



## **Determination of Significant Market Power and Dominance in International Connectivity Markets**

**Final Determination**

**Issued by the Telecommunications Regulatory Authority**

23 July 2020

Ref: MCD/07/20/041

**Public Version**

**(Confidential information has been replaced by [X])**

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.

**Final Determination**  
Determination of Significant Market Power and Dominance in International  
Connectivity Markets

**DETERMINATION REGARDING RETAIL MARKETS FOR  
INTERNATIONAL CONNECTIVITY SERVICES**

**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 23 July 2020



Nasser bin Mohamed Al-Khalifa  
Acting General Director  
Telecommunication Regulatory Authority  
Manama, Kingdom of Bahrain

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**DETERMINATION OF DOMINANCE IN THE WHOLESALE  
MARKET FOR INTERNATIONAL CONNECTIVITY SERVICES**

**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 23 July 2020



Nasser bin Mohamed Al-Khalifa  
Acting General Director  
Telecommunication Regulatory Authority  
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## **Annex 1 – Reasoning for the Determination**

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#### List of acronyms and definitions

AWS	Amazon Web Services
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
CSP	Cloud Service Providers
DWDM	Dense Wavelength Division Multiplexing
EC	European Commission
EU	European Union
EWA	Electricity and Water Authority
FAS	Facilities Access Service
FOG	Fibre Optic Gulf
FTIN	Fixed Telecommunications Infrastructure
GBI	Gulf Bridge International
GCC countries	Gulf Cooperation Council countries
GCCIA	Gulf Cooperation Council Interconnection Authority
ICS	International Connectivity Services
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
OTT	Over The Top
OWS	Optical Wavelength Service
POP	Point Of Presence
RO	Reference Offer
RAIO	Reference Access and Interconnection Offer

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SDH	Synchronous Digital Hierarchy
SD WAN	Software Defined WAN
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 / STC	VIVA Bahrain BSC now STC Bahrain BSC
VPN	Virtual Private Network
Zain	Zain Bahrain B.S.C.

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#### **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. It further sets out the comments received from industry stakeholders in response to the consultation on these preliminary conclusions, the Authority's assessment of these comments and its final conclusions.
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.

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## **2 Background to this 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<sup>1</sup>, and concluded that Batelco was dominant in the market<sup>2</sup>. 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.
7. In its 2008 Determination, the Authority defined a retail market for international leased lines<sup>3</sup>, and concluded that Batelco had SMP in that market. Within this Determination, Batelco's

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<sup>1</sup> The Authority "Dominance in Wholesale Markets by Batelco", 22 January 2006, page 5.

<sup>2</sup> *ibid*, page 9.

<sup>3</sup> The Authority "Significant Market Power in Certain Relevant Retail Markets", 3 June 2008, page 3.

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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”<sup>4</sup>.

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 final 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.<sup>5</sup> 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 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,<sup>6</sup> which, taken at

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<sup>4</sup> Ibid, page 51.

<sup>5</sup> 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.

<sup>6</sup> These complaints are further discussed in Section 2.2.2 below.

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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 6<sup>th</sup> of May 2016<sup>7</sup>. 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 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

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<sup>7</sup> Available at [http://www.tra.org.bh/media/document/NTP4\\_EnglishTranslation\\_May20161.pdf](http://www.tra.org.bh/media/document/NTP4_EnglishTranslation_May20161.pdf).

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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.<sup>8</sup>
24. Leased lines are, however, one of two main groups of retail services that use international connectivity.

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<sup>8</sup> The Authority "Significant Market Power in Certain Relevant Retail Markets", 3 June 2008, page 23.

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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, while still representing different 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	
<ul style="list-style-type: none"> <li>▪ International private leased circuits (IPLC)</li> <li>▪ Wavelength</li> </ul>	Layer 1	<i>Physical layer</i> Provides a basic physical connection over which Layers 2/3 can be established.
<ul style="list-style-type: none"> <li>▪ International Ethernet / VLANs</li> </ul>	Layer 2	<i>Datalink layer</i> Defines the protocol of a connection between two physically connected devices.
<ul style="list-style-type: none"> <li>▪ International virtual private network (VPN)</li> </ul>	Layer 3	<i>Network IP layer</i> 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 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,<sup>9</sup> the current market review will focus on the

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<sup>9</sup> 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

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supply of services that have the primary function of providing international connectivity to corporate customers and telecommunication service providers.

#### 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?**

### Summary and assessment of consultation responses

In this table, the Authority provides a summary of and a response to stakeholders' comments in relation to question 1.	
Summary of stakeholders' submissions	The Authority's analysis and response
Batelco agrees with the categories of retail and wholesale markets considered by the Authority to be relevant for the market review.	Noted
BNet generally agrees but highlights importance of identifying the licensing regime underpinning each aspect of the ICS supply chain.	The Authority acknowledges the need to identify the licensing regime at each stage of the ICS supply chain. It notes the same in the draft determination by pointing out the requirement for a party to hold appropriate licenses to operate and manage the part of the international cable system in Bahrain's territorial waters and to sell international services within Bahrain, with this affecting both the wholesale and retail markets for ICS in Bahrain.

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<p>STC agrees although a definition of end-to end service is needed in terms of the supply chains covered. It doesn't consider Batelco's IPLC service (as specified in its RO) as an end to end service as it comprises a half circuit from the point of handover to Batelco to the effective mid-point of the international segment of the circuit. Hence it covers three supply chain elements: the National Access to the PoP, Access at the PoP to international connectivity and the National part of the International Connectivity System</p> <p>In particular it also notes that Retail International Connectivity services that are part of the review are those that are applicable to large retail customers only</p>	<p>The Authority notes that STC agrees in principle with the Authority's position. In relation to its comment regarding end-to-end services, the Authority acknowledges that service definitions can vary from operator to operator. However, this, in the Authority's view, does not affect its conclusions on the supply chain, although it is relevant in the context of assessing retail prices.</p> <p>The Authority notes that Retail Interconnectivity services can be used by both large and smaller retail consumers. Indeed, this is shown by the fact that the Authority has considered, in its review, services with varied capacities and charged at different prices.. It is not clear to the Authority if STC considers that some services have been wrongly excluded from the Authority's analysis. However, for the avoidance of doubt, the Authority is comfortable that its analysis is comprehensive.</p>
<p>Zain agrees in principle with the retail and wholesale services considered relevant for this market review.</p>	<p>Noted</p>
<p>Kalaam agrees with the relevancy of the retail and wholesale services mentioned in the Determination.</p>	<p>Noted</p>
<p>AWS believes there are other factors that should be included. For example, it believes that, apart from the requirement to hold licences, there are customer segments in the retail market that have the ability and preference to self-supply their underlying networks, such as, for example, CSP's and OTT content providers.</p>	<p>AWS' comment appears to be consistent with the Authority's assessment of the market. Operators, subject to holding the appropriate licences, can choose between self-supply and wholesale services to establish international connectivity.</p>

### The Authority's final decision

Taking into account the responses received to its consultation, the Authority concludes that the range of services as set out Section 2.3 of this Annex, are the appropriate and relevant services to include in this review of the international connectivity market. It notes BNet's comment concerning the importance of considering the licensing regime for these services and this is one factor that the Authority takes into account when identifying possible

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bottlenecks in the defined markets. However, for the avoidance of doubt, changes to the licensing regime are considered to be beyond the scope of this 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.
31. The Authority considers that, from a network perspective, the supply chain for international connectivity is made up of 4 key elements.<sup>10</sup>
  - a. National access to the landing partner POP for international connectivity (e.g. domestic backhaul, from the customer site or Access seeker core network)
  - 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)<sup>11</sup>
  - d. The international part of the international connectivity system.
32. Figure 2 shows an illustration of the supply chain.

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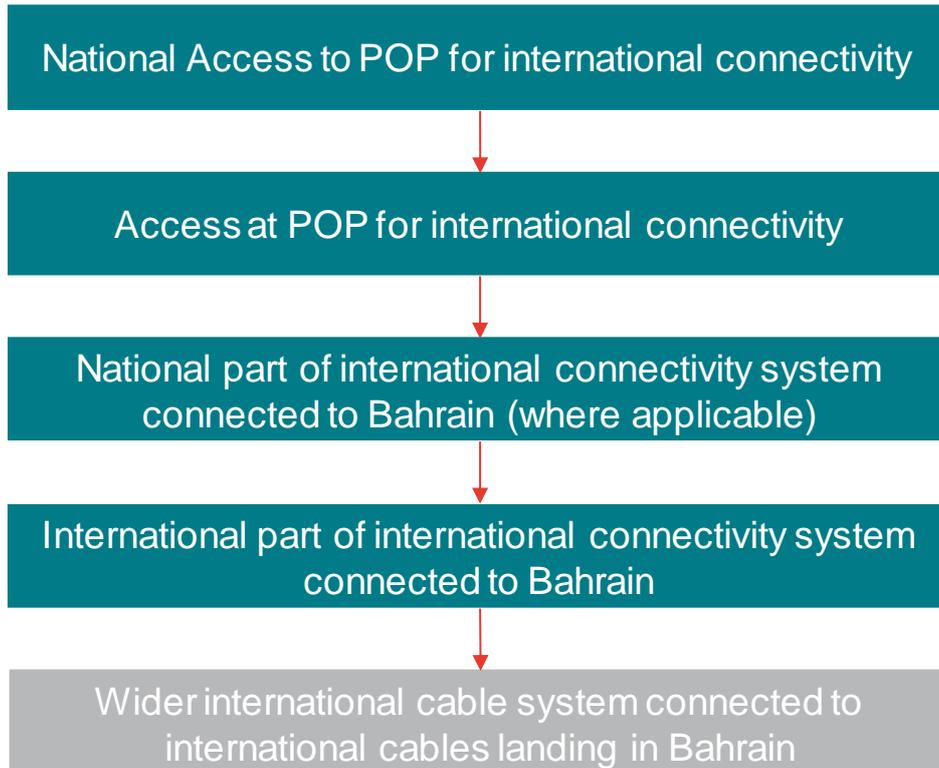
<sup>10</sup> For retail services, the supply chain would also include additional (non-network) retail elements. These are not shown here.

<sup>11</sup> 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.

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Figure 2: Supply chain of international connectivity in Bahrain



Source: the Authority

33. The first element relates to national access to the POP for international connectivity, typically provided through fibre infrastructure. Such connectivity is included within the market for domestic data connectivity services previously defined by the Authority.<sup>12</sup> 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.

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<sup>12</sup> 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.

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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)<sup>13</sup> 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 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. 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?**

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<sup>13</sup> [https://tra-website-content-prod-2019-do-not-delete.s3-eu-west-1.amazonaws.com/Media/Documents/Orders/20191009174538933\\_3qn0sehu\\_pl1.pdf](https://tra-website-content-prod-2019-do-not-delete.s3-eu-west-1.amazonaws.com/Media/Documents/Orders/20191009174538933_3qn0sehu_pl1.pdf)

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#### Summary and assessment of consultation responses

In this table, the Authority provides a summary of and a response to stakeholders' comments in relation to question 2.	
Summary of stakeholders' submissions	The Authority's analysis and responses
<p>Batelco agrees with the Authority's description of the elements of IC supply chain but notes that it doesn't consider significant bottlenecks currently exist to hamper the ability of licensed operators to supply. It cites that the 'bottleneck' outlined in Annex para 235 is limited, as operators already can access the POP and those parts of the cable systems that land within Bahrain and that are controlled by Batelco. In this regard, Batelco refers specifically to the IFC reference offer and access it provides to GBI, following the Authority's investigation into access to that cable. However, Batelco notes that such requests for access have been limited.</p>	<p>The Authority notes Batelco's general agreement regarding its description of the supply chain..</p> <p>In relation to Batelco's comments regarding bottlenecks, the Authority notes that the access Batelco provides to the Falcon [3&lt;] cables results from specific Art. 65 investigations and not a full market review. Furthermore, such access has also not been provided on a commercial basis (i.e., absent intervention). Now it has conducted a market review, the Authority has concluded, for the reasons set out in the remainder of this Annex, that the remedies imposed as a result of those ex-post investigations are not sufficient to resolve the competition issues identified for the market as a whole. The Authority considers that limited uptake of the previous remedies is further evidence of this, rather than evidence that demand for access to international capacity is limited.</p>
<p>BNet considers some elements have been too broadly defined, particularly "Access at POP for international connectivity".</p> <p>BNet does not agree with the interpretation that Access at the POP for international connectivity falls under the orbit of the International Facilities Licence ('IFL'). This is because,</p> <ul style="list-style-type: none"> <li>• the IFL only allows a holder of such a licence to connect its international telecommunications facilities to a Fixed Telecommunications Infrastructure Network ('FTIN') subject to an agreement with the holder of this FTIN Licence. As such, the demarcation of the IFL Licence stops at the international telecommunications facilities equipment.</li> <li>• any connectivity between the demarcation point of the IFL Licence and any domestic network falls under domestic connectivity and, therefore,</li> </ul>	<p>The Authority acknowledges BNet's comments in relation to the supply chain and how this may relate to the licensing regime. However, in describing the supply chain, the Authority's intention was not to link each element to a type of Licence - although the Authority acknowledges that this may be one reason for considering defining a specific element within the supply chain - but also to consider differences in function, ownership and commercial practices in the different parts of the supply chain.</p> <p>In relation to BNet's comment on the provision of connectivity between the demarcation of the international telecommunication facility and the domestic network, the Authority did not suggest that such a service would necessarily be provided by the holder of an IFL. However, in the Authority's view, connectivity between a domestic network and international telecommunications facilities equipment may be provided as part of the internal cabling at the landing station (e.g., a secure cross connect from a domestic colocation room at the landing station to the international telecommunications facilities room at the landing station) with both pieces of equipment connected to corresponding patch panels via passive cables. The ability to install those cables should</p>

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<p>should be provided by the holder of the FTIN Licence.</p>	<p>logically rest with the owner of the cable landing station. This is because the local connection of telecommunication equipment, be it installed by the owner of a facility or co-located at the facility is an integral part of the installation of that equipment.</p>
<p>STC agrees that supply chain is common to both retail and wholesale services but makes specific comments about each element of the supply chain and emphasises that the Authority should build a full list of components and surrounding services.</p>	<p>The Authority notes that a detailed description of the components and services surrounding the access at POP will be required for any Reference Offer service that must be provided by dominant licensees. However, for the purposes of the market assessment the Authority believes it is sufficient to describe the ICS supply chain at a level which identifies and highlights the relevant bottlenecks i.e., those bottlenecks which prevent the market functioning effectively Further details on the remedies proposed are provided by the Authority in relation to comments received in response to question 12 of this consultation.</p>
<p>Zain refers to its own illustration of the international connectivity supply chain (Annex A). The Authority notes that Zain also refers to this in its response to Question 12 and so the Authority considers this in more detail in that question.</p> <p>Zain further comments, in that context, that the approach of requiring international cable operators to hold appropriate licences to operate and sell international capacity in Bahrain is not consistent with international best practice. In particular it refers to Singapore where only the buyer of international capacity from international cable operators is required to hold a corresponding licence.</p>	<p>The Authority acknowledges Zain's description of the supply chain and notes that the key elements identified by Zain are consistent with those the Authority described. However, the Authority notes that Zain's illustration specifically attributes elements of the supply chain to certain types of operators that is not consistent with the situation in Bahrain. In particular, Zain attributes active SLTE equipment to the international cable system operator. This is not always the case. Instead, in a number of cases, the active submarine cable equipment is operated by the landing party instead. It is for that reason that the Authority's illustration of the supply chain does not consider asset ownership.</p> <p>The Authority acknowledges Zain's comments regarding international precedent but notes that this market review is carried out given the current market structure and licensing regime in the Kingdom. Changes to the licensing regime cannot be considered as a remedy within a market review.</p>
<p>Kalaam agrees with the description of the international connectivity supply chain. However, it also states that in its opinion, the National Access to POP can be broken down further into National Access to Amwaj border and a loop between Amwaj border to the CLS.</p>	<p>The first element of the supply chain relates to connectivity included within the market for domestic data connectivity services. The Authority notes that national connectivity itself can consist of a number of different components and with potentially different providers (in certain areas of Bahrain) providing such</p>

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	<p>components. However, given the scope of this market review the Authority has focused here on the international components of the supply chain, while presenting for completeness, in Figure 2, the domestic aspect of the supply chain. The Authority further notes that concerns around bottlenecks in the provision of domestic connectivity, regardless of the services for which that domestic connectivity is required, will be considered in the Authority's forthcoming review of domestic connectivity markets.</p>
<p>AWS believes that as the National Access to POP is part of the supply chain, the BNet Reference Offer and products should form part of the scope of this review. It believes competition and cost effective alternative routes would be at risk if BNet were to take ownership of all fiber assets in Bahrain because operators will be subject to the BNet RO WDC rates, which are not cost based and therefore pose issues at scale (i.e., for customers wishing to buy large volumes of capacity).</p>	<p>The Authority again notes, that while domestic connectivity forms part of the international supply chain, it is not the subject of the ICMR. This is because the economic bottlenecks over domestic connectivity are likely to differ to those for other components of the international connectivity supply chain, with this market review focusing on the latter.</p> <p>This also reflects the fact that the structure of the market has substantially changed in comparison to previous Determinations the Authority has reached on international connectivity. For example, previous TRA Determinations have considered the domestic connectivity as part of a regulated end-to-end retail service or as part of a set of services offered by an operator dominant in the market for international connectivity. However, since the separation of Batelco and the creation of BNet this is no longer the case. That is, where previously an operator offering an international connectivity service may have relied upon national connectivity and access at the cable landing station from Batelco, national connectivity is now clearly a service provided (primarily) by BNet. As such, the Authority no longer considers that a bottleneck in the international connectivity market could occur by a provider specifically linking domestic and international supply chain elements. Therefore, it places the focus of this ICMR on elements of the supply chain specifically related to the provision of international connectivity.</p> <p>The Authority also notes that the functioning of domestic connectivity markets is not just an issue for international connectivity but for all services requiring domestic connectivity. The Authority therefore considers it appropriate that domestic connectivity used for the purposes of providing international connectivity is also considered in the context of a domestic market review. For the avoidance of doubt, the Authority recognises that customers of international connectivity services in Bahrain may have specific requirements for domestic connectivity that may differ from the requirements of other users</p>

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	of domestic connectivity. However, the Authority considers that this can most appropriately be addressed through its forthcoming domestic connectivity market review and its future reviews of BNet's Reference Offer.
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### The Authority's final decision

Having considered the comments made by stakeholders in respect of the Authority's description of the supply chain for international connectivity services, the Authority concludes that the description it set out in the Annex to the Draft Determination remains appropriate. It acknowledges the comments received by stakeholders on the need to also consider domestic connectivity. However, for the reasons set out above, the Authority believes that such issues are best addressed through the Authority's forthcoming review of domestic connectivity markets. Finally, and for the avoidance of doubt, the Authority notes in this context that the POP referred to in the first element of the supply chain in Figure 21 (National access to POP for international connectivity) is the cable landing station (in the case of submarine cables or its equivalent for terrestrial international cables).

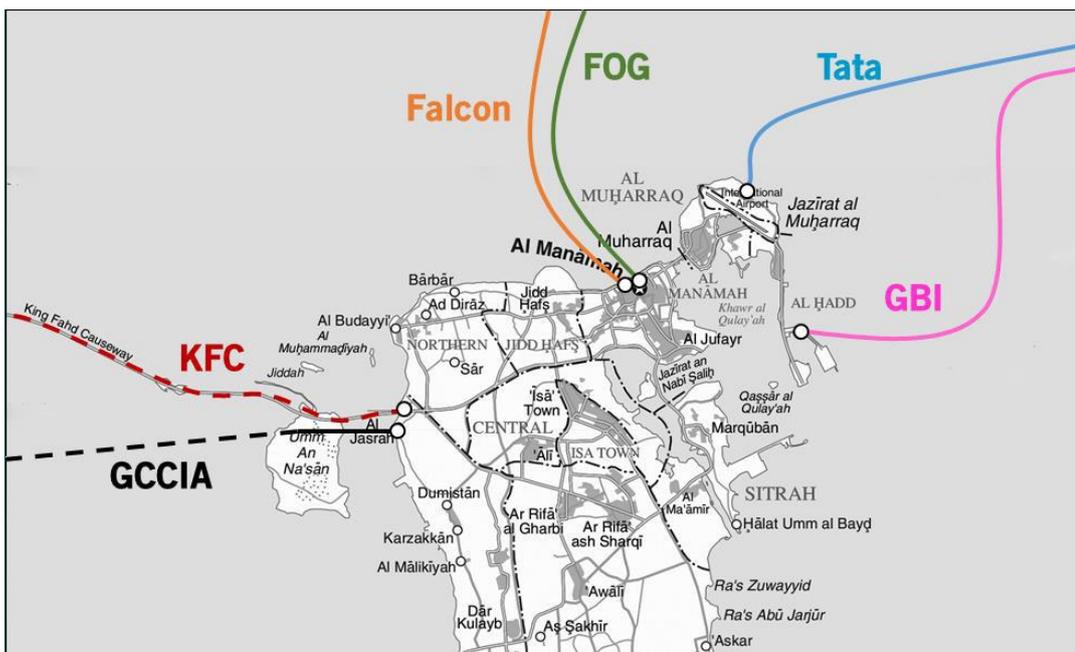
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#### 2.5 Overview of international capacity into and out of Bahrain

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 2 shows the international cable routes that are currently operational in Bahrain.

