



هيئة تنظيم الاتصالات
Telecommunications Regulatory Authority
مملكة البحرين - Kingdom of Bahrain

A final Order issued by the Telecommunications Regulatory Authority on the Reference Offer of the Bahrain Telecommunications Company B.S.C

Final Order on the Reference Offer of Batelco

18 August 2016

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Public Version

Confidential information has been replaced by [X]

Purpose: to set the fair, reasonable and non-discriminatory price and non-price terms of the regulated wholesale products and services in Bahrain Telecommunications Company B.S.C's Reference Offer.

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REFERENCE OFFER ORDER ON BAHRAIN TELECOMMUNICATIONS COMPANY B.S.C. (the “Batelco Order”)

1. Pursuant to:
 - a. The exercise of its powers under article 3(c)(1), 57(b) and 57(e) of Legislative Decree No. 48 for the year 2002 promulgating the Telecommunications Law (the ‘Law’), and articles 2,3,4,5 and 6 of the Access Regulation issued on 30 April 2005 (the ‘Access Regulation’).
 - b. The Dominance in Interconnection Markets Determination issued 9 August 2003; the Dominance Determination in Wholesale Markets by Batelco issued 22 January 2006; the Dominance Determination in Wholesale Broadband Markets issued 14 September 2009; the Determination for Wholesale International Services issued on 20 February 2013, the Determination of Significant Market Power and Determination of Dominant Position in the Markets for Provision of Broadband Internet Access from Fixed Location issued on 27 March 2014; the Determination of Significant Market Power and Determination of Dominant Position in the Markets for Domestic Data Connectivity Services issued on 10 April 2014; and the Determination of Significant Market Power in the retail market for premium access to call services including domestic calls from a fixed location issued on 20 April 2016.
 - c. The legal basis and reasoning set out in Annex A to this Batelco Order. Annex A forms an integral part of this Batelco Order.

Price terms of regulated wholesale products and services

2. The Telecommunications Regulatory Authority (the “**Authority**”) hereby orders the price terms as detailed in the following table to be implemented by Bahrain Telecommunications Company B.S.C (“**Batelco**”) in its Reference Offer (“**RO**”).
3. For the avoidance of doubt, the ordered price terms apply to all new and existing regulated wholesale products and services.

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Figure 1: Table listing the Authority's ordered price terms

Chargeable activity	TRA's final Order FRND charges		Currently implemented charges	Difference between final charges and currently implemented charges (in %)	
Wholesale Local Access ("WLA") – Monthly Recurring Charge ("MRC")					
Low-speed WLA Connections (copper-based) MRC in BD					
	GLIDEPATH				
	From implementation following issuance of this Batelco Order to 30 September 2017	From 1 October 2017 onwards		Difference (in %) 1 st step of glide path vs currently implemented	Difference (in %) 2 nd step of glide path vs 1 st step of glide path
64 kbit/s	58.508	58.508	58.508	0.0%	0.0%
128 kbit/s	60.963	60.963	60.963	0.0%	0.0%
256 kbit/s	65.200	64.600	65.872	-1.0%	-0.9%
512 kbit/s	69.900	67.700	72.000	-2.9%	-3.1%
1 Mbit/s	83.100	73.800	92.300	-10.0%	-11.2%
2 Mbit/s	109.200	86.300	132.000	-17.3%	-21.0%
High-speed WLA Connections (fibre-based) MRC in BD					
	GLIDEPATH				
	From implementation following issuance of this Batelco Order to 30 September 2017	From 1 October 2017 onwards		Difference (in %) 1 st step glide path vs currently implemented	Difference (in %) 2 nd step of glide path vs 1 st step of glide path
4 Mbit/s	184.500	134.900	234.000	-21.2%	-26.9%
8 Mbit/s	236.600	163.500	309.700	-23.6%	-30.9%
10 Mbit/s	258.900	175.300	342.500	-24.4%	-32.3%
15 Mbit/s	308.600	200.900	416.200	-25.9%	-34.9%
20 Mbit/s	352.700	223.100	482.200	-26.9%	-36.7%
25 Mbit/s	392.800	243.200	542.400	-27.6%	-38.1%
50 Mbit/s	562.400	325.400	799.300	-29.6%	-42.1%
75 Mbit/s	703.600	392.300	1,014.800	-30.7%	-44.2%

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Chargeable activity	TRA's final Order FRND charges		Currently implemented charges	Difference between final charges and currently implemented charges (in %)	
100 Mbit/s	762.000	450.900	1,073.000	-29.0%	-40.8%
150 Mbit/s	965.400	553.600	1,377.100	-29.9%	-42.7%
200 Mbit/s	1,146.300	644.100	1,648.400	-30.5%	-43.8%
300 Mbit/s	1,400.500	803.100	1,997.900	-29.9%	-42.7%
400 Mbit/s	1,672.600	943.500	2,401.700	-30.4%	-43.6%
500 Mbit/s	1,922.300	1,071.700	2,772.900	-30.7%	-44.2%
1,000 Mbit/s	2,980.500	1,610.600	4,350.300	-31.5%	-46.0%
WLA Aggregation Links (fibre-based)					
MRC in BD					
WLA Aggregation Link (1GbE; fibre-based)	200.000		200.000	0%	
Premium Support for WLA Connections					
MRC					
Charge premium for the "Premium Support" of a WLA Connection	Additional 20% premium on top of the applicable MRC for the Connection		n/a		
	Free for Connection with end-to-end physical and logical protection				
End-to-end physical and logical protection for WLA Connections					
MRC					
Charge premium for the end-to-end physical and logical protection of a WLA Connection	Additional 30% premium on top of the applicable MRC for the Connection		n/a		
WLA – Non Recurring Charge ("NRC")					
NRC in BD					
Installation and configuration charge for 'soft' change request	50.000		50.000	0.0%	
Installation and configuration charge for 'hard' change request – 64 and 128 kbit/s	150.000		150.000	0.0%	
Installation and configuration charge for 'hard' change request – 256 and 512 kbit/s	200.000		200.000	0.0%	
Installation and configuration charge for 'hard' change request – 1 Mbit/s	250.000		250.000	0.0%	
Installation and configuration charge for 'hard' change request – 2 Mbit/s	300.000		300.000	0.0%	
Installation and configuration charge for 'hard' change request – 4 Mbit/s to 1,000 Mbit/s	400.000		400.000	0.0%	

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Chargeable activity	TRA's final Order FRND charges	Currently implemented charges	Difference between final charges and currently implemented charges (in %)
Installation and configuration charge for 'hard' change request – Aggregation Link	Time and materials	<i>Time and materials</i>	
Wholesale Data Connection (“WDC”) – Monthly Recurring Charge (“MRC”)			
WDC Connections (fibre-based)		MCR in BD	
45 Mbit/s (or DS3)	276.400	2,512.235 *	-89.0%
100 Mbit/s	348.300		
156 Mbit/s (or STM-1)	405.800	3,552.331 *	-88.6%
200 Mbit/s	445.300		
300 Mbit/s	532.400	n/a	
400 Mbit/s	601.500	n/a	
500 Mbit/s	664.300	n/a	
622 Mbit/s (or STM-4)	734.800	8,185.213 *	-91.0%
750 Mbit/s	813.300	n/a	
1,000 Mbit/s	936.100	n/a	
1,250 Mbit/s	1,048.000	n/a	
1,500 Mbit/s	1,152.000	n/a	
2,000 Mbit/s	1,342.900	n/a	
2,500 Mbit/s (or SMT-16)	1,517.200	n/a	
5,000 Mbit/s	2,400.200	n/a	
7,500 Mbit/s	3,009.800	n/a	
10,000 Mbit/s (or SMT-64)	3,551.300	n/a	
WDC Aggregation Links (fibre-based)		MRC in BD	
WDC Aggregation Link (10 GbE/STM-64; fibre-based; including end-to-end physical and logical protection)	500.000	n/a	
Premium Support for WDC Connections		MRC	

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Chargeable activity	TRA's final Order FRND charges	Currently implemented charges	Difference between final charges and currently implemented charges (in %)
Charge premium for the "Premium Support" of a WDC Connection	Additional 20% premium on top of the applicable MRC for the Connection Free for Connection with end-to-end physical and logical protection	<i>n/a</i>	
End-to-end physical and logical protection for WDC Connections MRC			
Charge premium for the end-to-end physical and logical protection of a WDC Connection	Additional 30% premium on top of the applicable MRC for the Connection	<i>n/a</i>	
WDC – Non Recurring Charge ("NRC") NRC in BD			
Installation and configuration charge for 'soft' change request	50.000	<i>n/a</i>	
Installation and configuration charge for 'hard' change request – 45 Mbit/s to 10,000 Mbit/s	400.000	<i>n/a</i>	
Installation and configuration charge for 'hard' change request – Aggregation Link	Time and materials	<i>Time and materials</i>	
Other wholesale services in fils/min			
1-7.1 – Conveyance of emergency call to 999	5.403	<i>1.233</i>	<i>+338%</i>
1-7.2 – Conveyance of emergency call to 990	5.403	<i>2.711</i>	<i>+99%</i>
1-7.3 – Conveyance of emergency call to 992	5.403	<i>2.711</i>	<i>+99%</i>
1-7.4 – Conveyance of emergency call to 994	5.403	<i>2.711</i>	<i>+99%</i>
1-7.5 – Conveyance of emergency call to 998	5.403	<i>2.711</i>	<i>+99%</i>
2-2.1 – Directory assistance service for call to 181	186.970	<i>112.684</i>	<i>+66%</i>
2-2.2 – Directory assistance service for call to 188	186.970	<i>112.800</i>	<i>+66%</i>
2-9.1 – Inter-Operator Transit Access Service: Per Transit Call	1.551	<i>1.723</i>	<i>-10%</i>
2-13.7 – CPS Call Origination	2.826	<i>3.600</i>	<i>-22%</i>
2-13.8 – CPS Cost recovery surcharge	0.000	<i>4.200</i>	<i>-100%</i>

* Price ceilings applicable to high-speed CAT and LLCO circuits (current charges are known to be lower).
Source: the Authority

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Non price terms of regulated wholesale products and services

4. The Authority hereby orders the following non-price terms as detailed in the following table to be implemented by Batelco in its RO:

Figure 2: Table listing the Authority's ordered non-price terms

#	Section in Annex A	Paragraphs with ordered non-price terms	Page
1	2. General amendments to the RO	Paragraph 82	Page 30
2	2. General amendments to the RO	Paragraphs 87	Pages 31 and 31
3	2. General amendments to the RO	Paragraph 88	Page 31
4	2. General amendments to the RO	Paragraph 89	Page 32
5	2. General amendments to the RO	Paragraph 90	Page 32
6	3 Framework for defining Service Levels	Paragraphs 237 to 239	Page 71
7	3 Framework for defining Service Levels	Paragraph 243	Page 72
8	3 Framework for defining Service Levels	Paragraph 249	Page 78
9	3 Framework for defining Service Levels	Paragraph 253	Page 78
10	3 Framework for defining Service Levels	Paragraphs 264 and 265	Pages 79
11	3 Framework for defining Service Levels	Paragraph 266	Page 79
12	5. Review of non-price terms applicable to wholesale data connectivity products and services	Paragraph 582	Page 144
13	5. Review of non-price terms applicable to wholesale data connectivity products and services	Paragraph 592	Page 146
14	5. Review of non-price terms applicable to wholesale data connectivity products and services	Paragraphs 599	Page 147
15	5. Review of non-price terms applicable to wholesale data connectivity products and services	Paragraphs 606 to 607	Page 149
16	5. Review of non-price terms applicable to wholesale data connectivity products and services	Paragraph 610	Page 149
17	5. Review of non-price terms applicable to wholesale data connectivity products and services	Paragraphs 614	Page 150
18	5. Review of non-price terms applicable to wholesale data connectivity products and services	Paragraph 615	Page 150
19	5. Review of non-price terms applicable to wholesale data connectivity products and services	Paragraphs 621 to 623	Page 151
20	5. Review of non-price terms applicable to wholesale data connectivity products and services	Paragraph 628	Page 151
21	5. Review of non-price terms applicable to wholesale data connectivity products and services	Paragraph 631	Page 152
22	5. Review of non-price terms applicable to wholesale data connectivity products and services	paragraphs 636 and 637	Page 152
23	5. Review of non-price terms applicable to wholesale data connectivity products and services	Paragraph 642 and 643	Page 153

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#	Section in Annex A	Paragraphs with ordered non-price terms	Page
24	5. Review of non-price terms applicable to wholesale data connectivity products and services	Paragraph 646	Page 153
25	5. Review of non-price terms applicable to wholesale data connectivity products and services	Paragraph 649	Page 153
26	5. Review of non-price terms applicable to wholesale data connectivity products and services	Paragraph 652	Page 153
27	5. Review of non-price terms applicable to wholesale data connectivity products and services	Paragraph 655	Page 154
28	5. Review of non-price terms applicable to wholesale data connectivity products and services	Paragraphs 663 and 664	Pages 155
29	7. Review of the non-price terms applicable to the Bitstream product and services	Paragraph 803	Page 196
30	7. Review of the non-price terms applicable to the Bitstream product and services	Paragraphs 804 and 805	Page 196

Source: the Authority

Entry into force

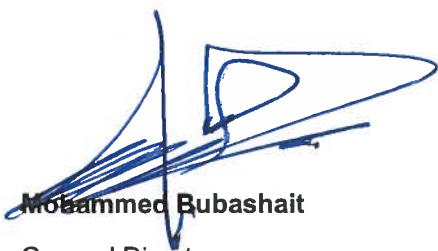
5. This Batelco Order is effective on the date of its issuance.
6. Within 7 calendar days following the date of issuance of this Batelco Order, Batelco shall notify via email all its wholesale customers copying the Authority of the new ordered price terms and the new ordered non-price-terms, including their effective implementation date which shall not be later than 60 calendar days following issuance of this Batelco Order.
7. Within 60 calendar days from the date of issuance of this Batelco Order:
 - a. Batelco shall reflect the ordered price terms and ordered non-price terms in its RO by amending the relevant RO schedules;
 - b. Batelco shall, before the effective implementation date, make available on its website 'marked-up' and 'unmarked' versions of the RO; and
 - c. Batelco shall promptly thereafter notify via email all its wholesale customers copying the Authority of the RO publication.
8. Batelco shall ensure that the 'marked-up' versions of RO schedules reflecting ordered price terms and ordered non-price terms remain available on its website for a minimum period of three (3) calendar months following the publication of the RO.
9. This Batelco Order is without prejudice to any further orders, regulations and determinations that the Authority may consider necessary pursuant to its powers and duties under the Law.

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REFERENCE OFFER ORDER

Compliance

10. Batelco shall comply with the terms of this Batelco Order. Failure to comply with the terms of this Order may constitute a material breach of the Law and may consequently be subject to enforcement action pursuant to the relevant provisions of the Law.

Signed on 18 August 2016



Mohammed Bubashait

General Director

Telecommunications Regulatory Authority

Manama, Kingdom of Bahrain

Annex A –Order Legal Basis and Reasoning

1 Introduction

11. Annex A contains the legal basis and reasoning for the final Batelco Order. Each section of Annex A is organised in the following manner:
- a. subsections called “CONSULTATION TEXT” reproduce the reasoning and legal basis that were included in the annex of the draft Batelco Order issued by the Authority for consultation on 15 December 2015 (ref: MCD/12/15/092);
 - b. subsections called “SUMMARY OF SUBMISSIONS ON SECTION X” provide a summary of submissions and cross-submissions received from respondents on 18 February 2016 and 10 March 2016 respectively;¹ and
 - c. subsections called “THE AUTHORITY’S FINAL CONCLUSIONS ON SECTION X” contain the Authority’s responses to the submissions and cross-submissions as well as its final decisions on the fair, reasonable and non-discriminatory RO terms that are being ordered in the final Batelco Order.

CONSULTATION TEXT

1.1 Preamble

12. Batelco’s Reference Offer (**‘RO’**) is a key regulatory instrument that underpins competition in the telecommunications markets in the Kingdom of Bahrain. It affects Batelco and other operators. Accordingly, the Authority will consult with the wider industry and stakeholders on this draft Order.
13. This Annex provides the context and chronology of this review of Batelco’s 2014 RO submission. It contains the legal basis of the decisions the Authority has made in this draft Order. It sets out, furthermore, the interpretation of fair, reasonable and non-discriminatory price and non-price terms, which the Authority is required by law to apply when determining the level of the regulated charges.

1.2 Legal basis

14. Article 57 of Legislative Decree No. 48 of 2002 promulgating the Telecommunications Law (the “**Law**”) and article 4 of the Access Regulation issued 30 April 2005 requires an operator, that has been determined by the Telecommunications Regulatory Authority (the

¹ The Authority received submissions and cross-submissions from the following operators: Batelco, Kalaam, Menatelecom, VIVA, and Zain.

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Annex A – Order Legal Basis and Reasoning

“**Authority**”) to be in a Dominant Position in a particular telecommunications market, to publish a RO that has been approved by the Authority. A RO sets out the terms, conditions and tariffs for regulated wholesale services that the dominant operator is required to supply to Other Licensed Operators (“**OLO**”).

15. Article 57 of the Law and articles 5 and 6 of the Access Regulation requires that the terms and conditions and tariffs are fair, reasonable, and non-discriminatory, and that the tariffs are based on forward-looking costs or benchmarked against tariffs in comparable telecommunications markets. When doing so, the Authority shall:
 - a. pursuant to article 3(a) of the Law, carry out its duties and exercise its powers efficiently, effectively, reasonably, and in a non-discriminatory and transparent manner.
 - b. pursuant to article 3(b) of the Law, ensure that when assessing such terms or tariffs, it will carry out its duties in a manner best calculated to:
 - i. protect the interests of Subscribers or Users in respect of:
 - the tariffs charged for services
 - availability and provision of service
 - protection of personal information and privacy of services; and
 - ii. promote effective and fair competition among new and existing Licensed Operators.
16. Furthermore, in accordance with article 57 of the Law, should the Authority consider that that the terms and conditions and tariffs are not fair, not reasonable, and are discriminatory, or that the tariffs are not based on forward-looking costs or benchmarked against tariffs in comparable telecommunications markets, then the Authority may issue an Order specifying the terms, conditions and tariffs.
17. Bahrain Telecommunications Company B.S.C. (‘Batelco’), has been found to have a Dominant Position in the relevant markets identified in the following determinations:
 - a. the Dominance in Interconnection Markets Determination issued 9 August 2003 (ref: ERU/DE/005);
 - b. the Dominance Determination in the wholesale market for termination services on Batelco mobile network in the Kingdom of Bahrain issued on 1 February 2010 (ref: MCD/02/10/010);
 - c. the Dominance Determination in the wholesale physical network infrastructure access market and in the wholesale broadband access market for the supply of business broadband internet access services from a fixed location issued on 27 March 2014 (ref: MCD/03/14/018); and
 - d. the Dominance Determination in the wholesale market for the supply of domestic data connectivity services in Bahrain, with the exception of Amwaj Islands issued on 10 April 2014 (ref: MCD/04/14/026).
18. As a result of having been found dominant in relevant markets identified in the above determinations, and pursuant to Article 57 of the Law, Batelco has been required to make a RO available to OLOs for regulated wholesale services.

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Annex A – Order Legal Basis and Reasoning

19. Batelco made a submission on 16 October 2014 with respect to changes to its RO. In its submission, Batelco proposed amendments to some of the RO terms, conditions and tariffs. This RO submission has been made to the Authority for its review and approval. In response, this draft Order presents the Authority's initial views with respect to whether or not Batelco's proposals as presented in its RO submission comply with Article 57 of the Law. Furthermore, this draft Order includes the Authority's views on additional matters to be addressed that would bring the RO into compliance with Article 57 of the Law.

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Annex A – Order Legal Basis and Reasoning

1.3 RO review process

20. In its letter dated 19 May 2014 (ref: MCD/05/14/062) to Batelco, the Authority set out the following requirements, which in accord with the Telecommunications Law, are to facilitate the RO review process. Batelco is to:
 - a. Document and justify its proposed RO tariffs in light of the relevant legal provisions, including article 57 of the Telecommunications Law;
 - b. Provide at the time of submission all supporting documents, particularly fully functioning and documented spreadsheets to enable the Authority to follow the calculations as well as to ensure consistency and accuracy of the figures and data provided;
 - c. Explain and justify in its written submission any changes to previously agreed and ordered positions;
 - d. Provide comparison with 2011 and 2012 cost stacks, when appropriate and relevant, in order to explain changes in costs for services over time and whether proposed tariffs are based on forward looking costs; and
 - e. Meet with the Authority to present all submitted documents.
21. On 16 October 2014, Batelco submitted its RO based on 2012 regulatory costs for the Authority's review (Batelco's reference GCL/389/14).
22. On 9 July 2015, Batelco submitted its 2013 regulatory accounts (Batelco's reference GCL/206/15).
23. On 12 November 2015, Batelco submitted its 2014 regulatory accounts (Batelco's reference GCL/345/15).
24. Where Batelco has not provided any justification or new arguments to support departures from a position taken in the previous RO Order, the Authority has reverted to its previous position. Where the Authority, furthermore, has departed from a previous position, the reasons for doing so are set out in this draft Order.

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Annex A – Order Legal Basis and Reasoning

1.4 Fair, reasonable and non-discriminatory terms, conditions and tariffs

25. The Authority considers access tariffs to be fair and reasonable if such tariffs are based on relevant, efficiently incurred economic costs calculated on a forward-looking incremental basis, including the regulated rate of return on capital employed.
26. After having conducted a review of the tariffs contained in the initial RO submission, and the additional information considered necessary by the Authority to complete its analysis, the Authority deems that certain terms listed in the initial RO submission are unfair, unreasonable and/or discriminatory.
27. Consequently the Authority has decided to exercise its power in accordance with articles 3(c)(1) and 57 of the Law and article 5.3 of the Access Regulation to issue this Order to Batelco with respect to its RO submitted on 16 October 2014. In order to ensure that tariffs are based on forward-looking costs, the review of Batelco's 2014 RO submission will not rely exclusively on a single source of costing information. In previous reviews, the Authority based its analysis only on costing information provided by Batelco's regulatory accounts, completed with benchmark information. In the case of this review, the Authority has utilised costing information provided in Batelco's 2012, 2013 and 2014 regulatory accounts, benchmark information, in combination with information provided by Bottom-Up ('BU') cost models.
28. Other than as detailed in this Order, the Authority has used Top Down ("TD") costs as set out in the 2012, 2013 and 2014 Fully Allocated Cost and Long Run Incremental Cost regulatory accounts as well as the outputs of the fixed access network and fixed core network bottom-up cost models or BU costs to set tariffs.
29. The TD costs have been adjusted where appropriate. The regulatory accounts are prepared in accordance with Batelco's Accounting Procedures Manual ("APM") approved by the Authority. The APM sets the principles and methods according to which Batelco's regulatory accounts must be prepared. It provides some details on the accounting treatment of costs and their allocation.
30. In assessing whether charges are fair and reasonable and non-discriminatory, the Authority also considers the relative relationship between the prices of wholesale services and the equivalent retail services. To this end, the Authority has consistently applied the same competition-based analytical framework to analyse wholesale and retail tariffs in order to ensure that there is consistency between the charges applicable at various levels of the value chain. This framework looks at whether retail services can be replicated by OLOs which rely on wholesale regulated products and remain profitable, thereby ensuring that tariffs are compatible with the development of sustainable and effective competition. The objective of introducing wholesale products which give access to bottlenecks controlled by dominant operators is to enable competitors that do not control such bottlenecks to compete at the downstream level. This is a core premise of the wholesale regulation of dominant operators.
31. In setting terms which are fair and reasonable, the Authority must also take into account the principle of non-discrimination referred to in article 57(b) of the Law and article 6 of the Access Regulation.

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Q1. Please provide any comments you may have in relation to the Authority's premise of fair, reasonable and non-discriminatory terms, conditions and tariffs for regulated RO products and services.

SUMMARY OF SUBMISSIONS ON SECTION 1

32. This subsection summarises the submissions and cross-submissions received from stakeholders on section 1 (Introduction).
33. Responses have been ordered as follows:
- a. first, the Authority summarises responses from OLOs in alphabetical order (i.e. Kalaam, Mena, VIVA and Zain; then
 - b. the Authority summarises Batelco's response.

Submissions

34. In their responses to the RO consultation, both Kalaam and Mena agree with the Authority's premise of fair, reasonable and non-discriminatory terms, conditions and tariffs for regulated RO products and services. They do not make any further comment on this regard.
35. VIVA makes a number of comments in response to this question:
- a. VIVA finds that the changes proposed in the RO will be insufficient to achieve a fair, reasonable and non-discriminatory outcome as this cannot be guaranteed until Batelco is structurally separated.
 - b. VIVA also finds that the current RO does not have firm enough requirements to ensure that Batelco does not act in a non-discriminatory manner. VIVA believes that the only instance where the Authority addresses discriminatory behaviour is where it requires Batelco to follow "first come first served" policy in setting expected RFT dates for Service Requests and where it suggests an online database should be used for the pre-sale process that would be accessible by both OLOs and Batelco's retail arm. VIVA elaborates on various options to ensure that Batelco acts in a non-discriminatory manner, including setting up impermeable procedural barriers between Batelco's upstream and downstream business, the imposition of a non-discrimination obligation wherein the downstream business would engage with the upstream business through the same systems and processes as OLOs and effective monitoring of these commitments through mandatory reporting and information flows.
 - c. VIVA also disagrees with the suggestion in the RO that an enhanced WDC product will be an adequate substitute for passive access, either on price or non-price terms. VIVA further finds that the Authority should hold its previous view in the 2014 Domestic Data Connectivity Service determination where it stated that passive access would provide OLOs with greater flexibility, control and incentives to invest in their own facilities. However, VIVA notes that the Authority also then stated that a fit-

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for-purpose dark fibre product may allow the withdrawal of the existing duct access product from Batelco's RO, which is something VIVA disagrees with.