Figure 3: International Fibre Optic Cable routes in Bahrain



Source: the Authority



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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.<sup>19</sup> 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.<sup>20</sup>

#### 2.5.3 Gulf Bridge International ("GBI")

51. 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.
52. 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.
53. 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 towards the international waters, must be acquired from Batelco.

#### 2.5.4 TATA

54. 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<sup>21</sup>. TATA entered into agreements with operators in each of these countries, including BIX in Bahrain, to provide international connectivity from the BIX points of

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<sup>19</sup> 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.

<sup>20</sup> Ibid, page 35.

<sup>21</sup> The cable branch and the landing station for the TATA cable have been financed by the Government of the Kingdom of Bahrain.

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presence in Seef and Juffair<sup>22</sup> through TATA's global network. The designed capacity on the cable is 4.2 Tbps.

55. The TATA cable became ready for service in 2011.
56. 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")

57. 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.
58. 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.

#### 2.5.6 GCCIA

59. 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).
60. 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).
61. The GCCIA with Batelco and Cinturion, are in the process of expanding the GCCIA's current regional network of fibre cables to Europe and India. This will further improve the viability and usefulness of the network and is likely to benefit the region including Bahrain.<sup>23</sup>

#### 2.5.7 Satellite

62. In 2005, the Authority noted that the only alternative suppliers of international capacity into Bahrain, other than Batelco, were satellite-based<sup>24</sup>. Specifically, the Authority referred to both Northstar and Mena Telecom (now acquired by Viva)<sup>25</sup> as offering access to satellite-

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<sup>22</sup> 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.

<sup>23</sup> <https://cinturioncorp.com/cinturion/News>.

<sup>24</sup> The Authority "Dominance in Wholesale Markets: A Consultation issued by the Telecommunications Regulatory Authority on Dominance in Wholesale Markets", 27 October 2005, page 41.

<sup>25</sup> During the 2005-2006 market review, the Authority referred to MENA Broadband Services, which subsequently became Mena Telecom.

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based international capacity, although it concluded that the market share of these two operators was not significant.

63. In 2010 Batelco<sup>26</sup> 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.
64. 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.

**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?**

### Summary and assessment of consultation responses

In this table, the Authority provides a summary of and a response to stakeholders’ comments in relation to question 3.	
Summary of stakeholders’ submissions	The Authority’s analysis and responses
<p>Batelco agrees that the focus should be on cable only and satellite continues to be insignificant.</p> <p>However, in contrast to the Authority’s view set out in section 2.5, Batelco identifies 12 physical cables that connect to Bahrain- four submarine cables (FALCON, GBI, FOG, TGN) and eight terrestrial cables (four cables run over KFC duct and operated by Batelco, Viva, Zain, and Infonas). And four run over GCCIA duct which are operated by Batelco, Viva, Zain, and Infonas). Batelco therefore, in its view, controls five of twelve cables.</p>	<p>The Authority notes Batelco’s view that satellite continues to be insignificant.</p> <p>The Authority agrees that cable ownership can be stated in terms of the individual cables but for the purposes of the current ICMR, the Authority’s assessment takes into consideration the six distinct routes as opposed to individual cables. This is consistent with the focus on available and used capacity rather than the number of cables, in the Authority’s assessment of market share and dominance. This is because the ownership of individual cables and how many each party owns is irrelevant for that assessment, which highlights (see further below) that while operators other than Batelco have access to terrestrial routes, a significant portion of international connectivity capacity is supplied over</p>

<sup>26</sup> Batelco “Application for a determination that Batelco is not dominant in the wholesale market for access to international facilities”, 14 December 2010, page 20.

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<p>Batelco states that licensed operators thus have several options, apart from relying on Batelco, to meet their IC needs. Indeed, Batelco reports that only one operator has sought international capacity from Batelco in recent years, so suggesting there is not a high demand for capacity on submarine cables under Batelco's control, and also that Batelco does not hold SMP. Batelco further notes in this context that the current usage patterns of terrestrial and submarine links is evidence that facilities based competition is working and that regulated access to Batelco submarine cable assets would jeopardise this.</p> <p>Batelco also notes that parties can also access the submarine cables connected to Batelco's cable landing stations by purchasing terrestrial capacity to Saudi Arabia and accessing submarine cables there.</p>	<p>submarine cables, with Batelco the predominant provider of that capacity.</p> <p>The Authority notes that the fact that there have not been many requests for access to capacity on submarine cables is not proof that there is no demand, should such access be available on terms consistent with those that would arise in a competitive market.</p> <p>The Authority acknowledges Batelco's reference to facilities based competition but notes that this is not necessarily an efficient outcome for consumers. This is why the Authority has considered a range of indicators in this market review in order to determine whether such competition is, in fact, effective.</p> <p>The Authority acknowledges Batelco's comment regarding access to submarine cables through Saudi Arabia. While this is certainly an option for access seekers to pursue, the Authority notes that prices on that part of the cable may reflect that the distance of the cable between Bahrain and Saudi Arabia can be considerably longer than the road distance and hence affect prices. Demand on particular segments of the cable could further impact prices. It also requires access seeker to acquire additional connectivity from parties outside of Bahrain to connect to those cables. Such differences could be sufficient to place Batelco at an unfair economic advantage.</p>
<p>BNet considers the assessment requires an understanding of the licensing regime and requirements of each part of the ICS supply chain</p>	<p>The Authority agrees that the licence regime is an important aspect in the assessment of international connectivity in Bahrain but less so for the description of the supply chain, and individual cable systems connecting to Bahrain. However, it is important to consider the licencing regime when assessing dominance in the market, the source of any bottlenecks and the ex-ante remedies that can be applied to resolve these. The Authority considers this in its subsequent assessment and definition of corresponding remedies. However, for the avoidance of doubt, this market review does not consider changes to the licensing regime.</p>
<p>STC considers that the question of whether satellite communication should be included in the analysis could arise again in future, were satellite use to become more relevant.</p>	<p>The Authority acknowledges that satellite communication could become more relevant in the future. However, it currently continues to be insignificant in the context of the provision of IC capacity in Bahrain and the Authority considers this</p>

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<p>STC is also concerned that any potential concerns and potential market power associated with access to the TATA cable has not been considered in this review.</p> <p>STC also raises concerns regarding the specification of individual (sub-)components of</p>	<p>is unlikely to change in the next 1-2 years, certainly to the extent that it would impact the analysis of capacity and market shares presented in the annex to the draft determination. If the use of satellite does increase the Authority will consider it as part of subsequent reviews.</p> <p>The Authority does not agree that it has not considered international connectivity services over the TATA cable in this review. Its assessment considers all relevant aspects of the provision of IC services over the TATA cable especially in the context of defining the relevant markets and dominance. The reasons for why access to this cable was not considered part of a separate market and why no party is considered to have a dominant position in relation to access to the TATA cable is set out in subsequent sections (e.g. see final decision in relation to dominance in the wholesale market / Q9). In relation to domestic connectivity towards the TATA cable, the Authority notes that it issued an ex-post decision<sup>27</sup> that directs Nuetel to refrain from anti-competitive behaviour in the provision of domestic connectivity to the TATA CLS across Amwaj. This followed an investigation into excessive pricing behaviour. While this decision was based on an ex-post competition investigation and could therefore be reassessed in the context of an ex-ante market review, the Authority notes that this matter concerns the provision of domestic connectivity, rather than international connectivity. As such, the Authority will consider this further in a separate, forthcoming, market review for domestic connectivity. For the avoidance of doubt, while, for the reasons set out later in this Annex, the Authority has not identified any reasons to define international connectivity over the TATA cable to be in a different market to international connectivity provided over other routes, this is not the same as concluding that domestic connectivity in Amwaj is in the same geographic market as domestic connectivity provided elsewhere in the Kingdom. Rather, this latter issue will be considered as part of the Authority's domestic market reviews.</p> <p>Finally, the Authority acknowledges STC's comment and agrees that a dominant position can impact (or</p>
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<sup>27</sup> Determination issued by the Telecommunications Regulatory Authority to Nuetel Communications SPC pursuant to Article 65(f) of the Telecommunications Law concerning Nuetel's pricing of its Local Interconnection Charges, 1 October 2018. Reference LAD 1018 252.

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<p>the supply chain elements discussed in the previous section of this annex (e.g. specific connector links or collocation), as it considers that competition concerns can arise equally for whole elements or sub-components alike.</p>	<p>abusive behaviour be directed) on the whole of the supply chain or sub-components thereof. However, the Authority is mindful that remedies imposed on the basis of this ex-ante assessment are not linked to individual sub-components of bottlenecks but the bottlenecks as a whole. Any subcomponents that could, individually, cause that bottleneck are therefore covered in the remedy imposed. This is because the remedies relate to the specific economic bottlenecks identified during the review. While taking account of past behaviour in relation to specific sub-components of the value chain, the remedies proposed consider the bottlenecks as a whole, in order to ensure that the risk of anti-competitive behaviour is minimised.</p>
<p>Zain considers "...that access to the TATA cable warrants a more detailed review by the authority."</p>	<p>The Authority refers to its response to STC's comment on the same matter, as set out above.</p>
<p>Kalaam agrees.</p>	<p>Noted</p>
<p>AWS draws the Authority's attention to three areas:</p> <ul style="list-style-type: none"> <li>• Diversity of cable landings and backhaul paths: AWS notes that diversity of backhaul paths and access to cable landing stations are important requirements for providing ICS. It believes opportunities for diversity should be assessed to understand whether it is feasible for wholesale or retail operators to build high availability networks within Bahrain.</li> </ul>	<p>The Authority acknowledges AWS's comments regarding the lack of diversity of cable landings and backhaul paths and the fact that this might prevent OLOs from providing their customers with high levels of resilience and redundancy. In the Authority's view, this highlights the need to remove relevant bottlenecks in the supply chain in order to promote more competition in the IC service markets. The Authority specifically notes that to implement the requirements described by AWS it is necessary for an operator to access several diverse routes, a factor which the Authority's draft Determination already identified as one potential reason for why Batelco has been able to maintain high market shares. The remedies proposed in the draft Determination and now set out in more detail in this final Determination are designed to ensure that access seekers can also benefit from that route diversity.</p> <p>In relation to the diversity of backhaul routes, AWS specifically refers to "bespoke fibre path routing" and notes that it is unclear if that characteristic is part of BNet's WDC product, as set out in its Reference Offer. The Authority notes that a discussion of such requirements should first and foremost take place between AWS and those licensees from whom it secures connectivity. Furthermore, the question of the scope and design of the WDC product is beyond the scope of this review and would instead be</p>

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<ul style="list-style-type: none"><li>• Available capacity on each International system: The Authority should conduct an assessment of long term supply on currently available systems in light of the FOG cable being expected to be decommissioned by 2023.</li><li>• AWS finally comments that only the WDC product is available for domestic connectivity and notes that the prices of those services are not cost oriented and therefore "...sets a high price floor for international connectivity"</li></ul>	<p>addressed in subsequent reviews of the BNet Reference Offer. The Authority also notes that in addition to WDC, the BNet reference offer includes the Exceptional Facilities Access Service (Exceptional FAS) which, subject to the prior approval of the Minister, shall be provided by BNet to OLOs to service Strategic Partners for the Kingdom of Bahrain.</p> <p>With regard to AWS's second point, the Authority notes that its approach to regulation is generally one that considers the impact on investment incentives carefully. However, it also recognises that investments in international capacity are driven by commercial decisions and other areas of government policies that the Authority does not influence. Therefore, while accepting that the decommissioning of one international cable system can increase utilisation on others and potentially reduce choice for access seekers, the remedies at the Authority's disposal are not designed to directly deliver more international capacity to Bahrain (although the Authority is confident that the remedies it sets out herein should not limit investment in such capacity). However, in the case of the FOG cable, the Authority is confident that decommissioning that cable will not significantly impact on overall international capacity to Bahrain and route diversity. This is because, while Batelco has [redacted] available on the FOG cable, research available to the TRA indicates that, in 2018, only, less than 5% was used.</p> <p>With regard to AWS's final point, the Authority refers to its earlier comments in relation to domestic connectivity services and notes specifically that WDC is not the only domestic connectivity service provided in the BNet RO BNet. In line with its response above, the Authority also confirms that the pricing of BNet RO services shall be considered again by the Authority at the time of the next RO review and in line with Pricing Guidelines being developed separately by the Authority and the timing set out in the Authority's 2019 BNet RO Order.</p>
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### The Authority's final decision

Having considered the comments made by stakeholders, the Authority has concluded that its description of international connectivity systems included in the Annex to the Draft Determination remains appropriate. The Authority has noted the comments of some stakeholders regarding

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access to the TATA cable. For the avoidance of doubt, the Authority has considered, as part of this review, whether connectivity over the TATA cable should be included in the same market as international connectivity over other links and it sets out its views on this in response to the comments it has received on Question 4 and Question 9. However, the Authority again reiterates that domestic connectivity, whether that is connectivity to the TATA cable landing station, the characteristics of the BNet WDC product or requirements for other domestic connectivity products, are beyond the scope of this review and will be considered in the forthcoming domestic connectivity market review and the next review of the BNet RO.

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## 3 Analytical framework

65. 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.
66. At each step, the Authority relies on well-established economic principles and tests to conduct its analysis.
67. 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.
68. Throughout the process, the Authority applies an analytical framework that is consistent with the Telecommunications Law and the Authority's Competition Guidelines<sup>28</sup>. 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).<sup>29</sup>
69. 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.<sup>30</sup> 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.
70. 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 any countervailing buyer power, that may limit the ability of an incumbent supplier of retail

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

<sup>29</sup> For example, the TRAs in Oman and UAE both apply a Three Criteria Test during market reviews.

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

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and wholesale international connectivity services to act independently of its competitors or customers and exercise market power.

71. 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.

72. Article 1 of the Telecommunications Law defines both SMP and a Dominant Position.
73. An operator with SMP is defined as holding a share of 25% or more of the relevant market as determined by the Authority<sup>31</sup>. 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%.
74. 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.
75. 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."<sup>32</sup>
76. In practice, the Authority considers that the concepts of SMP and dominance are similar and seek to capture similar types of behaviour<sup>33</sup>, 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 international best practice<sup>34</sup>. However, the legal definition of SMP in the Telecommunications Law places special emphasis on market shares while recognising the

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<sup>31</sup> Telecommunications Law of the Kingdom of Bahrain, page 8.

<sup>32</sup> Ibid, page 7.

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

<sup>34</sup> For example, the regulatory framework governing the EU telecommunications sector considers the concept of SMP to be equivalent to that of dominance.

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need to carefully consider the ability of an operator to influence market conditions, i.e. to act independently.

77. 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<sup>35</sup>:
- 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.
78. 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<sup>36</sup>. 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).
79. 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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<sup>35</sup> The Authority, Competition Guidelines, paragraph 93.

<sup>36</sup> The Authority, Competition Guidelines, Section 3.3.

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#### 4 Identification of the relevant markets

80. 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).
81. 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<sup>37</sup>. 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.
82. 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 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.
83. 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

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<sup>37</sup> The Authority, Competition Guidelines, Section 2.4.

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

84. 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.<sup>39</sup>
85. 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,<sup>40</sup>
  - 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).<sup>41</sup>
86. The Authority has then also cross-checked this data against the Periodic Market Data Request information regularly supplied by all licensees to the Authority.
87. 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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<sup>38</sup> 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*

<sup>39</sup> The Authority, Competition Guidelines, Paragraph 32.

<sup>40</sup> 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.

<sup>41</sup> In the remainder of this document, this information collection process is referred to as the Article 53 information request.

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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*

88. 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).
89. 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).
90. 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.
91. 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.
92. 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.

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93. 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*

94. 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.
95. However, despite these similarities, the Authority does not believe that these services form part of the same economic market as international connectivity services.
96. 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

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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.

97. 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.<sup>42</sup> 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<sup>43</sup> 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<sup>44</sup>. 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*

98. 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 are part of the same market*

99. 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.
100. 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.
101. 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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<sup>42</sup> Retrieved August 2019 - <http://batelco.com/business/products-and-solutions/connectivity/inet-dedicated-access/>

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

<sup>44</sup> Batelco in response to the Article 53 Information Request.

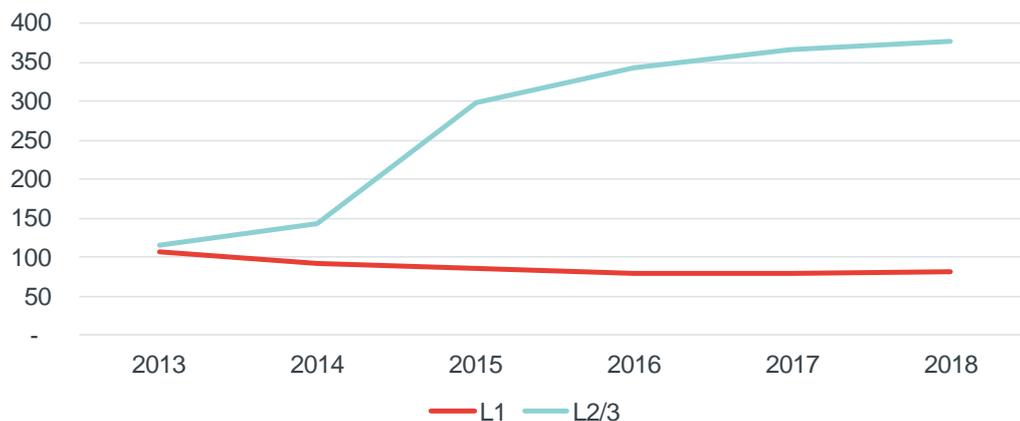
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example, a Layer 3 IP based international service to a Layer 2 service (such as an Ethernet based service) by changing their customer premise equipment and deploying their own IP based equipment such as routers. Similarly, a user of an Ethernet based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

102. 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.
103. 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.
104. 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**



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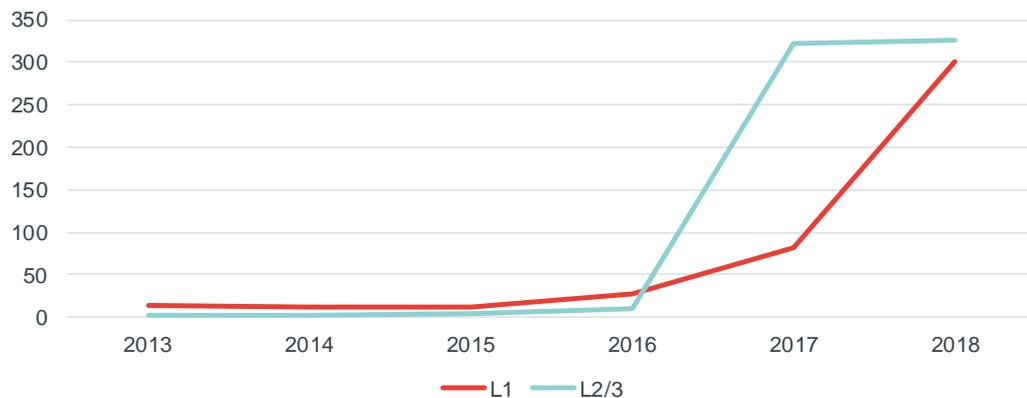
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Source: Licensed Operators' response to Article 53 Information Request

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.

105. 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)**



106. 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.
107. 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.
108. 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

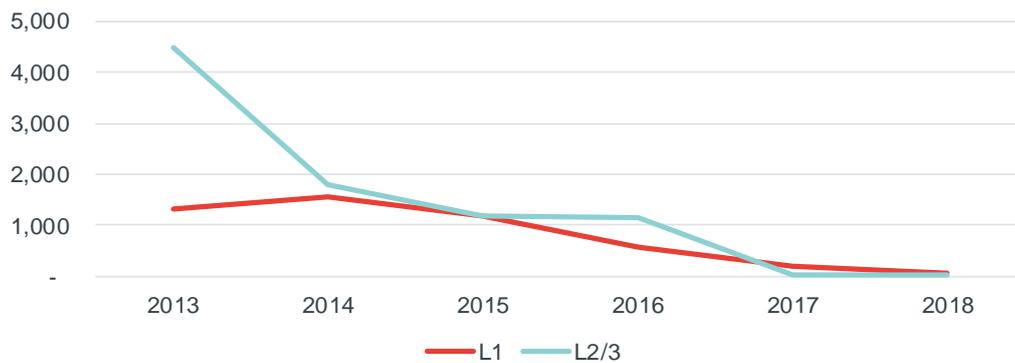
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approximately BD 163,000 and BD 210,000 with an average of BD 190,000 over the period 2013 to 2018. However, this is partly reflective of significant differences in the average capacities of these products: whereby the average capacity of Layer 1 products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

109. 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<sup>45</sup>.

**Figure 6: Average annual revenue per Mbps (BD)**



Source: Licensed Operators' response to Article 53 Information Request

110. 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<sup>46</sup> 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.
111. 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,<sup>47</sup> the Authority also notes that prices have converged over time.

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

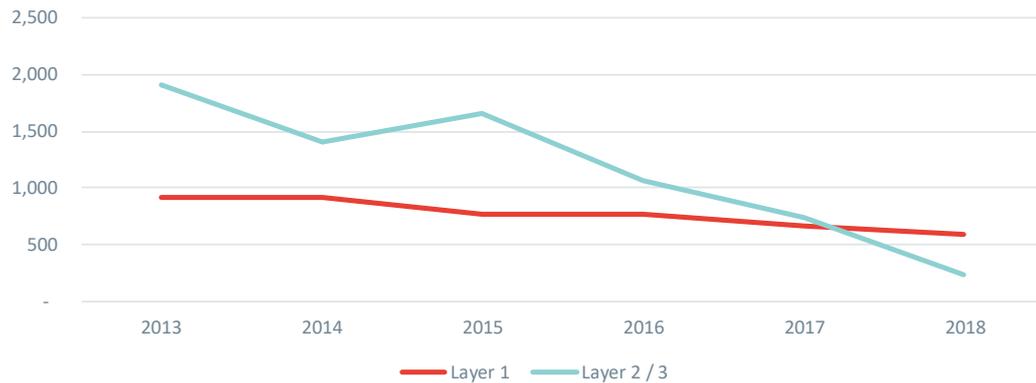
<sup>46</sup> Equant, Viva, Zajil and Zain provide data from 2015 onwards. Kalaam provides data from 2016 and Infonas from 2017 onwards.

<sup>47</sup> Batelco's Article 53 submission provides data consistently for the period 2013 to 2018.

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**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.

112. 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*

113. 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.
114. 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 [3].

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**Figure 8: Batelco average revenue per month (BD) across similar speeds<sup>48</sup>**

[REDACTED]

Source: Batelco response to Article 53 Information Request

115. 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.<sup>49</sup>
116. There is also likely to be a significant prospect of supply side substitution 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.
117. 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

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<sup>48</sup> In 2018, no 1 Mbps Layer 1 services were sold.

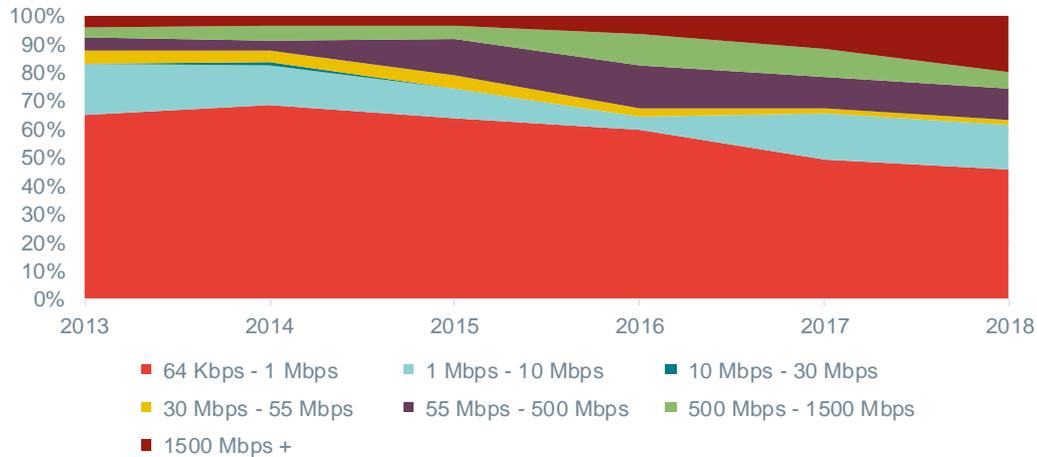
<sup>49</sup> 1. For example, Batelco’s Layer 1 international connectivity services are available at capacities of 64kbps, 128kbps, 256kbps, 512kbps, 1Mbps, 2Mbps, 20Mbps, 34Mbps, 45Mbps, 155Mbps, 622Mbps, 1Gbps, 2.5Gbps, 10Gbps and 100Gbps.

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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

118. 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.
119. 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*

120. 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.
121. 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.
122. 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.

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However, the Authority also understands that such preferences may be borne 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.

123. 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*

124. 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<sup>50</sup>. 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<sup>51</sup> and the 2013 Dominance Determination<sup>52</sup>, which defined a national market for wholesale international leased lines.
125. 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.
126. For the purpose of this Draft Determination, the Authority therefore defines a national market for retail international connectivity services.

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<sup>50</sup> The Authority, Competition Guidelines, Section 2.3.

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

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

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

#### Summary of and response to comments made by respondents on question 4

In this table, the Authority provides a summary of and a response to stakeholders' comments in relation to question 4.	
Summary of stakeholders' submissions	The Authority's analysis and responses
Batelco agrees with the Authority's market definition and the reasoning that led to it.	Noted
<p>STC agrees with the defined retail product market.</p> <p>STC considers that it can be argued that Amwaj constitutes a separate geographic market. In STC's view, this would be in line with previous dominance and SMP determinations issued by the Authority, which defined markets as national but expressly excluded the Amwaj area.</p> <p>STC also notes in response to this question, that it considers the retail market is not competitive and that the TRA should state this more formally. This comment seems to be made primarily in response to the Authority's finding (in the context of applying the Three Criteria Test to the retail market), that "the retail market will not become sufficiently competitive in the period of this market review (as in paragraph 169)"</p>	<p>Noted</p> <p>As discussed in response to earlier comments in this regard, (see Q3) the Authority considers that issues relating to connectivity in and across Amwaj are related to domestic, rather than international, connectivity. As such, these matters are not considered as part of this market review. The TRA has, however, recently launched a market review of domestic connectivity services. As a result, the fact that domestic connectivity may be supplied differently across Amwaj than the rest of Bahrain is not relevant for the purposes of defining a market for international connectivity. The Authority notes that this is consistent with its finding in its 2013 Determination regarding wholesale international connectivity services (which did not either define a separate market for Amwaj or exclude Amwaj from that market).</p> <p>The Authority notes that as (i) there has been no ex-ante wholesale regulation of international connectivity markets since its 2013 Determination; and (ii) the conditions under which previous ex-ante regulation was removed in the 2013 Determination had not been met, the conclusions set out in the draft determination are driven by the fact that the market is currently not delivering good outcomes in relation to the provision of retail services, consistent with there being a market failure. The paragraph referred to by STC was focused on whether ex-ante regulation should also apply in the retail market. The Authority's view, as set out in more detail in response</p>

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	<p>to the comments it received on Question 7 of the consultation, is that appropriately enforced ex-ante regulation in wholesale markets should be sufficient to resolve its concerns in the retail market.</p>
<p>Zain agrees in principle with the determination of the relevant retail product and geographic market.</p>	<p>Noted</p>
<p>Kalaam states that it believes the Authority's analysis of retail markets has been done "very well".</p> <p>Kalaam cites that there is "small impact" generated, with a few retail customers opting out from traditional Layer 2/3 solutions and moving to solutions like SDWAN that uses an underlying technology of Dedicated internet or broadband service and provides a Layer 3 VPN setup.</p> <p>Kalaam disagrees with the conclusion drawn by the Determination that the relevant product market for international retail connectivity should not be distinguished by capacity.</p>	<p>The Authority notes Kalaam's comments.</p> <p>With regard to its two further points, firstly, the Authority notes that there can be additional products that are similar to Layer 2/3 services but highlights that they still are captured within the Authority's assessment of the wholesale market for international connectivity, as the Authority takes into account total capacity used for all types of international connectivity services. This incorporates solutions like SDWAN which use the underlying technology of dedicated Internet or broadband services. The Authority, however, is unclear on what Kalaam means by a 'small impact' generated by solutions like SDWAN.</p> <p>In coming to the view that different capacity services should all form part of the same market, the Authority assessed the degree of both demand and supply side substitution between services of different capacity. It found significant evidence from the supply side for substitution among different capacities. From the demand side, it found that different capacities are not universally substitutable but that there can be a chain of substitution through adjacent capacities.</p> <p>The Authority further notes that the Kalaam does not provide a rationale for further differentiation of product markets along capacity boundaries or what appropriate boundaries might be.</p>
<p>AWS suggests that tariffs in the retail market should be created on a cost plus model to support and facilitate cost effective capacity at scale. It notes that transatlantic capacity rates and Western European co-location services rates can be used as benchmarks.</p>	<p>The Authority notes that imposing a cost based model of regulation on retail pricing would require it to make a finding that a party has market power in the retail international connectivity market, together also with a finding that imposing regulation on retail prices was necessary and appropriate to address that market power. As discussed later in this document, the Authority considers that ensuring, through regulation, effective access to wholesale international connectivity services (or bottleneck elements of the supply chain of wholesale international connectivity services) is likely to be</p>

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<p>AWS disagrees that Layer 2 and 3 services can be direct substitution for Layer 1 services and that they form part of the same market.</p>	<p>sufficient to resolve the issues observed in the retail market (e.g. see paras 173, 175 below).</p> <p>As already set out, the Authority has considered, in defining the relevant product markets, substitution from the supply and demand side, and believes there is sufficient evidence (as set out in the section leading up to Q4) to suggest that a reasonable degree of substitution may exist between these services. In relation to the difference between Layer 1 and 2/3 services, the Authority considers that, while there may not be direct substitution between L1 and 2/3, a provider of Layer 1 services is very likely to be able, with limited additional investment in equipment, to offer a Layer 2/3 service. Equally a provider of Layer 2/3 services, through the use of equipment over which Layer 2/3 services are already provided, is able to provide a Layer 1 service. So, whilst the Authority notes AWS's comments in this regard, it is not, for the avoidance of doubt, a requirement for every operator or customer to be willing to substitute in order to find that services are in the same product market.</p>
<p>AWS disagrees that it is on 'rare' occasions that customers seek to use a specific international cable system. It believes it is likely that all wholesale operators and International telecommunications companies in the retail market would seek to acquire connectivity on specific international cable systems to build diversity and resiliency into their networks.</p>	<p>The Authority acknowledges AWS's comment. It considers this is evidence of the importance of licensed operators having access to a diversity of routes and the importance of ensuring resilient international connectivity services. However, while generally highlighting the need for diversity (see AWS response to Q3 in relation to backhaul and landing stations such as access to the Exceptional FAS product), the Authority considers that AWS's response relates to the fact that some users may have a preference to use specific cables for the provision of individual services. While this may be true, the Authority notes that the market review is carried out for a market as a whole, not individual services or customers. Thus, whilst the Authority accepts that AWS's comment has merits, it does not believe that this is sufficient to overturn the other evidence available to the Authority (e.g. on customers' ability to switch between different technologies and cables and supply side substitutability), which suggests that access to all cable systems should be included in the same market.</p>

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#### **The Authority's final decision**

Having considered the comments made by stakeholders, the Authority has concluded that the scope of the retail geographic and product market definition included in the Annex to the Draft Determination remains appropriate. The Authority has noted the comments of some stakeholders in support of narrower market definitions, either by cable systems or technologies and speeds. However, the Authority considers that the evidence in support of such narrower market definitions was limited. However, it also notes that geographic and product market definitions are reflective of the specific characteristics of ICS and the range of services that operators provide in both retail and wholesale markets. For example, whilst the Authority has concluded, for the purposes of this review, that (primarily from a supply side perspective) Layer 1 and Layer 2/3 services form part of the same market, this may not necessarily be the case when defining markets for other services. The Authority also notes that not excluding Amwaj Island from its geographic market (or defining a separate market for Amwaj Island) is consistent with the approach taken by the Authority in its 2013 Determination and again, does not prejudice findings the Authority may come to in reviews of domestic markets, or the findings of its 2018 Article 65 case against Nuetel. The Authority discusses this further in response to the comments it has received on Question 9.

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#### 4.2 Identification of the wholesale markets

##### 4.2.1 Relevant product market

127. 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.
128. 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.
129. 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.
130. 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.<sup>53</sup>
131. 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.
132. 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.
133. 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.

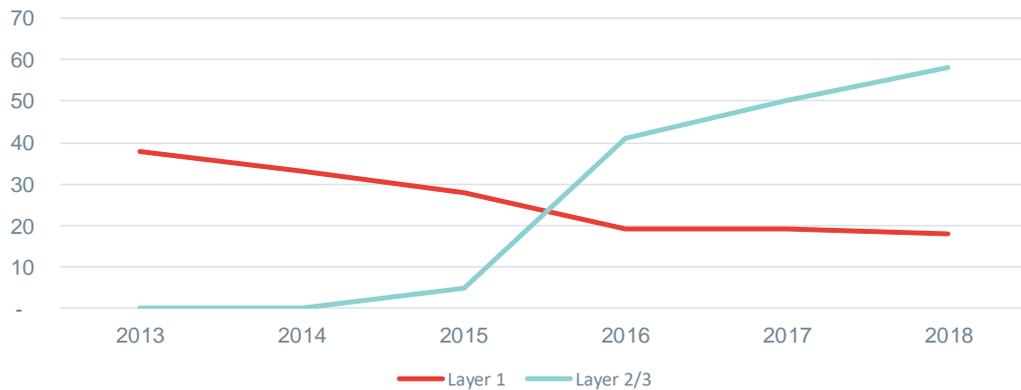
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<sup>53</sup> The inclusion of self-supply in the relevant market impacts, in particular, the competition assessment. The Authority therefore considers that further in Section 6, including setting out how self-supply is measured in this instance.

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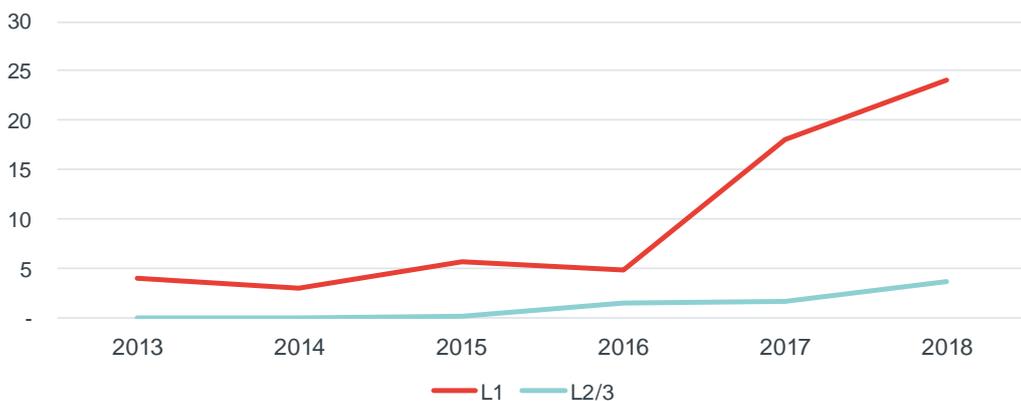
**Figure 10: Total wholesale connections**



Source: Licensed Operators' response to Article 53 Information Request

134. 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.<sup>54</sup> 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)**



135. 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 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.
136. 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

<sup>54</sup> 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.

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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.

137. 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 main 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 Infonias 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.
138. 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?
[X]	[X]

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[X]	[X]

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

139. 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.
140. 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.
141. This market covers all elements of the supply chain set out previously by the Authority in Figure 1. 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

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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*

142. 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.

143. 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?**

### Summary and assessment of consultation responses

In this table, the Authority provides a summary of and a response to stakeholders' comments in relation to question 5.	
Summary of stakeholders' submissions	The Authority's analysis and responses
<p>Batelco agrees that it isn't necessary to define separate wholesale ICS markets based on specific cable systems.</p> <p>Batelco agrees that variation in prices is not a basis for defining separate markets. It also notes that such variation is evidence for effective market competition and not of dominance. As operators opt to choose options based on affordability, it is evidence that Batelco isn't dominant in the market and there aren't bottlenecks in the supply chain.</p> <p>Batelco also considers that Bahrain's wholesale market is unique in the sense that operators buy circuits/bandwidth in pieces instead of in bulk, which blurs the line between wholesale and retail customers.</p>	<p>Noted</p> <p>The Authority does not consider that variation in prices is evidence of effective competition. For example, monopolistic price setting behaviour may increase the likelihood of price variation through discriminatory pricing.</p> <p>The Authority notes that Batelco isn't clear about the implication of its point regarding how operators buy capacity. The Authority considers, however, that any licenced operator acquiring services from another licensed operator does so on a wholesale basis, given that the purpose of their business is also, ultimately, to provide telecommunications services to</p>

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	<p>the public. The way in which such services are acquired, whether in bulk or by bandwidth, is, in the Authority's view, irrelevant.</p>
<p>STC considers that Amwaj may be considered to be a separate geographic market from the rest of Bahrain. Its reasoning for this view is similar to that which it gave in relation to the retail market, while STC also refers specifically to the Authority's 2018 Article 65 determination in relation to Nuetel and the fact that this determination referred to a "geographic scope of the relevant wholesale market ... [of] Amwaj alone".</p>	<p>As set out in relation to the retail market, the Authority considers that the matters highlighted by STC in relation to connectivity to the TATA cable relate to the markets for domestic connectivity and as such are beyond the scope of the ICMR.</p> <p>So, while the Authority accepts that the provision of domestic connectivity to the landing station for the TATA cable may be different to the provision of domestic connectivity to other cable landing stations in Bahrain, it does not accept that this means a separate geographic market should be defined for international connectivity in Amwaj. The Authority did, however, consider this specific connectivity in its 2018 Article 65 decision against Nuetel and notes that its direction requiring Nuetel to refrain from engaging in anti-competitive behaviour in the provision of domestic connectivity to the TATA CLS is not affected by this Determination.</p> <p>The Authority further notes, in this context, that the circumstances under which international connectivity from Amwaj, over the TATA cable, could be considered in a separate geographic or product market to other cables landing in Bahrain would require connectivity over the TATA cable to display unique characteristics which mean parties would be unlikely to switch demand, following a SSNIP in using the TATA cable, to using another route from Bahrain. The Authority is not aware of evidence of such unique characteristics, other than the fact that the cable lands on Amwaj. Indeed, the Authority considered connectivity across Amwaj to the TATA cable..</p>
<p>Zain agrees with the determination that the relevant wholesale product market includes all technologies, bandwidths and destinations but questions the exclusion of Amwaj.</p>	<p>The Authority clarifies that the determination didn't exclude Amwaj Island. As set out above, international connectivity provided over the TATA cable is part of the market defined by the Authority. As set out earlier, connectivity to the TATA cable is a matter of domestic connectivity that is not considered as part of the ICMR.</p>
<p>Kalaam agrees.</p>	<p>Noted</p>
<p>AWS agrees.</p>	<p>Noted</p>

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#### **The Authority's final decision**

Having considered the comments made by stakeholders, the Authority has concluded that the scope of the wholesale geographic and product market definition included in the Annex to the Draft Determination remains appropriate. The Authority notes again the questions it has received regarding the treatment of international connectivity in Amwaj (i.e., over the TATA cable) and confirms that this is considered to be part of this market. Domestic connectivity to international cables, however, including connectivity to the TATA cable, is, not considered as part of this review but rather will be considered as part of a separate, forthcoming, review of domestic connectivity services.