- d. VIVA believes that passive remedies will allow product and service innovation as OLOs will have complete control over how products and services are developed and brought to the market. VIVA states that passive access will also allow OLOs to develop their own FTTP networks, control customer experience and offer a differentiated product to that of Batelco. VIVA gives examples of other countries that have imposed passive access remedies, such as Spain, Portugal, France, etc.
- e. VIVA finds that a dark fibre service could be used by OLOs for various purposes such as offering new solutions to enterprise customers, better connecting OLOs to base-stations, supporting future mobile access technologies, etc.
- f. VIVA states that OLOs have rights under the Law to access ducts and that the Authority cannot prevent the OLOs from exercising these rights. VIVA therefore finds that denying such access would be contrary to the Law.
- g. According to VIVA, allowing passive access would be consistent with future government NBN policy. VIVA envisions that the NBN policy may include a single infrastructure provider ("SIP") that would provide wholesale-only, open access to the NBN to all service providers- Batelco and OLOs. VIVA believes that the SIP should not be controlled by Batelco. However, it finds that irrespective of the option that is finally chosen, the imposition of dark fibre access in the RO would not complicate or prevent a potential transition to an NBN with SIP. VIVA finds that it is inappropriate to defer enhancements to Batelco's RO in anticipation of a different policy environment.
- h. With regard to the service level requirements, VIVA finds that the proposed regime in the RO is an improvement over the current regime. However, it finds that this still remains behind international best-practice. VIVA compares the Service Credits in the RO with the levels suggested by Ofcom and believes that the RO falls short of these levels as it is not stringent enough. Furthermore, VIVA is concerned that the penalties in the proposed service level regime would not lead to Batelco suffering from any significant consequences from failing to meet the suggested service levels. VIVA suggests alterations to the regime which it feels will bring it up to international best practice. These are discussed in more detail later in their submission.
- i. Finally, VIVA finds that the proposed prices for WDC and WLA are very high, particularly in comparison to alternate solutions such as microwave links. VIVA therefore suggests that these prices be re-examined.

36. Zain also makes a number of comments in this section:

- a. Zain agrees that access tariffs are fair and reasonable if they are based on relevant, efficiently incurred economic costs calculated on a forward-looking incremental basis, including the regulated rate of return on capital employed.
- b. However, Zain states that although it agrees with the Authority's methodology, it does not have visibility of Batelco's costing elements and so, cannot comment if the costs are realistic and reflect industry available prices. Zain seeks assurance from the Authority that this is indeed the case. Zain also agrees with the approach to assess if charges are fair and reasonable by checking that the retail services can be replicated by OLOs which rely on wholesale regulated products and remain profitable. However,

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Zain believes that this should not be based on margins achieved but rather, on a cost-plus basis.

- c. Finally, Zain finds that the proposed WDC and WLA charges are higher than it would expect and provides its own estimate of the costs of providing these products based on the infrastructure it has in place at the moment. Zain suggests that the Authority review the costing elements underlying the proposed prices. Zain also believes that these solutions, which are supposed to be an alternative to dark fibre, should not have higher prices than Zain's own existing prices.
37. Batelco, on the other hand, does not agree that all remedies have to be cost based in all circumstances but rather, should be on fair and reasonable terms, as provided under Article 57 (e) and Article 6.1 Access Regulation 2005. Batelco states that neither of these articles mention "cost-based" requirement.
38. Batelco also makes the following comments in this section:
- a. Batelco finds fair and reasonable wholesale prices can range from retail minus to bottom up based LRIC, and specifying that charges should specifically be cost-based removes valuable flexibility in pricing access services.
 - b. Batelco urges the Authority to reconsider the costing calculations used to determine WDC and WLA prices as it will require large scale network expansions and upgrades; Batelco provides its own estimate of capital and operational expenditure as an input for these calculations.
 - c. Batelco also points out that the price reductions proposed in the RO would cause significant market shifts because of the difference between these and the retail prices. Batelco therefore suggests that the Authority apply a glide-path for these reductions, as it did for inbound rates to fixed and mobile, mobile termination rates and wholesale IPLC services.

Cross-submissions

39. Kalaam agrees with VIVA's comments on the importance of enforcing separation of Batelco's business, as it considers this is essential for healthy competition.
40. Mena rejects Batelco's proposals for how long it is given to implement the required changes. It considers Batelco's proposals are unjustified, given that the RO is long overdue. Mena states that it considers it important that Batelco publishes its pricing within 30 days and SLA within 60 days so that the OLOs can take the measures required.
41. VIVA provides a number of comments on Batelco's submission:
- a. Implications for Batelco: VIVA considers that the claims made by Batelco on the need for fundamental restructuring of its Wholesale, Network and Delivery and IT divisions are not true as Batelco already provides high capacity retail products in the enterprise market. VIVA makes comments on specific points raised by Batelco:
 - i. Implementation time: VIVA states that it cannot comment on the actual time proposed by Batelco because it was redacted in the public version but considers that WDC is not a complex product and given that Batelco already provides it at the retail level, it only requires higher capacity equipment to make it wholesale-ready.

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- ii. Implementation costs and impact on resources: VIVA notes Batelco's point that implementation of the changes set out in the draft Order would lead to it incurring additional costs. However, VIVA does not consider this to be justification for the Authority to back away from the proposed interventions because most costs will be recoverable from OLOs in MRCs and there is a proposed mark-up of 20% to BU prices to compensate Batelco for such costs (although VIVA asks for this mark-up to be further investigated to ensure it is reflective of the additional costs that will be incurred). VIVA also asserts that only costs that are incremental to those already incurred by Batelco for its downstream business should be charged to the OLOs. According to VIVA, Batelco has the resources and capabilities required to implement these changes, but uses these mainly to support its enterprise and other retail initiatives.
 - iii. Process going forward: VIVA considers it inappropriate for Batelco to engage in closed discussions with the Authority concerning the Authority's proposals as any new proposals should be subject to OLO scrutiny. Further, VIVA takes issue with Batelco's redactions in its submission as it finds it difficult to test the credibility of its proposals. It therefore urges the Authority to release more redacted information, subject to reasonable confidentiality restrictions.
 - b. Need for cost-based pricing: With regard to Batelco's point that a fair and reasonable price need not be cost-based, VIVA believes that cost-based pricing is necessary when the access product is non-replicable or close to it. VIVA considers that WDC and WLA products are non-replicable because OLOs cannot deploy duct infrastructure, and there is a lack of duct access or a dark fibre remedy.
 - c. Need for a glidepath: VIVA disagrees with Batelco's request for a glidepath because it considers that this would delay the availability of wholesale products at "fair and reasonable" prices and cushion Batelco from competition. It also urges the Authority to investigate Batelco's retail pricing in the enterprise market because it believes that it is not paying the same price for wholesale inputs as the price it charges OLOs, and so, cost-based pricing should not be delayed. VIVA further asserts that Batelco should be subject to meaningful non-discrimination obligations.
42. Zain provides comments on both Batelco's and VIVA's submissions:
- a. On Batelco's submission:
 - i. Need for cost-based pricing: Zain comments on Batelco's assertion that a fair and reasonable price need not be cost-based. Zain considers that cost recovery in the main component of any cost model in the telecoms industry and Zain explains that having a regulated access service price, set at cost, which is equal for all downstream entities, is a requirement to ensure effective and sustainable competition.
 - ii. Need for a glide-path: Zain also disagrees with Batelco's request for a glide-path because there are no counter-offers or asymmetries in the prices of regulated access services (which is when glide-paths are generally used). Furthermore, Zain considers that the reduction in access prices will have a direct impact on competition level at the retail level, specifically in the business segment.

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- b. On VIVA's submission: Zain agrees with a number of points raised by VIVA
- i. Importance of separation: Zain points out benefits of structural separation additional to those mentioned by VIVA, such as the creation of a level-playing field, allowing regulators to focus on the wholesale network to guarantee service quality, network reliability, etc.
 - ii. Importance of non-discriminatory terms: Zain believes that competition in the market for data connection services is currently impaired by an information asymmetry, wherein Batelco's internal systems are accessible to both its enterprise and wholesale arm. Zain therefore calls for their separation. Zain also believes that non-discrimination in pricing is necessary to ensure that Batelco does not exclude downstream rivals from markets.
 - iii. Importance of passive access: Zain reiterates its view that passive access, especially duct rental, is important and urges the Authority to take account of the views of the industry and allow OLOs to benefit from their legal right to take such access.
 - iv. Dark fibre is consistent with a single national network policy: Zain agrees with VIVA's perception that any national broadband network ("NBN") will be provided by a single infrastructure provider ("SIP") and that Batelco may be required to implement structural and functional separation to support the creation of this. Zain describes that in these cases the wholesale branch of the incumbent operator is separated in a way that non-discriminatory access is provided to its own retail division as well as to competing alternative retail operators. Zain then gives various examples of where this has taken place, e.g. New Zealand and Sweden, and their benefits of such a policy (such as vertically unlimited bandwidth, flexibility of interconnection, etc).
 - v. Zain considers that dark fibre is the only comparable alternative to duct access and expresses surprise that it has not been introduced despite it being set out as a remedy in the Authority's 2014 review of the market for domestic data connectivity services.
 - vi. Adequacy of the Service Level Regime and Pricing for WLA and WDC products: Zain agrees with VIVA's comments and refers to its own responses in the submission stage on these topics.

43. Batelco makes a number of comments in relation to VIVA's response:

- a. The RO "heading in the right direction" but not going far enough: Batelco appears to disagree strongly with this statement. Batelco presents a summary of the changes proposed in the RO, emphasising that these represent a material and significant impact.
- b. Time for implementation: Batelco considers that there is a presumption that final terms and major reference offer revisions can be made within 60 days as proposed in the RO (or less, as proposed by VIVA) because of previous experience with the launch of new products. However, Batelco believes that for remedies as significant as those in the RO, a more reasonable timescale should be allowed.
- c. Separation as a remedy: Batelco disagrees with VIVA's assertion that structural separation would provide advantages for competition in Bahrain. Batelco points to

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Ofcom's recent review of Openreach in the UK and its recommendations on the degree of separation, which stopped short of structural separation. Batelco also outlines the costs associated with separation, such as loss of benefits of access to capital and operational synergies from vertical integration, financial costs of separation, impact on incentives to invest further, etc.

- d. Importance of non-discriminatory terms:
- i. Batelco interprets VIVA's response to include measures akin to the Equivalence of Inputs ("Eol") test. Batelco considers that although non-discrimination is a prominent feature of the regulatory matrix, it does not consider Eol as a mandatory part of it. Batelco states other jurisdictions have established a trade-off between the precision of non-discrimination measure and wholesale price deregulation to encourage fibre roll-out. Batelco considers that this trade-off is absent in the current RO because of the downward pressure on wholesale prices. Batelco therefore believes that additional non-discrimination measures would have to be co-ordinated with NTP4, taking into account the costs and benefits of doing so.
 - ii. Noting that the proposed service descriptions with the new service levels and service credits will take precedence over the main terms and conditions, Batelco believes that the effect of this proposed change would apply to deregulated wholesale services supplied to OLOs as well.
 - iii. With regard to VIVA's assertion that there should be further compliance reporting, Batelco points out that it is already subject to additional reporting requirements as part of the current WLA and Bitstream service. It further considers that the scope for reporting for WLA and WDC has increased further under the draft RO.
- e. Passive access as a remedy: Batelco considers that the additional proposed wholesale remedies are proportionate and adequate, and there is no need for additional passive access remedies. It also points out that duct rental and a "bolt on" service deploying fibre are provided on a significant scale in business and Government areas. Batelco further asserts that the operational challenges and cost impact of dark fibre deployment, previously discussed with the Authority, still remain true.
- f. Adequacy of the Service Level Regime: Batelco disagrees with VIVA's comments that the current Service Level Regime is not strict enough and leaves room for Batelco to "take a hit" for service credits rather than solve the problem. Batelco argues that VIVA has ignored that there are additional regulation sanctions which the Authority could apply if Batelco was found to be "taking a hit" and therefore acting anti-competitively. Batelco also points out that there is no precedent in GCC and Arab countries of a service level and credit regime as per the draft RO.
- g. Pricing for WLA and WDC products: Batelco dismisses VIVA's comparison of WLA and WDC prices with fixed microwave link fees. Batelco asserts that as fibre and microwave links are not in the same market, making a comparison of the two is misleading. Batelco further considers that there is more demand uncertainty relating to fibre demand and so, more investment uncertainty (which is reflected in the prices). Batelco states that its costs include a proportion of non-network costs, equipment

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costs and network element costs whereas VIVA's microwave link fees only cover regulatory spectrum fees.

THE AUTHORITY'S FINAL CONCLUSIONS ON SECTION 1

44. In this subsection, the Authority provides its final views and conclusions with regard to section 1 (Introduction).
45. The Authority has considered the responses received from the operators and notes that several of them relate to later sections of the draft Order reasoning, and indeed are repeated by other operators in the relevant sections. The Authority therefore addresses concerns raised in such responses in the relevant sections.
46. On comments relating to the premise of fair, reasonable and non-discriminatory terms, conditions and tariffs for regulated RO products and services, the Authority notes that, with the exception of Batelco, operators have largely agreed with the views set in the draft Order.
47. The Authority therefore maintains that terms, conditions and tariffs put forth in the final RO Order are fair, reasonable and non-discriminatory.
48. The Authority notes that in certain places, OLOs have stated that the draft Order was not sufficient to ensure fair and effective competition downstream, while Batelco claimed that it placed too many obligations on it. Whilst the Authority responds to individual points in response to comments on later questions, it considers that overall, the draft Order placed an appropriate level of obligations on Batelco and will, when implemented with final amendments, contribute to the development of effective downstream competition for relevant services and indeed, towards the Government's policy objectives as set out in the Government's Fourth National Telecoms Plan (NTP4).²
49. In addition, the Authority has noted the comments of access seekers regarding the importance of passive access products such as duct access and dark fibre. However, for this RO review, the Authority does not consider it appropriate for the regulated terms of duct access to be reviewed and enhanced, nor for a dark fibre to be introduced. Rather, it believes that competition in downstream markets can be best supported at the present time through the effective delivery of the WLA and WDC products on a fair, reasonable and non-discriminatory basis. The Authority recognises that the implementation of the requirements of this RO Order will represent a development in access-based competition in the Kingdom and so considers it is appropriate to focus at this time on the implementation of these matters.
50. Furthermore, in reaching its decision on this matter, the Authority has also been guided by the publication of NTP4. This plan points to the establishment of a single NBN infrastructure provider in the Kingdom. For instance, in paragraph 20, NTP4 states that the

² The Fourth National Telecommunications Plan, 22 May 2016. Available at http://www.tra.org.bh/media/document/NTP4_EnglishTranslation_May20161.pdf

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“Government considers that a single NBN infrastructure to deliver ultra-fast broadband products and services is preferable and efficient for a country of the size, population distribution and topology of Bahrain”. To this end, it has called for this NBN to be established through the functional separation of Batelco; paragraph 20 goes on to state “This single network will be owned by a separate legal entity, which shall be legally and functionally separated from the Incumbent Operator, Bahrain Telecommunications Company (Batelco), which will supply wholesale products and services to all licensed operators in the Kingdom on a non-discriminatory basis, and it will be awarded the right to deploy the NBN and to supply these wholesale products and services.” Paragraph 24 (b) states that the new, functionally separate entity will have “exclusive right and responsibility to established (sic), operate and maintain the NBN and provide offer wholesale products and services to licensed operators”.

51. The Authority considers it important that the RO is in line with the policy direction set out in NTP4. NTP4 does not specify that the functionally separate entity should be required to provide duct access to other licensees to deploy fibre cables, as seen in the paragraphs highlighted above. However, to do so could result in the development of multiple fibre infrastructures that may go against the Government’s stated objective of creating a single NBN infrastructure.
52. The Authority acknowledges, that until such time as the new entity tasked with the rollout of the NBN is incorporated and NBN-based wholesale services are offered to all licensed operators on an equivalence-of-input basis, some transitional arrangements should be put in place in order to satisfy the claims made by OLOs that some of their duct access requests are fundamental to their business plans. These arrangements must include the continued access to Batelco’s ducts on regulated terms for those access requests made by OLOs which are deemed critical for addressing the OLOs’ business and operational requirements.
53. While NTP4 is silent as to the types of wholesale products and services that the new functionally separate entity would be required to offer to other operators, and while there is no reason to believe that the introduction of a dark fibre service could conflict with the objective of establishing a single NBN infrastructure, the Authority nonetheless considers that the introduction of a regulated dark fibre product is not justified at the present moment. The Authority’s decision not to mandate the introduction of dark fibre as part of this RO review is motivated by a number of factors, including:
 - a. the continued availability of the regulated duct access rental service;
 - b. the introduction of the regulated active Wholesale Data Connection (WDC) product which can be considered functionally equivalent to dark fibre; and
 - c. the regulatory cost of developing and implementing a regulated dark fibre service.
54. Finally, if deemed necessary should circumstances change, the Authority may decide to re-assess the need for a regulated dark fibre service at a later stage.

2 General amendments to the RO

55. In this section, the Authority proposes several general amendments to be made to Batelco's RO.

CONSULTATION TEXT

56. In its previous reviews of Batelco's RO, the Authority had identified several changes that would enhance the RO terms and conditions. The Authority is of the view that the following changes will enhance the transparency the RO terms and conditions of the fairness and reasonableness of the RO terms and conditions as per Article 57 of the Telecommunications Law.

2.1 Publication of RO changes

57. The Authority considers that Batelco should make available 'marked-up' versions of the RO schedule subject to changes, along with 'unmarked versions of the same RO schedule. Such an approach will enable OLOs to easily and quickly identify all the changes made to the RO schedules without the need to carefully compare amended RO schedules against previous versions.
58. The Authority also considers that the 'marked-up' versions of RO schedules should remain available on Batelco website for a minimum of three (3) calendar months.
59. Furthermore, the Authority considers that Batelco should notify OLOs via email of any changes to be made to the RO. This would allow OLOs to be aware of any such changes before they are published on Batelco's website. On the publication day of RO schedules, Batelco should also notify OLOs via email of such publication.
60. For all the above reasons, the Authority considers that Batelco shall comply with the following:
- a. Within 7 calendar days following the date of issuance of this Batelco Order, Batelco shall notify via email all its wholesale customers copying the Authority of the new ordered price terms and the new ordered non-price-terms, including their effective implementation date which shall not be later than 60 calendar days following issuance of this Batelco Order.
 - b. Within 60 calendar days from the date of issuance of this Batelco Order:
 - i. Batelco shall reflect the ordered price terms and ordered non-price terms in its RO by amending the relevant RO schedules;
 - ii. Batelco shall, before the effective implementation date, make available on its website 'marked-up' and 'unmarked' versions of the RO; and
 - iii. Batelco shall promptly thereafter notify via email all its wholesale customers copying the Authority of the RO publication.

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- c. Batelco shall ensure that the ‘marked-up’ versions of RO schedules reflecting ordered price terms and ordered non-price terms remain available on its website for a minimum period of three (3) calendar months following the publication of the RO.

2.2 Revision history included in all RO schedules

61. The Authority is concerned that Batelco does not include any information on the history of the different versions of the RO schedules available on Batelco’s website. This information is important for OLOs and the Authority to have an overview of the major changes made to RO schedules.
62. The Authority therefore orders Batelco to:
 - a. introduce an additional section at the beginning of each RO schedule called ‘Revision history’. The ‘Revision history’ page should include a table with three columns:
 - i. a first column with header “Date” which provides the date of the amendment;
 - ii. a second column with header “Amendment” which provides the title of the amendment made to the RO schedule; and
 - iii. a third column with header “Description of amendment” which provides a summary description of the amendment made to the RO schedule, its location within the schedule (i.e. page number), and the context that led to such amendment (e.g. RO approval, RO Order, Retail Tariffs Notification etc.)
 - b. maintain and update the “Revision history” table included in each RO schedule.

2.3 Improvements to RO Schedule 3

63. The Authority considers that the RO Schedule 3 (CHARGES) should be the only RO schedule that contains price terms. The duplication of RO service charges in the Service Descriptions and the Schedule 3 is confusing and unnecessary and can potentially lead to errors when updates are required. For instance, the Authority has come across cases where the charges included in the Service Description were not updated. Such a situation creates confusion as to which charges were correct. Furthermore, the Authority considers that all references to charges in the service descriptions should be made using a code system, which would facilitate cross-reference to the price list of Schedule 3.
64. Furthermore, the RO Schedule 3 contains for wholesale products and services which are price-regulated, as well as charges for wholesale products and services that are unregulated. To prevent misinterpretation, the Authority considers that a clear distinction should be made between regulated and unregulated charges.
65. Finally, to improve the RO transparency, the Authority considers that any ordered or approved charges should be inserted in RO Schedule 3 without replacing previously ordered or approved charges. For example, this may be done by indicating the period for which the charges apply or used to apply.
66. For all the above reasons, the Authority therefore orders Batelco to amend its RO as follow:
 - a. RO Schedule 3 as the only source of price term information:

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- i. Batelco is ordered to remove all pricing elements (i.e. monetary terms) from all RO schedules other than Schedule 3. Batelco is required to maintain all pricing elements only in RO Schedule 3.
 - ii. Batelco is ordered to ensure that all pricing elements in Schedule 3 are correctly described and explained (i.e. unit of the charges and applicable limitations, if any).
 - iii. Batelco is ordered to ensure that the price implication for each service element in the service descriptions are referenced by a code which allows unambiguous cross-reference to the price list of Schedule 3.
- b. **Distinction of regulated vs. non-regulated charges in RO Schedule 3:** Batelco is ordered to indicate which wholesale products and services in its RO Schedule 3 are price-regulated and which are not, either by virtue of re-organising the RO Schedule 3 in different sections, or by virtue of including a specific mention before the corresponding charges.
- c. **Historic regulated charges in RO Schedule 3:** Batelco is ordered to keep all previously ordered or approved charges in RO Schedule 3 and to indicate the period during which such charges were applicable. For the avoidance of doubt, this requirement is not retro-active.

2.4 Availability of RO forms

67. The Authority considers that all the different forms which Batelco requires OLOs to use in the context of the RO are integral parts of the RO and should therefore be available for download on the RO section of its website. The forms which should be available should at least cover the following activities, if applicable:
- a. Service Request Form i.e. forms for ordering, modifying or cancelling a product or service;
 - b. Submission of forecast information;
 - c. Report of a fault; and
 - d. Claim of an unpaid service rebate.
68. The availability of the above forms in Batelco's website will improve the transparency of the different RO processes. This also ensures that the communication between OLOs and Batelco is somehow standardised.
69. The Authority therefore orders Batelco to make available on the RO section of its website all RO forms used for RO-related processes.

Q2. Do you agree with the Authority's proposed general amendments to be made to Batelco's RO? Please explain your position. If you disagree, please propose an alternative.

SUMMARY OF SUBMISSIONS ON SECTION 2

70. In this subsection, the Authority summarises the submissions and cross-submissions received from stakeholders on section 2 (General amendments to the RO).

Submissions

71. Kalaam and Mena agree with the Authority's proposed general amendments to the RO.
72. Zain too agrees with the proposed amendments and finds them on par with the transparency objective the Authority wished to follow in the draft RO order.
73. VIVA generally agrees with the changes proposed to Schedule 3. However, VIVA believes that a 60 calendar day period for Batelco to implement changes to the RO is unjustified as it would mean that OLOs will remain reliant on the old regime till September 2016. Instead, VIVA suggests that Batelco should have no more than 30 calendar days to implement the changes.
74. Finally, Batelco finds that the requirements on document management imposed in the Draft RO Order would create an unnecessary administrative burden on it. For instance, Batelco does not see the benefit to the OLOs of the requirement on Batelco to insert any ordered or approved changes in RO Schedule 3 without replacing previously ordered or approved changes. Batelco argues that no comparable measures have been imposed on VIVA and Zain's ROs.

Cross-submissions

75. Kalaam, Mena and VIVA do not comment on the other operators' responses.
76. Zain believes that the proposals will neutralise the ambiguity in the RO and therefore finds that, contrary to Batelco's comments, these amendments should be made.
77. Batelco, on the other hand, disagrees with Zain's comment that there is ambiguity on the prices and services currently in the RO as, according to Batelco, the OLOs can look through the previous determinations and see the rationale behind the price and non-price changes. It re-emphasises that it would need [~~3~~] months to implement the draft ordered changes on its RO because of the impact on networks, costing, billing, etc.

THE AUTHORITY'S FINAL CONCLUSIONS ON SECTION 2

78. In this subsection, the Authority provides its final views and conclusions with regard to section 2 (General amendments to the RO).
79. The Authority notes that the operators largely agree with the general amendments proposed.

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Implementation timeframe

80. The primary concern raised by operators relates to the implementation timeframe; Batelco raises the concern, here and consistently in response to several of the questions, about the implementation timetable suggested in the draft Order.
81. The Authority is not convinced that the alternate timescale suggested by Batelco is credible. However, recognising that there are significant changes being ordered in certain aspects of the process, the Authority has concluded that it would be reasonable to require Batelco to gradually meet some of the requirements in this Order.
82. Therefore, in terms of network coverage, Batelco is hereby ordered to commit to the following implementation plan:
- a. Batelco shall launch the WDC product within 60 calendar days of the issuance of the final Order³ and shall commit to a WDC coverage of 60% within 6 months, 80% within 12 months and 100% within 18 months of the issuance of the final Order. The percentage is to be understood as the number of locations with WDC-capable point-to-point fibre access lines over the total number of locations with point-to-point fibre access lines.
 - b. As part of its RO, Batelco shall provide a table of all service areas of Bahrain and indicate for each service area, if the WDC product is currently being supported, and if not, when it is planned to be supported. As part such table, Batelco shall also provide the total number of point-to-point fibre access lines that have been deployed in each service area, as well as the number of active lines (retail and wholesale). In an annex to the table, Batelco shall also provide a geographic map of Bahrain showing the boundaries of each service area. Batelco shall ensure that such table and associated geographic map remains updated at all times.
 - c. If an OLO requests WDC Connections in a service area where the WDC product is not yet supported, Batelco shall be under the obligation to extend support of the WDC product to that service area before the date set in its RO (see above paragraph) only if the requested WDC Connections represent a combined capacity of at least 2 Gbps. In such case, Batelco shall endeavour to deliver the WDC Connections as early as possible and before a Maximum Delivery Time of 60 working days (i.e. the same maximum delivery time that is applicable for cases where new ducts must first be installed before deploying a new fibre access cable).
83. In later questions, the Authority sets out any other areas where Batelco's compliance will be staggered. In the absence of any other decision on this point, the original timeframe set out in the draft Order shall apply. For the avoidance of doubt, these are detailed below.

³ At the end of April 2015, Batelco indicated that nine (9) of its service nodes were equipped with DWDM core transmission equipment. For the list of such service areas, please refer to paragraph 318 in page 91.

Final Order on the Reference Offer of Batelco

Annex A – Order Legal Basis and Reasoning

Publication of RO changes

84. Batelco shall make available ‘marked-up’ versions of the RO schedule subject to changes, along with ‘unmarked versions of the same RO schedule. Such an approach will enable OLOs to easily and quickly identify all the changes made to the RO schedules without the need to carefully compare amended RO schedules against previous versions.
85. The ‘marked-up’ versions of RO schedules shall remain available on Batelco’s website for a minimum of three (3) calendar months.
86. Batelco shall notify OLOs via email of any changes to be made to the RO. This will allow OLOs to be aware of any such changes before they are published on Batelco’s website. On the publication day of RO schedules, Batelco shall also notify OLOs via email of such publication.
87. Batelco is also ordered to comply with the following:
 - a. Within 7 calendar days following the date of issuance of this Batelco Order, Batelco shall notify via email all its wholesale customers copying the Authority of the new ordered price terms and the new ordered non-price-terms, including their effective implementation date which shall not be later than 60 calendar days following issuance of this Batelco Order.
 - b. Within 60 calendar days from the date of issuance of this Batelco Order:
 - i. Batelco shall reflect the ordered price terms and ordered non-price terms in its RO by amending the relevant RO schedules;
 - ii. Batelco shall, before the effective implementation date, make available on its website ‘marked-up’ and ‘unmarked’ versions of the RO; and
 - iii. Batelco shall promptly thereafter notify via email all its wholesale customers copying the Authority of the RO publication.
 - c. Batelco shall ensure that the ‘marked-up’ versions of RO schedules reflecting ordered price terms and ordered non-price terms remain available on its website for a minimum period of three (3) calendar months following the publication of the RO.

Revision history included in all RO schedules

88. The Authority orders Batelco to:
 - a. introduce an additional section at the beginning of each RO schedule called ‘Revision history’. The ‘Revision history’ page should include a table with three columns:
 - i. a first column with header “Date” which provides the date of the amendment;
 - ii. a second column with header “Amendment” which provides the title of the amendment made to the RO schedule; and
 - iii. a third column with header “Description of amendment” which provides a summary description of the amendment made to the RO schedule, its location within the schedule (i.e. page number), and the context that led to such amendment (e.g. RO approval, RO Order, Retail Tariffs Notification etc.)
 - b. maintain and update the “Revision history” table included in each RO schedule.

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Annex A – Order Legal Basis and Reasoning

Improvements to RO Schedule 3

89. The Authority orders Batelco to amend its RO as follows:
- a. RO Schedule 3 as the only source of price term information:
 - i. Batelco is ordered to remove all pricing elements (i.e. monetary terms) from all RO schedules other than Schedule 3. Batelco is required to maintain all pricing elements only in RO Schedule 3.
 - ii. Batelco is ordered to ensure that all pricing elements in Schedule 3 are correctly described and explained (i.e. unit of the charges and applicable limitations, if any).
 - iii. Batelco is ordered to ensure that the price implication for each service element in the service descriptions are referenced by a code which allows unambiguous cross-reference to the price list of Schedule 3.
 - b. **Distinction of regulated vs. non-regulated charges in RO Schedule 3:** Batelco is ordered to indicate which wholesale products and services in its RO Schedule 3 are price-regulated and which are not, either by virtue of re-organising the RO Schedule 3 in different sections, or by virtue of including a specific mention before the corresponding charges.
 - c. **Historic regulated charges in RO Schedule 3:** Batelco is ordered to keep all previously ordered or approved charges in RO Schedule 3 and to indicate the period during which such charges were applicable. For the avoidance of doubt, this requirement is not retro-active.

Availability of RO forms

90. The Authority orders Batelco to make available on the RO section of its website all RO forms used for RO-related processes.

3 Framework for defining Service Levels

91. In the following section, the Authority indicates which regulated wholesale access products are to be subject to Service Levels. The Authority also proposes a framework for such Service Levels.

CONSULTATION TEXT

3.1 RO Schedules to include Service Level Terms and Penalties

92. The Authority considers that Service Levels including Service Level Terms and Service Level Penalties should be integral to the RO Schedules for the services associated with the following wholesale products:⁴
- a. Wholesale Local Access (“WLA”) and Wholesale Data Connection (“WDC”), which are described in section 5 (see page 85); and
 - b. Bitstream, which is described in section 7 (see page 182).
93. The potential range of services associated with the above products that the Authority considers the Service Levels should address includes:
- a. New Connection – provide a new connection as requested by the OLO;
 - b. Transfer – transfer an existing connection from one operator to another operator;
 - c. Upgrade and Downgrade – upgrade or downgrade the speed of an existing connection;
 - d. Hot and Cold Migration – change the end user address of an existing connection, requiring disconnection and reconnection of the connection end point, including “hot migration” which is when the connection is not disrupted and “cold migration” which is when the connection can be disrupted;
 - e. Reconfiguration – reconfigure technical parameters of an existing connection, such as adding a VLAN; and
 - f. Cancellation – OLO requests the relinquishment of an existing connection.
94. The above list of services is indicative of the range services that are to be covered by the Service Level Terms and Penalties. The final list may include other services, and the list may differ between (a) the WLA and WDC products and (b) the Bitstream product. The Authority expects that the complete list of services will be specified in the service description of each product.

⁴ While Batelco use the term “service” in its RO to refer to regulated remedies (e.g. Bitstream service), the Authority considers that instead, it is more appropriate to use the term “product” (i.e. Bitstream product) where “services” should be used for activities associated with such product (see also paragraph 93).

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Annex A – Order Legal Basis and Reasoning

95. Notwithstanding any differences between the services associated with the products, the Authority considers that framework for defining Service Levels should apply to these services and any others. However, the Authority considers that the specific terms and penalties for these Service Levels are likely to differ between these services and products. These Service Levels in relation to the products (i.e. Wholesale Local Access/Wholesale Data Connection and Bitstream) are set out in sections 5 and 7 of this annex.
96. The Service Levels to be included in the RO will require Batelco to supply the relevant wholesale products in accordance with specified terms. Failure to meet certain Service Level Terms will entitle the concerned wholesale customer to receive a level of monetary compensation defined by the Service Level Penalties.

Rationale of ordering the addition of Service Levels to the RO

97. The reasons for revising the Service Levels applicable to the WLA product and the reasons for introducing Service Levels for WDC and Bitstream products are all developed, in detail, in the Domestic Data Connectivity Market Review and the Broadband Market Review, respectively. For convenience, the relevant sections for these market reviews have been included in Annex B of this document.
98. In summary, these reviews concluded that prescribed Services Levels are required to promote sustainable and effective competition in the relevant downstream, retail markets. In particular, the purpose of specifying the Service Level terms and penalties are to:
- a. provide the Service Levels that Batelco is expected to maintain in the supply of the relevant regulated wholesale products; and
 - b. provide Batelco with an economic incentive to maintain these Service Levels.
99. The Authority has introduced Service Levels in RO Orders in the past. Service Level Terms and Penalties have been introduced in the Local Loop Unbundling Order of 2011⁵ ('LLU Order') and for the WLA.⁶ These are examples where the Authority has required Batelco to introduce Service Level Terms for certain regulated wholesale products, and they highlight a reason for incorporating Service Levels in the RO Order is the absence of Batelco voluntarily providing such Service Levels.
100. The Authority considers that the service descriptions of the relevant regulated wholesale products currently do not provide Batelco with the incentive to deliver these products promptly, efficiently, and at an acceptable level of quality. There are therefore limited safeguards in the RO to mitigate Batelco's ability to:
- a. discriminate between an OLO's and Batelco's retail business unit, when provisioning regulated wholesale products, which are in competition in downstream retail markets; and
 - b. restrict competition by supplying poor quality wholesale products to OLOs.

⁵ Local Loop Unbundling Reference Offer Order issued on 5 May 2011 (ref: MCD/05/11/055).

⁶ The WLA was launched by Batelco on 27 November 2012.

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Annex A – Order Legal Basis and Reasoning

101. In addition to introducing Service Levels for WLA, WDC and Bitstream, the Authority also considered whether to introduce Service Levels for Business Wholesale DSL (“**WDSL**”). The Authority has decided, however, not to do so because Business WDSL is in the decline phase of its product life cycle. The volume of the Business WDSL subscriptions has been declining over the last 2-3 years as wholesale customers switch to Bitstream. This decline of Business WDSL raises the risk that ordering the introduction of Service Levels would have the following consequences:
- a. The regulatory cost of imposing Service Levels on Business WDSL may be greater than any market benefits, which implies that the introduction of Service Levels in this case may not promote an efficient market outcome. This follows from the fact that the decline in Business WDSL would limit the time horizon over which the cost of introducing Service Levels could be recovered. This ultimately would be disproportionate.
 - b. Should regulated Service Levels be imposed on Business WDSL then these would need to be carefully calibrated with respect to the Service Levels for Bitstream, as these products are substitutes and OLOs are transitioning from Business WDSL to Bitstream. Regulating both sets of Service Levels may either speed-up or slow-down the rate of transition compared with the rate of transition that may be efficient. The Authority therefore considers that the risk of such an unintended, detrimental consequence is best managed by introducing Service Levels for Bitstream and not for Business WDSL. That is, Bitstream would become the *anchor product*, whereby regulating the Service Levels of Bitstream would indirectly influence Batelco’s incentive to maintain the quality of service for Business WDSL, while allowing Batelco a degree of flexibility to determine an appropriate terms of the Service Levels. If the quality of service for Business WDSL is not satisfactory, then OLOs have the option to migrate from the Business WDSL product to the Bitstream product.
102. In addition, however, to exercising forbearance in relation to introducing Services Levels for Business WDSL, the Authority will closely review the QoS reports submitted by Batelco under the QoS Regulation obligations. If required by the evidence, the Authority will investigate the effect of any differences in quality indicator measurements between Batelco’s retail DSL services and the WDSL services on competition.
103. Finally, for the avoidance of doubt, the Authority wishes to clarify that the introduction of Service Level Terms and Service Level Penalties should not be construed as a limitation of the Authority’s right to take remedial action in accordance with the provisions of the Law in the event of a material breach by Batelco of the Law or its licenses.

Q3. Do you agree with the Authority’s proposal to mandate the introduction of Service Levels for the Wholesale Data Connection and the Bitstream products and services? Please explain and justify your position.

3.2 Service Level framework

104. In this section, the Authority sets out the overarching framework for the Service Level Terms and Service Level Penalties as applied to Bitstream and Wholesale Data Connection. The framework comprises high-level descriptions of the operational processes associated with product delivery, maintaining service quality, as well as fault management and restoration. These descriptions are used to identify the key parameters that are to be regulated by that Service Levels Terms and Service Level Penalties. The parameter values are then populated in sections 5 and 7 of this annex for Wholesale Data Connection and Bitstream, respectively.

105. The Authority understands that these descriptions provided here may need to be amended to accommodate the specificities of a given regulated access product. In such circumstance, stakeholders should propose such amendments with supporting evidence. Specifically, these processes are:

- a. service request process;
- b. service delivery process;
- c. service quality management process; and
- d. fault management process.

106. Each of these processes are considered in turn in the following subsections.

3.2.1 Service request process

107. The service request process consists of two Service Levels, which are:

- a. Service Request Acknowledgement; and
- b. Service Request Confirmation.

108. Both Service Levels are described and defined in the following table with the associated deliverables, actual measures of performance, Service Level Terms and Service Level Penalties.

Figure 3: Service Levels for the service request process (defined terms are capitalized and italicized)

	Service Request Acknowledgement	Service Request Confirmation
Deliverable	The OLO receives a notice from Batelco acknowledging receipt of the OLO's <i>Service Request</i> .	The OLO receives a notice from Batelco informing that Batelco either accepts a <i>Service Request</i> or rejects it because insufficient or incorrect information is provided by the OLO in the <i>Service Request Form</i> . Absent any notice within the <i>Maximum Time for Service Request Confirmation</i> , the <i>Service Request</i> is deemed to have been accepted by Batelco.

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	Service Request Acknowledgement	Service Request Confirmation
Actual measure of performance	<p><i>Actual Time for Service Request Acknowledgement</i> means the time period between the following events:</p> <ol style="list-style-type: none"> a. the OLO sends a <i>Service Request</i> to Batelco, and b. the OLO receives a notice from Batelco acknowledging that the <i>Service Request</i> has been received. 	<p><i>Actual Time for Service Request Confirmation</i> means the time period between the following events:</p> <ol style="list-style-type: none"> a. the OLO receives a notice from Batelco acknowledging that the <i>Service Request</i> has been received.; and b. one of the following three events, whichever happens the soonest: <ol style="list-style-type: none"> i. the OLO receives a notice from Batelco indicating that the information provided by the OLO in the <i>Service Request Form</i> is incorrect and/or insufficient to progress the <i>Service Request</i> to the service delivery process; or ii. <i>Accepted Service Request (explicit acceptance from Batelco)</i> which happens when the OLO receives a notice from Batelco confirming that the information provided by the OLO in the <i>Service Request Form</i> is correct and sufficient to progress the <i>Service Request</i> to the service delivery process; or iii. <i>Accepted Service Request (deemed acceptance from Batelco)</i> which happens at the end of the <i>Maximum Time for Service Request Confirmation</i>, where absent formal notice from Batelco, the <i>Service Request</i> is deemed to have been accepted by Batelco and thus progressed to the service delivery process.
Service Level Terms	<p><i>Maximum Time for Service Request Acknowledgment</i> means the maximum <i>Actual Time for Service Request Acknowledgement</i> that Batelco should meet at all times.</p>	<p><i>Maximum Time for Service Request Confirmation</i> means the maximum <i>Actual Time for Service Request Confirmation</i> after which, absent formal notice from Batelco, the <i>Service Request</i> is deemed to have been accepted by Batelco.</p>
Service Level Penalties	<p><i>Penalties for Service Request Acknowledgment</i> The Authority does not presently propose to define any penalties for failure to meet the <i>Maximum Time for Service Request Acknowledgment</i>. When the OLO does not get an acknowledgment notice from Batelco within the <i>Maximum Time for Service Request Acknowledgment</i>, the OLO should follow up/escalate its request directly with its Batelco wholesale account manager.</p>	<p><i>Penalties for Service Request Confirmation</i> The Authority does not presently propose to define any penalties for Service Request Confirmation.</p>

Source: the Authority

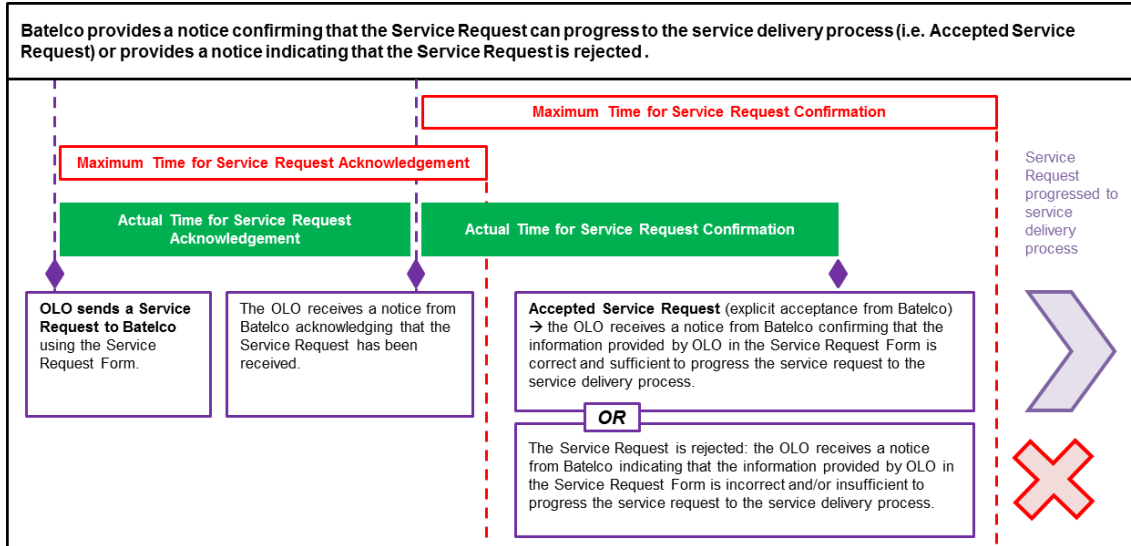
109. The following diagrams illustrates the relationship between the two Service Levels set out in the above table, with the Service Level Terms and deliverables along the service request process. Two scenarios are represented:

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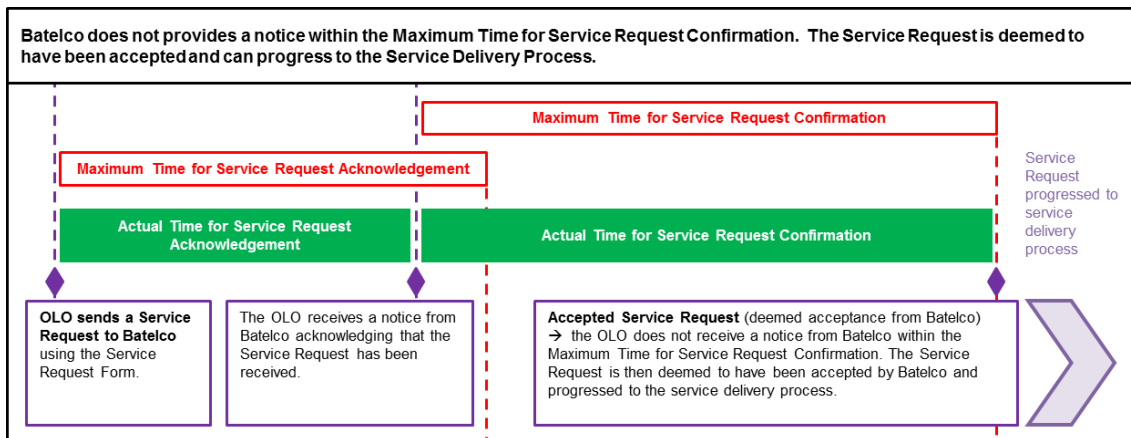
- a. scenario A1: the Service Request is explicitly accepted (or rejected) by Batelco and;
- b. scenario A2: the Service Request is deemed to have been accepted by Batelco.

Figure 4: The Authority’s illustration of the service request process

Scenario A1 (service request process)



Scenario A2 (service request process)



Source: the Authority

110. The above diagram show that the service request process starts from the time when an OLO sends a Service Request Form to Batelco and it ends at one of the following event, whichever happens the soonest:

- a. the OLO receives confirmation from Batelco that the Service Request is either accepted or rejected by Batelco in accordance with the specific requirements set by the RO, if any; or
- b. the end of the Maximum Time for Service Request Confirmation.

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111. The service request process described above follows the below principles:

- a. All *Service Requests* should be made by OLOs using the *Service Request Form* provided in the annex of the service description.
- b. The actual time within which the OLO receives a *Service Request Acknowledgement* from Batelco (i.e. *Actual Time for Service Request Acknowledgement*) starts when the OLO sends Batelco a *Service Request* in accordance with processes set out in the RO. The OLO is then to receive an acknowledgement notice within the *Maximum Time for Service Request Acknowledgement*, as described in the above diagrams.
- c. Absent receipt of an acknowledgement notice from Batelco within the *Maximum Time for Service Request Acknowledgement*, the OLO should follow up its *Service Request* directly with its Batelco wholesale account manager. This escalation process should be documented in the RO.
- d. Following the OLO's receipt of the *Service Request Acknowledgment* notice, the OLO is to then receive from Batelco confirmation that the information provided by OLO in the *Service Request Form* is correct and sufficient to progress the *Service Request* to the service delivery process (i.e. "*Accepted Service Request*"). See scenario A1 (first diagram above).
- e. At the contrary, if the information contained in the *Service Request Form* is insufficient or incorrect to progress the *Service Request* to the service delivery process, then Batelco notifies the OLO that the *Service Request* is rejected and provides in such notice, the reasons for the rejection. The exhaustive list of potential reasons for which Batelco may reject a *Service Request* should be documented in the relevant RO schedule. See Scenario A1 (first diagram above).
- f. If the OLO does not receive a confirmation from Batelco within the *Maximum Time for Service Request Confirmation*, then the *Service Request* is deemed to have been accepted by Batelco. See scenario A2 (second diagram above).
- g. If a *Service Request* is rejected more than twice, then Batelco is to assist the OLO to complete a valid *Service Request Form*.

Q4. Do you agree with the Authority's proposed definition and description of the service request process? Please explain and justify your position.

3.2.2 Service delivery process

112. The service delivery process consists of two *Service Levels*, which are:

- a. Notification of Expected RFT and RFS Dates; and
- b. *Service Level* for RFS Date.

113. Both *Service Levels* are described in the following table with the with the associated deliverables, actual measures of performance, *Service Level Terms* and *Service Level Penalties*.

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Figure 5: Service Levels defined for the service delivery process (defined terms are capitalized and italicized)

Service Level	Notification of Expected RFT and RFS Dates	Service Level for RFS Date
<p>Deliverable</p>	<p>OLO receives a notice from Batelco of the dates that Batelco expects the connection to be Ready For Test (“RFT”) and then Ready For Service (“RFS”).</p> <p>In such notice, Batelco also indicates the <i>Maximum RFS Date</i>, the <i>Maximum Delivery Time</i> and the <i>Maximum Delivery Date</i>.</p> <p>The <i>Maximum RFS Date</i> must be set no later than the <i>Maximum Delivery Date</i>.</p>	<p>OLO receives a <i>RFS Certificate</i> from Batelco confirming that:</p> <ol style="list-style-type: none"> a. the connection has been provisioned and tested by Batelco; b. the connection is properly registered in all of Batelco’s systems (e.g. OSS/BSS, service level monitoring platform, fault reporting system etc.); c. the connection has been validated by the OLO (or deemed to have been validated by the OLO if the Maximum Validation Time has lapsed); and d. the connection is ready for service and the OLO will be invoiced accordingly.
<p>Actual measure of performance</p>	<p><i>Actual Time for Notification of Expected RFT and RFS Dates</i></p> <p>means the time period between the following events:</p> <ol style="list-style-type: none"> a. <i>Accepted Service Request</i>, and b. the OLO receives a notice from Batelco indicating the <i>Expected RFT Date</i>, the <i>Expected RFS Date</i>; the <i>Maximum Delivery Time</i>; and the <i>Maximum Delivery Date</i>. 	<p><i>Actual Delivery Time</i></p> <p>means the time period between the following events:</p> <ol style="list-style-type: none"> a. <i>Accepted Service Request</i>, and b. <i>Actual RFS Date</i> which happens when the OLO receives the <i>RFS Certificate</i> from Batelco. <p>Batelco may only issue the <i>RFS Certificate</i> to the OLO after one of the following events, whichever happens the soonest:</p> <ol style="list-style-type: none"> a. the OLO sends a notice to Batelco confirming that the connection has been correctly provisioned and can be considered RFS; or b. the end of the <i>Maximum Validation Time</i> i.e. the OLO has not explicitly raised any issue and the <i>Maximum Validation Time</i> lapsed). <p><i>Maximum Validation Time</i></p> <p>means the maximum <i>Actual Validation Time</i> after which, absent formal notice from the OLO, Batelco may issue the <i>RFS Certificate</i></p> <p><i>Actual Validation Time</i></p> <p>means the time period(s) between the following events:</p> <ol style="list-style-type: none"> a. <i>Actual RFT Date</i> which happens when the OLO receives a notice from Batelco confirming that the connection has been provisioned the same day and is ready for test; and b. one of the following two events, whichever happens the soonest: <ol style="list-style-type: none"> i. the OLO sends a notice to Batelco confirming that the connection is performing in accordance with the Acceptance Criteria;

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Service Level	Notification of Expected RFT and RFS Dates	Service Level for RFS Date
		<p>ii. the end of the <i>Maximum Validation Time</i>.</p> <p>The <i>Actual Validation Time</i> is suspended between the following events, if such events occur:</p> <ul style="list-style-type: none"> a. the OLO sends a notice to Batelco indicating that the connection is not performing in accordance with the Acceptance Criteria; and b. the OLO receives a notice from Batelco indicating that the connection has been re-provisioned.
Service Level Terms	<p><i>Maximum Time for Notification of Expected RFT and RFS Dates</i></p> <p>means the maximum <i>Actual Time for Notification of Expected RFT and RFS Dates</i> after which Batelco is subject to <i>Penalties for Notification of Expected RFT and RFS Dates</i>.</p>	<p><i>Maximum RFS Date</i></p> <p>means the last day on which the OLO should receive the <i>RFS Certificate</i> for Batelco not to be subject to <i>Penalties for RFS Date</i>.</p> <p><i>Actual RFS Date</i> ≤ <i>Maximum RFS Date</i>.</p> <p>The <i>Maximum RFS Date</i> corresponds to the <i>Expected RFS Date</i>, if the latter has never been modified after the notice of <i>Expected RFT and RFS Dates</i></p> <p>If the <i>Actual RFS Date</i> happens after the <i>Expected RFS Date</i>, Batelco shall be subject to <i>Penalties for RFS Date</i>.</p>
Service Level Penalties	<p><i>Penalties for Notification of Expected RFT and RFS Dates</i></p> <p>means the penalties due by Batelco for not meeting the <i>Maximum Time for Notification of Expected RFT and RFS Dates</i> as specified in the relevant RO service description.</p>	<p><i>Penalties for RFS Date</i></p> <p>means the penalties due by Batelco for not meeting the <i>Maximum RFS Date</i> as specified in the relevant RO service description.</p>

Source: the Authority

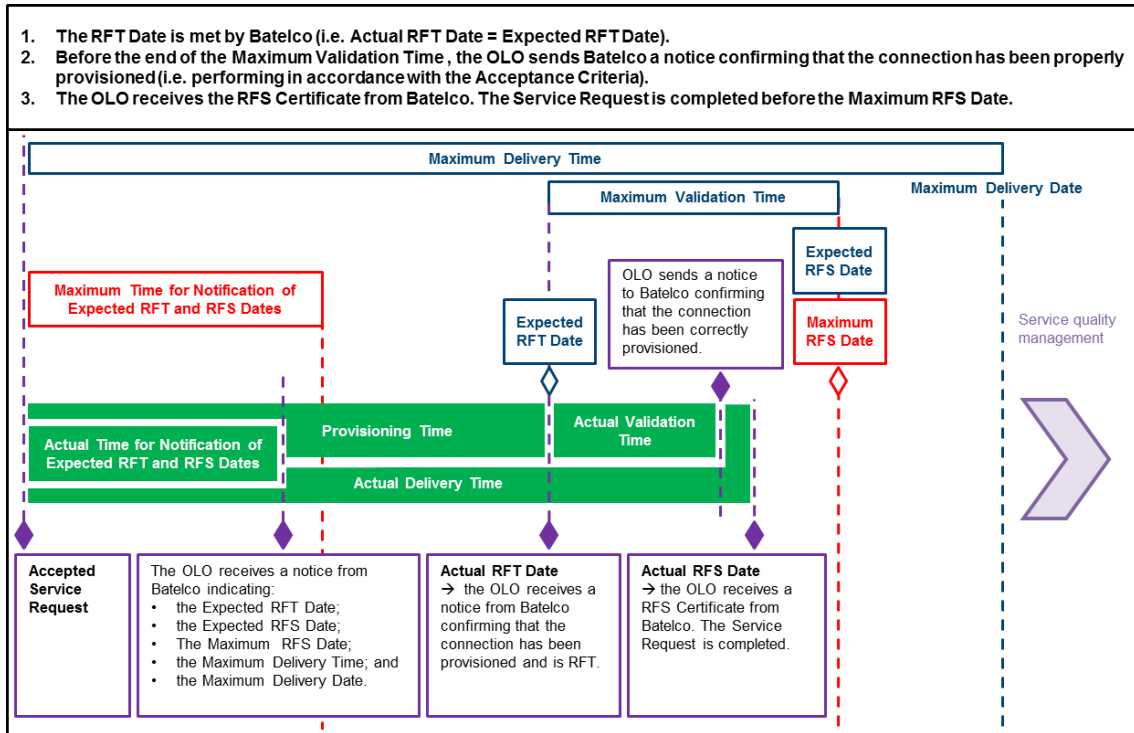
114. The following diagrams illustrate the relationship between the two Service Levels set out in the above table, with the Service Level Terms and deliverables along the service delivery process. Four scenarios are represented:

- a. scenario B1 is the base scenario where the Expected RFT Date is met, and the Actual RFS Date happens before the Maximum RFS Date;
- b. scenario B2 is a variant of scenario B1. The Actual RFS Date happens on the Expected RFS Date as the RFS Certificate is issued at the end of the Maximum Validation Time;
- c. scenario B3 where the Expected RFT Date is shifted and the Actual RFS Date happens after the Maximum RFS Date; and
- d. scenario B4: where the Expected RFT Date is met, but the OLO notifies Batelco that the connection is not performing in accordance with the Acceptance Criteria. Batelco re-provisioned the connection. The Actual RFS Date happens after the Maximum RFS Date.