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#### 4.3 Preliminary conclusion – Market definition

144. Based on the evidence presented above and the Authority's understanding of the relevant products and services for international connectivity, it preliminarily 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?**

#### Summary and assessment of consultation responses

In this table, the Authority provides a summary of and a response to stakeholders' comments in relation to question 6.	
Summary of stakeholders' submissions	The Authority's analysis and responses
<p>Batelco agrees with the market definitions and inclusion of terrestrial and submarine cable systems in the same markets. However, in its view, this wide definition raises issues around the draft determination of Batelco's dominance in wholesale ICS. This is because:</p> <ul style="list-style-type: none"><li>• Batelco controls only five of twelve physical cables</li></ul>	<p>The Authority notes Batelco's agreement with the market definitions. With regards to Batelco's further comments, the Authority responds as follows:</p> <p>Firstly, as discussed earlier, it is, in the Authority's view, irrelevant how many physical cables operators have access to, as cables can differ in the amount of capacity they provide. The Authority notes that cables Batelco has access to also have several fibre cores that could be considered separately since each provide a certain amount of capacity. However, Batelco has chosen not to consider that degree of differentiation. The Authority also notes that some of the cables Batelco refers to are placed along the same routes and therefore do not provide the level of differentiation that Batelco enjoys through its diverse portfolio of access to submarine and terrestrial cables.</p>

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<ul style="list-style-type: none"><li>• Batelco’s degree of control over access to its three submarine cables is limited due to ex ante access obligations.</li></ul>	<p>With regards to Batelco’s second point, the Authority notes that the purpose of the ICMR is to assess the level of competition and potential barriers to the market as a whole. The remedies referred to by Batelco are those which have been imposed as a result of specific ex-post interventions and have been designed to specifically take into account the matters previously raised with the Authority.</p> <p>It is therefore possible that such remedies are not sufficient to address competition issues identified for the market as a whole. As shown in Figure 13 of Section 5.2 in the draft determination, total capacity on all international links has increased significantly since the time of the last market review in 2013. However, this increase in capacity has largely been driven by Batelco. This highlights that the existing remedies may be insufficient.</p> <p>Indeed, the Authority notes that its assessment presumes that no remedies are in place in these markets. Its purpose is then to consider whether remedies are required in order to ensure the market functions effectively. If it does conclude that such remedies are required, the Authority then considers what scope of remedies is appropriate. To conclude that Batelco does not have market power as a result of remedies already imposed in these markets would risk creating a circular outcome.</p>
<ul style="list-style-type: none"><li>• When assessing dominance in the market, the Authority implicitly narrows its definition of the wholesale ICS market to submarine cables only, on the basis of the requirements of customers for resilience and redundancy.</li></ul> <p>Batelco further notes in this context that the Authority’s arguments are, in its view, contradictory. This is because, on one hand, the Authority noted, when determining that individual cables should not form separate markets, that requirements for resilience are “too rare” (para 124) while on the other hand arguing “that demand for resilience is sufficient to support a determination of market dominance”.</p>	<p>Thirdly, the Authority does not accept Batelco’s characterisation of its assessment. Its assessment of competition in the wholesale market examines the share of international bandwidth (capacity) attributed to each licensee in Bahrain. It takes into consideration both controlled and used capacity (see Table 2 and Figure 14 respectively in the draft determination) of both, terrestrial and submarine cables (Figure 15 and Figure 16 of draft determination).</p> <p>Finally, the Authority is satisfied that its draft determination was not contradictory. The context in which the statement in para 124 (now para 122) was made related to whether there are specific requirements for access to individual cables that would justify defining separate markets for each cable. This is different to acknowledging the importance of service providers being able to access redundant routing. That is, providers may want redundant routing and therefore access to two or more different routes out of Bahrain, without having a specific desire over whether that routing is provided over a specific cable.</p>

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<p>BNet agrees that terrestrial and submarine cables should be included in the same wholesale market. It does note that the Authority should clearly demarcate between entry points of international cable systems and the domestic network. BNet reiterates in this context that it should be the provider of the connectivity between national and international cable systems.</p>	<p>The Authority notes BNet's agreement with the market definitions. In relation to BNet's comment on the demarcation between the domestic and international cable network and responsibility for the connectivity between the two, the Authority refers to its response to BNet's comment on Q2.</p>
<p>STC considers that there should be separate product markets for international connectivity services provided over submarine cables, as opposed to over terrestrial cables. This is because capacity over terrestrial compared to submarine cable is valued differently by licensed operators in Bahrain.</p> <ul style="list-style-type: none"> <li>• Submarine cables offer direct connection on the same cable system to significant international centres globally, whereas connections through terrestrial cables may require cross connection through other systems and so often require third-party agreements.</li> <li>• The overall costs of obtaining submarine capacity is lower than terrestrial capacity due to high costs imposed by transit countries / operators, as well as the costs of cross connects.</li> </ul> <p>STC then states further reasons for why terrestrial and submarine cables are not substitutes, namely:</p> <ul style="list-style-type: none"> <li>• if wholesale submarine capacity is subject to a SSNIP test, terrestrial capacity would not be seen as sufficiently substitutable for submarine capacity e.g. because customers of a Licensee, as well as that licensee itself may require resilience through a cable system other than one passing through the KFC,</li> <li>• operators such as STC (and other licensees) which have in general only one type of international connectivity via terrestrial cables are not able to exert competitive pressure on Batelco in the retail IPLC market, where Batelco continues to hold SMP.</li> </ul>	<p>As set out in the draft Determination, parties are likely to place different values on international connectivity services. This is because of different destinations, capacities and technical specifications of given services. For example, links to some international destinations established through terrestrial links may require additional 3<sup>rd</sup> party agreements that aren't required if connectivity is arranged via submarine cables. This can make connectivity via a submarine cable more economical. On other occasions, terrestrial links can be more economic (such as when a customer may want a link only between Bahrain and Saudi Arabia).</p> <p>Furthermore, the Authority agrees with STC's assessment that access to submarine cables is essential for some use cases and can offer providers lower costs and a lower administrative burden for some routes. Indeed, this is why effective competition in the market depends on parties having effective access to a diverse set of routes, including submarine cables.</p> <p>Indeed, the Authority agrees with STC's observations in relation to some specific services offered (e.g. specific clients served) that cannot be offered on terrestrial cables.</p> <p>However, for some services neither submarine nor terrestrial cables may provide specific advantages and services can be equally provided through either types of IC systems.</p> <p>Indeed, as outlined above, it is not necessary to demonstrate that submarine and terrestrial links are substitutes for all types of international connectivity services in order to conclude that they form part of the same product and geographic market – rather, the degree of substitution only needs to be sufficient such that a for a hypothetical monopolist offering the focal product, a SSNIP is not profitable . Finally, Authority notes that the SSNIP test should be conducted on the assumption that prices are set at a competitive level – the fact that one party may, or may not, have market power, should not affect the outcome of the SSNIP test. That is, the fact that</p>

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	<p>parties may not currently be using submarine cable capacity because of bottlenecks in accessing that capacity does not mean that, in a well-functioning market, submarine and terrestrial capacity would be in the same market.</p> <p>Therefore, the Authority believes it is appropriate to continue to define submarine and terrestrial cables in the same market. Furthermore, it notes that the remedies it is imposing as a result of this market review would not differ, even if it did define a separate, narrower market just for international connectivity over submarine cables.</p>
Zain agrees with the proposed market definitions	Noted
Kalaam agrees.	Noted
AWS notes there should be differentiation between Layer 1 vs Layer 2 & 3 services, as it does not consider these to be substitutable..	<p>The Authority notes that there are some differences in the degree of substitutability between Layer 1 and Layer 2/3 services when looked at from the demand and supply side. However, the determination takes in account both demand and supply side perspectives (as set out from paras 100 onwards) and the Authority considers that there is evidence for some degree of substitutability on the grounds that larger customers may be able to self-supply a L2/3 service using an L1 service. On the supply side, substitution is also possible, as these services use similar equipment which can be switched from providing one type of service to another. Therefore, as set out in its replies to the responses on Q4, the Authority is satisfied that, for the purposes of this market review, it is appropriate to define Layer 1 and Layer 2/3 services in the same product market.</p>

### The Authority's final decision

Having considered the comments of all stakeholders, the Authority concludes that it remains appropriate to include terrestrial and submarine cable international capacity in the same product market.

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## 5 Applying the Three Criteria Test

145. 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<sup>55</sup>) and regional precedence (for example, regulatory authorities in Saudi Arabia<sup>56</sup> and Qatar<sup>57</sup>, 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.
146. 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 costly, 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.
147. 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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<sup>55</sup> 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>)

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

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

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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.

148. 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<sup>58</sup> and the Exceptional FAS products). 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.
149. 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

150. 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*

151. 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.

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<sup>58</sup> Currently available to holders of Individual Mobile Telecommunications Licences.

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152. 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, the party would still need to self-supply the first two elements.
153. 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).
154. 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.<sup>59</sup> The Authority does, however, believe that there are potentially other barriers related to the structure of international connectivity services.
155. 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.
156. 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.<sup>60</sup> 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.
157. 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

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<sup>59</sup> 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.

<sup>60</sup> 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.

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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.

158. 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, 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 [redacted] 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 [redacted] (by value) in the defined retail market (i.e., covering Layer 1 and Layer 2/3 services), compared to less than 10% in 2013.
159. 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).<sup>61</sup> 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.
160. 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.
161. 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;

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<sup>61</sup> 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.

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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.

#### 5.1.2 *Whether the market is tending towards competition*

162. As set out in the preceding sections, 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 [redacted] of international connectivity services<sup>62</sup> in 2018, and accounted for [redacted] 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 [redacted] per annum. The equivalent revenue for [redacted].<sup>63</sup>
163. 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.
164. 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.
165. 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<sup>64</sup> shows prices for 10Gbps and 100Gbps connections from Bahrain exceed prices from any other comparator, except Kuwait.

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<sup>62</sup> [redacted]

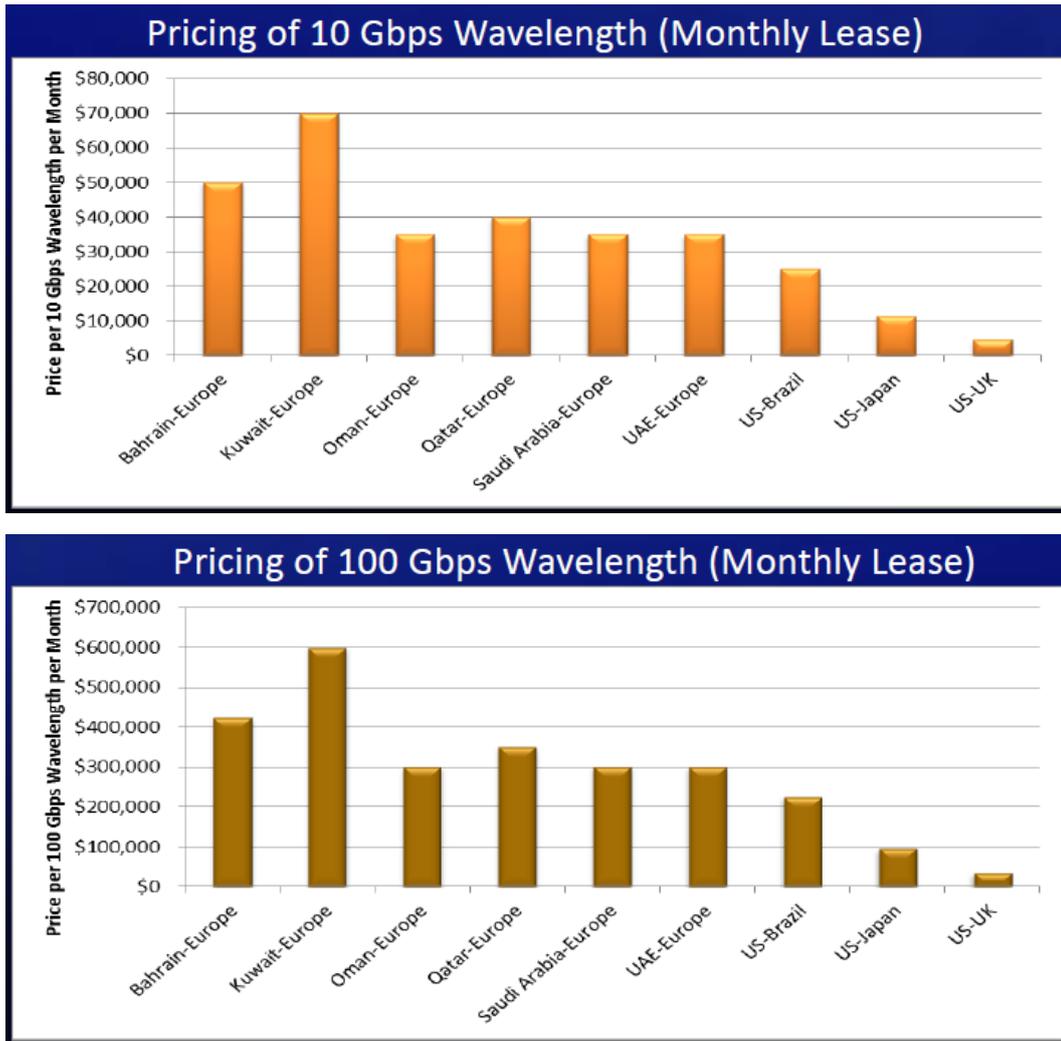
<sup>63</sup> This comparison does not take into account the destination of the leased line but the majority of services from both operators terminate in the GCC and MENA region and the Authority therefore considers the figures broadly comparable.

<sup>64</sup> <https://www.terabitconsulting.com/mt-content/uploads/2018/01/201704-international-submarine-cables-and-terrestrial-cables-in-the-middle-east.pdf>

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**Figure 12: Supply chain of international connectivity in Bahrain**



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

166. 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.
167. 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

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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.

168. 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*

169. 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.

170. 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.

171. 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

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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.

172. 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*

173. 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.
174. 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,<sup>65</sup> 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.
175. Given this, the Authority does not continue to consider whether any parties hold a position of SMP in this market.

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<sup>65</sup> As based on the principle of proportionality and reference to the competition and regulatory problems identified, set out in Paragraph 132 of the Authority's Competition Guidelines.

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

### Summary and assessment of consultation responses

In this table, the Authority provides a summary of and a response to stakeholders’ comments in relation to question 7.	
Summary of stakeholders’ submissions	The Authority’s analysis and responses
<p>Batelco agrees that the retail ICS market is not susceptible to ex ante regulation and no one holds a position of SMP in it.</p> <p>Further, it states that ex-ante regulation can be intrusive and costly and that if ex-ante regulations are required, they should be imposed as far upstream as possible.</p> <p>However, although Batelco agrees with the Authority’s conclusion, it does not agree with the Authority’s reasoning (namely that addressing issues in the wholesale market will be sufficient to remedy market failures in the retail market).</p> <p>This is because Batelco does not accept that there are market failures in the retail market. In particular, it doesn’t agree that mere ownership/control of assets equates to dominance and notes that its facilities towards submarine cables are not essential. It notes that operators choose to go on terrestrial routes and that concentration of operators on those routes doesn’t equate to dominance over submarine routes.</p>	<p>The Authority notes Batelco agrees with its position that the retail market is not susceptible to ex ante regulation and that remedies should be imposed in the upstream market if they are likely to be sufficient to resolve market failures in the downstream market. However, the Authority continues to believe that there is evidence of market failure at the retail level. This is because:</p> <ul style="list-style-type: none"> <li>• Parties raised concerns in their response to the Article 53 requests in relation to this market review about thigh costs to access the submarine cables owned/controlled by Batelco, with this acting as a barrier to entry in the provision of retail services. As such, the Authority’s conclusion on dominance is not just based on Batelco’s ownership/control of assets as Batelco seems to suggest..</li> <li>• The Authority notes that its assessment did not conclude that greater concentration on terrestrial routes is proof of dominance. Instead, the market assessment and responses from operators show that OLOs presence on terrestrial routes is likely to be the result of a lack of access on submarine routes (through ‘essential’ bottleneck facilities) and hence, meaning they may lack the potential capacity and connectivity options to address a wider share of the retail market. In this regard, the Authority notes again (see its response to Batelco’s comment in relation to Q6) that its conclusions on dominance are not based on an assessment of submarine cables alone, but the market as a whole.</li> </ul> <p>However, the Authority finds that the source of these market failures lies upstream because of bottlenecks in the IC supply chain, which, when corrected, can address the retail market failures. Given this, it</p>

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<p>In relation to the specific implementation of the Authority's Three Criteria Test, Batelco comments on each of the three criteria separately:</p> <p><b>Presence of high and non-transitory barriers to entry:</b> Batelco argues that recent entry of the TATA and GBI cables demonstrate that barriers to entry are not significant and are transitory. It also argues that entry in the retail market demonstrates that barriers to self-supply are limited. It further notes that access to cables landed by Batelco is already provided through existing remedies and that since 2013, OLOs' retail market shares have increased. Batelco again refers to what it considers to be an inconsistency between the Authority's comments in relation to resilience and redundancy (as already detailed in response to Question 6).</p> <ul style="list-style-type: none"><li>• <b>The market tending towards competition:</b> Batelco argues that a reference to Batelco charging higher prices is not proof of a lack of competition because such higher prices could reflect higher quality and higher costs. It argues that the appropriate assessment must, therefore, take into account costs. Batelco also argues that the Authority is focussed on submarine cables when referring to Licensee's capacity forecasts which suggest limited changes in future market shares and that no further submarine cables are expected to land in Bahrain in the short to medium term. It then refers to the Authority's conclusion that terrestrial and submarine cables are in the same market. It again notes that regulated access to Falcon and GBI is already available.</li><li>• <b>Reliance on competition law:</b> Batelco notes under this heading that reference to Batelco's high market share made by the Authority is not proof of dominance.</li></ul>	<p>continues to believe that the retail market is not necessarily susceptible to ex ante regulation.</p> <p>Despite some recent entry (as set out by Batelco in its response), the Authority notes that it is rare for additional cables to be landed in Bahrain, with any commercial decisions to land additional cables possibly requiring significant policy intervention. Furthermore, any new cables that were landed would only relieve the bottlenecks identified if they were not landed by the dominant party. However, international cable operators may have an incentive to land their cables with the dominant party since most of the retail demand ultimately carried over that cable rests with the dominant licensee. The Authority therefore considers that investment in further international capacity is not straight forward. The Authority also refers to earlier comments (its response to Batelco's comments on Q2) in relation to existing access remedies and why they may not be not suitable for addressing the wider concerns in the IC market identified.</p> <p>The Authority agrees with Batelco that there are genuine reasons why prices can and will differ but notes that its concerns around the state of competition arise from having considered a range of evidence including differences in prices charged by different providers in Bahrain, differences between average prices in Bahrain and those in other jurisdictions, and stakeholder comments in relation to differences in costs between submarine and terrestrial routes.</p> <p>The Authority also notes that Batelco, while referring to differences in costs and pointing out the requirement for an assessment of profitability does not provide any information the Authority could consider in order to undertake the analysis Batelco proposed.</p> <p>Furthermore, as the Authority has already set out, its assessment examines the whole market it has defined, not just ICS over submarine cables. The Authority's comments in relation to future market shares (para 163), which Batelco seems to be referring to in this context, are based on Licensees' responses to questions regarding expected future demand, regardless of how that demand is satisfied (e.g. through submarine or terrestrial cables).</p> <p>The Authority notes again that its conclusions on dominance set out later in this document are based on a range of observations, not just market shares alone. In relation to existing Art 65 remedies, the</p>
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<p>Presumably in reference to the Authority's Three Criteria Test in the wholesale market, Batelco further notes that potential anti-competitive behaviour has not been demonstrated or substantiated. For example, Batelco believes that the Authority has not demonstrated that interventions such as its "TICCS" Decision (i.e., in relation to the GBI cable) are ineffective or insufficient, whilst again noting that the remedies from that assessment are in effect.</p>	<p>Authority again notes it considers those to be insufficient given the wider concerns identified in this ICMR and notes that recent behaviour, such as [X] demonstrate that measures beyond those imposed by the Authority through ex post interventions are justified to ensure effective competition in this market. Furthermore, the Authority notes that relying solely on its ex post powers can also lead to a number of problems, particularly around the time it can take to resolve cases and the impact that such time delays, although always kept to a minimum, can have on all market participants.</p>
<p>BNet notes that it does not have access to the data provided by stakeholders to the Authority as part of the strategic review of the supply chain of international connectivity and is, therefore, unable to respond to the question. However, it notes that its remedy proposal addresses the issue of ex-ante regulation of what the Authority has identified as a bottleneck in the supply chain of international connectivity.</p>	<p>The Authority notes that no Licensee has access to data provided to the Authority by any other Licensee, with all parties only having access to the published information (plus information from their own business) with which to respond.</p> <p>With regards to BNet's remedy proposal, the Authority refers to its responses to BNet's comments on Q2 and Q8 and does not repeat those positions here.</p>
<p>STC is not in agreement that there should be no ex-ante regulation in the retail market. It notes:</p> <p><b>Batelco is found not to have SMP or be dominant in the retail market.</b> - STC appears to suggest that in its assessment, the Authority did not provide evidence that no party holds a position of SMP. Referencing the 2013 Determination of Dominance, it notes that the Authority's conclusion that no operator was dominant was conditional on the availability of key wholesale inputs. It argues that in the absence of evidence to the contrary, Batelco should be found dominant.</p> <p><b>Evidence of market failure:</b> In response to the Authority's references to market failures in the retail market, STC notes that these take the form of:</p> <ul style="list-style-type: none"> <li>• Batelco still controlling 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.</li> </ul>	<p>The Authority wishes to clarify that its assessment does not establish whether Batelco has SMP or not. Rather, the assessment considers whether the retail market is susceptible to ex-ante regulation. For the reasons set out in the Annex, most notably that addressing bottlenecks in the upstream market should be sufficient to support effective competition and good consumer outcomes in the retail market, the Authority concludes that it is not (see para 168).</p> <p>The Authority further notes that the 2013 Determination of Dominance did not consider the retail market but only the wholesale market.</p> <p>The Authority acknowledges and agrees with STC that market failures have been identified. However, as mentioned above, the Authority finds that addressing bottlenecks in the upstream market are likely to be sufficient to remedy such failures. The Authority also notes that STC does not set out how ex-ante regulation in the retail market can address the market failures the Authority has identified.</p>