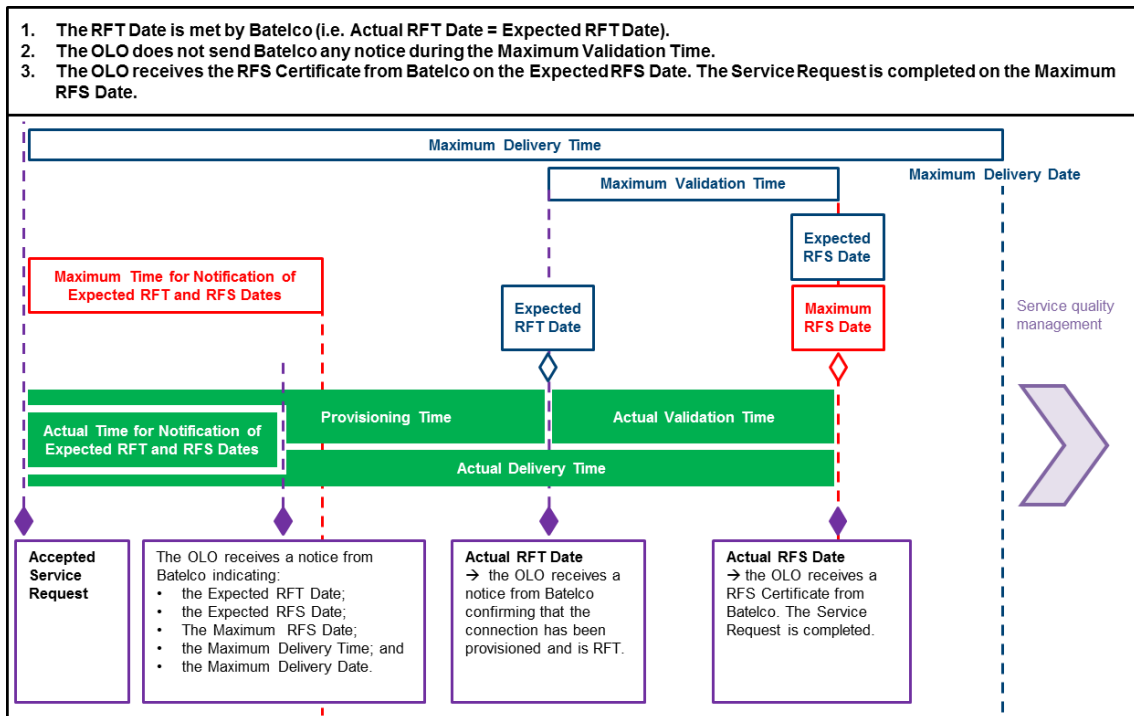
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Figure 6: The Authority's illustration of the service delivery process

Scenario B1 (service delivery process)

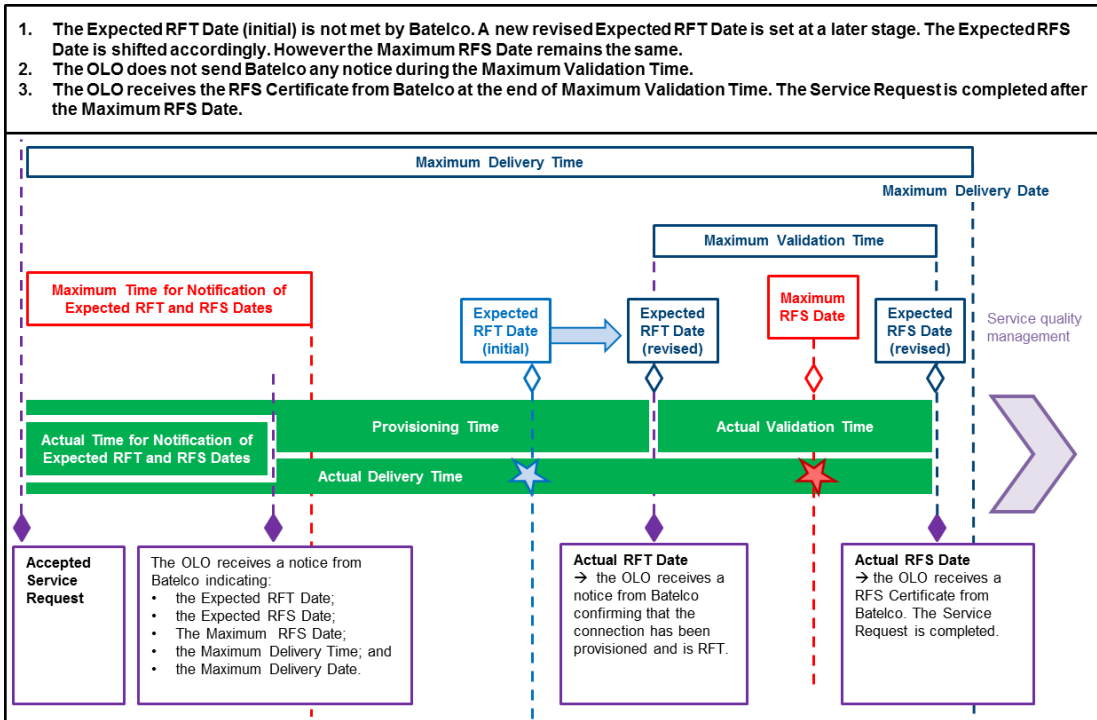


Scenario B2 (service delivery process)

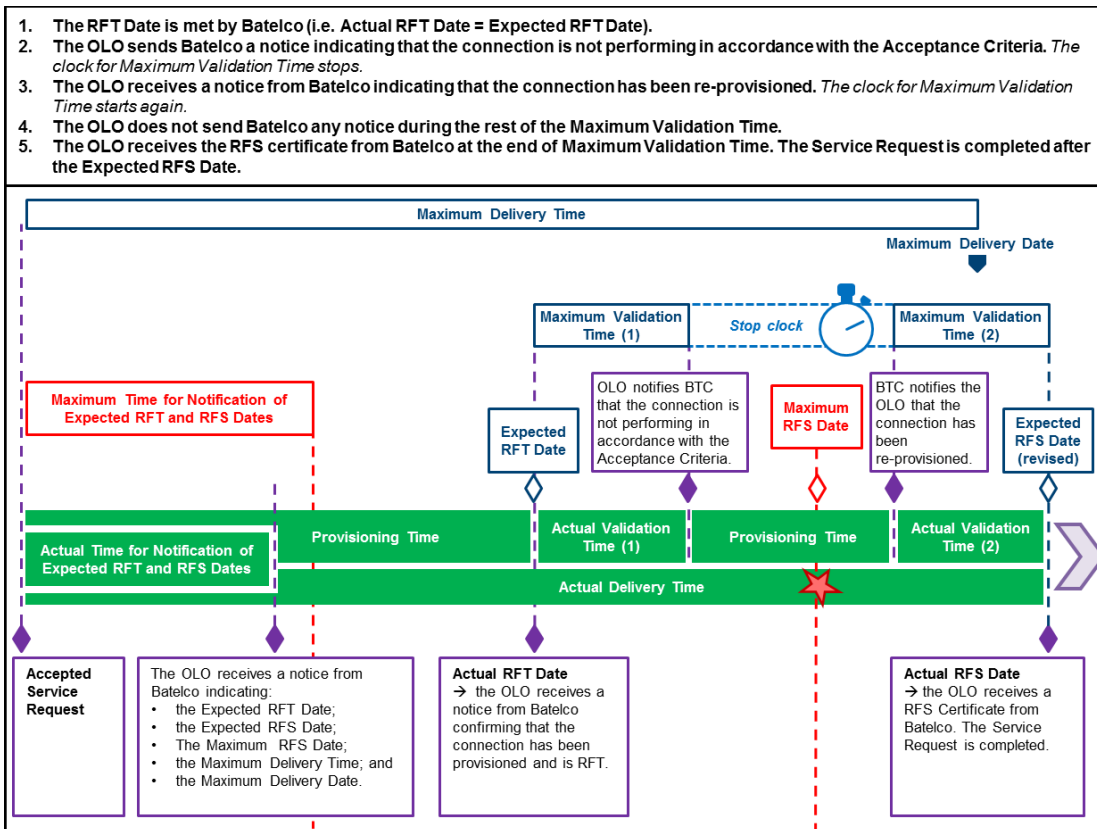


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Scenario B3 (service delivery process)



Scenario B4 (service delivery process)



Source: the Authority

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115. The above diagrams shows that the service delivery process starts when a Service Request is accepted by Batelco (either explicitly accepted by Batelco, or deemed to have been accepted by Batelco).
116. The process ends at the Actual RFS Date when the OLO receives the *RFS Certificate* from Batelco confirming that the product is RFS and that Batelco will bill for the service provided.
117. The service delivery process follows the below principles.

Before the notice of Expected RFT and RFS Dates

118. The OLO is to receive a notice from Batelco of:
- the date of Accepted Service Request;
 - the Expected RFT Date;
 - the Maximum RFS Date / Expected RFS Date ;
 - the Maximum Delivery Time; and
 - the Maximum Delivery Date.
119. This notice must be provided in order to coordinate the service delivery between the OLO and Batelco, and to allow the OLO to inform its retail customer of the expected delivery date.
120. The OLO is to receive the notice from Batelco of the *Expected RFT Date and Expected RFS Date* within a maximum allowed time (i.e. *Maximum Time for Notification of Expected RFT and RFS Dates*) as set in the relevant RO schedule. As the above diagrams indicates, this maximum time starts when a Service Request is accepted (or deemed to have been accepted).
121. The *Maximum Delivery Date* is determined by adding the *Maximum Delivery Time* to the date of *Accepted Service Request*. The Maximum Delivery Time is to be specified in the relevant RO service description.
122. The Maximum RFS Date must be set no later than the Maximum Delivery Date. At this stage, the Expected RFS Date is set equal to the Maximum RFS Date.
→ Expected RFS Date = Maximum RFS Date ≤ Maximum Delivery Time.
123. The *Expected RFT Date* must precede the *Expected RFS Date* by a period of time equal to the *Maximum Validation Time* which is to be specified in the relevant RO service description.
124. If the completion of the Service Request requires that Batelco sends a technician at the end-user site, Batelco should provide a 4-hour time window during which the on-site installation is expected to take place on the *Expected RFT Date*.
125. In the process of setting the *Expected RFT Dates* for Service Request, Batelco is required to follow a “first come, first served” policy. While Batelco shall not be permitted to discriminate among service requests (and more especially between retail and wholesale service requests), the Authority understands that it maybe optimum from an operational standpoint for Batelco to classify service requests according to the type of work required and manage different queues accordingly.

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126. If the OLO has preference for the installation date in the submitted *Service Request Form*, Batelco should take such preference into consideration when setting the *Expected RFT Date* provided that this not done at the expense of any other Service Requests.
127. If Batelco fails to meet the *Maximum Time for Notification of Expected RFT and RFS Dates*, then Batelco will incur *Penalties for Notification of Expected RFT and RFS Dates* in accordance with the relevant RO schedule for the particular service and product.
128. In all diagrams above (scenarios B1 to B4), Batelco meets the *Maximum Time for Notification of Expected RFT and RFS Dates*.

After the notice of Expected RFT and RFS Dates – Coordinating the Expected RFT Date.

129. The Authority considers that the OLO should handle all communications with the end-user for which the connection is requested. Unless explicitly agreed by the OLO, Batelco should not contact the end-user directly.
130. If a Batelco technician must be present at the end-user site to install a connection, and if, for any reason, the OLO and/or end-user cannot be available on the *Expected RFT Date* for such installation, the OLO must give Batelco a minimum written notice of two (2) working days. The new dates for RFT and RFS are then set following the below principles:
- Batelco should propose the next earliest dates for which a Batelco technician would be available for the installation. The earliest proposed date(s) may exceed the *Maximum Delivery Date* if Batelco has no other availability until such date.
 - The OLO is to choose one of the proposed dates which becomes the applicable *Expected RFT Date*.
 - The *Expected RFS Date* is also modified and is set apart from the *Expected RFT Date* by the *Maximum Validation Time* (see paragraph 123 above). The *Maximum RFS Date* is then set equal to the *Expected RFS Date*.
 - Batelco is required to send the OLO a notice of the applicable *Expected RFT Date*, *Expected RFS Date*, and *Maximum RFS Date*.
131. If at least one of the following two conditions is met (i) the OLO does not provide Batelco a minimum written notice of two working days to inform of its unavailability; or (ii) Batelco sends a technician who is not able to access the end-user site to install the service, then the OLO is liable to pay the installation and configuration charge for the requested service as specified in the relevant RO service description. In such case, the modification and notification of the *Expected RFT Date*, the *Expected RFS Date*, and the *Maximum RFS Date* follow the same principles as described in the above paragraph 130. For the avoidance of doubt, the OLO will, in this case, be liable to pay two (2) installation and configuration charges when the *RFS Certificate* is issued by Batelco.
132. Batelco may also contact the OLO to propose to install a connection at an earlier date than the *Expected RFT Date*. If the OLO provides written consent for an installation at an earlier date, then the *Expected RFT Date* and *Expected RFS Date* are revised accordingly. The *Maximum RFS Date* remains the same. Batelco is required to send the OLO a notice of the applicable *Expected RFT Date*, *Expected RFS Date*, and *Maximum RFS Date*. For the avoidance of doubt, Batelco is not authorised to send a technician at the end-user

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premises to install a connection prior to the *Expected RFT Date* unless a written consent is provided by the OLO.

133. If Batelco is not in a position to meet the *Expected RFT Date*, then it should contact the OLO as early as possible and should propose the next earliest dates for which a Batelco technician would be available for the installation. Two cases may be envisaged:
- a. case 1: the OLO is available on the earliest date of Batelco' proposed dates; or
 - b. case 2: the OLO is available on an other date than the earliest date (e.g. second, third, or fourth date or any date thereafter etc.).
134. In case 1, Batelco sets the earliest of the proposed dates as the revised *Expected RFT Date*. The *Expected RFS Date* is also modified is set apart from the *Expected RFT Date* by the *Maximum Validation Time* (see paragraph 123 above). While the *Maximum RFS Date* is unlikely to be met in this case, it remains the same for the purpose of calculating the applicable *Penalties for RFS Date*. Batelco is required to send the OLO a notice of the applicable *Expected RFT Date*, *Expected RFS Date*, and *Maximum RFS Date*. Case 1 is illustrated by scenario B3 (see third diagram above).
135. In case 2, Batelco sets the new revised *Expected RFT Date* to take into account the OLO's earliest availability (e.g. this date can be the second, third, or fourth date of Batelco's proposed dates, or any date thereafter). The *Expected RFS Date* is also modified is set apart from the *Expected RFT Date* by the *Maximum Validation Time* (see paragraph 123 above). In case 2, the *Maximum RFS Date* is modified for the purpose of calculating the applicable *Penalties for RFS Date* (i.e. Batelco should only be penalised on the basis of its first availability). The *Maximum RFS Date* is to be shifted by the number of working days that separates the following two dates: (a) the earliest date of Batelco's availability; and (b) the revised *Expected RFT Date*. Once defined, Batelco is required to send the OLO a notice of the applicable *Expected RFT Date*, *Expected RFS Date*, and *Maximum RFS Date*.

The following is a numerical example illustrating how the *Maximum RFS Date* should be shifted in case 2. Let's assume that Batelco cannot meet the *Expected RFT Date* that was planned for the 6th working day of a given month. Batelco however indicates to the OLO that it can install the connection on the 9th, 11th, 12th, or 14th working day instead. If the OLO chooses the 14th working day of the month, then the *Expected RFT Date* and *Expected RFS Date* are shifted forward by 8 working days (i.e. $8 = 14 - 6$) and the *Maximum RFS Date* is shifted forward by 5 working days (i.e. $5 = 14 - 9$).

Actual RFT Date and Maximum Validation Time

136. When Batelco has provisioned the connection, it should send the OLO a notice confirming that the connection has been provisioned and is ready for test. The OLO's receipt of Batelco's notice marks the *Actual RFT Date*. The RFT notice can be directly handed over by Batelco to the OLO if both parties are on site for the installation of the connection.
137. In case the connection was tested by Batelco against the *Acceptance Criteria*, Batelco may also be required to provide the OLO with a copy of test results together with the RFT notice.

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138. As part of the RFT notice, Batelco should indicate the *Expected RFS Date* which marks the end date for the *Maximum Validation Time*, after which, absent any issue reported by the OLO, Batelco may issue the *RFS Certificate* to the OLO.
139. The *Actual Validation Time* starts upon receipt by the OLO of the RFT notice. It provides the OLO with an opportunity to check that Batelco has correctly provisioned the connection, and that the connection is performing in accordance with the *Acceptance Criteria* defined in the relevant RO service description. The concept of “Validation Time” is also introduced to provide Batelco a chance to adjust the provisioning of a connection in the first few days following its activation. During this initial period of time, the occurrence of faults tends to be statistically higher and absent the concept of “Validation Time”, Batelco would be subject to heavier penalties such as those defined in the fault management process (see *Penalties for Restoration Time* in section 3.2.4 below). The Authority considers that, during the first few days following activation, Batelco should be subject to lighter penalties such as those defined by the *Penalties for RFS Date*.
140. The *Actual Validation Time* ends at one of the following events, whichever happens the soonest:
- the OLO sends Batelco a notice confirming that the connection is performing in accordance with the *Acceptance Criteria*;⁷ or
 - the end of the *Maximum Validation Time*.⁸
141. If during the *Actual Validation Time*, the OLO sends a notice to Batelco to indicate that the connection is not performing in accordance with the *Acceptance Criteria*, the clock for *Actual/Maximum Validation Time* stops.⁹
142. The clock for *Actual/Maximum Validation Time* starts back ticking when the OLO receives a notice from Batelco indicating that the connection has been re-provisioned. In such notice, Batelco is required to provide the revised *Expected RFS Date* which marks the end of the *Maximum Validation Time*. During the re-provisioning of the connection, Batelco should regularly update the OLO on the progress made towards the re-provisioning of the connection.
143. The OLO is to receive a *RFS Certificate* from Batelco if one the following condition is met:
- the OLO has sent Batelco a notice confirming that the connection is performing in accordance with the *Acceptance Criteria* (i.e. correctly provisioned); or
 - the *Maximum Validation Time* has lapsed and the provisioning of the connection is deemed to have been validated by the OLO.
144. The *RFS Certificate* is to confirm that:

⁷ Scenario B1 (see above diagrams) provides an illustration of the case wherein the OLO confirms to Batelco that the connection is performing in accordance with the *Acceptance Criteria* (i.e. the connection has been correctly provisioned).

⁸ Scenarios B2, B3 and B4 (see above diagrams) are cases wherein Batelco issues the *RFS Certificate* at the end of the *Maximum Validation Time*.

⁹ This case is illustrated by scenario B4 (see above diagrams).

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- a. the connection has been provisioned and tested by Batelco;
 - b. the connection is properly registered in all of Batelco's systems (e.g. OSS/BSS, service level monitoring platform, fault reporting system etc.);
 - c. the connection has been validated by the OLO (or deemed to have been validated by the OLO if the *Maximum Validation Time* has lapsed); and
 - d. the connection is ready for service and the OLO will be invoiced accordingly.
145. The date of the OLO's receipt of the *RFS Certificate* is the *Actual RFS Date* which marks the end of the *Actual Delivery Time*. The Service Request is now considered completed. Batelco can send the OLO the invoice for installation, configuration and activation charges, if any (i.e. Non-Recurring Charges ("NRC")). The connection (or amended connection) is billed from the *Actual RFS Date* (i.e. Monthly Recurring Charges ("MRC")).
146. The *Maximum RFS Date* requires that the *Actual RFS Date* happens before or after the *Expected RFS Date*. If the *Actual RFS Date* happens after the *Expected RFS Date*, Batelco shall be subject to *Penalties for RFS Date* as defined in the relevant RO service description. In the above diagrams, scenarios B3 and B4 provide examples of cases where Batelco does not meet the *Expected RFS Date* and is thus subject to *Penalties for RFS Date*.

Cancellation of a Service Request during the service delivery process

147. The Authority considers that the following provisions shall apply when an OLO cancels a *Service Request* during the service delivery process:
- a. If the OLO's request to cancel a *Service Request* occurs up to two working days after the notice of Expected RFT and RFS Dates, then the OLO shall not be penalized;
 - b. Subject to paragraphs (c) and (d) below, if the OLO's request to cancel a *Service Request* occurs three or more working days after the notice of Expected RFT and RFS Dates, the OLO shall be liable to pay one (1) Monthly Recurring Charge to Batelco;
 - c. If two (2) calendar months following the *Maximum RFS Date*, Batelco has not yet issued the *RFS Certificate* for the requested service and the OLO sends a request to cancel the *Service Request*, then Batelco shall be liable to pay the OLO penalties equal to three (3) Monthly Recurring Charges.
 - d. If Batelco issues the RFS Certificate on a date which exceeds by more than two (2) calendar months the *Maximum RFS Date*, then the *Penalties for RFS Date* shall be capped at five (5) Monthly Recurring Charges (i.e. 500 SCs).

Q5. Do you agree with the Authority's proposed definition and description of the service delivery process? Do you agree with the proposed provisions that the Authority considers should apply in case an OLO cancels a Service Request during the delivery process? Please explain and justify your position.

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3.2.3 Service quality management process

148. Service quality management process is an on-going process which corresponds to the day-to-day management of service quality with a view to ensuring that the connection perform in accordance with the *Quality of Service (“QoS”) Parameters* defined in the service description (or in accordance with international standards if no specific *QoS Parameters* are defined).

149. The *QoS Parameters* are a set of technical parameters which a connection must meet to be considered as available. When the connection is performing below the *QoS Parameters*, it is considered unavailable and the OLO may report a fault to Batelco in accordance with the fault management process.

3.2.4 Fault management process

150. The fault management process consists of three Service Levels, which are:

- a. Fault Acknowledgement Time;
- b. Response Time; and
- c. Restoration Time.

151. All three Service Levels are described in the following table with the associated deliverables, actual measures of performance, Service Level Terms and Service Level Penalties.

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Figure 7: Service Levels defined for the service delivery process (defined terms are capitalized and italicized)

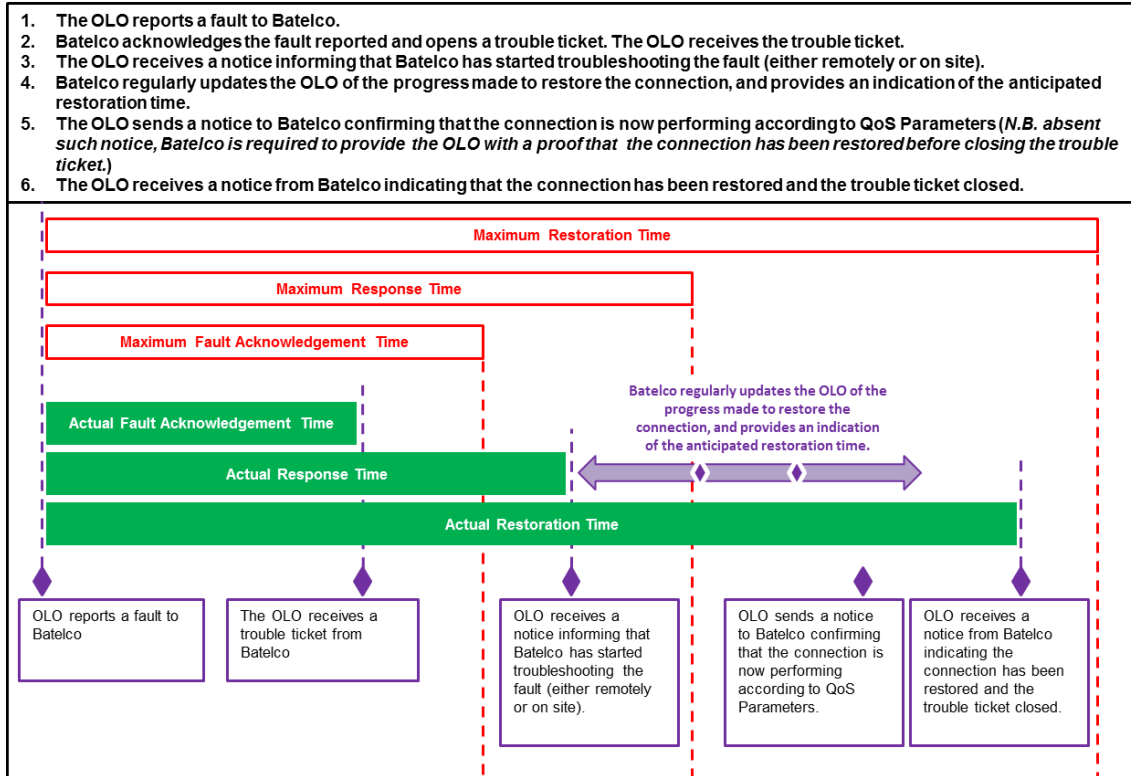
Service Level	Fault Acknowledgment Time	Response Time	Restoration Time
Deliverable	The OLO receives a trouble ticket after having reported a fault to Batelco.	The OLO receives a notice confirming that Batelco has started troubleshooting the fault (either remotely or on site).	The OLO receives a notice from Batelco indicating the connection has been restored and the trouble ticket closed.
Actual measure of performance	<p><i>Actual Fault Acknowledgment Time</i> means the time period between the following events:</p> <ul style="list-style-type: none"> a. the OLO reports a fault to Batelco , and b. the OLO receives a trouble ticket from Batelco for the reported fault. 	<p><i>Actual Response Time</i> means the time period between the following events:</p> <ul style="list-style-type: none"> a. the OLO reports a fault to Batelco , and b. the OLO receives a notice from Batelco confirming that the troubleshooting of the fault has started (either remotely or on site) <p>Once a Batelco technician has started troubleshooting the fault, Batelco is required to regularly update the OLO of the progress made to restore the connection, and to provide an indication of the anticipated restoration time.</p>	<p><i>Actual Restoration Time</i> means the time period between the following events:</p> <ul style="list-style-type: none"> a. the OLO reports a fault to Batelco , and b. the OLO receives a notice from Batelco indicating the connection has been restored and the trouble ticket closed. <p>Batelco is allowed to close a trouble ticket only if one of the following conditions is met.</p> <ul style="list-style-type: none"> a. Batelco provides a proof (i.e. test results) that the connection is performing in accordance with the QoS Parameters; or b. Batelco has received a confirmation from the OLO that the service is performing in accordance with the QoS Parameters.
Service Level Terms	<p><i>Maximum Fault Acknowledgment Time</i> means the maximum <i>Actual Fault Acknowledgment Time</i> that Batelco should meet at all times.</p>	<p><i>Maximum Response Time</i> means the maximum <i>Actual Response Time</i> that Batelco should meet at all times.</p>	<p><i>Maximum Restoration Time</i> means the maximum <i>Actual Restoration Time</i> after which Batelco is subject to <i>Penalties for Restoration Time</i>.</p>
Service Level Penalties	<p><i>Penalties for Fault Acknowledgment Time</i> The Authority does not presently propose to define any penalties for failure to meet the <i>Maximum Fault Acknowledgment Time</i>.</p>	<p><i>Penalties for Response Time</i> The Authority does not presently propose to define any penalties for failure to meet the <i>Maximum Response Time</i>.</p>	<p><i>Penalties for Restoration Time</i> means the penalties due by Batelco for not meeting the <i>Maximum Restoration Time</i> as specified in the relevant RO service description.</p>

Source: the Authority

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152. The following diagram illustrates the relationship between the three Service Levels set out in the above table, with the Service Level Terms and deliverables along the fault management process.

Figure 8: The Authority’s illustration of the fault management process



Source: the Authority

153. The above diagram shows that the faults management process starts when an OLO reports a fault to Batelco. It ends when the OLO receives a notice from Batelco confirming that the service has been restored. The fault management process described above follows the below principles:

- a. Within the *Maximum Fault Acknowledgement Time*, the OLO is to receive a notice (i.e. open trouble ticket) from Batelco that acknowledges that its fault report has been received. The *Actual Fault Acknowledgement Time* starts when the OLO reports a fault to Batelco and ends when the OLO receives the open trouble ticket. If the OLO does not receive an acknowledgment receipt within the *Maximum Fault Acknowledge Time*, then it should escalate the fault report to its Batelco account manager.
- b. Within the *Maximum Response Time*, the OLO is to receive a notice from Batelco confirming that a Batelco technician has started troubleshooting the fault either remotely (from Batelco’s network operation centre) or dispatched on-site. The *Actual Response Time* starts when the OLO reports a fault to Batelco and ends when the OLO receives a notice confirming that the troubleshooting of the fault has started.
- c. Once a Batelco technician has started troubleshooting the fault, Batelco is required to provide an update of the progress made to restore the connection. Such update

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should be provided as soon as possible and should include an estimate of the anticipated restoration time. Batelco should continue to update the OLO on regular basis thereafter.

- d. Within the *Maximum Restoration Time*, the OLO is to receive a notice from Batelco confirming that the connection has been restored and the trouble ticket closed. The *Actual Restoration Time* starts when the OLO reports a fault to Batelco and ends when the OLO receives the notice from Batelco confirming that the connection has been restored.
- e. Batelco is authorised to close a trouble ticket only if one of the following two conditions is met:
 - i. Batelco provides the OLO with a proof (i.e. test results) that the connection is performing in accordance with the QoS Parameters; or
 - ii. Batelco has received a confirmation from the OLO that the service is performing in accordance with the QoS Parameters.
- f. If the *Actual Restoration Time* exceeds the *Maximum Restoration Time*, then Batelco shall be subject to *Penalties for Restoration Time* as defined in the relevant RO service description.
- g. If after investigation, Batelco can demonstrate that the service was affected by a fault falling within the scope of the OLO's responsibility and reasonable control (or within the scope of the end user's responsibility and reasonable control), then Batelco is allowed to charge the OLO a reasonable NRC to recover the costs incurred in investigating/troubleshooting the fault and Batelco shall not be liable to the payment of *Penalties for Restoration Time*.

Q6. Do you agree with the Authority's proposed definition and description of the fault management process? Please explain your position.

3.2.5 Payment of Service Level Penalties

154. Three different Service Level Penalties are defined in the above proposed framework:

- a. Penalties for Notification of Expected RFT and RFS Dates;
- b. Penalties for RFS Date; and
- c. Penalties for Restoration Time

155. Service Level Penalties shall be due by Batelco any time Batelco fails to meet any of the following Service Level Terms for reasons attributable to Batelco:

- a. the Maximum Time for Notification of Expected RFT and RFS Dates;
- b. the Maximum RFS Date;
- c. the Maximum Restoration Time.

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156. Service Level Penalties shall be expressed in Service Credits. A Service Credit (“**SC**”) is defined as one per cent (1%) of the applicable monthly recurring charge for the connection.¹⁰
157. Service Level Penalties shall be directly reflected in the next monthly invoice(s) in the form of rebate(s). The Authority is of the view that Service Level Penalties shall not have to be claimed by OLOs for Batelco to directly reflect them in the next monthly invoice(s). The direct rebating of SCs in the next wholesale invoice(s) is more optimal from a process standpoint as it reduces the number of communications between Batelco and OLOs.
158. For each rebate of SCs in an invoice; Batelco should include a reference for the OLO to identify the reason of such rebate:
- a. For Penalties for Notification of Expected RFT and RFS Dates and Penalties for RFS Date, the reference shall be the Service Request reference number and, if available, the Connection reference number.
 - b. For Penalties for Restoration Time: the reference shall be the trouble ticket number and the Connection reference number.
159. The Penalties for Notification of Expected RFT and RFS Dates shall not be capped.
160. The Penalties for RFS Date shall be capped as described in paragraph 147 above.
161. The Penalties for Restoration Time shall be capped by the Maximum Monthly Penalty Cap which is to be defined in the RO.

Q7. Do you agree with the Authority’s proposed process for the payment of Service Level Penalties? Do you agree that the corresponding rebate(s) shall not be claimed by OLOs but directly reflected by Batelco in the next invoice(s)? Please explain and justify your position.

3.3 Definitions applicable to the Service Level framework

162. In the following subsection, the Authority provides a consolidated list of all definitions that shall apply to the Service Level framework.

¹⁰ In the WLA service description, a Service Credit is defined as 5% of the monthly recurring charge. The Authority considers a Service Credit set at 1 % of the MRC to be more convenient to quickly determine the applicable penalties.

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Figure 9: Definitions applicable to the Service Level framework

#	Term	Definition
1	Service Levels	means the set of parameters defining the minimum performance expected from the [] product and its services. Service Levels include Service Level Terms, and Service Level Penalties.
2	Service Level Terms	means the set of defined performance targets that must be met by Batelco in relation to the request, delivery, quality management and fault management of the [] product and its services.
3	Service Level Penalties	means the set of defined penalties expressed in Service Credits which are due by Batelco for not having met Service Level Terms.
4	Service Request Form	means the form used by an OLO to request a service for the [] product
5	Service Request	means a formal request for a service of the [] product. Service Requests include New Connection Requests, Transfer Requests, Upgrade/Downgrade Requests, Migration Request, Reconfiguration Requests, and Cancellation Requests.
6	New Connection Request	means a Service Request for establishing a new Connection.
7	Transfer Request	means a Service Request for transferring an existing connection from one operator to another operator. For the avoidance of doubt, the existing connection may be provided by Batelco retail and transferred to an OLO.
8	Upgrade/Downgrade Request	means a Service Request for upgrading /downgrading the speed of an existing Connection.
9	Migration Request	means a Service Request for changing the end user address of an existing Connection, requiring disconnection and reconnection of the Connection end point. A “hot migration” happens when the Connection is not disrupted and a “cold migration” when the Connection can be disrupted.
10	Reconfiguration Request	means a Service Request for reconfiguring the technical parameters of an existing Connection.
11	Cancellation Request	means a Service Request for cancelling an existing Connection.
12	Service Request Acknowledgement	means the Service Level for the timely acknowledgment of a Service Request sent by an OLO.
13	Actual Time for Service Request Acknowledgement	means the time period between the following events: a. the OLO sends a Service Request to Batelco, and b. the OLO receives a notice from Batelco acknowledging that the Service Request has been received.
14	Maximum Time for Service Request Acknowledgement	means the maximum Actual Time for Service Request Acknowledgement that Batelco should meet at all times.
	Service Request Confirmation	means the Service Level for the timely acceptance or rejection of a Service Request sent by an OLO.

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#	Term	Definition
	Actual Time for Service Request Confirmation	means the time period between the following events: a. the OLO receives a notice from Batelco acknowledging that the Service Request has been received.; and b. one of the following three events, whichever happens the soonest: i. the OLO receives a notice from Batelco indicating that the information provided by the OLO in the Service Request Form is incorrect and/or insufficient to progress the Service Request to the service delivery process; or ii. Accepted Service Request (explicit acceptance from Batelco) which happens when the OLO receives a notice from Batelco confirming that the information provided by the OLO in the Service Request Form is correct and sufficient to progress the Service Request to the service delivery process; or iii. Accepted Service Request (deemed acceptance from Batelco) which happens at the end of the Maximum Time for Service Request Confirmation, where absent formal notice from Batelco, the Service Request is deemed to have been accepted by Batelco and thus progressed to the service delivery process .
	Maximum Time for Service Request Confirmation	means the maximum Actual Time for Service Request Confirmation after which, absent formal notice from Batelco, the Service Request is deemed to have been accepted by Batelco.
	Accepted Service Request	means the time when a Service Request is explicitly accepted by Batelco or deemed to have been accepted by Batelco.
	Notification of Expected RFT and RFS Dates	means the Service Level for the timely notification of the Expected RFT Date, the Expected RFS Date, the Maximum RFS Date, the Maximum Delivery Time, and the Maximum Delivery Date to the OLO.
	Actual Time for Notification of Expected RFT and RFS Dates	means the time period between the following events: a. Accepted Service Request, and b. the OLO receives a notice from Batelco indicating the Expected RFT Date, the Expected RFS Date; the Maximum Delivery Time; and the Maximum Delivery Date.
	Penalties for Notification of Expected RFT and RFS Dates	means the penalties due by Batelco for not meeting the Maximum Time for Notification of Expected RFT and RFS Dates.
	Expected RFT Date	means the date at which Batelco expects the service to be ready for test as indicated in the notice of Expected RFT and RFS Dates. The Expected RFT Date must precede the Expected RFS Date by a period of time equal to the Maximum Validation Time. The RFT Date may be modified at a later stage if Batelco or the OLO is not able to meet it.
	Expected RFS Date	means the date at which Batelco expects the service to be ready for service as indicated in the notice of Expected RFT and RFS Dates. The Expected RFS Date must be set no later than the Maximum Delivery Date. The RFT Date may be modified at a later stage if Batelco or the OLO is not able to meet it.
	Maximum Delivery Time	means the maximum time within which Batelco must set the Expected RFS Date in the notice of Expected RFT and RFS Dates. The Maximum Delivery Time may differ according to the type of Service Request and/or the availability of access line/access ducts. The Maximum Delivery Time starts at Accepted Service Request.
	Maximum Delivery Date	means the last working day after which the Maximum Delivery Time lapses.
	Actual Delivery Time	means the time period between the following events: a. Accepted Service Request, and b. Actual RFS Date.
	Actual RFT Date	means the date on which the OLO receives a notice from Batelco confirming that the connection has been provisioned the same day and is ready for test.
	Actual RFS Date	means the date on which the OLO receives the RFS Certificate from Batelco

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#	Term	Definition
	Actual Validation Time	<p>means the time period(s) between the following events:</p> <ul style="list-style-type: none"> a. Actual RFT Date which happens when the OLO receives a notice from Batelco confirming that the connection has been provisioned the same day and is ready for test; and b. one of the following two events, whichever happens the soonest: <ul style="list-style-type: none"> i. the OLO sends a notice to Batelco confirming that the connection is performing in accordance with the Acceptance Criteria; ii. the end of the Maximum Validation Time. <p>The Actual Validation Time is suspended between the following events, if such events occur:</p> <ul style="list-style-type: none"> a. OLO sends a notice to Batelco indicating that the connection is not performing in accordance with the Acceptance Criteria; and b. the OLO receives a notice from Batelco indicating that the connection has been re-provisioned.
	Maximum Validation Time	means the maximum Actual Validation Time after which, absent formal notice from the OLO, Batelco may issue the RFS Certificate
	Acceptance Criteria	means the set of technical parameters including the Quality of Service Parameters, and test procedures, which the Connection has to meet before a Service Request can be considered as completed.
	RFS Certificate	<p>means the certificate issued by Batelco to the OLO to confirm that:</p> <ul style="list-style-type: none"> a. the connection has been provisioned and tested by Batelco; b. the connection is properly registered in all of Batelco's systems (e.g. OSS/BSS, service level monitoring platform, fault reporting system etc.); c. the connection has been validated by the OLO (or deemed to have been validated by the OLO if the Maximum Validation Time has lapsed); and d. the connection is ready for service and the OLO will be invoiced accordingly.
	Service Level for RFS Date	means the Service Level for the timely issuance of the RFS Certificate to the OLO.
	Maximum RFS Date	<p>means the last day on which the OLO may receive the RFS Certificate, after which Batelco is subject to Penalties for RFS Date.</p> <p>The Maximum RFS Date may be modified under specific conditions as detailed in this service description.</p>
	Penalties for RFS Date	means the penalties due by Batelco for not meeting the Maximum RFS Date
	QoS Parameters	means the set of technical parameters, which the Connection has to meet to be considered available. N.B. OLO may only report a fault if a Connection is not performing according to the QoS Parameters.
	Fault Acknowledgment Time	means the Service Level for the timely acknowledgement of a fault reported by the OLO.
	Actual Fault Acknowledgment Time	<p>means the time period between the following events:</p> <ul style="list-style-type: none"> a. the OLO reports a fault to Batelco, and b. the OLO receives a trouble ticket from Batelco for the reported fault.
	Maximum Fault Acknowledgment Time	means the maximum Actual Fault Acknowledgment Time that Batelco should meet at all times.
	Response Time	means the Service Level for the timely start of troubleshooting of a fault.

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#	Term	Definition
	Actual Response Time	means the time period between the following events: a. the OLO reports a fault to Batelco , and b. the OLO receives a notice from Batelco confirming that the troubleshooting of the fault has started (either remotely or on site). Once a Batelco technician has started troubleshooting the fault, Batelco is required to regularly update the OLO of the progress made to restore the Connection, and to provide an indication of the anticipated restoration time.
	Maximum Response Tim	means the maximum Actual Response Time that Batelco should meet at all times.
	Restoration Time	means the Service Level for the timely restoration of a Connection affected by a fault.
	Actual Restoration Time	means the time period between the following events: a. the OLO reports a fault to Batelco , and b. the OLO receives a notice from Batelco indicating the connection has been restored and the trouble ticket closed. Batelco is allowed to close a trouble ticket <u>only if</u> one of the following conditions is met. a. Batelco provides a proof (i.e. test results) that the connection is performing in accordance with the QoS Parameters; or b. Batelco has received a confirmation from the OLO that the service is performing in accordance with the QoS Parameters.
	Maximum Restoration Time	means the maximum Actual Restoration Time after which Batelco is subject to Penalties for Restoration Time.
	Penalties for Restoration Time	means the penalties due by Batelco for not meeting the Maximum Restoration Time.
	Service Credit	means one per cent (1%) of the applicable monthly recurring charge for the Connection.
	Maximum Monthly Penalty Cap	means the maximum Penalties for Restoration Time the OLO is entitled to for a specific Connection, on a monthly basis, as a result of Batelco not meeting the Maximum Restoration Time.

Source: the Authority

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3.4 Summary table of Service Levels

163. The Authority considers that Batelco should insert a summary table of the applicable Service Levels in the annex of the relevant RO service descriptions. Such a summary table should follow the below format:

Figure 10: Format of the table summarizing Service Levels

Service Levels	Service Level Terms	Service Level Penalties
Service request process		
Service Request Acknowledgment	Maximum Time for Service Request Acknowledgment: <input type="checkbox"/>	
Service Request Confirmation	Maximum Time for Service Request Confirmation: <input type="checkbox"/>	
Service delivery process		
Notification of Expected RFT and RFS Dates	Maximum Time for Notification of Expected RFT and RFS Dates: <input type="checkbox"/>	Penalties for Notification of Expected RFT and RFS Dates: <input type="checkbox"/>
Service Level for RFS Date	Maximum Delivery Time: <input type="checkbox"/> <i>N.B. Actual RFS Date ≤ Maximum RFS Date ≤ Maximum Delivery Date</i>	Penalties for RFS Date: <input type="checkbox"/>
	Maximum Validation Time: <input type="checkbox"/>	
Acceptance Criteria	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
Service quality management		
QoS Parameters	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
Fault management process		
Fault Acknowledgment Time	Maximum Fault Acknowledgment Time: <input type="checkbox"/>	
Response Time	Maximum Response Time: <input type="checkbox"/>	
Restoration Time	Maximum Restoration Time: <input type="checkbox"/>	Penalties for Restoration Time: <input type="checkbox"/>
		Maximum Monthly Penalty Cap: <input type="checkbox"/>

Source: the Authority

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Q8. Do you have any comments on the Service Level definitions proposed by the Authority? Please explain and justify your position.

SUMMARY OF SUBMISSIONS ON SECTION 3

164. This subsection summarises the submissions and cross-submissions received from stakeholders on section 3 (Framework for defining Service Levels). The Authority has grouped the responses by question for the convenience of the reader.

Q3. Introduction of Service Levels for WDS and Bitstream products and services

Submissions

165. Kalaam and Mena agree with the Authority's proposal to mandate the introduction of service levels for WDC and Bitstream products and services. Mena states that this should not be limited to just WDC.
166. VIVA also agrees with the Authority's proposal. However, it also proposes that OLOs should be able to require, at no additional cost, that installation services for enterprise customers which needs the personnel to have proper security clearances are carried out by Batelco's VIP installation team.
167. Zain also agrees with the Authority's proposal as it believes that these are a prerequisite to having a level playing field and effective competition in the relevant downstream retail markets.
168. Batelco, on the other hand, raised a number of concerns regarding the revised service level agreements (SLAs):
- a. Batelco considers that the proposed SLAs give the OLOs not only the existing processes but also in several cases a clearer and better service level than appears at the retail level.
 - b. Batelco finds that the delivery deadline targets proposed, along with the imposition of stringent rebates, would require Batelco to invest in developing systems and training resources at significant cost. Batelco suggests an incremental approach to help manage the change in work load from these SLAs.
 - c. Batelco finds it unreasonable to be expected to deliver 100% of all WLA and WDC orders within the maximum timeframe proposed as there may be exceptional circumstances outside Batelco's control which delay delivery. Batelco states that it has provided a non-exhaustive list of such situations, for instance, wrong customer details, way leave issues, etc. Batelco considers that it does not have the resources or service capabilities to fully comply with the existing SLA timeframes. Batelco therefore wishes to confirm that the delivery targets only relate to matters within

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Batelco's reasonable control and that industry-standard reasonable exceptions to these applications of these levels will remain.

Cross-submissions

169. Kalaam does not make any comment in the cross-submission stage on this topic.
170. Mena considers that Batelco has not provided sufficient justification for its proposal to not provide Service Levels. Mena believes that Service Levels will enable confirmation of Batelco's claims that it is abiding by its non-discrimination contractual obligations. It also rejects Batelco's claim that the service levels should take account of exceptional circumstances as Mena is concerned that OLOs will lose customers as a result of late delivery.
171. VIVA makes a number of comments on Batelco's submission:
- a. Comparison to retail SLAs: VIVA expresses scepticism towards Batelco's statement that the proposed service levels are better for wholesale than it offers for retail. VIVA urges the Authority to verify if the retail level Batelco refers to is for its smaller customers rather than its high-value customers. It also expresses concern over Batelco's claim that it complies with non-discrimination requirements.
 - b. Investment, training and deployment: VIVA notes Batelco's comments on work-flow management with caution and considers that the processes used for managing internal workflow between wholesale and enterprise units could be applied to OLOs as well. VIVA believes that prescriptive workflow requirements or highly accurate forecasting regime are not a necessary pre-condition for the application of the service level regime.
 - c. Exceptions for service level regime: In response to Batelco's comments on the matter, VIVA reiterates its views from the submission stage that Batelco should be responsible for any non-customer caused delay that arises due to matters such as network build, lack of engineering resource, etc. It asserts that this approach is in line with Ofcom's.
 - d. Application of a "buffer": VIVA considers that Batelco has misconstrued the requirement of an effective service level regime. VIVA disagrees with Batelco's suggestion and submits that there should be no buffer or tolerable threshold.
 - e. Ofcom's Strategic Review: VIVA points to Ofcom's proposals to enhance the service level regime applicable to Openreach, and finds these consistent with its own submission that there should be a quality of service condition on Batelco on provisioning and repair time that are applied at an aggregate level to Batelco's performance.
172. Zain finds that, contrary to Batelco's assertion, its experience suggests that Batelco has not been meeting its existing targets. Zain accepts that Batelco may require significant IT development for some elements of the RO but does not believe this is one of them. It maintains that the introduction of Service Levels is a must and that Batelco should implement the IT solutions that are required to provide those service levels. Furthermore, Zain considers that Batelco's concern regarding the removal of exceptional circumstances is addressed by the mechanism wherein Batelco can notify the OLO of any unforeseen issue and provide a revised RFT date. However, Zain suggests that the extent to which

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Batelco utilises the revised RFT date should be monitored in case of anti-competitive behaviour.

173. With regard to VIVA's response, Zain states that it was not aware of a VIP team at Batelco, but agrees with VIVA that OLOs should have access to the team at no additional charge where similar customers request this team.
174. Batelco takes issues with VIVA's request that Batelco provide its VIP team for implementation of orders at sensitive sites at no additional cost. Batelco finds that the requirements of a third party in relation to access are outside Batelco's reasonable control. It further takes the view that the activities of this retail unit do fall under the general exemption provided under Article 2 of the Telecommunications Law¹¹ and automatic entitlement at no additional cost should not be standard.