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<ul style="list-style-type: none"><li>• Alleged anti-competitive behaviour in this market</li><li>• • The limited likelihood of any other licensee increasing its market shares in this market</li><li>• • The limited appetite among investors to bring new cables to be landed in Bahrain</li><li>• • Prices for international connectivity services offered to customers being still significantly above those elsewhere</li><li>• The limited ability of licensees to offer, on reasonable terms, the degrees of resilience and redundancy sought by many clients</li></ul> <p>It therefore argues that <b>retail remedies must be implemented in addition to wholesale remedies</b>: STC argues that the Bahraini market is different to those elsewhere (and historically has suffered major distortions) and hence remedies in upstream supply may not necessarily remedy market failures in the retail market. STC further considers that the Authority's approach towards ex-ante regulation is "minimalist" and notes that Authority's Article 65 powers are not sufficient to deal with the market failures. It also notes that the complexity of designing ex-ante remedies is no reason for not implementing them.</p> <p><b>Specifically, STC states that retail remedies in current form must continue</b>: STC notes that Batelco's dominance in the wholesale market and presence in the retail market implies that wholesale remedies alone will not be able to resolve competition issues. Its position is that:</p> <ul style="list-style-type: none"><li>• Maintaining the international business within Batelco will not address the problem of transparency and ensuring the equal supply of wholesale inputs to OLOs.</li><li>• There is insufficient assurance that Batelco, as a vertically integrated business in the provision of international connectivity, is not engaged in unfair cross subsidization and undue discrimination.</li><li>• Retail regulation, in its current form, should continue until there is clear and demonstrable evidence that wholesale remedies have been effective in changing the behaviour of Batelco (and</li></ul>	<p>The Authority considers that its approach to ex-ante regulation is proportionate to the competition issues identified. As set out (in para 168 and earlier in this section), despite the market failures identified, the Authority recognises there is some degree of competition in the market (including new entrants; see para 158), with there being limited barriers to such entrants expanding, if market failures (bottlenecks) upstream are resolved. This is different from the situation in other retail markets where retail competition is much less established.</p> <p>The Authority does accept that some risks of anti-competitive behaviour may remain, even with its proposed intervention upstream. However, STC does not explain how retail remedies reduce that risk. The Authority also considers that, with effective ex-ante remedies in the wholesale market in place, its Article 65 powers can be sufficient to mitigate such risks in the retail market. The Authority comments on each of the points made below.</p> <p>The wholesale remedies proposed by the Authority are aimed at fully removing the bottlenecks identified. Once these remedies have been implemented by Batelco in full, its offer should be fully transparent and comprehensive. It is not clear from STC's submission how remedies in the retail market can improve transparency and equivalence.</p> <p>Given the focus on self-supply and reliance on BNet products for other parts of the IC supply chain, the Authority considers that the risk for cross-subsidisation from wholesale revenues for access to cable landing stations is limited. The Authority also</p>
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<p>BNet) in a manner that has positively benefited the competitive environment in this market</p> <ul style="list-style-type: none"> <li>• Retail regulations should cover the Layer 1 and Layer 2/3 products summarised by the Authority in the Consultation.</li> </ul>	<p>notes that charges for the access remedies it is imposing on Batelco must be thoroughly documented and will be reviewed by the Authority to ensure they are appropriate and consistent with supporting effective and sustainable competition. Furthermore, by imposing this wholesale regulation, Batelco's ability to engage in cross-subsidising its retail services from its wholesale international connectivity services will be reduced. Nevertheless, given the other factors set out above and the emergence of some competition in the retail market, the Authority considers that any such concerns could be dealt with adequately through its ex post procedures.</p> <p>Therefore, it is unclear to the Authority why a remedy in the retail market would be necessary given there is some degree of competition already present in the market and provided the remedies set out in this Determination are implemented within the timelines required under the law.</p>
<p>Zain considers that Batelco should be determined to hold SMP in the retail market for ICS until such time as the wholesale remedies for access to bottleneck services have been successfully implemented and have eliminated any potential threats to competition in this market.</p>	<p>The Authority refers to its response to STC, set out above. In relation to Zain's proposal for maintaining remedies imposed on the retail market until wholesale remedies are implemented and effective, the Authority notes that Zain has not demonstrated how existing retail remedies could support competition in the sector until wholesale remedies are implemented, given that remedies in the retail market would not resolve the bottlenecks in the supply chain. Given the Authority's finding that the retail market is not susceptible to ex-ante regulation, the Authority believes it would further be inappropriate to maintain retail regulation. Furthermore, the Authority does not believe that the most common form of retail regulation (i.e., some form of retail price regulation, such as through the Authority's Retail Pricing Rules) would anyway support competition in the retail market. This is because of the nature of retail pricing in this market, with tariffs for individual companies often being bespoke and subject to tenders. Indeed, this can be seen through the fact that there have been very limited changes to published list prices for international connectivity services in recent years. Finally, as set out above in response to STC, the Authority notes that some competition has already emerged in retail markets, despite the bottlenecks the TRA has identified in wholesale markets.</p>
<p>Kalaam agrees.</p>	<p>Noted</p>

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<p>AWS disagrees on grounds that there isn't any guarantee that wholesale remedies will result in lower pricing or better choice for the retail market.</p>	<p>In imposing ex-ante wholesale remedies, the Authority is mindful that such measures will ensure the greatest possible choice in the retail market. This is because, regulating as far upstream as possible ensures that access seekers retain maximum control over the supply chain, enabling them to compete on service characteristics and price. As set out in the Authority's responses earlier and the reasoning for the Authority's view that the retail market is not susceptible to ex-ante regulation, there is already some competition in the retail market, which subject to the implementation of the proposed measures, is likely to be able to expand further. Finally, the Authority notes that only direct action by the Authority to reduce prices would definitely result in lower prices in the retail market. However, the Authority considers that such intervention would not support the long term development of competition and would be disproportionate, given that the Authority has only identified bottlenecks in one part of the supply chain.</p>
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### The Authority's final decision

Having considered the comments provided by stakeholders in relation to Question 7 of the consultation, the Authority concludes, in line with its position in the Draft Determination, that the retail market for international connectivity does not pass the Three Criteria Test and hence is not susceptible to ex ante regulation. The Authority has noted, in particular, STC's, Zain's and AWS's arguments for why this market may be susceptible to ex ante regulation. However, the Authority is satisfied that its analysis reflects a range of factors in the market, including that some competition already exists which, once upstream remedies are implemented, should enable the market to move towards effective competition within a reasonably short period of time. The Authority notes, however, that it has reached this conclusion based on the specific evidence presented regarding the international connectivity market and the specific characteristics of that market and as such, it does not believe that this should create any precedent for the possible treatment of other retail telecommunications markets.

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#### 5.2 Applying the Three Criteria Test to the wholesale market

176. 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*

177. 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.

178. 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.

179. 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 as Bahrain is concerned significant public funding to be realised.

180. 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*

181. 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

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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.<sup>66</sup>

182. 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.
183. 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)**

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

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

184. 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 [REDACTED] Gbps in 2013 to [REDACTED] Gbps in 2018 (based on Licensed Operators' responses to the Article 53 Information Request). This is equivalent to a share of [REDACTED] of all controlled capacity. The majority of this increase (approx. 2/3) occurred on submarine cable systems.
185. 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.

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<sup>66</sup> 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.

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#### 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*

186. 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 that, in some cases, can lead to licensees possibly being able to circumvent the measures imposed, as demonstrated [3<]. 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.
187. 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?**

## Summary and assessment of consultation responses

In this table, the Authority provides a summary of and a response to stakeholders' comments in relation to question 8.	
Summary of stakeholders' submissions	The Authority's analysis and responses
Batelco does not agree with the Authority's conclusion that wholesale ICS market meets the Three Criteria Test. Its response to each of the three criteria is summarised below. <b>High and non-transitory barriers to entry:</b> 1. Batelco disagrees that access to any of its submarine cables is unduly restricted or that tariffs are set at levels which prevent parties gaining access.	The Authority responds to each of Batelco's comments below:  As demonstrated in Section 6 of this Annex, higher retail prices charged by a vertically integrated firm can be an indicator that this firm has market power.

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<p>According to Batelco, for the Authority to show that tariffs are set at such a level, it would need to show there is a margin squeeze. In addition, the fact that operators have a choice in how to purchase international connectivity indicates the market is effectively competitive. It notes in this context that it runs most of its own traffic [redacted] through terrestrial routes because they are technically superior and more commercially viable, with access to a wider range of global cable systems.</p>	<p>However, as set out below, the Authority has also considered a range of other factors.</p> <p>The Authority further notes that it does not have to demonstrate a margin squeeze in order to conclude a market is susceptible to ex ante regulation. This current proceeding is not an ex post investigation of specific conduct and is instead considering if the market conditions exist which could create a risk of anti-competitive behaviour occurring. The Authority notes that Batelco's comment regarding its own traffic running primarily through terrestrial routes appears inconsistent with the evolution of Batelco's controlled capacity. That is, between 2016 and 2018, Batelco's controlled submarine capacity has increased by ca. [redacted]Gbps while its controlled capacity on terrestrial routes has increased by ca. [redacted]Gbps. The Authority notes that the inconsistency may stem from Batelco's reference to traffic rather than capacity. It notes that it may be possible for Batelco to carry a significant amount of traffic through terrestrial routes but that this traffic does not represent the value and causal link to prices and revenue generated from ICS. That is, ICS are typically sold on the basis of their capacity, with higher capacities generally demanding a higher price. This appears to be consistent with Batelco's increase in submarine capacity and confirms that the Authority's approach to estimating market shares is appropriate.</p>
<p>2. Batelco states that the Authority has not provided any substantive evidence to support its argument that end-users require 'redundancy and resilience' and hence why, in Batelco's view, the Authority has used a narrower definition of the market to assess dominance than its actual retail market definition.</p>	<p>The Authority highlights that it has received a number of responses from OLOs stating the importance of end users requiring 'redundancy and resilience'. In fact, Batelco notes in its announcement<sup>67</sup> of a project to extend its international network reach to Singapore that "<i>[t]he project includes connecting Singapore ... using two submarine cables to ... ensure maximum diversity and resilience</i>". It further notes that "<i>Batelco's expansion projects ... ensur[e] network diversity, avoiding single points of failure, providing better country resilience and efficient use of international capacities</i>". Batelco also highlights in its own IP-VPN product offering<sup>68</sup> the benefits that it provides to its customers in terms of "<i>[F]ully redundant nodes with a redundant international backbone ensuring highest availability</i>".</p>

<sup>67</sup> <http://batelco.com/news-media/batelco-extends-its-global-reach-to-asia-pacific-region-with-new-point-of-presence/>

<sup>68</sup> <http://batelco.com/global/connectivity/global-ethernet/>

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<p>3. The Authority considers it unlikely that any licensee will land a new international cable in Bahrain over the time period of the review. However, Batelco states it has plans to invest in new cables, subject to receiving public sector support and understanding any regulatory risk. Batelco notes in this context that investments in international cables involve significant capital outlay which may be at risk if regulatory and policy measures are inadequate for generating a reasonable return on those investments.</p>	<p>The Authority further notes that NTP4 is consistent with it ensuring that the remedies from this market review enable all Licensees to have adequate access to infrastructure enabling them to offer resilient services. Paragraph 36(a) specifically states that <i>“[t]he Authority, in cooperation with Government, shall identify the necessary regulatory measures to mitigate risks affecting public telecommunications networks, including the adoption of measures to ensure an appropriate level of resilience and integrity in line with international best practices and benchmarks.”</i></p> <p>As set out previously, the Authority also disputes Batelco’s assertion that it has assessed competition and the susceptibility of the market to ex ante regulation by applying a narrower definition of the market than was actually defined in the draft determination. As set out above, the Authority has included both terrestrial and submarine cables in its analysis of market shares, for example. Rather, the focus on submarine cables is because of the fact that Batelco controls three out of six available routes for international capacity, all of which are submarine cables.</p> <p>The Authority notes Batelco’s plans for further investment and welcomes these. However, it does not consider that this changes its conclusions on whether the market is susceptible to ex ante regulation. This is because this investment will not change the nature of the economic bottleneck in this market.</p> <p>In relation to Batelco’s comment regarding the importance of adequate policy and regulatory support for future investments in the sector, the Authority notes that in implementing any remedy it imposes (in relation to this market review or any other measure) it will ensure that regulated charges are set such that the regulated entity is able to recover efficiently incurred costs and generate a reasonable market oriented return on its investments. The Authority further notes that remedies imposed as a result of this market review affect a small part of an international cable project, the landing station and, subject to licensing, the national part of the submarine cable. The vast majority of costs in relation to submarine cables investments are incurred for rolling out the international part of the submarine cable, which is not, and cannot be, subject to any regulation imposed by the Authority.</p>
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<p><b>Whether the market is tending towards competition in relevant time frame:</b> Batelco notes that it's not uncommon for incumbents to charge higher prices if challengers are seeking to compete on price. Higher per unit revenue doesn't therefore, on its own, imply that firm is in a dominant position. For example, this could be justified by the incumbent offering higher quality or more technical support and therefore incurring higher costs.</p> <p><b>Whether competition law is adequate to address market failures:</b> Batelco submits that as monopoly sectors evolve after liberalisation, there should be increased reliance on ex post competition law intervention. The reversal of Authority's view (from its previous Determination) on the susceptibility of the wholesale ICS market to ex ante regulation isn't, in Batelco's view, backed by robust evidence. For instance, Batelco doesn't agree that there were significant complaints received post the 2013 determination. It further notes that there is no substantial evidence of widespread demand for capacity on Batelco's submarine cables or of Batelco's refusal to meet those demands.</p>	<p>The Authority acknowledges Batelco's assessment of reasons why incumbent prices may be higher. However, in its assessment, price was not the only factor taken into account by the Authority. For example, the Authority also considered Batelco's persistent high market shares and average prices in Bahrain (not just Batelco's) compared to those in other jurisdictions.</p> <p>The Authority highlights that ex post competition law interventions can be time consuming, while in some cases, it can be difficult to distinguish competitive behaviour (such as an aggressive pricing response to competition) from anti-competitive behaviour. More specifically, ex post interventions may also not be appropriate in wholesale markets where any remedies can be complex and time consuming to design and implement.</p> <p>The limitations of ex post interventions can create a significant risk to the efficient functioning of the market if regulation is solely based on such intervention. Such interventions also focus on specific complaints and as such, do not consider the whole of the market, as this review does. The Authority also notes that commercial transactions in the market for international connectivity are infrequent and can easily be frustrated by anti-competitive behaviour</p> <p>The Authority also highlights that it has not changed its view of the wholesale ICS market since its last market review. As stated in the last review in 2013, the Authority's conclusion that no operator held a dominant position was forward looking and conditional on the availability of access to submarine cables. As set out in this draft determination, that access has not been forthcoming.</p> <p>Contrary to Batelco's claims, the Authority has received several responses from OLOs – Kalaam and Tawasul, VIVA and Zain- stating that they would choose to obtain international capacity on submarine cables if it was provided on terms they considered to be fair and reasonable. This is because this access would enable these providers to serve their customers with diverse and resilient services.</p>
<p>BNet considers its proposal of it being the provider of cross connect service addresses the bottleneck identified by the Authority in the supply chain of IC.</p>	<p>The remedies developed in this annex assume that Batelco, rather than BNet, continues to control the submarine cable landing stations owned by Batelco and those parts of the cables within Bahrain's</p>

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	<p>territorial waters. This is in line with the licences currently held by Batelco. As set out in response to BNet's comments on Q2, therefore, the Authority continues to believe that the remedies proposed in the draft determination should not be provided by BNet. .</p> <p>However, for the avoidance of doubt, should the remedies set out in this Determination not be effective, the Authority, in consultation with Government and other stakeholders, will consider if other measures are required.</p>
<p>STC is in general agreement with the TRA's assessment of the wholesale market and that it should be subject to ex-ante regulation. However, STC states it is not confident that the proposed remedies will resolve the bottleneck, particularly given that Batelco will retain its international business and notes that the Authority should consider separating Batelco's landing stations into a structurally separate entity.</p>	<p>Noted.</p> <p>The Authority again notes (see earlier responses in relation to comments received on Q7) that it believes the remedies set out in this Determination can resolve the bottlenecks it has identified. However, should these not be effective, the Authority will consider if other measures are required. .</p>
<p>Zain agrees with the Authority's assessment that the wholesale market for international connectivity services is susceptible to ex-ante regulation but notes that the finding is long overdue, noting that market failures have existed over a long period of time.</p>	<p>The Authority notes Zain's agreement with its conclusion but also its concerns over the time it has taken to issue this Determination. The Authority notes that the market for international connectivity is a dynamic one with significant changes since 2013. The Authority responded to challenges in that market through ex post investigations and in 2018 undertook a strategic review in light of major changes in the supply chain of international connectivity, with this having now been followed by this formal market review. The timing of this review also reflects the implementation of NTP4 and the separation of Batelco and BNet, given that it was important for that separation to be in place first (with clarity over the responsibility of each party) before this market review could be conducted.</p>
<p>Kalaam agrees and emphasises that the primary bottlenecks are in obtaining access and competitive cross connection charges to the cable system. It notes that in the past it has faced significant delays in the provision of wholesale services and hence loss of business.</p>	<p>Noted</p>
<p>AWS agrees and believes the correct approach is to remove bottlenecks in both international and domestic networks. The Authority should, in its view, prohibit discretionary or notional fees and</p>	<p>The Authority refers to its earlier comments on the matter of domestic connectivity. It also notes that matters of technical requirements for such connectivity (regarding specific equipment or</p>

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<p>customers should be able to maintain a choice of the hardware used on the Terrestrial DWDM infrastructure between the CLS and their end location.</p> <p>AWS further notes that the ex-ante regulation imposed should not replace one dominant operator with another, set prices above costs or create technical bottlenecks.</p>	<p>otherwise) should first and foremost be discussed between access seeker and provider or raised in the context of the Authority's review of BNet's RO..</p> <p>In relation to AWS's further comments, the Authority notes that charges for access services offered by dominant parties, in line with Article 57, must either be cost based or based on benchmarks. The Authority also noted AWS's comments in relation to not replacing one dominant operator with another or creating new technical bottlenecks. For the avoidance of doubt, this is not the Authority's intention. Rather, its proposed interventions in the wholesale market seek to resolve the bottlenecks it has identified and so support the development of competition in this market.</p>
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### The Authority's final decision

Having considered the comments made by licensees in relation to Question 8 of the consultation, the Authority concludes, in line with its position in the Draft Determination, that the wholesale market for international connectivity passes the Three Criteria Test and hence is susceptible to ex ante regulation. The Authority has noted, in particular, Batelco's arguments for why this market may not be susceptible to ex ante regulation. However, the Authority is satisfied that its analysis reflects a range of factors in the market, including those matters raised by Batelco. Furthermore, the Authority is also satisfied that any ex ante regulation can be designed in a way which still allows the dominant provider to earn a reasonable return and so not harm efficient investment in the market, whilst also supporting OLOs in their ability to offer a diverse range of resilient international connectivity services.

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## 6 Assessment of dominance in the relevant wholesale market

188. According to the Telecommunications Law, a dominant position is defined as<sup>69</sup>:

*“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.”*

189. 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

190. As noted in the Competition Guidelines,<sup>70</sup> 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<sup>71</sup>:

- a. market shares and existing competition (including evidence on behaviour and performance);
- b. potential entry and expansion; and
- c. countervailing buyer power.

191. 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%.<sup>72</sup> 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.

192. 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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<sup>69</sup> The Authority “Authority’s Draft Order on the Wholesale Local Access Service”, 12 July 2012 (Ref: MCD/07/12/097), paragraphs 6-29.

<sup>70</sup> The Authority “Competition Guidelines”, 18 February 2010, Section 3.

<sup>71</sup> Ibid, Section 3.2.

<sup>72</sup> Ibid, Section 3.2, paragraph 96

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#### 6.1 Market shares and existing competition

193. 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 0.
194. 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.
195. 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.
196. 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.
197. 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
[X]	[X]	[X]	[X]
[X]	[X]	[X]	[X]
[X]	[X]	[X]	[X]
[X]	[X]	[X]	[X]
[X]	[X]	[X]	[X]
[X]	[X]	[X]	[X]
[X]	[X]	[X]	[X]
[X]	[X]	[X]	[X]
[X]	[X]	[X]	[X]
[X]	[X]	[X]	[X]
[X]	[X]	[X]	[X]
[X]	[X]	[X]	[X]
[X]	[X]	[X]	[X]
[X]	[X]	[X]	[X]
[X]	[X]	[X]	[X]

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[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

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

198. This table clearly shows that Batelco continues to hold a high share in this market, with its share of controlled capacity being close to [REDACTED] 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.
199. 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 shares 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.

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**Figure 15: Controlled capacity on terrestrial links (Gbps)**

[X]  
[X]  
[X]  
[X]  
[X]  
[X]  
[X]

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

200. 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%.
201. 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)**

[X]  
[X]  
[X]  
[X]  
[X]  
[X]  
[X]  
[X]  
[X]

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

202. 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.<sup>73</sup>
203. 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

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<sup>73</sup> 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.

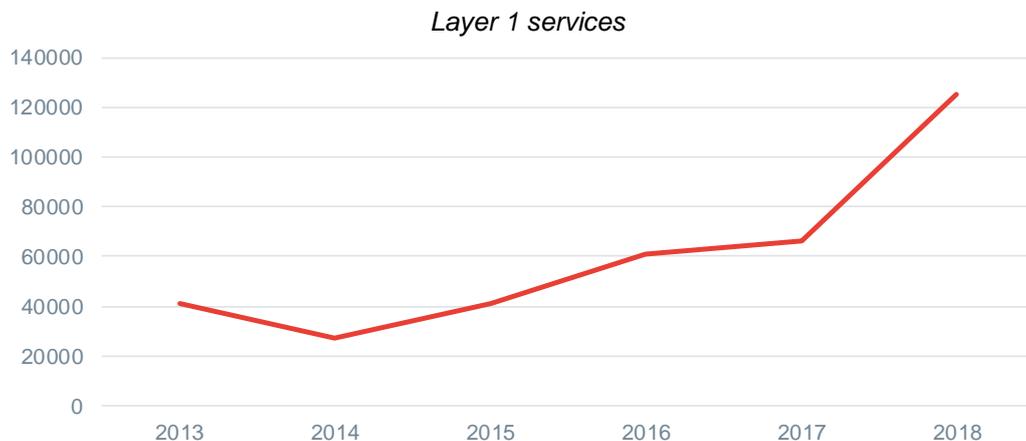
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additional international capacity being landed in Bahrain over the short to medium term is limited, given the high fixed costs and long lead times associated with deploying such capacity.

204. 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.
205. 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.
206. 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)<sup>74</sup>**

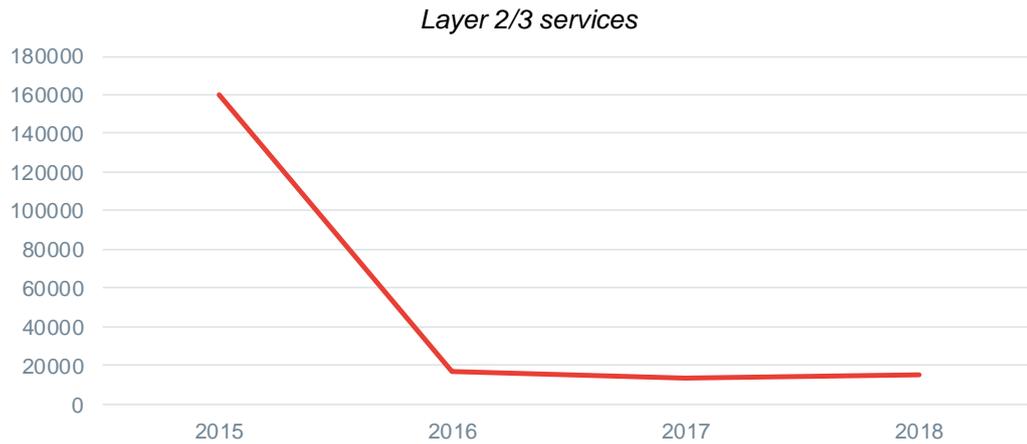


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<sup>74</sup> The Authority notes that the significant drop in Layer2/3 average revenues from 2015 to 2016 are driven by much smaller volumes in 2015 which is likely to imply a significant change in the mix of services sold and may not represent a significant change in price.

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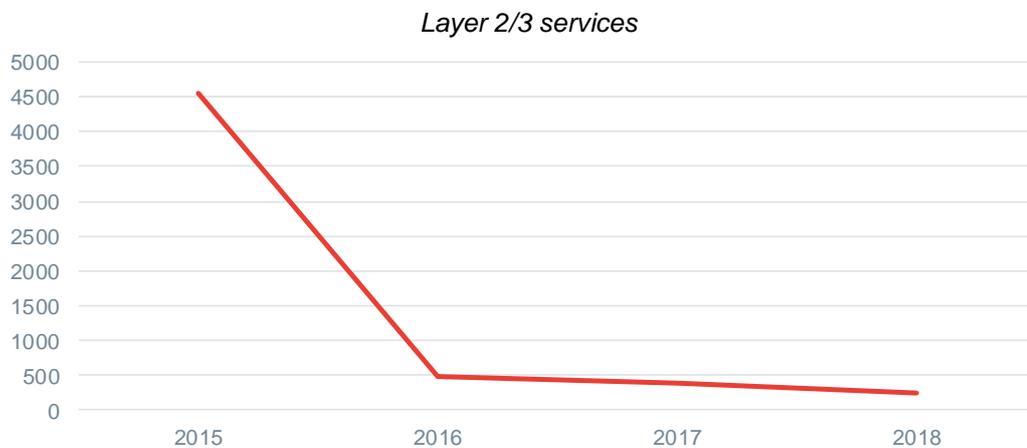
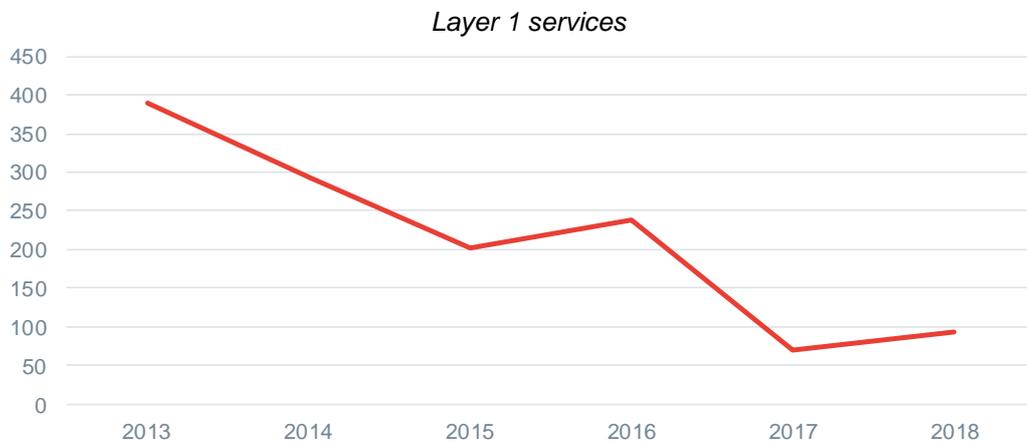
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Source: Licensed Operators' responses to the Article 53 Information Request

207. 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

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208. 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.
209. 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)<sup>75</sup>**

[X]

[X]

[X]

[X]

[X]

[X]

[X]

[X]

210. 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.
211. 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.
212. 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 meeting 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,

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<sup>75</sup> 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

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and Viva rent or own capacity on at least two international routes. Currently, only Batelco can provide that redundancy.

## 6.2 Potential entry and expansion

213. 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.
214. 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.
215. 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.
216. 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.

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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.

217. 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.

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#### 6.3 Countervailing buyer power

218. 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.
219. 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.<sup>76</sup>
220. 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's 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

221. 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.
222. 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.
223. 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.
224. 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.
225. 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

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<sup>76</sup> The Authority's Competition Guidelines, paragraphs 120 – 122.

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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.

- 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?**

### Summary and assessment of consultation responses

In this table, the Authority provides a summary of and a response to stakeholders’ comments in relation to question 9.	
Summary of stakeholders’ submissions	The Authority’s analysis and responses
Batelco didn’t provide a specific response to this question.	
BNet puts forward the proposal that it should be the provider of the cross connect service.	The Authority refers to its previous responses in relation to this matter.
<p>STC agrees that Batelco can be considered dominant in the national wholesale market for international connectivity as defined by the Authority.</p> <p>However, it also considers that Batelco is dominant in the wholesale market for international connectivity in the national market excluding Amwaj and in the market for wholesale connectivity on terrestrial cables in the national market excluding Amwaj. In relation to Amwaj, STC seems to suggest that this should be considered as a separate market in which BIX is the dominant player and should therefore face the same remedies as Batelco.</p>	<p>The Authority reiterates that domestic connectivity on Amwaj is not within the scope of this market review. It further notes that its assessment of market shares, given the boundaries of the market it has defined, demonstrates that BIX is not a dominant player in the defined market for international connectivity. In addition, the Authority has not been provided with any evidence to suggest that there is a substantial difference between international connectivity on the TATA cable and other routes sufficient to suggest that connectivity over this cable should form a separate market for international connectivity services.</p> <p>The Authority notes that this conclusion is distinct from its finding in its 2018 Article 65 investigation against Nuetel in relation to domestic connectivity across Amwaj, which concluded that Nuetel must continue to provide dark fibre (or, in the absence of spare fibres, an active wholesale access service) for</p>

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	connectivity between the meet me room in Amwaj and the TATA cable landing station, namely the focal product of the complaint investigated by the Authority. This is because that finding related to domestic connectivity across Amwaj and so is unaffected by any findings in this Determination regarding international connectivity.
Zain agrees with the Authority's assessment.	Noted
Kalaam agrees with the Authority's assessment and notes that especially small operators are unable to effectively compete with larger operators due to them not being able to access the bottleneck facilities and due to high cross connect charges.	The Authority acknowledges Kalaam's agreement and notes that the remedies imposed in this Determination are aimed at removing the bottlenecks Kalaam has identified.
AWS agrees with the Authority's assessment.	Noted

### The Authority's final decision

Having considered the comments received from stakeholders in response to Question 9, the Authority is satisfied that the preliminary conclusion set out in its Draft Determination, namely that Batelco is dominant in the defined wholesale market for international connectivity, remains valid.

In considering the comments from stakeholders, the Authority notes that it received a number of comments in relation to access to the TATA cable, with respondents to the consultation suggesting that the TATA cable should form its own market, and also that remedies should be imposed on BIX, to provide access to the TATA cable, similar to those the TRA proposed in the Draft Determination to impose on the dominant Licensee, Batelco. However, for the reasons set out below, the Authority does not believe that this is necessary or appropriate.

The arrangement for the TATA cable to land in Bahrain is similar to those for other submarine cables, notably Falcon and GBI. That is, TATA does not hold an IFL and is therefore unable to offer services in Bahrain. Access to the TATA cable is provided through BIX, which for the purpose of connecting to the TATA international submarine cable, operates the cable landing station, active submarine cable terminating equipment and the domestic part of the submarine cable. BIX operates its own domestic connectivity towards Amwaj where it interconnects with Nuetel, who then provides domestic connectivity across Amwaj towards the cable landing station. This domestic connectivity link was subject to an Article 65 investigation by the Authority in 2018, which found Nuetel to be in breach of Article 65(f) of the law and consequently imposed appropriate remedies on Nuetel. Licensees have referred to this connectivity across Amwaj as a potential bottleneck. However, while that Article 65 investigation was focused on one specific behaviour (i.e., the provision of services from Nuetel to BIX), the Authority would expect Nuetel to ensure that it does not engage in anti-competitive behaviour in its dealings with any licensee.

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Furthermore, the Authority's conclusions in this Article 65 case are not affected by this Determination. Although the Authority has not defined access to the TATA cable as being in a separate international connectivity market to other international cables, this does not mean that domestic connectivity across Amwaj is not in a separate market to domestic connectivity services in the rest of Bahrain. This will be considered further as part of the Authority's forthcoming review of domestic connectivity markets.

The other matter identified by Licensees is whether BIX ownership of the landing station creates a bottleneck for access to the TATA cable. This is because access seekers consider that access to the TATA cable is equally important as access to other landing stations and BIX should therefore have to provide access in the same manner as that which the Authority has proposed to impose on Batelco.

However, the Authority notes that for such remedies to be appropriate, BIX would have to be found dominant in the provision of ICS. The Authority has not found any such dominance. In particular, the Authority does not consider it would be correct to define a specific market for international connectivity over the TATA cable. This is because the Authority has seen no evidence to suggest that, in an effectively functioning market, international connectivity over other cable routes to / from Bahrain would not serve as economic substitutes for international connectivity over the TATA cable. This is, in turn, because no evidence has been presented to the Authority to suggest that there are specific characteristics of the TATA cable that would limit the ability of parties to substitute access to that cable with access to other cables.

Given this, the Authority has found there is a single market for wholesale international connectivity services, including connectivity over TATA and other cables and, therefore, that BIX is not dominant for the provision of wholesale access to international capacity.

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In this table, the Authority provides a summary of and a response to stakeholders' comments in relation to question 10.	
Summary of stakeholders' submissions	The Authority's analysis and responses
<p>Batelco does not agree that it is dominant in the wholesale market for international connectivity. Given this, it also does not agree that the source of any dominance is the exclusive access it has to key bottleneck facilities. It believes that if this access does create a dominant position, then other operators who control cables must face the same access remedies, as the Authority considers that access to all cables is substitutable.</p> <p><b>a. Assessment of dominance:</b> Batelco disagrees with the Authority's approach equating service (IC) with input (capacity). In a market where all ICS providers have sufficient international capacity, one provider having more doesn't equate to having greater market share/market strength. Based on the Authority's <i>'Methodology for Determining Market Power'</i>, Batelco argues it is possible that firms with more than 50% market share may have relatively little market power.</p> <p>Batelco repeats its views that 'redundancy and resilience' are not relevant and there is lack of evidence from the Authority's assessment that this is an essential service attribute at the retail level. Batelco further states that, in any event, redundancy can be achieved through multiple options and not just Batelco owned cables and that Batelco's control over access is limited given existing ex ante regulations on GBI and Falcon cables.</p>	<p>The Authority does not agree that symmetric remedies should be placed on all providers of ICS. Under the Law, specific access obligations only apply to licensees who are dominant in a relevant market and the Authority does not consider that any other parties hold a dominant position. While other licensees may control access to certain cables, this does not automatically imply they hold a dominant position, with any dominant position being instead driven by a licensee's overall position in the market and hence its ability to act independently. For reasons set out in the draft determination, the Authority has concluded it is not appropriate to define separate markets for access to individual cables, whereas this market definition appears to be implicitly assumed by Batelco's comment.</p> <p>The Authority points out that its assessment of dominance reflects both controlled and used capacity. This is because the wholesale market consists to a large extent of self-supply, i.e. without reference to actual wholesale services. The Authority further notes that the reference to market shares in used capacity is no different from a reference to other volume based measures of market share in markets where such measures are more readily available, such as the number of wholesale services. Even when looking at retail services, i.e. recognising the absence of reliable wholesale service volumes given the large degree of self-supply, Batelco's market share across all connections remains significantly and persistently high, at more than 40% on average (70% in value). Considering that Batelco not only self-supplies but also provides wholesale services to other operators, this demonstrates that its market share is significantly above the relevant thresholds at which a likelihood of dominance must be considered.</p> <p>The Authority also notes that other operators having available capacity does not imply they have market power. For example, this could be the case if such capacity is of lower economic value than capacity on submarine cables. That is, available capacity on terrestrial cables may be of limited economic value compared to capacity on submarine cables if using that capacity for the provision of ICS implies that providers could incur significant costs and administrative burden from connecting the capacity to subsequent international cable systems. In addition, the Authority notes it is unlikely to have been possible for Batelco to maintain a persistently</p>

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<p>b. <b>Potential entry and expansion:</b> Batelco reiterates its point from previous responses to this consultation that there have been players successfully entering the ICS market such as introduction of TATA and GBI cables and expansion of services at the retail level. Existing regulated access services should enable fair competition and prevent vertical integration as a barrier.</p>	<p>high market share if licensees with access to capacity on terrestrial cables were able to use it to compete on an equal footing to Batelco in the retail market.</p> <p>Furthermore, as previously noted, the Authority's dominance assessment is based on the range of evidence collected, including statements from market participants, market shares, price comparisons between operators in the market and comparison of prices in Bahrain with other markets. AWS specifically highlighted the importance of resilience and redundancy for its product offerings and Batelco itself emphasises its importance as stated in previous responses (see the Authority's response in relation to Q8). Additionally, the presence of existing regulations doesn't necessarily imply that the market is functioning competitively. As previously noted (see response to comments received in relation to Q2), existing remedies are the result of ex-post investigations and do not take into account the breadth of evidence considered in this market review. The Authority further notes additional barriers identified in relation to the GBI and Falcon cables, namely [redacted]. Furthermore, it is important for the Authority to consider, in this review, what would happen if such remedies were not offered and then, if it concludes that competition would not be effective, whether those, or further remedies would be required to promote effective and sustainable competition.</p> <p>With regards to the potential for further entry into the market, the Authority notes that significant Government support was required to land the TATA cable. However, this so far has not contributed to strengthening the position of access seekers in this market, as is evident from persistent high market shares. The GBI cable was landed by Batelco and is subject to the bottlenecks identified in this market review. As such, the Authority finds that recent entry and expansion has not led to an enhancement in competition. It is also important to note that on aggregate, a significant amount of submarine capacity is still unused (Source: TRA internal international capacity report (2018)). This can act as a barrier to attracting further cables to land into Bahrain, thus sustaining Batelco's dominance.</p> <p>Also, as already set out, the Authority does not consider that current regulation in this market should be considered when determining whether ex ante</p>
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<p>c. <b>Countervailing buyer power:</b> Batelco disagrees with the Authority and sees that there are alternative sources of supply which increases the value of alternative options and hence buyers' bargaining power. Batelco, which has excess capacity, also has incentive to fill that up.</p>	<p>regulation is required going forward. Whilst there may have been limited take-up of access products to date, there can be a number of reasons for this. As such, this does not, in the Authority's view, negate the need for future regulation.</p> <p>With regard to the possibility of there being countervailing buyer power in this market, as set out in Section 6.3, 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. In that section, the Authority notes a number of conditions are required for this to take effect. As pointed out in the earlier section, the Authority does not consider that these conditions are likely to be present. There are significant barriers, both legal and economic, to consumers looking to either self-supply international connectivity or sponsor the entry of another provider. There have also been evidence of efforts to frustrate the wholesale supply to alternative operators, with this having the potential to discourage retail customers from choosing suppliers other than Batelco - international connectivity is often mission critical for corporate customers and so their willingness to test alternative options may be limited.</p> <p>In support of its view, Batelco notes that it has available capacity that it is has an incentive to fill. The Authority notes in this regard that such an incentive only exists if Batelco is able to discriminate between customers, which would be indicative of it holding some market power.</p>
<p>BNet puts forward the proposal of it being the provider of cross connect service.</p>	<p>The Authority refers to its earlier responses in relation to comments on Q2 and Q8.</p>
<p>STC agrees in relation to the source of Batelco's dominance but notes that the Authority needs to review and prevent Batelco from engaging in landing party agreements through which Batelco can pass on its dominance beyond the bottlenecks identified in this Determination.</p> <p>It further reiterates its view that BIX's dominance of the market for wholesale international submarine connectivity in Amwaj also relies on its control of key bottleneck facilities at cable landing stations and the national part of international cable systems is the source of its dominance.</p>	<p>In relation to Batelco possibly engaging in behaviour aimed at circumventing remedies imposed through this determination, the Authority notes that it has already intervened on such an occasion [REDACTED]. Its remedies in this market review are, however, designed to limit the risks of Batelco engaging in anti-competitive behaviour.</p> <p>With regards to BIX and the TATA cable, the Authority refers to its earlier comments on the matter of domestic connectivity and further assessments in relation to the TATA cable, as set out in the</p>

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	conclusions following the Authority's responses to comments on Q9.
Zain agrees that the source of Batelco's dominance in this market is its exclusive access to key bottleneck facilities at cable landing stations and the national part of international cable systems.	Noted
Kalaam agrees with the Authority's assessment.	Noted
AWS agrees with the Authority's assessment.	Noted

### The Authority's final decision

Having considered the responses of stakeholders, the Authority concludes that the position it set out in the Draft Determination, that Batelco's dominant position stems from its control of key bottleneck facilities, namely access to three out of four submarine cable landing stations and the parts of those submarine cables that are within Bahrain's territorial waters, remains appropriate.