Q4. Definition and description of service request process

Submissions

175. Kalaam agrees with the proposed definition and description but points out that the absence of any proper SLAs so far has led to delays for which credit has been paid to the customer. Kalaam requests that some cases be back-dated.
176. Mena did not make any comment in this regard.
177. VIVA suggests some additions to the process. For instance, VIVA proposes that there should be an exhaustive list of potential reasons for which Batelco may reject a Service Request document. VIVA further suggests that if it rejects for these reasons, it should set out in that notice why the request was insufficient and how it could have been made sufficient. VIVA states that failure to include these reasons should result in an invalid Service Request Confirmation, and this failure may lead to deemed acceptance by Batelco if it does not provide a valid Service Request Confirmation by the end of the Maximum Time for Service Request Confirmation. VIVA also suggests that Batelco should provide assistance to the OLOs to complete a valid Service Request Form if there has been any rejection, rather than only after the second rejection, as per the RO's proposal.
178. Zain generally agrees with the Authority's definition and description. However, Zain finds that not imposing penalties on Batelco for failing to send a Service Request Acknowledgment weakens the entire Service Level, especially because of the dependence of the Service Request Confirmation on the Service Request Acknowledgment, which could lead to delays in the entire process.
179. Zain also agrees with the Authority that the list of potential reasons for which Batelco may reject a Service Request should be documented in the relevant RO schedule. Zain also

¹¹ The Authority understands that Batelco's intent was to refer to the Second Article of the Legislative Decree promulgating the Telecommunications Law: "*The provisions of this law attached hereto shall govern all telecommunications except the radio frequency spectrum, telecommunications networks and services used by the Bahrain Defence Forces and all security organs in the Kingdom.*"

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gives examples of instances where there has been a delay from Batelco in service delivery.

180. Finally, Batelco does not make any comment on automated acknowledgment. However, it disagrees that a service request should be deemed to have been accepted by Batelco if the OLO does not receive a formal notice of confirmation. Batelco finds that this is impractical as the order may have been missed by the working team or it may not be possible to provide the request due to an incorrect address.

Cross-submissions

181. Kalaam did not make any additional comments in the cross-submission stage.
182. Mena disagrees with Batelco's claim that the process is not practical and asserts that Batelco should accept responsibility for missing service requests. It agrees with Zain's submission regarding the lack of penalties for service request acknowledgment.
183. VIVA disagrees with Batelco's submission that there should be no deemed acceptance as it believes there are enough safeguards in the Authority's proposed approach. This is because if incorrect or insufficient information is provided by the OLO, then Batelco notifies the OLO and the clock stops for the Actual Time for Service Request Confirmation. VIVA further says that if there has been error by Batelco and they miss the opportunity to respond to the OLO's Service Request, then Batelco should bear the consequences.
184. VIVA too suggests that there should be penalties for Batelco failing to meet the Maximum Time for Service Request Acknowledgement.
185. Zain states that for the same reasons as it provided in its response to Q4, a service request should be deemed to have been accepted if formal confirmation is not received by the OLO.
186. Zain further states that it agrees with VIVA's view that Batelco should be required to set out in the rejection notice why a rejected request was insufficient (and what would make it sufficient), and why the information was incorrect. It also agrees that this explanation should be provided if any service request is rejected.
187. Batelco, on the other hand, considers this proposal excessive and unreasonable. Batelco points out that the Authority is already asking it to prepare an exhaustive list of possible reasons for rejection. It considers this self-explanatory and does not think it can be expected to carry out such a time consuming task. It believes there is a contradiction between pushing down prices and raising the service levels as the latter raises costs. Batelco finds the penalties proposed by Zain, such as those for acknowledging and confirming receipt of a valid service request form, to be unreasonable.
188. Batelco also strongly refutes the allegations that it has engaged in illegal anti-competitive conduct, especially what it describes as Zain's uncorroborated and unsubstantiated claims relating to "implicit refusal to supply".

Q5. Definition and description of service delivery process

Submissions

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189. Kalaam agrees with the Authority's proposals. However, Kalaam suggests that an automated system is set up to ensure SLAs are maintained, as no mention has been made of whether the notices of RFT and RFS dates will be done manually or automatically.
190. Mena agrees with the Authority's proposal and makes no further comment.
191. VIVA generally agrees with the proposals but makes some suggestions on specific aspects of the proposals where it considers the penalties inadequate to incentivise Batelco to meet the service level requirements:
- a. Notification date penalties: VIVA suggests that a ratchet be applied on the notification of expected RFT and RFS dates so that the service credits per day double every three days of delay instead of the proposed 5 service credits per day.
 - b. Potential anti-competitive conduct: VIVA also suggests that service level failures from Batelco should be regarded as anti-competitive behaviour by the Authority. VIVA considers that the Authority should react promptly in response to an OLO's complaints, as responding to periodic data gathering may not be sufficient; this is because failures may apply to single high-value customers as well.
 - c. Dispute resolution process: VIVA believes that the Authority should address the circumstances where there is a dispute between Batelco and the OLO over whether service level terms have been met. VIVA proposes that, pending a resolution of that dispute under clause 24 of the Supply Terms, a decision in favour of the OLO prevail. If it is determined that service levels had been met, the OLO should refund the service credits to Batelco. Furthermore, VIVA suggests that a streamlined dispute resolution process be established in place of the current process, which VIVA finds too long. VIVA reiterates the need for mandatory reporting and information flows.
 - d. Next available date: VIVA notes that Batelco is only required to notify OLOs if it is not in a position to meet the expected RFT date. VIVA suggests that it should be stated how much notice needs to be provided and that a requirement be imposed on Batelco to offer alternative dates, with these being required to be no later than two working days after the original date.
192. VIVA also seeks clarity on certain other aspects of the proposals:
- a. Acceptance criteria: VIVA also considers that the Acceptance Criteria needs to be clear and unambiguous.
 - b. Batelco to follow the same service request criteria: VIVA seeks clarity on whether Service Requests from Batelco's downstream unit and OLOs will be handled in the order in which they come to Batelco's upstream unit (using the same processes, etc.) to ensure that non-discrimination is maintained.
 - c. Preferred installation date: VIVA requests clarification on the Authority's statement that an OLO's preferred installation date is to be considered "provided that this is not done at the expense of any other Service Requests". VIVA is concerned that the current wording gives Batelco too much latitude and ability to prefer its own Service Requests.
 - d. Additional charges if OLO or end-user is not present: VIVA considers that further clarity is required around the stage outlined in Para 89 of the draft RO where charges may be imposed if the OLO or end-user is not present on the day on which the

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Batelco technician installs a connection at the end-user site. VIVA suggests possible amendments to this, e.g. any expected RFT date should specify morning or afternoon and provide the OLO with a two-hour window to be present at the end-user site. VIVA also considers that the OLO should be liable to pay a fixed amount that reflects the cost of the technician visit incurred by Batelco, rather than two installation and configuration charges when the RFS certificate is issued by Batelco.

193. Finally, VIVA disagrees that OLOs should have two working days (“WD”) after the notice of Expected RFT and RFS Dates to cancel the Service Request without being penalised, because the process of cancellation comes from the end-user and could take more than two days. VIVA instead suggests this be changed to 5 WD. VIVA suggests a ratchet mechanism, in line with that in the UK, be applied instead of that proposed in the draft RO.
194. Zain strongly agrees with the Authority’s proposed definition and description of the service delivery process and considers that these should apply in case an OLO cancels a Service Request during the delivery process. Zain then highlights the issues being faced by it at this stage of the delivery process, and makes the following suggestions:
- a. overtime charges should only be charged over weekends and official public holiday’s at fair calculated manpower (technician) charge per hour;
 - b. separation of the wholesale and enterprise teams to assure confidentiality, the enterprise team currently has access to the internal systems which OLOs do not.
 - c. service installation team at Batelco that delivers any wholesale service for OLOs should not be dressed in any manner that shows them a representatives of Batelco (logos and colours should be neutral)
195. Batelco provides some general overall comments on the Authority’s proposal in this regard. It considers that instead of separate service request and processing stages, a single 7 WD timeframe for confirmation and notification to OLOs of expected maximum RFT and RFS dates be applied.
196. It also considers that the same time-frame should apply to new and existing orders and that this should be 7-10 WD.
197. Finally, Batelco considers it excessive to have penalties for failure to notify OLOs of Expected RFT and RFS dates as it will require the introduction of new processes and working teams. Batelco feels this penalty will disincentivise Batelco from committing to an expected delivery date rather than the maximum.

Cross-submissions

198. Kalaam did not make any additional comments in the cross-submission stage on this topic.
199. Mena states that it disagrees with Batelco and considers it necessary to be informed of expected RFT and RFS dates to keep its customers informed. It believes that Batelco has enough experience to be able to communicate a reasonable expected timeframe to OLOs.
200. VIVA makes a number of comments on Batelco’s response:
- a. VIVA expresses surprise at Batelco’s request to remove the Service Level associated with the Service Request confirmation as VIVA considers this is common internationally. VIVA explains that this Service Level is necessary because OLOs need to communicate waiting times to their customers.

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- b. VIVA agrees that Batelco could fail to notify OLOs of expected RFT /RFS dates in the event of matters arising outside its control. However, it is wary of this, as emphasised in its submission.
- c. VIVA nevertheless considers that Batelco should be required to notify OLOs of the RFT/RFS dates.
- d. VIVA also does not accept Batelco's point that having a penalty for failing to notify will disincentivise Batelco from providing accurate dates.

201. Zain comments on both Batelco and VIVA's responses, mainly disagreeing with the former and agreeing with the latter:

- a. Batelco:
 - i. Zain disagrees with Batelco's suggestion of a single 7 WD timeframe for both the service request confirmation stage and the notification to OLOs of expected and maximum RFT and RFS dates by Batelco. Zain explains that OLO's need the initial feedback within the 2 WD to manage customers/end-user expectation.
 - ii. Zain also disagrees with Batelco's suggestion that same time frame should be applied for both new and existing orders. Zain considers that requests such as transfer requests, upgrade/downgrade requests, etc. mainly require soft changes and so should take less time than New Connection and Migration Requests.
 - iii. Zain urges the Authority to monitor Batelco given its admission that it will communicate the maximum delivery date rather than the expected date. Zain considers this is anti-competitive.
- b. VIVA: Zain agrees with VIVA's comments to Q5. In particular,
 - i. Zain agrees with VIVA's comment that it is unfair for the OLO to pay two installation and configuration charges. Zain considers that OLOs should instead be liable for the cost of mobilising a technician which can be set at a fixed amount.
 - ii. Zain also considers that if the OLO cancels its service request after the 5 working days have elapsed, OLOs should only be liable to pay the amount of 1 capped NRC instead of 1 MRC.
 - iii. Finally, Zain states that it shares VIVA's concerns regarding the process for Batelco to notify the OLO in case of circumstances that arise where Batelco is not in a position to meet the Expected RFT Date.

202. Batelco also makes a number of comments in response to Zain's:

- a. Batelco asserts that its standard working hours are from 7:00am to 2:45pm and it has an obligation to pay its service and delivery team employees overtime charges for each additional hour worked outside of these. It considers this should be recovered if any particular OLO or customer requests services outside of the standard working day.

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- b. In response to Zain's request for neutral uniforms, Batelco points out that the costs of new uniforms for the service, delivery and installation teams have not been factored into the proposed prices and are not accounted for anywhere else.

203. Batelco states that its views on whether additional service penalties should be applicable to VIVA's points on this issue. Batelco reemphasises that it already considers the proposed penalties to be excessive and unreasonable, especially where new services and processes are being introduced without a grace period for Batelco's staff to become accustomed to.

Q6. Definition and description of fault management process

Submissions

204. Mena and Kalaam agree with the proposed definition and description of the fault management process.
205. VIVA generally agrees with the Authority's proposals but offers comments on specific aspects of the process:
- a. Restoration outside working hours: VIVA considers that any restoration outside working hours should be free of charge because the OLOs are already paying for this service.
 - b. Proactive notification of faults: According to VIVA, Batelco should be required to proactively notify the OLO of a fault when it discovers it, whether or not first notified by the OLO. Further, VIVA believes that this should signal the commencement of the Actual response Time and Actual Restoration Time periods.
 - c. Dispute resolution process: This recommendation is as per VIVA's previous comment and is not repeated here.
 - d. Responsibility of end-user or OLO: VIVA suggests that the Authority state clearly which areas are within Batelco's responsibility and which are within the OLO's so as to avoid constant disputes. On a related point, VIVA considers that the definition of a force majeure event is unusually broad and should not include events such as electricity outage. VIVA points to Ofcom's comments on the subject and considers that the same should apply to Bahrain i.e. "non-customer caused delays" should be Batelco's responsibility.
 - e. Additional activities: VIVA finds that the RO should require Batelco to conduct additional activities following a service level failure such as Root Cause Analysis, remediation, and provision of updates to OLO on these matters.
206. Zain also generally agrees with Authority's proposals but like VIVA, provides comments on particular aspects:
- a. Zain strongly recommends that penalties for Fault Acknowledgment Time should be implemented at 1 SC per hour elapsed following the Maximum Fault Acknowledgment Time. This is to forestall the possibility that Batelco refuses to troubleshoot because of the lack of a trouble ticket (which Zain would not have if it did not receive the Fault Acknowledgment).

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- b. Zain recommends that Batelco should be required to provide the OLO with updates at pre-defined intervals (specifically, every hour) once it has started troubleshooting the fault.
- c. Zain considers that the statement in Para 112 (g) wherein Batelco can charge the OLO a “reasonable NRC” in case of a fault falling within the scope of the OLO’s responsibility and reasonable control (or within the scope of the end user’s responsibility and reasonable control) is vague and subjective. Zain suggests that Batelco should either provide evidence of the cost incurred in investigating or set a predefined value cost/cap for this scenario.
- d. Finally, Zain finds that Batelco should provide the OLO with Root Cause Analysis within 48 hours following service restoration.

207. Batelco considers the timeframes suggested for the fault management process in the draft RO are unachievable given the resources required and the practicalities of reaching and accessing certain premises (i.e., through congested roads and traffic). Batelco offers alternative timeframes that it considers more realistic.

Cross-submissions

208. Kalaam did not make any additional comments in the cross-submission stage on this topic.

209. Mena considers that Batelco’s proposed restoration timeframe is unacceptable and that the reasoning of there being traffic and congestion is invalid.

210. VIVA states that given the size of Bahrain, it fails to see traffic problems as a reason for reducing the burden of the service level regime on Batelco. It also cross-refers to its comments on Batelco’s resourcing needs.

211. Zain states that it strongly disagrees with Batelco’s comment. It finds the proposed restoration time frames in the draft order adequate. However, it reasserts its view that 6 hours set as a Maximum Restoration Time under Standard Support may be too high because most of businesses in Bahrain have 8 working hours. It suggests a maximum of 4 hours instead, in line with BT, Orange and Belgacom. It also emphasises that Batelco must provide the same support level and restoration KPI for OLO’s that they offer for their retail arm.

212. Zain says that it generally agrees with VIVA’s comments. It also states that it shares the same comments on service installation/restoration outside working hours; it believes that Batelco should not charge any additional or overtime charges as there is already an NRC.

213. Batelco disagrees with VIVA’s suggestion on proactive notification of faults. It finds it unreasonable to monitor its many connections in a manner that would place the burden of identifying a fault on Batelco rather than the OLO who actually has control over the regulation of its own network. Batelco therefore considers that it should be for the OLO to identify and communicate a fault to Batelco before any service level ‘clocks’ start.

214. With regard to VIVA’s suggestion on the dispute resolution process, Batelco states that it is not reasonable, rational or practical for the complaining party’s request to be given immediate effect while the actual dispute process takes place. It explains that this is because the outcome may be completely different thereby resulting in significant consequences for either party or the relevant customer.

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Q7. Process for payment of Service Level Penalties

Submissions

215. Kalaam agrees with the proposed process but considers that in cases where Batelco does not add the corresponding rebate in the invoice, the OLO has the right to dispute against the same.
216. Mena too agrees with the proposed process but only so long as there is a clear process for disputing rebates.
217. VIVA agrees with the proposed process and that the rebates shall not be claimed by the OLOs but directly reflected by Batelco in the next monthly invoices. However, it recommends that if the rebates exceed the amount of the monthly invoice then any unutilised credits should get carried over to subsequent months.
218. Zain also agrees with the proposed process and that the rebate would be included in monthly invoice because the calculation of penalty/rebates is easy and objective under the current proposed Service Levels.
219. Batelco does not make any additional comments and states that its comments on service levels and penalties apply in this category as well.

Cross-submissions

220. Kalaam did not make any additional comments in the cross-submission stage on this topic.
221. Zain agrees with VIVA's comments that if the rebates exceed the amount of the monthly invoice, then any unutilised credits should get carried over into subsequent months.
222. Batelco states that it notes the OLO's responses in this regard but re-emphasises that its IT and billing systems are not currently capable of automatically processing rebates. It re-asserts that processes and service levels that require automated tasks impose an additional level of investment in systems to manage and monitor compliance. Batelco considers that this type of cost has not been taken into account in any of the provisional prices proposed by the Authority.

Q8. Service Level definitions

Submissions

223. Kalaam, Mena, Zain and Batelco do not make any comments in this regard.
224. VIVA considers that the term "requirement" should be used rather than "target" as the former suggests a legal requirement and if it is not met, Batelco would be in breach.
225. VIVA also considers that service credits should not be the exclusive remedy for an OLO for service level failure. VIVA points to examples of New Zealand and the UK where there are remedies beyond service credits. VIVA considers that OLOs should instead be entitled to seek damages. Furthermore, VIVA believes that the loss of profits should not be excluded and considers this consistent with the approach in the UK.

Cross-submissions

226. No additional comments were made in the cross-submission stage.

THE AUTHORITY'S FINAL CONCLUSIONS ON SECTION 3

227. In this subsection, the Authority provides its final views and conclusions for each question in section 3 (Framework for defining Service Levels).

Q3. Introduction of Service Levels for WDC and Bitstream products and services

The Authority's final views

228. OLOs largely agree with introduction of Service Levels while Batelco finds them too stringent.
229. The Authority is not convinced of the need to change the text in the final Order from that set out in the draft, but considers that further clarity is warranted with regards to the treatment of VIP teams and the definition of the “exceptional circumstances” under which the SLAs would not apply.
230. With regards to the former, the Authority considers that Batelco’s VIP team shall be made available at the OLOs’ request (and free of any additional charge), if the OLOs can provide official justifications for the need for such services.¹²
231. With regards to the latter, the Authority is concerned that there may be unnecessary disputes regarding the definition of “exceptional circumstances” if they have an impact on Batelco’s ability to meet its deadlines within the Service Delivery Framework. To avoid this, the Authority considers it necessary to expand on its definition of an “exceptional circumstance”.
232. In particular, the Authority concludes that “exceptional circumstances” should only include those circumstances which are:
- i. either caused by or are under the reasonable control of the OLO or its retail end-customer; or
 - ii. planned maintenance; or
 - iii. Force Majeure Events.

¹² Pursuant to the Second Article of the Legislative Decree promulgating the Telecommunications Law, this requirement however does not apply to telecommunications networks and services used by the Bahrain Defence Forces and all security organs in the Kingdom.

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All other events, (whether or not they are caused and/or are under the reasonable control of Batelco) will not qualify as exceptional circumstances under the service level framework.

233. To this end, the Authority provides below an illustrative list of exceptional circumstances:

- a. If the customer premises or site is not:
 - i. Ready;
 - ii. in expected or required condition; and/or
 - iii. awaiting customer approval;
- b. If the customer details including address and contact are wrong in the Service Request Form;
- c. Circumstances where full testing after implementation cannot be carried out because the customer's other sites are not yet complete/ ready. This applies as long as justification from Batelco and/or the end-customer can be provided;
- d. If the box is buried within a customer's property. This applies as long as it can be proved by Batelco. However, this should not extend the delivery time by more than 10 working days (if it is on private property);
- e. If the OLO does not mention in the Service Request that unplanned civil works and cabling will need to be undertaken on private land/property at the customer location;
- f. If there is a requirement to change route of duct, but only if this request is made by OLO/customer;
- g. Where planned maintenance prevents the completion of the service delivery process of a Connection; or cause a Connection to be completely or partially unavailable on a temporary basis.
- h. A Force Majeure event

234. Furthermore, the Authority requires that the definition of a "Force Majeure Event" be amended in the RO. The current definition is:

"Force Majeure Event means any event outside the reasonable control of the party affected, including without limitation the failure of any supplier to deliver equipment at the prescribed time, an act of God, an industrial dispute of any kind, a war declared or undeclared, military operations, an act or threat of terrorism, a blockage, a civil disturbance, lightning, fire, earthquake, storm, flood, explosion, weather of exceptional severity, interruption or failure of utility service (including but not limited to electric power, gas and water), national or local emergency, meteor, or acts or omissions of persons for whom that party is not responsible."

235. The Authority requires that the words "*the failure of any supplier to deliver equipment at the prescribed time*" be removed from the definition. This is because Batelco manages its stocks and so the unavailability of a specific piece of equipment may be due to improper stock management. Furthermore, Batelco can exert some level of control over its suppliers: it can, for example, negotiate guaranteed delivery lead time with its supplier(s) or can mitigate the risk of shortage by relying on additional suppliers.

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236. With regard to the examples of exceptional circumstances, it is important to note that “emergency maintenance” and work in VIP areas would **not** qualify as exceptional.
- a. Emergency maintenance – The Authority is concerned that “emergency maintenance” could be used as an excuse for undue and unnecessary delays by Batelco. The Authority considers that its definition of an exceptional circumstance should be sufficient to capture true emergencies and an explicit line item for “emergencies” is not necessary. For instance, an emergency may be caused by an act of God or natural disaster, and this is captured under a Force Majeure Event, which in turn is in the definition of an exceptional circumstance. However, “planned maintenance” should still be considered as an exceptional circumstance, so long as Batelco provides a notice of 10 working days for such planned maintenance as it is currently the case for the WLA product.
 - b. Work in VIP areas – The Authority does not consider it necessary to include work in VIP areas as an exceptional circumstance. This is because for work in such areas (e.g. Ministries, administrations, Royal Court etc.), Batelco gets direct approval from the relevant entity and this is in fact usually obtained in a shorter period than allowed for in the Service Levels. Therefore, allowing more time for VIP work is deemed unnecessary.

The Authority’s final conclusions

237. The discussion in the final Order remains as per the draft Order, as outlined in Section 3.1. The Authority therefore requires the introduction of service levels as outlined in subsequent sections of this Order.
238. Furthermore, the Authority has now clarified the definition of an exceptional circumstance, which is a circumstance:
- a. either caused by or are under the reasonable control of the OLO or its retail end-customer; or
 - b. caused by planned maintenance; or
 - c. caused by a Force Majeure Event, which is “any event outside the reasonable control of the party affected, including without limitation, an act of God, an industrial dispute of any kind, a war declared or undeclared, military operations, an act or threat of terrorism, a blockage, a civil disturbance, lightning, fire, earthquake, storm, flood, explosion, weather of exceptional severity, interruption or failure of utility service (including but not limited to electric power, gas and water), national or local emergency, meteor, or acts or omissions of persons for whom that party is not responsible.”
239. Batelco is therefore ordered to reflect these amendments in its RO and to implement a service level framework in line with this Order.

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Q4. Definition and description of service request process

The Authority's final views

240. The Authority notes that the operators largely agreed with the proposed definition and description of service request process.
241. However, the Authority considers that the following modifications to the framework will enable a smoother process and provide a greater level of certainty to all parties:
- a. The Authority will remove the condition of “Deemed Acceptance” in the service acknowledgement and confirmation steps of the Service Request Process. This is because this is the first step in the Service Delivery Process and a miscommunication at the start will have a knock-on impact on the rest of the process, causing delays and inconvenience to end-customers.
 - b. Batelco shall therefore remove the following text “is deemed to have been accepted by Batelco” from Figure 3 in the draft RO, **only** for the steps relating to Service Request Confirmation. The final service level framework is as per Figure 11 below.
 - c. The Authority also requires Batelco to add a penalty for delays in the Service Request Confirmation step (“Penalties for Service Request Confirmation”). This is because the Service Request Process is a key stage in the Service Level Framework and delays at this stage would have a knock-on effect on the entire process and affect the quality of service received by the end-consumer. This and the actual penalty that will be applicable is discussed in paragraphs 659 and 660.
242. With regard to Batelco’s request that the step for Service Request Confirmation be combined with the step for Notification of Expected RFT and RFS Dates, the Authority considers this would be premature to do so at this stage. However, once Batelco’s fibre access network covers most areas of Bahrain and once fibre availability and usage is known at all locations, there may be some merit in combining both steps in such a way that Expected RFT and RFS Dates are directly communicated by Batelco to the OLO at the Service Request Confirmation stage.

The Authority's final conclusions

243. For the reasons set out above, Batelco is hereby order to implement in its RO, the service level framework as presented below in Figure 11 and Figure 12. For ease of reference, these figures highlight the changes from the equivalent figures in the draft Order. These replace Figure 3 and Figure 5 from the draft Order.