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In this table, the Authority provides a summary of and a response to stakeholders' comments in relation to question 11.	
Summary of stakeholders' submissions	The Authority's analysis and responses
Batelco does not provide a response.	
BNet does not provide a response.	
<p>STC raises two points in its response.</p> <p>With respect to BNet, STC assumes that a Batelco IC POP will contain components of BNet systems to enable BNet services to be terminated at the PoP.</p> <p>In relation to domestic connectivity, STC notes that Amwaj should remain a separate geographic market and be regulated accordingly. Such regulation should, according to STC, include an obligation for provision of access across the area to a BNet node for onward linking or directly to a IC POP.</p>	<p>With regards to STC's first point, the Authority agrees with this assumption and notes that any access provided by Batelco to BNet forms part of the set of access services falling under the remedies set out in this annex.</p> <p>In relation to STC's second comment, the Authority again confirms that domestic connectivity is not part of this market review and that, in its view (for the reasons set out in its responses to comments received on Questions 4 and 9) it is not appropriate, in this case, to define a separate market for international connectivity from Amwaj.</p>
Zain considers that current BNet product satisfies the domestic connectivity requirements of operators. [redacted].	The Authority notes that matters of domestic connectivity are outside the scope of the ICMR. However, the Authority notes that it commenced the market review of domestic connectivity, while the suitability of BNet's product set will also be considered again in the next review of the BNet Reference Offer.
Kalaam believes there should be an option for BNet to provide services over a non-Chinese DWDM network.	The Authority notes that the matter of domestic connectivity is outside the scope of this ICMR, whilst its interventions to resolve economic bottlenecks are generally technology neutral. However, the Authority notes that the Exceptional FAS provided by BNet does offer a way for parties to implement, for Strategic Partners for the Kingdom of Bahrain, technical requirements not part of the regular offers provided by BNet.
AWS notes that BNet's Reference offer WDC service is a bottleneck in the supply chain in relation to domestic connectivity to provide ICS. It notes that the RO pricing is not cost based and that no market choice for similar domestic connectivity exists, specifically referring to limited hardware choice in BNet's offer, lack of ability to tailor WDC service attributes to meet specific requirements and the time for deploying WDC,	The Authority notes that it is currently undertaking its domestic connectivity market review. This will consider market requirements for all forms of domestic connectivity, while the suitability of BNet's product set will also be considered again in the next review of the BNet Reference Offer. The Authority also notes that the Exceptional FAS product, currently included in BNet's RO, provides another route to potentially address specific connectivity

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<p>which makes it inadequate as a basis for establishing international connectivity services.</p> <p>AWS also notes that all cable landing stations should be open access for wholesale operators.</p>	<p>requirements that Strategic Partners for the Kingdom of Bahrain such as AWS may have.</p> <p>In relation to AWS's comment regarding open access, the Authority notes that current ownership structures form the basis of this market review and changes to such structures are not part of the remedies available to the Authority in the context of this ex-ante market review.</p>
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### The Authority's final decision

The Authority notes the comments it has received from stakeholders in response to this question. Although much of this falls outside the scope of this market review, the Authority shall take account of these comments in its forthcoming review of domestic connectivity markets and also future reviews of the BNet RO, in order to ensure that the BNet product set is fit for purpose.

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## 7 Final conclusion and proposed remedies

226. 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.
227. In doing so, the Authority has regard to Article 57 of the Law and paragraph 132 of the Competition Guidelines. In particular, paragraph 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).<sup>77</sup>
228. 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.<sup>78</sup>
229. 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, consistent with the provisions of paragraph 132 of the Competition Guidelines, and the potential impact on parties' incentives to invest in international connectivity.

### 7.1 Assessment

230. 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.
231. 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

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<sup>77</sup> 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.

<sup>78</sup> The Authority notes that changes to the licensing regime for international connectivity 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.

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terms. However, the Law does not specify the exact form that this network access should 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 several specific 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.

232. 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.
233. 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. The Authority therefore compares the impact of imposing a remedy over the whole supply chain, against imposing a remedy focusing only on these bottleneck assets.

234. Considering first the impact of requiring Batelco to offer regulated end to end international connectivity services, 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

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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.

235. 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 than 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

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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.

236. 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

237. 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 and licensing 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

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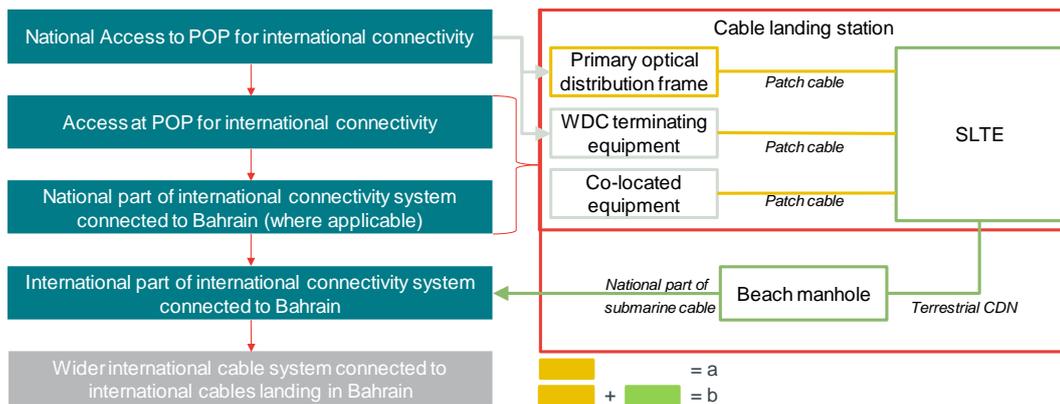
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international cable system operator and that operator is licensed to provide international services and facilities in the Kingdom); or

- 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 and licensed by Batelco.

238. 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**



239. 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.

240. 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 13 above or similar) in line with established principles of cost causality. 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).

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#### 7.3 Conclusion on remedies

241. 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.
242. 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 *constraints 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.
243. 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.
244. Should this remedy not lead to the removal of the bottlenecks identified through this market review, the Authority shall consider what other forms of action, beyond the provision of access remedies, 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?**

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#### Summary and assessment of consultation responses

In this table, the Authority provides a summary of and a response to stakeholders' comments in relation to question 12.	
Summary of stakeholders' submissions	The Authority's analysis and responses
<p>1. Batelco believes that the draft determination doesn't provide evidence of why existing access remedies are insufficient or ineffective and why new regulation is needed.</p> <p>2. Batelco then specifically responds to the remedies proposed:</p> <p style="margin-left: 20px;">a. Batelco notes that an <b>end-to-end wholesale product</b> would impose a wholesale access obligation over parts of the international connectivity supply chain in which Batelco isn't dominant and access seekers won't be able to take up their own capacity on international cable systems directly.</p> <p style="margin-left: 20px;">b. In response to the consideration of 'bottleneck specific wholesale access' Batelco notes that, in its view, it is unclear if the imposition of asymmetric remedies on it would be the correct approach to ensure resilience – to the extent that issues of resilience and redundancy are actually as important as the Authority claims. It also believes that a market wide obligation, although preferred to the former, is likely to dampen incentives for new investments.</p>	<p>1. As previously set out, ex-ante remedies imposed as a result of ex-post interventions do not take into account the whole market assessment undertaken by the Authority in this review. Following ex post cases, decisions on remedies are taken in isolation, focussing on the specific complaint at hand. As such, the Authority considers it necessary to define remedies that apply to all bottlenecks consistently.</p> <p>2a. The Authority did not propose that Batelco should be required to provide an end-to-end wholesale service on regulated terms. Indeed, it agrees with Batelco's reasoning for why a regulated end-to-end wholesale product is not required. Rather, the boundaries of the access products proposed by the Authority were, on the domestic side, the termination of a domestic connectivity product at the cable landing station, (e.g., a WDC or colocation at the landing station) and, on the international side, the SLTE or ownership boundary of the submarine cable, where that ownership differs (e.g., where the domestic segment of the submarine cable belongs to Batelco and the international segment to the international cable operator). The principle that the Authority considers critical is that to overcome the bottlenecks it has identified, the regulated wholesale access product imposed following this determination needs to cover all technical equipment, infrastructure and activities between those boundaries (i.e. end to end) in the most cost effective way.</p> <p>b. The remedies considered as part of this market review are imposed on the operator found dominant in the market for international connectivity. Given that Batelco is the only operator the Authority has found to be dominant in this market, the remedies are applied only to Batelco.</p>



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	<p>Furthermore, the Authority notes that even if BNet did provide the cross connect at the landing station, its proposal would not resolve the concern highlighted by the Authority in this Determination arising from Batelco’s control of the actual submarine cables within Bahrain’s territorial waters, for three out of four of the submarine cables landing in the Kingdom.</p>
<p>STC does not agree with the TRA’s final conclusions and its proposed remedies. Rather, STC states that:</p> <ul style="list-style-type: none"> <li>• The retail market should be subject to ex ante regulation.</li>   <li>• The bottleneck remedies in the wholesale market will not be sufficient. In STC’s view, significant tightening of the TRA’s proposal is required to ensure that Batelco can’t circumvent the regulation by indirectly charging additional excessive and discriminatory fees through third parties (for example, the supplier of the international capacity element).  Of particular concern to STC is that this new wholesale product is complemented by reasonable fit for purpose wholesale backhaul products supplied by BNet. Whilst the most recent BNet Reference Offer order dated 3 June 2019 mandates WDC and OWS, STC seeks wholesale dark fibre on fair and reasonable terms.</li>   <li>• That the Authority should monitor the progress that is being made over the course of 2020 in relation to the ability of access seekers to obtain access on reasonable, non-discriminatory terms in a timely manner. STC also notes that sanctions should be imposed in the case of non-compliance with the remedies imposed.</li>   <li>• That separation of Batelco’s international business must be considered.</li> </ul>	<p>The Authority refers to its previous response (Q7) in regard to the possible regulation of the retail market.</p> <p>The Authority notes that the implementation of the remedy will be subject to further scrutiny as Batelco prepares its draft Offer. However, to support this process, the Authority does provide, below, guidance on its expectations regarding the required design of the wholesale product. However, the Authority notes that the overarching aim of the remedies is to completely remove the bottlenecks in the international supply chain such that access seekers will not require any other access products in this market in order to access capacity over the Batelco controlled submarine cables. The Authority further notes that any attempts by Batelco to circumvent these remedies, such as by seeking to project its dominance onto other parts of the supply chain through specific contractual agreements with the cable operators, will be taken very seriously by the Authority. The Authority confirms it will, therefore, monitor closely the implementation of the remedies set out here and further that non-compliance will be sanctioned through the TRA’s enforcement powers under Article 35 of the Law.</p> <p>In relation to domestic connectivity, the Authority refers to its previous responses, including its conclusions in relation to Question 11.</p> <p>As stated in para 244 above, the Authority is prepared, if necessary, if the current remedies do not support the enhancement of effective competition, because of – for example – the behaviours highlighted by STC – to consider further measures, additional to those prescribed in this determination in order to remedy the bottlenecks it has identified.</p>

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<p>STC also submits a proposed template as best practice for a reference access offer and provides links to a number of international reference offers.</p>	<p>Finally, the Authority acknowledges STC's provision of reference offers from other markets and will make those available to other parties as part of its further guidance on the remedies it is imposing. It is important, however, that Batelco's access products meet the specific requirements of the Bahrain market, rather than copying those set out elsewhere without regard to the local conditions.</p>
<p>Zain considers the form of access and associated remedies put forward in the draft determination to be unclear and inconclusive. It states that it expects the required colocation and cross connect services to be more clearly defined. It then proposes that licensed operators should have access to regulated, cost based:</p> <ol style="list-style-type: none"> <li>1. Passive cross connect service referencing a price of BD350/month (based on BNet's reference offer for co-location per ETSI standard rack price)</li> <li>2. Co-location services referencing a pricing of BD142 per link according to Batelco's IFC service reference offer.</li> </ol>	<p>In response to Zain, the Authority refers to its response above and the guidance on the implementation of the remedies set out below.</p>
<div style="text-align: center;"> <p style="text-align: center;"><b>Annex A</b></p> <p style="text-align: center;">* the above is not applicable to terrestrial cables (KFC and GCCIA) as the Access Seeker will interconnect directly with counterparty international capacity at the meet-me-room rather than be reliant on a landing party.</p> </div>	
<p>Zain notes that the Authority should consider implementing an open access model with passive cost-based cross connects to enable access seekers to international capacity to pool their demand for attracting new international cables to Bahrain. In this regard it</p>	<p>The Authority acknowledges Zain's comment in relation to the potential pooling of demand and the provision of passive cross connects, but notes that the market review considers the current structure of the market in Bahrain,</p>

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<p>refers to Singapore where such a model has been implemented.</p> <p>Zain then also states that access seekers must not be burdened with any other non-regulated fees by a landing party for connecting to ICS.</p> <p>Additionally, Zain considers that any fully-fledged IFL and ISL licensed operators should be able to purchase international capacity directly from any cable owner.</p>	<p>including the ownership of international connectivity assets and the current licensing regime, with the remedies it is proposing designed specifically to reflect that structure. Implementing more structural changes to those factors are beyond the scope of this market review.</p> <p>The Authority again highlights that the remedies it is imposing are designed to remove completely the bottlenecks identified and refers to its further guidance set out below on how Batelco shall implement the required access services.</p> <p>Finally, and similar to the point it has made above, the Authority notes that whether an IFL and ISL holder should be able to purchase international capacity directly from any cable owner is beyond the scope of this consultation. This is because this market review has been conducted on the basis of the current market structure and licensing regime.</p>
<p>Kalaam agrees with the conclusions set out in the draft determination and the proposed remedies. However, it states that the final determination should also cover the following points:</p> <ul style="list-style-type: none"> <li>• The introduction of an immediate interim measure until the Batelco RAIO is published; with speeds up to 100G or more;</li> <li>• IRU options in case operators are willing to invest in a long term commitment;</li> <li>• the delivery of an interface for various OSI products;</li> <li>• service level agreement on all the Layers;</li> <li>• introduction of any aggregation/CPE requirement or limitation; and</li> <li>• the breakdown of the supply chain process if the OLO would like to directly buy capacity from the International cable system owners/consortium members.</li> </ul>	<p>The Authority notes that its Access Regulation has been developed so that remedies are implemented as soon as possible following a determination of Dominance in a relevant market. Should Batelco not comply with its obligations arising from this Determination the Authority will, therefore, take appropriate enforcement action.</p> <p>Kalaam notes a number of requirements that the Authority captures in its guidance, below.</p> <p>However, in relation to Kalaam’s request for IRU options, this is not a form of service that the Authority considers necessary under the remedy, given its specification is likely to depend on a number of assumptions that access seekers and access providers normally agree in commercial negotiations. The Authority also notes that no other licensee has requested such a type of access. However the determination does not preclude access seekers and providers from having such commercial negotiations.</p>
<p>AWS agrees and suggests that the regulated charges should be at cost-based rates.</p>	<p>The Authority notes AWS’s comment regarding the charges for the regulated access product and in this context, refers AWS to its response to comments made by Batelco, also in respect</p>

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<p>AWS believes that the Draft service description should include multiple services that allow for a variety of connectivity models and refers to several elements of a co-location service that it considers should be defined in the draft service description, including rack space and power, IP management connectivity, structured cabling installation, cross connection, security, access to CLS.</p>	<p>of Question 12, regarding the pricing model for the access services.</p> <p>With regards to AWS's second point, the Authority generally agrees with some of the elements identified but notes that the dominant operator, in preparing its draft offer needs to consider the specific characteristics of the bottlenecks identified and the services that access seekers require to overcome those bottlenecks. However, the Authority again highlights that Batelco must offer access products that comprehensively remove the bottlenecks it has identified.</p>
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### The Authority's final decision

The Authority notes the comments it has received from stakeholders in response to this question. Given responses primarily relate to the implementation of the remedy proposed in the draft determination, the Authority maintains its conclusion that such a remedy is superior to imposing an obligation on Batelco to offer end-to-end wholesale services, for the reasons set out in the draft determination.

However, having considered the comments received and its initial proposal, the Authority concludes that some adjustments and clarifications to the overall design of the remedies it has proposed are required. It therefore sets out the following three service categories the remedy needs to cover<sup>79</sup>.

- a. Co-location at the landing station, e.g. for equipment terminating national connectivity services at the landing station or dedicated international connectivity equipment.
- b. Cross connect at the landing station, i.e. passive connectivity between the national part (where Licensees' co-located equipment is located) and the international part (location of the SLTE) of the cable landing station, inclusive of any connector links (or patches) required.
- c. And, subject to whether the domestic part of a submarine cable is owned or controlled by Batelco, connectivity between the passive cross connect and the international submarine cable on the territorial boundary of Bahrain including the SLTE, (including any required connector links or patches), the terrestrial network between SLTE and beach manhole (where applicable) and the domestic submarine cable.

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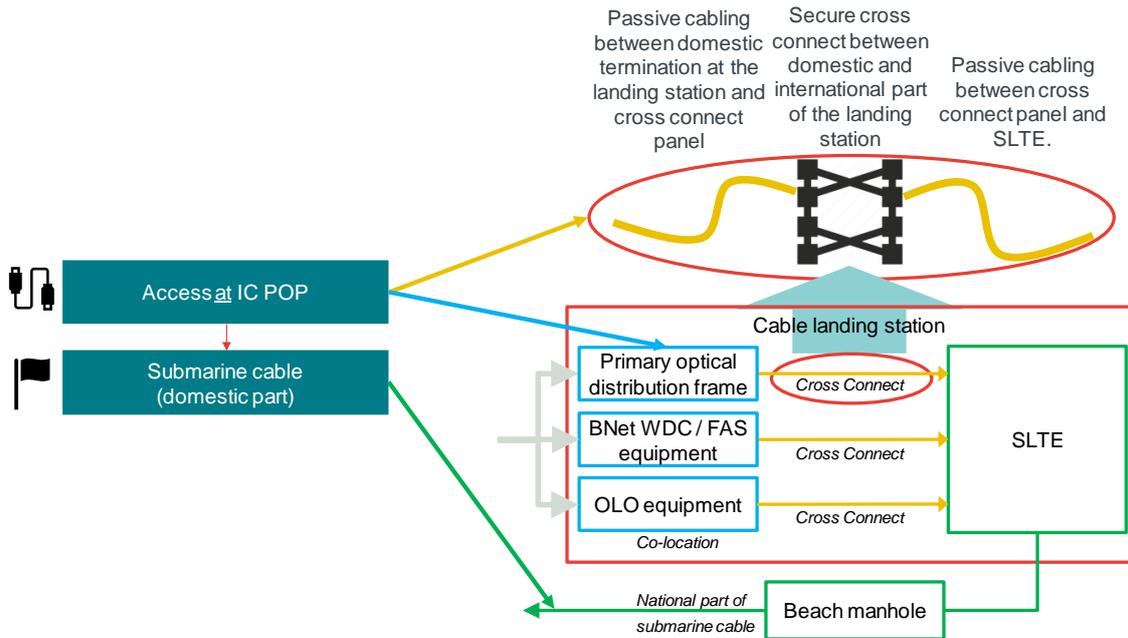
<sup>79</sup> This remedy is similar to that imposed by the Authority on Batelco as a result of the Article 65 investigation into anti-competitive behaviour in relation to the provision of access to the GBI cable. However, it differs from the current IFC service offered by Batelco. In particular, the remedy the Authority is now imposing on Batelco does not include access to duct facilities for the purpose of rolling out domestic fibre towards the landing station. This is because including this would not be consistent with the current licencing regime and the provision of regulated domestic connectivity services by BNet. It also includes an active component for transmission over the domestic part of the submarine cables, an element that is not included in the IFC service. This is because, at the time when the IFC service was implemented, Batelco did not have ownership of the domestic part of the Falcon cable.

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This is illustrated below.

**Figure 21: Illustrative example of the bottleneck access service**



### Further guidance on the implementation of the required remedy

In this part, the Authority provides further guidance to all parties on the nature of the required remedy, in line with the general elements outlined above. This does not form part of the Authority's formal determination but is rather provided in order to support Batelco in the preparation of its RAIO and all parties in responding to that. This does not, however, fetter the Authority's discretion in reviewing the draft RAIO service description in any way.

In providing this guidance, the Authority notes that in this determination, it has identified two bottlenecks: the provision of connectivity at the landing station and the transmission of traffic across the national part of the submarine cable (towards the international waters) where that part is owned by Batelco.

### Connectivity at the landing station

In order to define the types of services required to remove these bottlenecks, the Authority considers it useful to define the areas where active or passive or both types of services are required. This is because determining the technical implementation of corresponding service elements critically depends on that definition.

There are two areas in relation to the bottlenecks identified where active equipment is used to establish an international connectivity service:

- For national connectivity: from a location in Bahrain terminating on active equipment at the landing station.

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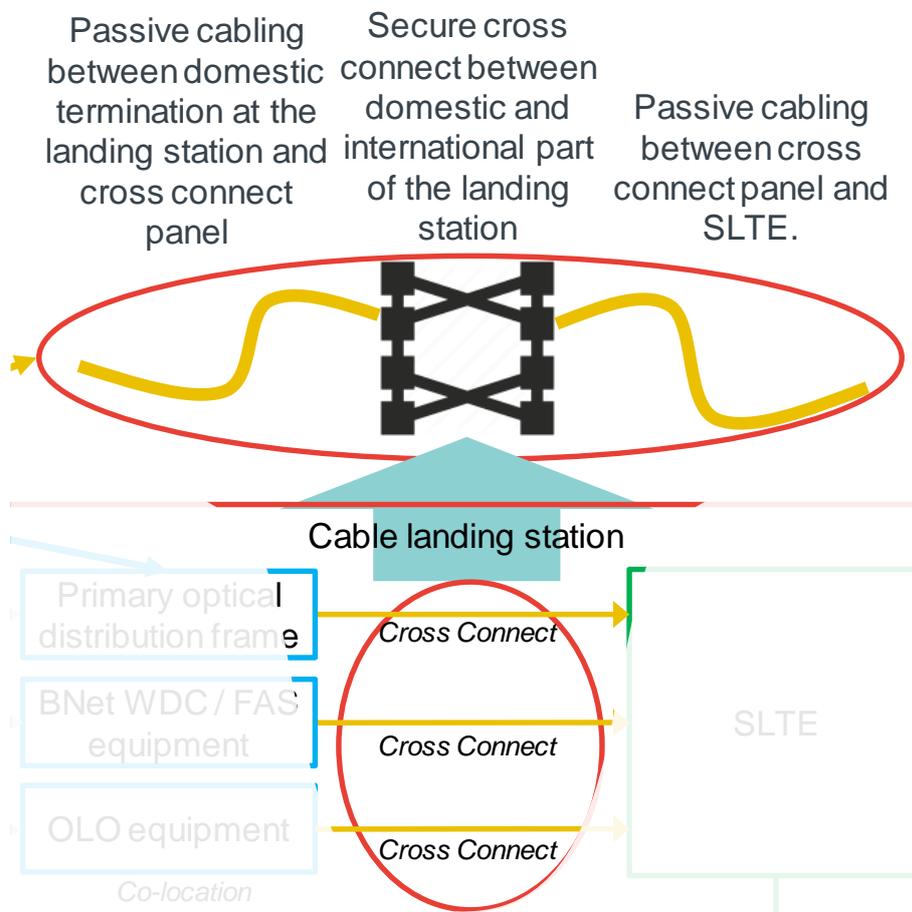
### Annex – Reasoning for the Final Determination

- For the international capacity: the connection originating at the (active) Submarine Line Terminal Equipment (SLTE).

An operator wishing to provision an ICS therefore must be able to connect between the national termination equipment and the international termination equipment. A service, or part thereof, that satisfies this requirement is likely to be one that provides passive connectivity from the national termination equipment to the international communication equipment. In order to maintain security (in terms of who has access to what equipment) and to allow for flexibility, resilience and pre-provisioning of connectivity, a reasonable solution could include the following:

- a. Passive cabling would be installed between the termination on the national equipment to a passive cross connection panel.
- b. Passive cabling would be installed between the termination on the international equipment to the same passive cross connection panel.
- c. A passive “patch lead” is then installed on the cross connection panel to connect between the national termination and the international termination.

This is indicated below.



All of this installation, with the possible exception of the patch lead, can be pre-provisioned. This means it forms part of the internal wiring at the cable landing station and does not require manual intervention at the time when a wholesale service is established. The end-to-end service, that is from the termination on the national equipment to the termination on the international equipment should be considered as a single service. The end-to-end service is completely passive, requiring no active components. This is because the management and configuration of the

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services will be conducted via the termination equipment (both for the national service and for the international service).

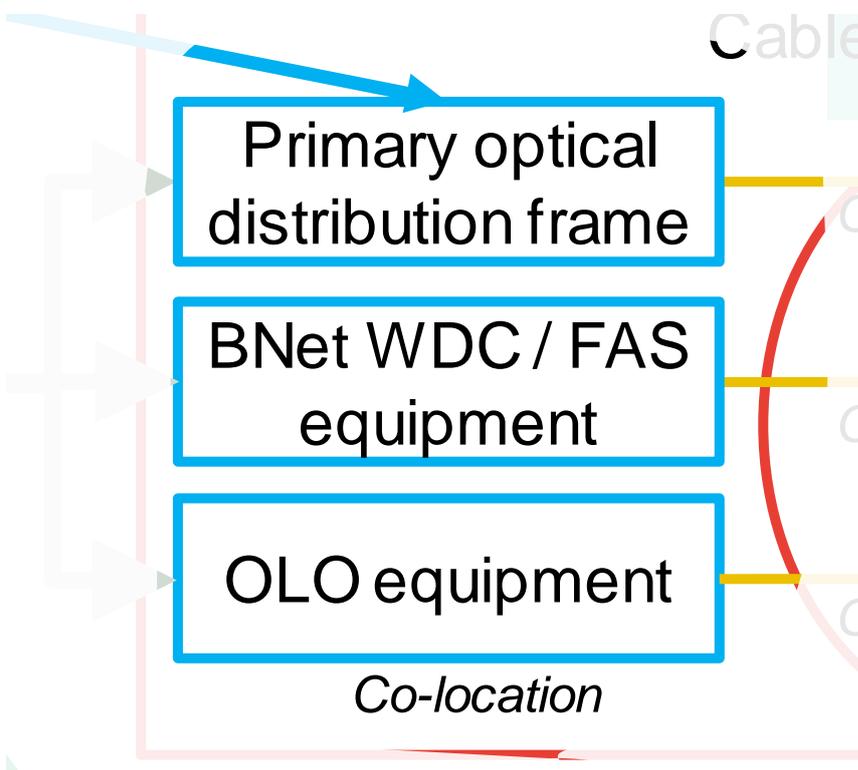
In terms of cost, the only potential elements affecting the cost of providing this service are:

- The per meter cost of fibre cabling
- The installation support for the fibre cables (e.g. trunking, if integral to the existing design of the landing station); and
- Fire stopping and security features.

For the equipment on which a domestic connectivity service terminates, the Authority considers three possible scenarios:

- The optical distribution frame at the cable landing station where an optical cable dedicated for international connectivity terminates.
- Termination at the endpoint of a WDC, OWS or Exceptional FAS domestic connectivity service acquired by an access seeker; and
- Termination at an access seeker's equipment co-located at the landing station.

The corresponding part of the earlier illustration is highlighted below.



While the Authority would expect termination on equipment used by BNet to provide WDC (or OWS or Exceptional FAS) services to be the default, given BNet's role in the provision of domestic connectivity services, it does not preclude the possibility of operators seeking collocation at the landing station or direct cross connection from the optical distribution frame.

The Authority expects that charges for enabling that termination will be set on the basis of:

- the port occupied by terminating at the Optical Distribution Frame – a port charge;

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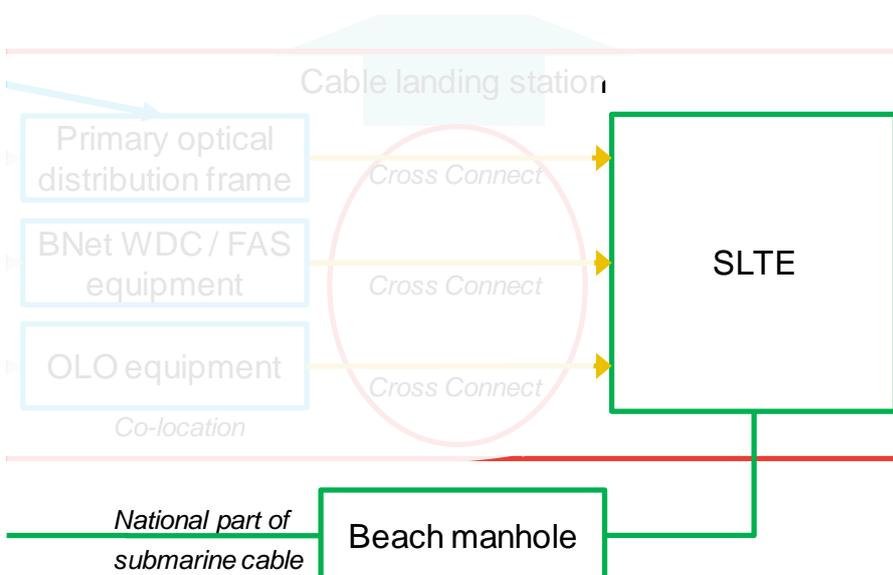
- the space occupied by BNet and OLO co-located equipment – a charge per square metre;
- consumption of power and cooling required for BNet and OLO co-located equipment – consumption based charges, e.g. kWh.

However, for the avoidance of doubt, space rental charges for BNet equipment co-located at the landing station should be imposed on BNet at non-discriminatory terms, rather than on the party seeking access to Batelco's international connectivity services. In turn, the Authority would expect that those charges imposed on BNet would be absorbed into BNet's general cost stack for the provision of domestic connectivity services and recovered through the regulated charges for its services.

### Transmission across the domestic segment of the submarine cable

Where ownership of the submarine cable implies that Batelco is responsible for the transmission of services across the domestic part of the submarine cable, the wholesale service also needs to include transmission across this network element. This service is from the termination point on the SLTE to the point at the international boundary. The Authority notes, that from a technical point of view the latter is a notional concept. That is, no active (or passive) component exists for the technical handover at the boundary between the domestic (located in the territorial waters of Bahrain) and international parts of a submarine cable. Instead, the differentiation exists as a result of a commercial agreement between the cable landing party (Batelco) and the international cable operator. Technically, the international service is provided end to end from the SLTE in Bahrain to the SLTE at the far end landing station. However, due the commercial agreement and Batelco's ownership of the domestic section, that domestic segment of the submarine cable represents a bottleneck and transmission across it needs to be covered by the wholesale service to be offered under the remedy imposed on Batelco.

The elements covered by the service are outlined below.



Given that the service acquired by access seekers to international connectivity from an international submarine cable operator is managed and provided with certain active service characteristics such as capacity (1G, 10G, 100G, STMx, or wavelengths) and the fact that the

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service includes the provision of access to the ‘active’ SLTE equipment at the cable landing station, the Authority considers, provisionally, that the service provided by Batelco should also be provided as an active service. However, given the ability to multiplex several ICS into one, the Authority considers that an access seeker should be able to acquire a single active transmission service (or request to expand an existing transmission service) from Batelco for several services it acquires from the international submarine operator (i.e., beyond Bahrain’s territorial waters) so long as the former is greater than the latter.

The cost incurred for the provision of the service, which the pricing of the wholesale service provided as a result of this remedy should consider, will depend on the commercial agreement made between the landing party and international submarine cable operator. For example, if the agreement between the landing party and international submarine cable operator stipulates that the cost of establishing and operating the cable landing station as well as the domestic part of the submarine cable and active equipment connected to it are borne by the international submarine cable operator, such costs should not be included in the costs recovered from customers of wholesale services designed as a result of the remedies imposed in this market review.

### Summary of and response to general comments made by respondents to the consultation

In addition to the above responses to specific questions in the consultation, the stakeholders also provided general comments which are summarised below.

In this table, the Authority provides a summary of and a response to stakeholders’ general comments that are not specifically covered by any of the consultation questions.	
Summary of stakeholders’ submissions	The Authority’s analysis and responses
<p>BNet contends that connectivity between the network terminating point of the domestic network at the CLS and the customer facing side of equipment where the dry segment of the submarine cable terminates at any CLS, should be provided by BNet. This is because it falls within domestic telecommunications infrastructure. It is also the sole holder of an FTIN licence and hence any service purporting to connect a domestic network to the international infrastructure at any cable landing station, whether terrestrial or submarine, should be provided by BNet. BNet points out that its ability to protect the FTIN from security threats depends on having access to the CLS as the provider of the cross connect service.</p>	<p>The Authority refers to its response to BNet’s comment in relation to Question 2.</p> <p>The Authority also notes that it is not clear how the provision of a passive cross connect service would enable BNet to adequately protect the FTIN. The Authority considers that such security measures are implemented in active network equipment of which BNet operates corresponding WDC, OWS or Exceptional FAS equipment at the landing station, i.e. prior to traffic entering the FTIN.</p>
<p>Key issues of concern to STC are:</p> <ul style="list-style-type: none"> <li>• end users paying higher prices for international services</li> </ul>	<p>The Authority agrees with the issues STC highlights and notes that the remedies identified as a result of this market review seek to resolve these.</p>

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<ul style="list-style-type: none"> <li>• an artificial increase in the cost of doing business in Bahrain, therefore rendering the location a less attractive place for providers to host content</li> <li>• Bahrain in general being a less competitive location because of these higher costs</li> <li>• less entry into the market for innovative start-up businesses needing to use competitively priced high quality international communication services.</li> </ul> <p>It considers that the Authority has not adequately established why regulation of retail prices is not required. It refers to other countries in the region that maintain such regulations.</p> <p>It requests the provision of a wholesale domestic dark fibre service to connect to international capacity and notes that the option of separating the international business from Batelco must be considered.</p>	<p>The Authority disagrees with Zain in relation to its findings on regulation of retail services. As discussed in Section 5 of this Annex, the Authority has weighted the current degree of competition in the market with the impact that regulation at the retail level can have on access seekers and the development of sustainable competition over time. It concluded with appropriate regulation upstream, the retail market not susceptible to ex-ante regulation.</p> <p>The Authority notes that the provision of a wholesale dark fibre service over domestic networks is beyond the scope of this review.</p>
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<p>Zain provides a diagram of the elements of the International connectivity market to show its proposed service models. It splits this into two categories:</p> <ul style="list-style-type: none"> <li>• Category 1- Shared ownership cables</li> <li>• Category 2- Privately owned cables</li> </ul> <p style="text-align: center;"><u>Annex B</u></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Categories</th> <th style="text-align: center;">Types Description</th> <th style="text-align: center;">Examples</th> <th style="text-align: center;">Zain's Proposed Remedies</th> </tr> </thead> <tbody> <tr> <td rowspan="2" style="vertical-align: middle;">Category 1 Shared Ownership</td> <td style="background-color: #4a86e8; color: white; padding: 5px;"> <b>Category 1.1</b> Capacity may only be purchased from the owner operator in that country, which is the landing party as well                 </td> <td style="background-color: #4a86e8; color: white; padding: 5px;">FOG</td> <td style="background-color: #4a86e8; color: white; padding: 5px;">No wholesale remedy if Zain's proposed remedies below are adopted</td> </tr> <tr> <td style="background-color: #4a86e8; color: white; padding: 5px;"> <b>Category 1.2</b> Open access, capacity may be sold by any of the owners of that cable, and cross-connect from the landing party                 </td> <td style="background-color: #4a86e8; color: white; padding: 5px;">IMEWE EIG SeaMeWe-4</td> <td style="background-color: #4a86e8; color: white; padding: 5px;">Regulated wholesale: 1- Colocation 2- Passive Cross-connect</td> </tr> <tr> <td rowspan="2" style="vertical-align: middle;">Category 2 Private Ownership</td> <td style="background-color: #4a86e8; color: white; padding: 5px;"> <b>LPA</b> Agreement between the cable owner and a Licensed operator in order to 'land' the cable in a country, where the cable owner does not have the required license to do so. Cable owner pays the landing party an annual O&amp;M to recover the cost of landing station                 </td> <td rowspan="2" style="background-color: #4a86e8; color: white; padding: 5px;">GBI FALCON</td> <td rowspan="2" style="background-color: #4a86e8; color: white; padding: 5px;">Regulated wholesale: 1- Colocation 2- Passive Cross-connect</td> </tr> <tr> <td style="background-color: #4a86e8; color: white; padding: 5px;"> <b>CPA</b> Agreement by which cable owners usually set a minimum purchase of capacity required prior to landing the cable in a particular country. Multiple Access Seekers may purchase capacity directly from the cable owner itself, the landing party or any other party that has purchased capacity on the cable system                 </td> </tr> </tbody> </table> <p>Zain also comments on aspects it later repeated in relation to specific questions put to consultation. In particular it notes that the remedy should consist of a passive cross connect service, regulated co-location services and not allow the the dominant party any other ways of abusing its dominant position. It also notes that holders of IFL and ISL licences</p>	Categories	Types Description	Examples	Zain's Proposed Remedies	Category 1 Shared Ownership	<b>Category 1.1</b> Capacity may only be purchased from the owner operator in that country, which is the landing party as well	FOG	No wholesale remedy if Zain's proposed remedies below are adopted	<b>Category 1.2</b> Open access, capacity may be sold by any of the owners of that cable, and cross-connect from the landing party	IMEWE EIG SeaMeWe-4	Regulated wholesale: 1- Colocation 2- Passive Cross-connect	Category 2 Private Ownership	<b>LPA</b> Agreement between the cable owner and a Licensed operator in order to 'land' the cable in a country, where the cable owner does not have the required license to do so. Cable owner pays the landing party an annual O&M to recover the cost of landing station	GBI FALCON	Regulated wholesale: 1- Colocation 2- Passive Cross-connect	<b>CPA</b> Agreement by which cable owners usually set a minimum purchase of capacity required prior to landing the cable in a particular country. Multiple Access Seekers may purchase capacity directly from the cable owner itself, the landing party or any other party that has purchased capacity on the cable system	<p>The Authority notes that the remedies it is imposing on Batelco as a result of this determination are consistent with Zain's proposal in relation to the bottleneck facilities of the dominant operator.</p> <p>The Authority refers to its responses to comments on Q12 in this regard.</p>
Categories	Types Description	Examples	Zain's Proposed Remedies														
Category 1 Shared Ownership	<b>Category 1.1</b> Capacity may only be purchased from the owner operator in that country, which is the landing party as well	FOG	No wholesale remedy if Zain's proposed remedies below are adopted														
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<p>should be able to acquire services directly from international cable operators.</p>	
<p>AWS provides the following overall comments as part of its response</p> <ul style="list-style-type: none"><li>• It is crucial to have clear and definitive fee structures which are reasonable, cost based and non-discriminatory to promote transparency and competition</li><li>• The Authority should leverage existing mechanisms, in particular the Exceptional FAS, and expand these to drive competition</li><li>• The Authority should distinguish between wholesale and retail remedies to consider whether the wholesale remedies will issues in the retail market.</li></ul>	<p>The Authority notes AWS's comments and refers to the further guidance on the required access service that Batelco must provide, as set out earlier in the document.</p> <p>In relation to AWS' comment on retail and wholesale market remedies, the Authority refers to comments made in relation to the 3 Criteria test and in relation to the effectiveness of wholesale remedies on outcomes in the retail market. (see assessment in relation to Q7).</p>