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Figure 11: Service Levels for the service request process (defined terms are capitalized and italicized)

	Service Request Acknowledgement	Service Request Confirmation
Deliverable	The OLO receives a notice from Batelco acknowledging receipt of the OLO's <i>Service Request</i> .	The OLO receives a notice from Batelco informing that Batelco either accepts a <i>Service Request</i> or rejects it because insufficient or incorrect information is provided by the OLO in the <i>Service Request Form</i> . Absent any notice within the <i>Maximum Time for Service Request Confirmation</i>, the <i>Service Request</i> is deemed to have been accepted by Batelco.
Actual measure of performance	<p><i>Actual Time for Service Request Acknowledgement</i></p> <p>means the time period between the following events:</p> <ol style="list-style-type: none"> a. the OLO sends a <i>Service Request</i> to Batelco, and b. the OLO receives a notice from Batelco acknowledging that the <i>Service Request</i> has been received. 	<p><i>Actual Time for Service Request Confirmation</i></p> <p>means the time period between the following events:</p> <ol style="list-style-type: none"> a. the OLO receives a notice from Batelco acknowledging that the <i>Service Request</i> has been received; and b. one of the following three events, whichever happens the soonest: <ol style="list-style-type: none"> i. the OLO receives a notice from Batelco indicating that the information provided by the OLO in the <i>Service Request Form</i> is incorrect and/or insufficient to progress the <i>Service Request</i> to the service delivery process; or ii. <i>Accepted Service Request (explicit acceptance from Batelco)</i> which happens when the OLO receives a notice from Batelco confirming that the information provided by the OLO in the <i>Service Request Form</i> is correct and sufficient to progress the <i>Service Request</i> to the service delivery process. iii. <i>Accepted Service Request (deemed acceptance from Batelco)</i> which happens at the end of the <i>Maximum Time for Service Request Confirmation</i>, where absent formal notice from Batelco, the <i>Service Request</i> is deemed to have been accepted by Batelco and thus progressed to the service delivery process.
Service Level Terms	<p><i>Maximum Time for Service Request Acknowledgement</i></p> <p>means the maximum <i>Actual Time for Service Request Acknowledgement</i> that Batelco should meet at all times.</p>	<p><i>Maximum Time for Service Request Confirmation</i></p> <p>means the maximum <i>Actual Time for Service Request Confirmation</i> after which Batelco is subject to <i>Penalties for Service Request Confirmation</i> after which, absent formal notice from Batelco, the <i>Service Request</i> is deemed to have been accepted by Batelco.</p>

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	Service Request Acknowledgement	Service Request Confirmation
Service Level Penalties	<p>Penalties for <i>Service Request Acknowledgment</i></p> <p>The Authority does not presently define any penalties for failure to meet the <i>Maximum Time for Service Request Acknowledgment</i>.</p> <p>When the OLO does not get an acknowledgment notice from Batelco within the <i>Maximum Time for Service Request Acknowledgment</i>, the OLO should follow up/escalate its request directly with its Batelco wholesale account manager.</p>	<p>Penalties for <i>Service Request Confirmation</i></p> <p>means the penalties due by Batelco for not meeting the <i>Maximum Time for Service Request Confirmation</i></p>

Source: the Authority

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Figure 12: Service Levels defined for the service delivery process (defined terms are capitalized and italicized)

Service Level	Notification of Expected RFT and RFS Dates	Service Level for RFS Date
<p>Deliverable</p>	<p>OLO receives a notice from Batelco of the dates that Batelco expects the connection to be Ready For Test (“RFT”) and then Ready For Service (“RFS”).</p> <p>In such notice, Batelco also indicates the <i>Maximum RFS Date</i>, the <i>Maximum Delivery Time</i> and the <i>Maximum Delivery Date</i>.</p> <p>The <i>Maximum RFS Date</i> must be set no later than the <i>Maximum Delivery Date</i>.</p>	<p>OLO receives a <i>RFS Certificate</i> from Batelco confirming that:</p> <ol style="list-style-type: none"> a. the connection has been provisioned and tested by Batelco; b. the connection is properly registered in all of Batelco’s systems (e.g. OSS/BSS, service level monitoring platform, fault reporting system etc.); c. the connection has been validated by the OLO (or deemed to have been validated by the OLO if the Maximum Validation Time has lapsed); and d. the connection is ready for service and the OLO will be invoiced accordingly.
<p>Actual measure of performance</p>	<p><i>Actual Time for Notification of Expected RFT and RFS Dates</i></p> <p>means the time period between the following events:</p> <ol style="list-style-type: none"> a. <i>Accepted Service Request</i>, and b. the OLO receives a notice from Batelco indicating the <i>Expected RFT Date</i>, the <i>Expected RFS Date</i>; the <i>Maximum Delivery Time</i>; and the <i>Maximum Delivery Date</i>. 	<p><i>Actual Delivery Time</i></p> <p>means the time period between the following events:</p> <ol style="list-style-type: none"> a. <i>Accepted Service Request</i>, and b. <i>Actual RFS Date</i> which happens when the OLO receives the <i>RFS Certificate</i> from Batelco. <p>Batelco may only issue the <i>RFS Certificate</i> to the OLO after one of the following events, whichever happens the soonest:</p> <ol style="list-style-type: none"> a. the OLO sends a notice to Batelco confirming that the connection has been correctly provisioned and can be considered RFS; or b. the end of the <i>Maximum Validation Time</i> i.e. the OLO has not explicitly raised any issue and the <i>Maximum Validation Time</i> lapsed). <p><i>Maximum Validation Time</i></p> <p>means the maximum <i>Actual Validation Time</i> after which, absent formal notice from the OLO, Batelco may issue the <i>RFS Certificate</i></p> <p><i>Actual Validation Time</i></p> <p>means the time period(s) between the following events:</p> <ol style="list-style-type: none"> a. <i>Actual RFT Date</i> which happens when the OLO receives a notice from Batelco confirming that the connection has been provisioned the same day and is ready for test; and b. one of the following two events, whichever happens the soonest: <ol style="list-style-type: none"> i. the OLO sends a notice to Batelco confirming that the connection is performing in accordance with the Acceptance Criteria;

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Service Level	Notification of Expected RFT and RFS Dates	Service Level for RFS Date
		<p>ii. the end of the <i>Maximum Validation Time</i>.</p> <p>The <i>Actual Validation Time</i> is suspended between the following events, if such events occur:</p> <ol style="list-style-type: none"> a. the OLO sends a notice to Batelco indicating that the connection is not performing in accordance with the Acceptance Criteria; and b. the OLO receives a notice from Batelco indicating that the connection has been re-provisioned.
Service Level Terms	<p><i>Maximum Time for Notification of Expected RFT and RFS Dates</i></p> <p>means the maximum <i>Actual Time for Notification of Expected RFT and RFS Dates</i> after which Batelco is subject to <i>Penalties for Notification of Expected RFT and RFS Dates</i>.</p>	<p><i>Maximum RFS Date</i></p> <p>means the last day on which the OLO should receive the <i>RFS Certificate</i> for Batelco not to be subject to <i>Penalties for RFS Date</i>.</p> <p><i>Actual RFS Date</i> ≤ <i>Maximum RFS Date</i>.</p> <p>The <i>Maximum RFS Date</i> corresponds to the <i>Expected RFS Date</i>, if the latter has never been modified after the notice of <i>Expected RFT and RFS Dates</i></p> <p>If the <i>Actual RFS Date</i> happens after the <i>Expected RFS Date</i>, Batelco shall be subject to <i>Penalties for RFS Date</i>.</p>
Service Level Penalties	<p><i>Penalties for Notification of Expected RFT and RFS Dates</i></p> <p>means the penalties due by Batelco for not meeting the <i>Maximum Time for Notification of Expected RFT and RFS Dates</i> as specified in the relevant RO service description.</p>	<p><i>Penalties for RFS Date</i></p> <p>means the penalties due by Batelco for not meeting the <i>Maximum RFS Date</i> as specified in the relevant RO service description.</p>

Source: the Authority

Q5. Definition and description of service delivery process

The Authority's final views

244. The OLOs largely agreed with the Authority's proposals while Batelco found the penalties to be excessive.
245. The operators also made a number of suggestions/sought clarification on certain aspects, some of which the Authority considers are worth addressing, specifically:
- a. Overtime charges: Batelco can already recover the costs of overtime work on a time and materials basis, as specified in its current RO. Item A1.1 of Batelco's RO Schedule 3¹³ specifies that charge rate for such time-based activity. This would continue to apply.
 - b. Separation of the wholesale and enterprise teams to assure confidentiality: The Authority agrees this is important and notes that NTP4 provides a basis for the functional separation of Batelco's business. The Authority considers that the implementation of this Order is a vital first step towards achieving this objective.
 - c. Exceptional circumstances: As described in paragraph 238 (the Authority's conclusions on Question 3), exceptional circumstance is now defined and paragraph 233 provides an illustrative list of such exceptional circumstances. All circumstances which do not meet this definition are therefore not exceptional and, in such cases, the Service Level Terms and Penalties shall apply.
246. The Authority separately addresses the OLOs' concerns regarding the level of the penalty charges below in paragraph 251.
247. Finally, the Authority notes that several of the suggestions made by the OLOs in response to the questions in this section of the Annex to the draft Order (as well as questions in other sections) have been constructive and would support the further development of the wholesale regime. The Authority will take these into consideration and may adopt some of them following future reviews. However, this Order marks a significant change through the introduction of the Service Level framework and so, the Authority considers it proportionate to allow a phased approach in its implementation and considers that the final Order reflects a balanced, fair and transparent set of requirements, consistent with the needs of the Bahraini market at this time.
248. The Authority will monitor the performance of this new framework and will consider modifying it as part of future reviews, should the need arise.

¹³ See page 31 of Schedule 3 of Batelco's RO. Available at <http://batelco.com/business/solutions-by-sector/wholesale/reference-offer-ro/>

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The Authority's final conclusions

249. The Authority maintains the same conclusions as set out in the draft Order and now adds to these the definition of exceptional circumstances outlined in paragraph 232.

Q6. Definition and description of fault management process

The Authority's final views

250. In this regard as well, the OLOs have largely agreed with the proposals set forth by the Authority in the draft Order.

251. The Authority recognises the desire from the OLOs for even stricter standards to be placed on Batelco. However, considering the step change in regulation that this Order represents (through the introduction of a Service Level framework), the Authority finds the requirements in the Order proportionate. The Authority will, however, monitor the QoS levels achieved and will determine at a later stage whether the terms and penalties should be reviewed or enhanced.

252. The Authority considered the arguments put forward by Batelco for less strict standards because of barriers such as congestion and traffic in Bahrain but found them unconvincing. Specifically, the Authority does not consider that these would give just cause for reducing the standards expected in the service level framework.

The Authority's final conclusions

253. For the reasons set out above, the requirements for the faults management process to be included in Batelco's RO remains as per the draft Order as set out in paragraph 153 and Figure 7 above.

Q7. Process for payment of Service Level Penalties

The Authority's final views

254. The operators did not make any substantive comments in response to this question.

255. The issue of exceptional circumstances was raised again and for this, the Authority refers back to its definition of exceptional circumstances as set out in paragraph 238 above. The Authority reiterates that "emergency" maintenance is not in and of itself an exceptional circumstance unless it meets this definition.

256. The Authority also notes that Batelco expressed a concern about the feasibility and cost of implementing an automated rebate system.

257. For the avoidance of doubt, the Authority does not require that Batelco sets up an automated rebate system.

258. It does, however, require that penalties are reflected in the form of rebates included directly in the next invoice issued to the OLO who has been subjected to Batelco's failure to meet its required service level, without the OLO having to request such a rebate.

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259. Whether Batelco meets this obligation through the application of an automated or manual process is beyond the remit of this Order and for Batelco to determine.
260. Furthermore, recognising the potential costs to Batelco of meeting this obligation, the Authority will allow this obligation to be met on a phased basis, whereby direct rebates for accrued penalties will initially apply only to fibre-based Connections (WLA, WDC and Bitstream). This is because the fibre access network is more recent and less subject to quality deterioration and faults. As such, the Authority expects that it should be more feasible for Batelco to implement. Therefore, for copper-based Connections, the OLO will still be required to claim rebates from Batelco for each individual fault.
261. The Authority considers this decision is proportionate given Batelco's current lack of integrated systems (service provisioning, fault management, service levels etc.).
262. The Authority will however consider the merit of extending this requirement to all Connections, including copper-based Connections, as part of the future RO review.
263. Finally, Batelco is required to create specific GL account(s) for recording Service Level Penalties. Under the regulatory accounts, the corresponding Penalty rebates should be allocated to a new Wholesale Activity element. Batelco shall not seek to recover the payment of rebates (e.g. by introducing such cost in the cost stack of regulated products).

The Authority's final conclusions

264. The Authority maintains its conclusions from the draft Order and adds to these the implementation plan outlined above, which is:
- a. the direct rebating of Service Level Penalties without specific rebate claims shall, for the time being, be restricted only to fibre-based Connections (WLA, WDC and Bitstream).
 - b. For copper-based Connection, the OLO will still be required to claim rebates from Batelco for each individual fault.
265. Furthermore, Batelco is hereby ordered to create specific GL account(s) for recording Service Level Penalties. Under the regulatory accounts, the corresponding Penalty rebates should be allocated to a new Wholesale Activity element. Batelco shall not seek to recover the payment of rebates (i.e. Batelco shall not introduce such cost in the cost stack of regulated products).

Q8. Service Level definitions

266. As there were no major comments from the operators, the Authority's views and conclusions remain as per the draft Order, as outlined in Figure 9, with exception to the following changes which Batelco shall reflect:
- a. the definition of "*Maximum Time for Service Request Confirmation*" shall be amended to "*means the after which Batelco is subject to Penalties for Service Request Confirmation*"; and
 - b. the definition of "*Penalties for Service Request Confirmation*" shall be introduced as "*means the penalties due by Batelco for not meeting the Maximum Time for Service Request Confirmation*".

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4 The need for a forum on Batelco's RO

267. In the following section, the Authority proposes to create of a forum on Batelco's RO.

CONSULTATION TEXT

268. The Authority is considering to create a forum that will be meeting from time to time with relevant stakeholders, with the purpose of providing a platform to discuss matters related to the active wholesale access products and services included in Batelco's RO. Such forum will be referred hereafter as Forum on Batelco's RO ('FRO').

269. The Authority considers that certain RO subjects, due to their technical or procedural nature, should first be discussed together with OLOs and Batelco before an informed regulatory decision can be taken.

270. The need to set up the FRO was evidenced during a series of meetings that the Authority held with OLOs at the end of October 2014. The purpose of such meetings was to understand what enhancements to Batelco's wholesale domestic data connectivity products would be necessary to ensure that OLOs could compete more effectively with Batelco in the downstream retail markets. OLOs also discussed some enhancements that they believe would be required before considering Batelco's wholesale access products for the purpose of radio site backhauling.

271. As some of the discussions held during such meetings were of a very technical nature, the Authority considers that they should first be held during meetings of the proposed FRO. This would ensure that any concerns raised by different parties are fully considered before proposing draft regulatory decisions for consultation.

272. In summary, the establishment of the proposed FRO would have the following purposes:

- a. understand the views of OLOs and Batelco with regard to the terms that apply to regulated wholesale products and services;
- b. gather information for the purpose of taking better informed preliminary decisions that would then be consulted with the industry;
- c. provide clarifications as needed on changes to the RO that are ordered or approved by the Authority; and
- d. monitor the implementation of ordered or approved changes to the RO and address any issues that may arise during such implementation.

Terms of reference for an effective FRO

273. For the FRO to be effective, the Authority proposes that the below terms of reference should apply:

- a. **Scope:** the scope of the FRO will be limited to technical and procedural matters regarding regulated wholesale access products and services (i.e. technical

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configurations and wholesale processes). However, the FRO should not provide a platform to discuss issues that may arise for a specific wholesale Connection (e.g. fault impacting a given Bitstream Connection at a specific customer location). In other words, only the general terms (technical or procedural terms) applicable to regulated products and services should be discussed during meetings of the FRO, not specific situations.

- b. **Governance and participation:** the Authority will chair the FRO and own the agenda of FRO meetings. Batelco and all interested OLOs should be able to participate to FRO meetings. Where relevant and appropriate, the Authority may propose to restrict the participation to a FRO meeting to a limited number of operators and/or participants per operator.
- c. **Periodicity and location:** the FRO will meet on a regular basis and the Authority anticipates that at least two FRO per year would be held. FRO meetings will be held at the Authority's premises. The Authority does not propose any FRO meeting to take place during the period starting from (a) the issuance of a draft RO Order for public consultation and ending with (b) the issuance of the corresponding final RO Order.
- d. **Documentation:** minutes of FRO meetings will be taken by the Authority. In addition to forwarding meeting minutes to FRO participants, the Authority reserves the right to publish such minutes on its website, if deemed appropriate.

274. The Authority anticipates that the first FRO meeting would cover the following agenda items:

- a. Presentation of the FRO's terms of reference; and;
- b. Discussions regarding Batelco's implementation of the price and non-price terms included in this Order.

Q9. Do you agree with the Authority's proposed creation of a Forum on Batelco's RO? Please explain and justify your position. According to you, what should be the terms of reference of such forum to ensure its effectiveness?

SUMMARY OF SUBMISSIONS ON SECTION 4

275. This subsection summarises the submissions and cross-submissions received from stakeholders on section 4 (The need for a forum on Batelco's RO).

Submissions

276. All operators agree with the Authority's proposal.

277. Kalaam suggests that there also be one-on-one sessions between the OLO, Batelco and the Authority to discuss product-related issues specifically for Kalaam.

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278. Although VIVA agrees that such a forum is a good idea, it considers that the terms of reference for the forum should include all regulated products, rather than just active products. VIVA states that the establishment of a forum should not prevent the Authority from stepping in and deciding on a technical or operational matter, even if the forum has not considered the matter or is in the process of considering it. VIVA believes that this will prevent Batelco from “gaming” the system.
279. Zain too agrees with the proposal and outlines its understanding of the functions and responsibilities of the forum.
280. Although Batelco welcomes suggestions which improve communication amongst all relevant stakeholders, it states that in its experience, one-to-one wholesale account manager discussions facilitate a more confidential flow of information.

Cross-submissions

281. Mena and Kalaam do not make any comments in the cross-submission stage on this topic.
282. VIVA states that it has sympathy for Batelco’s view that one-to-one communication at account manager level facilitates confidentiality. However, it believes that this can still take place outside of the forum construct.
283. Zain considers that Batelco should not have any concerns regarding confidentiality because the Authority has stated that the scope of the forum is general and individual cases should be not discussed during meetings of the FRO. Zain states that all the OLO’s will be present in the meetings and if any stakeholder would like to share an important concern or requirement he will be responsible for the level of information disclosed.
284. Zain agrees with VIVA’s comments that FRO agenda should include all regulated products (not just active products).
285. Batelco, on the other hand, considers Zain and VIVA’s proposals for the FRO to be misusing the initiative. It considers that some of the proposals for using the forum as an inquisitorial process and a compliance checking function raises issues of inadvertent disclosure of confidential information (for example, the order information for one wholesale customer being revealed to another competitor).

THE AUTHORITY’S FINAL CONCLUSIONS ON SECTION 4

286. In this subsection, the Authority provides its final views and conclusions with regard to section 4 (The need for a forum on Batelco’s RO).
287. The Authority has considered the operators’ submissions and cross-submissions. Given that all operators have agreed with the proposal, the Authority is satisfied that the Forum will be a useful initiative.
288. For the sake of clarity, the Authority reiterates that regulated active RO products should, at this point in time, be the primary focus of FRO meeting discussions. However, if deemed necessary, the Authority may propose to include other topics such as passive access in the agenda of future meetings.

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289. Finally, the Authority expects the first meeting of the Forum to take place in November 2016 (i.e. about one month after the implementation of this Order). The Authority will send out a separate invitation for such meeting.

290. Therefore, the Authority's conclusions in the final Order remain as per the draft Order, as outlined in paragraphs 268 to 274, with the additional clarifications as per paragraphs 287 to 289 above.

5 Review of non-price terms applicable to wholesale data connectivity products and services

291. In the following section, the Authority reviews the non-price terms applicable to the wholesale connectivity products and services.

CONSULTATION TEXT

5.1 Background

292. As stated by the Authority in the “Determination of Significant Market Power and Determination of Dominant Position in the Markets for Domestic Data Connectivity Services” issued on 10 April 2014 under reference MCD/04/14/026 (hereafter, the “Determination”), the Authority considers that Batelco should introduce additional ancillary services, enhance existing Service Levels, and introduce Service Levels when inexistent. This would enable OLO to compete more effectively against Batelco in the retail market for connectivity services and to promote the use of the wholesale product and services by OLOs for wireless site backhauling and/or core network transmission.¹⁴

293. As previously indicated above (see paragraph 270), the Authority has held several meetings with OLOs at the end of October 2014 to discuss potential enhancements to Batelco’s wholesale data connection products.

294. Among the different suggestions for improvements, OLOs stressed that it would be important to consider:

- a. **Reviewing and enhancing the current SLAs applicable to the WLA service:**
When a WLA Connection does not meet the Service Levels terms defined for the WLA product, OLOs consider that Service Credits should be automatically reflected by Batelco as rebates in the corresponding invoices. The possibility of introducing a premium support with higher Service Levels was also discussed as OLOs indicated that certain customers require a guarantee that the service would be restored in no time. This particularly applies to cases where WLA Connections are used as inputs by OLOs to provide end-to-end international connections or to meet the higher requirements demanded by certain customers (e.g. banking sector). OLOs finally mentioned the possibility of introducing clearly defined protection options for WLA Connections.
- b. **Introducing higher speeds:** with the continued growth in mobile data usage, OLOs indicated that the average backhaul traffic per radio site had increased considerably over the last 2-3 years. The increase of traffic per site is expected to continue in the coming years, notably with the rapid uptake and development of LTE services. One of

¹⁴ For more information on the Determinations, please refer to page 134 “

B.3 Domestic data connectivity market review (2013-2014)”.

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the OLOs mentioned that the combined backhaul traffic of a typical busy radio site was currently in the range of 300Mbit/s to 500Mbit/s, and such traffic was expected to increase up to 1Gbit/s in the coming 3-5 years. Moreover, as OLOs tend to deploy hubs to aggregate traffic of several radio sites (i.e. star topology with traffic aggregators), there would be a need for a reliable fibre-based wholesale product in the range of 1 to 5Gbit/s.

- c. **Introducing a “pre-sale process”**: under such a process, OLOs would quickly be informed of the availability of a fibre access at a specific location in Bahrain. This would enable OLOs to be more responsive to customer requests (i.e. inform potential customers of the expected provisioning time for a new connection).
- d. **Reviewing the approach for the recovery of costs incurred by Batelco for passive network extensions**: in cases where a new CAT/LLCO or WLA Connection requires an extension of Batelco’s passive network (i.e. where there is a need to build an additional duct path and/or pull additional fibre cables to deliver a new CAT/LLCO or a WLA Connection), several OLOs have highlighted that the costs of such network extensions are currently fully recovered by Batelco on a time and material basis (see for example, charge items 2-16.10 in RO Schedule 3). While some OLOs understand that in specific cases, the cost of Batelco’s network extension should be borne by OLOs (e.g. duct lead-in to a radio site), they do not agree that Batelco should systematically seek to recover the full invested amount from OLOs. In such cases, OLOs stressed that, while Batelco’s network extensions have been fully paid by OLOs, Batelco nonetheless retains the full ownership of such extensions and may use them to provide other services to OLOs and/or retail customers. OLOs therefore consider that they should not be financing the extension of Batelco’s fibre access network, and that, in the majority of cases; costs should be fully borne by Batelco. If the costs of Batelco’s fibre-access network extensions are to be fully recovered from OLOs, OLOs consider that a fair downward adjustment to the applicable MRC should apply.
- e. **Introducing the same terms (including SLAs) for the CAT/LLCO services**: OLOs have insisted that the CAT/LLCO services should have the same terms and Service Levels as the WLA service.

295. In the following sections, the Authority discusses the changes that Batelco would be required to introduce in its RO to address the above comments made by OLOs.

5.2 Standardized service description for all wholesale data connectivity products and services

5.2.1 Basis for the proposed standardized service description

296. The Authority considers that there would be some merit in having standardized service descriptions for the existing WLA, CAT, and LLCO services as they all provide symmetrical data connectivity between a Point of Presence (“POP”) of the Access Seeker and either a) an End User premises; or b) an other POP of the Access Seeker.

297. Under this approach, the main document of each service description will be identical, with exception to the product name and the product definition. Each service description will

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however have different technical annexe(s) which will provide details on the technical parameters of the product.

298. Furthermore, the Authority considers that the high-speed CAT and high-speed LLCO services should be merged under one service description. The Authority invites Batelco to propose a name for such service description as part of its response to the draft Order consultation. Until such time as Batelco proposes a name, the Authority will refer to this product as “**Wholesale Data Connection**” (hereafter “**WDC**”). This name is temporarily set by the Authority for ease of reference in this document. For the avoidance of doubt, the Authority does not propose to merge the low-speed CAT and LLCO circuits (≤ 2 Mbit/s) under the WDC.

299. The use of standardized service descriptions for the WLA and WDC products and services is pertinent for the following reasons:

- a. **One defined wholesale market:** In its “Determination of Significant Market Power and Determination of Dominant Position in the Markets for Domestic Data Connectivity Services” issued on 10 April 2014 (ref: MCD/04/14/026), the Authority has only defined one wholesale market for the provision of domestic data connections. With exception to technical terms, there is no justifiable reason for non-price terms to differ between the WLA and WDC service descriptions.
- b. **Reduction of regulatory costs:** Standardized WLA and WDC service descriptions would reduce the regulatory costs incurred by both Batelco and the Authority for the maintenance, review and update of the RO service descriptions.
- c. **Same functionality:** All current wholesale data connection products, including the CAT, the LLCO and the WLA are fundamentally the same: they are all defined by Batelco as “*wholesale dedicated private leased circuit service*” and are used to provide dedicated data connection between two distant geographic end-points located in Bahrain:
 - i. As indicated by their respective definitions (see below), CAT and LLCO only differ according to the restriction placed by Batelco on the location of the connection’s end-points. For the CAT, one end-point must be a POP, and the other, an End User premises (i.e. customer site); while for the LLCO, both end-points must be POP. It is therefore sensible to regroup the CAT and LLCO under one service description called WDC.

“The CAT Service is a wholesale dedicated private leased circuit service for carrying Access Seeker’s traffic within Bahrain between an End User premises and an Access Seeker’s Point of Presence.”¹⁵

“The Local Leased Circuit for OLO (LLCO) Service is a wholesale dedicated private leased circuit service for

¹⁵ SERVICE DESCRIPTION 2-6 CUSTOMER ACCESS TAIL (CAT) SERVICE, Batelco’s RO.

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carrying Access Seeker's traffic within Bahrain between two of the Access Seeker's Points of Presence."¹⁶

- ii. The WLA is also defined in similar terms by Batelco: "a wholesale dedicated private leased circuit service within the Kingdom of Bahrain between a Point of Presence of an Access Seeker and an End User Premises / Point of Presence providing guaranteed symmetrical bandwidth."¹⁷ While CAT/LLCO circuits use Batelco's SDH transmission network, WLA Connections use its MPLS transmission network. The two transmission networks have different costs. This results in different regulated charges for the CAT/LLCO and the WLA and justifies maintaining two distinct but standardized service descriptions. However, there is no reason that would justify the maintenance of different non-price terms for such products.

5.2.2 Format of the standardized service descriptions

300. As the WLA service description (i.e. SERVICE DESCRIPTION 2-16: WHOLESAL LOCAL ACCESS SERVICE [WLA]) was the latest RO service description reviewed and approved by the Authority, the Authority proposes to consider it as a starting point for the standardized service descriptions applicable to both the WLA and WDC products.

301. The Authority is of the view that the generic terms of the WLA product should also apply to the proposed unified WDC product. Any terms that would be specific to either the WLA or WDC product could be placed in an annex of the corresponding service description (e.g. technical parameters, service tests, technical diagram etc.).

5.3 WDC product as an alternative to a regulated dark fibre product

5.3.1 Background information on the dark fibre discussions

302. In section 8 of its "Determination of Significant Market Power and Determination of Dominant Position in the Markets for Domestic Data Connectivity Services" issued on 10 April 2014 (ref: MCD/04/14/026), the Authority identified dark fibre as a potential remedy that could be introduced by Batelco at the wholesale level to promote competition in the downstream retail market and to provide a solution to address OLOs' need for backhaul transmission:

"The Authority therefore believes that Batelco should offer access to dark fibre [...]. Once such a fit-for-purpose dark fibre access product is available and being used, the Authority may consider allowing for the withdrawal of the existing duct access product from Batelco's Reference Offer."

¹⁶ SERVICE DESCRIPTION 2-5: LOCAL LEASED CIRCUIT FOR OLO (LLCO) , Batelco's RO.

¹⁷ SERVICE DESCRIPTION 2-16: WHOLESAL LOCAL ACCESS SERVICE (WLA), Batelco's RO.

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303. Accordingly, the Authority has taken a number of steps to investigate with Batelco the technical feasibility of introducing a dark fibre service as a remedy in Batelco's RO. Such steps are being summarized in the below table.

Figure 13: Timeline of discussions regarding the potential introduction of a dark fibre product or an equivalent active wholesale product

Date	Description	Reference
10 April 2014	The Authority issues the "Determination of Significant Market Power and Determination of Dominant Position in the Markets for Domestic Data Connectivity Services".	MCD/04/14/026
11 May 2014	The Authority sends a letter to OLOs requesting them to provide comments on the potential introduction of a dark fibre product in Batelco's RO. OLOs are invited to provide such comments before 22 May 2014.	MCD/05/14/066
29 June 2014	The Authority sends a letter to Batelco to request Batelco to submit a draft service description for the dark fibre product for the Authority's review. In such letter, the Authority sets out the key requirements which it expects the draft dark fibre service description should cover. The requirements are based on the feedbacks given by OLOs to the Authority during May 2014.	MCD/06/014/087
7 July 2014	At Batelco's request, the Authority organizes a meeting to discuss the requirements of the dark fibre product. During the meeting, Batelco claims that it would be challenging to introduce such product for reasons including but not limited to: a) issues with database records on fibre availability and usage; and b) shortage of fibre pairs in junction cables linking Batelco's service nodes.	N/A
4 August 2014	In its response to the Authority's letter dated 29 June, Batelco sets out its main issues and concerns with regard to the introduction of a dark fibre product. Batelco also submits a draft service description for a service called "WIRELESS BACKHAUL SERVICE" aimed at addressing backhaul connectivity requirements of operators holder of a fixed wireless or mobile license.	GCL/296/14
9 April 2015	During a meeting held at the Authority's premises, Batelco presents its proposed Wireless Operator Backhaul Service based on DWDM transmission.	
29 April 2015	Batelco submits costing information for the Wireless Operator Backhaul Service. In addition, Batelco provides the list of service nodes which currently host DWDM equipment.	GCL/119/15
29 April 2015	The Authority shares its concerns with Batelco on the costing of the Wireless Operator Backhaul Service and requires Batelco to submit its proposed pricing for such service.	
17 May 2015	Batelco confirms by email its proposed pricing for the Wireless Operator Backhaul Service.	
28 May 2015	Batelco submits additional information regarding the Wireless Operator Backhaul Service and other regulated wholesale data connection products.	GCL/140/15

Source: the Authority

304. In its letter dated 4 August 2014, Batelco claimed that it has serious concerns and issues with regard to the introduction of a regulated dark fibre product. Batelco particularly highlighted certain issues with the technical feasibility of a dark fibre product:

- a. **Issues with database records:** Batelco indicates that the database records of existing spare ducts and spare fibre are fragmented. Batelco further submits that a

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consolidated database, as envisaged by the Authority, would require time and cost to develop.

- b. **Congestion in junction cables:** Batelco claims that it has concerns over capacity congestion in its existing junction cables.¹⁸ According to Batelco, the launch of an “any to any” dark fibre service would exacerbate this congestion problem in highly-demanded areas, especially when taking into account reasonable capacity requirements of its retail division.

305. Together with its letter dated 4 August 2014, Batelco also submitted a draft service description for an active wholesale active data connection product called “*Wireless Backhaul Service*” aimed at addressing backhaul connectivity requirements of operators holder of a fixed wireless license or mobile license.

306. Given the uncertainties regarding the Government policy on the National Broadband Network (“**NBN**”) in Bahrain, the Authority decided several months later to consider Batelco’s proposed active wholesale product as an alternative to dark fibre. Accordingly, the Authority invited Batelco to present its proposed active wholesale product.

307. On 9 April 2015, Batelco presented a revised version of its proposed product called Wireless Operator Backhaul Service (hereafter referred as “**WOBS**”). Batelco’s proposed WOBS is described in the following section.

5.3.2 Batelco’s proposed active wholesale data connection product as an alternative to a regulated dark fibre product

308. The following section details the main characteristics of the WOBS that was proposed by Batelco. Such characteristics are organised around key topics, including:

- a. Proposed service definition;
- b. Proposed technical parameters;
- c. Proposed non-price terms, including Service Levels; and
- d. Proposed price terms.

Proposed service definition

309. Batelco’s proposed WOBS is defined as:

“The Wireless Operator Backhaul Service (WOBS) is a wholesale uncontended symmetrical dedicated private leased circuit service within the Kingdom of Bahrain between a Wireless Radio Site of the Access Seeker and the Access Seeker aggregation Point of Presence.”

¹⁸ Batelco calls ‘junction cables’ the cables that interlink its exchanges.

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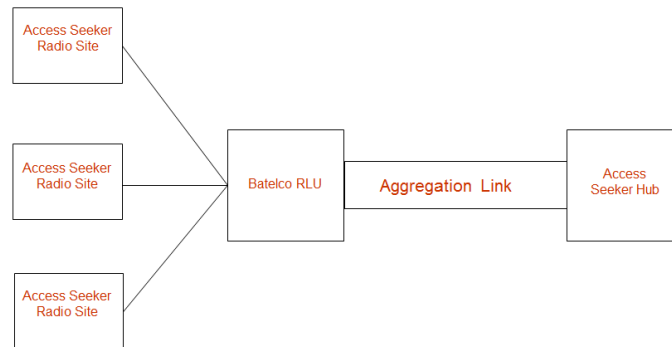
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Available To: *Mobile Network Operators and Fixed Wireless Operators holding the appropriate license.*

Proposed technical parameters

310. Batelco's proposed WOBS is intended to be delivered using Batelco's Dense Wavelength Division Multiplexing ("DWDM") network. The proposed WOBS provides a seamless end-to-end transmission between a wireless operator's mobile tower and its main hub or POP.
311. The technical standards referred to by Batelco for the WOBS are:
- ITU-T G.709: Interfaces for the Optical Transport Network (OTN); and
 - IEEE 802.3z: IEEE standards for Gigabit Ethernet in the LAN/MAN environment.
312. According to Batelco, customer VLANs or other labels will not be detected by the network. In addition, OLOs will be able to configure VLANs independently between customer equipment at the wireless site and customer aggregation site equipment.
313. The WOBS connections are aggregated and delivered at the OLO's POP through an aggregation link, as can be seen in the following figure provided by Batelco as part of the WOBS service description.

Figure 14: Batelco's service diagram for the proposed WOBS



Source: Batelco's WOBS service description dated 9 April 2015

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314. Batelco proposes a protection mechanism for the WOBS aggregation link:

“MSP 1+1 protection

Sub-Network Connection Protection (SNCP)

Silver auto switching of 50ms.”¹⁹

315. An optional level of protection is also proposed by Batelco for WOBS connections:

“Option of providing 1+1 fiber connection to the Wireless Radio Site should this be required by the Access Seeker.”²⁰

316. Batelco proposes the following speeds for the WOBS connections:

- a. 300Mbit/s;
- b. 500Mbit/s;
- c. 1,000Mbit/s;
- d. 2,500Mbit/s; and
- e. 10,000Mbit/s.

317. Batelco proposes that the following QoS parameters for the WOBS:

- a. Packet loss: none;
- b. Jitter: none; and
- c. Latency: 5ms.

318. Finally, in an email dated 29 April 2015 (ref: GCL/119/15), Batelco indicated that the following nine (9) service nodes were equipped with DWDM core equipment:

- a. Sanad;
- b. Salmaniya;
- c. Isa Town;
- d. Riffa;
- e. Ras Abu Jarjoor;
- f. Mahooz;
- g. Muharraq;
- h. Hidd industrial; and
- i. Juffair.

¹⁹ Batelco's presentation of the WOBS dated 9 April 2015

²⁰ ibid

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Proposed non-price terms, including SLAs

319. The service description of the proposed WOBS is very similar to the existing WLA service description. However, the proposed WOBS terms differ from the WLA terms. The main differences are listed below:
- a. **Access restrictions:** compared to the WLA service, Batelco proposes to introduce some restrictions for access the WOBS. Such restrictions include:
 - i. **Access restrictions based on the type of license:** Batelco proposes that only holders of an Individual Mobile Telecommunications Licence (IMTL) or a National Fixed Wireless Services Licence (NFWS) should have access to the WOBS.
 - ii. **Access restrictions based on the use of the service:** Batelco proposes that the WOBS should only be used for the provision of backhaul transmission to Wireless Radio Site. Wireless Radio Site is defined by Batelco as follows “*Wireless Radio Site means a permanent physical location in Bahrain owned or controlled by the Access Seeker and from which location the Access Seeker transmits wireless signal or a Wireless Colocation Site.*”
 - iii. **Access restrictions based on the location of the OLO’s POP:** it would appear that Batelco proposes to introduce restrictions with regard to the geographic location of the OLO’s POP which, contrary to a WLA Connection, cannot be a Batelco collocation facility.
 - iv. **Access restrictions based on a minimum initial order:** Batelco proposes that the WOBS should only be accessible for a minimum initial order of 50 Connections.
 - b. **Service period:** compared to the WLA, Batelco proposes a different minimum service period and renewed minimum service period for the WOBS:
 - i. **Minimum service period:** Batelco proposes a minimum service period of twenty-four (24) calendar months for the WOBS, as opposed to twelve (12) calendar months for the WLA.
 - ii. **Renewed minimum service period:** similarly, Batelco proposes that, upon expiry of the service period, a renewed minimum service period of twelve (12) calendar months applies to the WOBS as opposed to one (1) calendar month for the WLA service
320. The Service Levels proposed for the WOBS are, to a large extent, similar to those offered for the WLA, with exception to the following:
- a. The Service Availability of 99.99% is being proposed for the WOBS instead of 99.7% for the WLA;
 - b. The maximum Ready for Test lead time of the WOBS is set at 90 Working Days instead of 15 Working Days, 30 Workings Days and “Exceptional Delivery Date” for the WLA (the RFT date applicable to the WLA varies depending on whether the fibre is readily available and can accommodate a Connection, or whether Batelco is required to build new access ducts to deliver a new Connection).

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Proposed price terms

321. Batelco proposed the following charges for the WOBS.

Figure 15: Batelco's proposed charges for the WOBS

Speed in Mbit/s	MRC (in BD per month)
300	3,787
500	4,046
1,000	4,574
2,500	5,775
10,000	9,769
Installation Charges	BD500 per WOBS Connectivity. Any excess construction and/or Access Network expansion charges may apply.

Source: Batelco's WOBS service description dated 9 April 2015

5.3.3 Batelco's proposed WOBS to be offered as WDC product

322. As mentioned above, the Authority is willing to consider Batelco's proposed WOBS as an alternative to a regulated dark fibre product. The Authority's decision is motivated by a number of factors including:

- a. the apparent shortage of unused fibre pairs in the junction cables connecting Batelco's service nodes, which, according to Batelco, would make a dark fibre service difficult to implement; and
- b. the current lack of details regarding the plan that will cover the implementation of the Government policy on NBN.

323. As the DWDM network has been principally used by Batelco to offload traffic from its legacy SDH transmission network, the Authority considers that it is judicious for the proposed WOBS to be offered as WDC product, which is to combine the high-speed CAT and LLCO services.

324. The Authority is also confident that the new defined WDC product, once market tested, will also provide a sound alternative to the duct access rental product currently being offered by Batelco.

325. For the reasons set out in the above subsections, the Authority therefore orders Batelco the following:

- a. Batelco shall continue to offer the WLA product which shall be defined as "The Wholesale Local Access (WLA) product is an active wholesale product providing symmetric and guaranteed data connectivity within the Kingdom of Bahrain between a Point of Presence of an Access Seeker and an End User Premises / Point of Presence."

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- b. Batelco shall combine the high-speed CAT service and the high-speed LLCO service under a unified service description provisionally called 'Wholesale Data Connection' or 'WDC' product.
- c. Batelco shall offer the WDC product which shall be defined as "The Wholesale Data Connection (WDC) product is an active wholesale product providing symmetric, synchronous, dedicated, and uncontended data connectivity within the Kingdom of Bahrain between a Point of Presence of an Access Seeker and an End User Premises / Point of Presence."
- d. From a technical standpoint, WDC shall correspond to both the high-speed CAT/LLCO and the WOBS proposed by Batelco. WDC Connections shall use Batelco's SDH transmission network or Batelco's DWDM transmission (or a combination of the two). For cost efficiency purposes, Batelco may first aggregate WDC traffic via Ethernet switches or via SDH aggregation rings before transmitting such WDC traffic on its DWDM network.
- e. Batelco shall consider the current WLA service description as a starting point for the definition of the revised WLA service description and the new unified WDC service description.
- f. Batelco shall ensure that the WLA and WDC service description are standardized to the maximum extent possible:
 - i. the WLA and WDC service descriptions shall have the same structure, including main document and annexes;
 - ii. the main document of the WLA and WDC service descriptions shall be identical, with exception to the product name and product definition.
 - iii. the terms which are specific to either the WLA or the WDC product shall be annexed to the service description. This includes technical parameters, service tests, technical diagram, Service Request Form and other specific information.
- g. On the effective implementation date of this Batelco Order, Batelco shall treat existing CAT, LLCO and WLA Connections as follow:
 - i. the existing low-speed legacy CAT and LLCO circuits shall remain as is;
 - ii. the existing low-speed NGN-based CAT and LLCO circuits (i.e. speed \leq 2 Mbit/s) shall become WLA Connections; and
 - iii. the existing high-speed SDH-based CAT and LLCO circuits (i.e. DS3 speed and above) shall become WDC Connections.

5.4 Review of the non-price terms applicable to the WLA and WDC products and services

326. While the Authority is willing to accept Batelco's proposed WOBS as an alternative to a regulated dark fibre product, it considers that the price and non-price terms proposed by Batelco for such product are unfair, unreasonable and discriminatory, and as result shall not be the terms applicable to the WDC.

327. For instance, the Authority considers that the access restrictions that Batelco wishes to introduce for the WOBS are unjustified (see above paragraph 319.a). It is not clear to the

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Authority why Batelco wishes to limit access to the WOBS to only those licensees holding a mobile or fixed wireless network license. It is likely that other OLOs may also be interested in such a product for other purposes, which could include the provision of core transmission capacity between OLO's core nodes, the provision of data connections to large corporate entities, or the provision of transmission links from cable landing stations.

328. Similarly, the Authority considers that the CAT and LLCO non-price terms shall not be used as a basis for defining WDC terms as they do not contain any Service Levels at present.
329. The Authority finally considers that some of the non-price terms currently applicable to the WLA should also be revised to ensure that they are fair and reasonable.
330. In the following sections, the Authority reviews the non-price terms applicable to the WLA and the WDC and sets the terms which it considers to be fair, reasonable and non-discriminatory.

5.4.1 Over recovery of costs incurred by Batelco for fibre access network extensions

331. Having regard to the discussions with OLOs during the meetings held in October 2014, the Authority is concerned that, when an OLO pays a one-off charge to Batelco to cover the costs incurred for extending Batelco's fibre access network to a new location, Batelco may actually be over recovering its costs.
332. The costs incurred by Batelco for extending the reach of its fibre access network to a new location include:
- a. costs of carrying out desk study, field study and coordination;
 - b. material costs (ducts, manholes, joints, fibre cables etc.); and
 - c. costs of work (trenching, ducting, construction of manholes, pulling of fibre cables, jointing and splicing etc.).
333. For such costs, Batelco currently charges:
- a. a Non-Recurring Charge ("NRC") based on time and material (e.g. for the WLA product, see charge item 2-16.10 "*Additional work (e.g. relocation of Aggregation Link or laying access copper or fibre)*" in the RO Schedule 3); and
 - b. regulated Monthly Recurring Charges ("MRC") for the wholesale Connection which include the unit cost of fibre access (e.g. for the WLA, see item 2-16.1 "*Monthly recurring tariffs per WLA Connection*").
334. Whilst the Authority considers that Batelco should only be authorized to recover efficiently incurred costs (and thus prevented from over-recovering costs or recovering inefficiently incurred costs), the Authority is also cognisant that Batelco is currently under no obligation to extend the reach of its existing fibre access network. In other words, Batelco is subject to an access obligation but not to a deployment obligation.
335. The Authority is therefore concerned that the introduction of limitations on Batelco's ability to recover fibre access deployment costs through a NRC may have the unintended adverse effect of limiting network investment (whereby Batelco would reject any Service Request made by an OLO to Batelco for a WLA or WDC Connection at a location where

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access fibre is not yet available). At the same time, the Authority remains of the view that Batelco should not seek to over recover fibre access deployment costs. The Authority has identified two approaches that could be followed to ensure that this objective is met:

- a. Based on historic wholesale invoices, the Authority could perform a downward adjustment to the unit cost of fibre access (i.e. Network Element AN08 in Batelco's regulatory accounts) to offset any costs that Batelco has already recovered through NRCs based on time and material; or
- b. Batelco could voluntarily introduce certain limitations on the recovery of access network deployment costs through NRCs.

336. The Authority is of the view that the second approach is the more appropriate way forward and proposes that Batelco should only seek to recover the costs of deploying a fibre access through a NRC when the additional passive infrastructure that has been deployed would be for the OLO's exclusive use in the foreseeable future (i.e. next 3 years). If the additional passive infrastructure that has been deployed is likely to be used for other purposes (i.e. to provide other retail or wholesale services), Batelco shall only seek to recover the cost of deployment by the MRC.

337. To justify such an approach, the Authority highlights the following:

- a. Fibre access costs are already being recovered by Batelco through the regulated MRC of Connections, which include the unit cost of fibre access (the costs incurred for fibre access deployment are being capitalized by Batelco and, as such, are considered in the calculation of the unit cost of fibre access).
- b. Except for cases where fibre access-related works are carried out in privately owned property, Batelco is certain to retain the full ownership of any infrastructure and fibre cable deployments. The Authority therefore considers that OLOs should not be financing Batelco's fibre access deployment, other than through the payment of the regulated MRC.
- c. Fibre-access deployments are long term investments. The economic lives of fibre cables and ducts are respectively set to 20 years and 40 years in the regulatory accounts of Batelco. The Authority considers that the return on investments for access fibre deployment projects is guaranteed over such long periods, in particular when deployments are targeted at connecting business locations.

338. Furthermore, according to Batelco's 2014 regulatory accounts, the monthly unit cost of a point-to-point fibre access is BD [X].²¹ The Authority has estimated the present value of this monthly unit cost, which based on calculations, represents an average CAPEX figure of BD [X] (~120 times the monthly unit cost). To derive this present value, the following assumptions were made:

- a. OPEX and unattributable cost contributions based on estimates from the access network bottom-up cost model;

²¹ For more information on the calculations of the unit cost of fibre access, please refer to paragraph 688 page 91.

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- b. weighted average lives of assets in a fibre access network deployment based on estimates from the BU access cost model; and
- c. the weighted average cost of capital (i.e. regulated WACC).

339. Based on the above, the Authority considers that the current unit cost of fibre access, which is included in the cost stacks of fibre-based data connection products, is sufficient to cover the investment costs of deploying fibre access for any such reasonable deployment project in Bahrain.

340. In the following table, the Authority provides several examples of cases and specify for each example, whether Batelco should or should not recover the costs of fibre-access related works through NRCs.

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Figure 16: Cases where access deployment costs may also be recovered through NRCs

#	Description	Work required	Cost recovery through a NRC	The Authority's justification
1	A large multi-storey business building (4 floors or more) is not connected with fibre.	Deploying a new fibre access cable (In addition, construction of new ducts and other underground infrastructure may be required in some sections).	No	Batelco should fully bear the costs of the new fibre access, as it may be used to provide services to other businesses that currently occupy or will occupy the building. The costs incurred by Batelco are however recovered through payments of MRC (which include a contribution for fibre access).
2	The existing fibre access cable to a business building is fully utilised by existing services and cannot accommodate any new services.	Deploying an additional fibre access cable to the location (In addition, construction of new ducts and other underground infrastructure may be required in some congested sections).	No	As Batelco may not have correctly anticipated future demand when it initially dimensioned the first access cable deployed at the location, Batelco should fully bear the costs of building additional fibre access capacity. The costs incurred by Batelco are however recovered through payments of MRC (which include a contribution for fibre access).
3	A small business building (3 floors or less) is not connected with fibre. OR A radio site is not connected with fibre.	Deploying a new fibre access cable (In addition, construction of new ducts and other underground infrastructure may be required in some sections).	Partial – Limitations apply	Batelco is only allowed to recover the costs incurred in building the portion of fibre access which corresponds to the path from the building (or radio site) to the nearest street/road where an existing duct is available. The costs that are recoverable exclude any additional underground infrastructure (e.g. handhole or manhole) built on the main duct path in the street/road and used to connect to the building (or radio site). In all cases, the Authority proposes to limit the recoverable portion of civil works per fibre access through a NRC to the maximum amount of BD1,000. ²² The rest of the costs are to be recovered through payments of MRC (which include a contribution for fibre access). Payment by the OLO should be made against Batelco's submission of an itemised invoice (broken down by time and material) and a map detailing the work performed.

²² Based on the access BU cost model, the total investment required to deploy a nationwide point-to-point fibre access network is estimated at ~BD 120 million. Under such a green-field deployment scenario, the deployment of approximately 14,500 km of fibre cables would be required (for a total fibre length of ~ 950,000 km). The amount of BD1,000 therefore corresponds to a 'fully loaded cost' for a fibre access cable distance of approximately 120 metres. The Authority anticipates that the average distance from any sites or buildings to Batelco's main duct network would be less than 120 metres.

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#	Description	Work required	Cost recovery through a NRC	The Authority's justification
4	Deployment of a fibre access protection (i.e. path redundancy)	Deploying a redundant fibre path to a location (In addition, construction of a new duct lead-in, new ducts and other underground infrastructure may be required in some sections).	Yes (however, the possibility to recover costs from several parties should be investigated first)	Batelco is allowed to fully recover the costs incurred in deploying a new fibre protection path by charging the OLO a NRC. When protection is requested for a multi-storey building, Batelco should first propose the protection option to other existing wholesale and retail customers in the building and assess the possibility of recovering the estimated cost of work from several other parties, including its own retail division. The final amount should be split between the relevant parties based on fair and reasonable criteria. Payment by the OLO should be made against Batelco's submission of an itemised invoice (broken down by time and material) and a map detailing the work performed.
5	Deployment of fibre access within privately owned property.	Deployment of fibre access within privately owned property (in addition to the fibre access cable, construction of new ducts and other infrastructure may be required e.g. distribution panel and boxes, fibre cables in risers etc.).	Yes	Batelco is allowed to fully recover, on a time and material basis, the costs incurred in deploying a fibre access within a privately owned property by charging the OLO a NRC. Payment by the OLO should be made against Batelco's submission of an itemised invoice (broken down by time and material) and, if available, a map detailing the work performed.

Source: the Authority

341. For all the above reasons, the Authority considers that, in the majority of cases, Batelco should only recover the costs of deploying a fibre access at a specific location through the MRC of wholesale and retail access products offered at that location.
342. However, for those specific cases where the additional passive infrastructure being deployed would be of the OLO's exclusive use in the foreseeable future (such cases are described in the above table), Batelco should, in addition to the MRC, also be allowed to recover such costs or a portion thereof through the NRC. The NRC should be capped and payment by the OLO should be made against an itemised invoice (broken down by time and material elements), and where relevant, a map detailing the work performed.
343. Batelco is invited to reflect the above limitations in the WLA and WDC service descriptions.

Q10. Do you agree with the Authority's proposed approach aiming at limiting the payment of one-off charges for the deployment of a fibre access? Please explain and justify your position.

5.4.2 Information on coverage and availability of fibre access lines

Current situation

344. OLOs have suggested that effective competition in the markets for provision of data connection services is currently being impaired by the asymmetry of information which exists between Batelco's retail arm and OLOs. In other words, the fact that Batelco retail can access information that OLOs cannot access means that there is not a level-playing field in this market between Batelco retail and OLOs.
345. This asymmetry of information between Batelco retail and OLOs is especially problematic when it comes to knowing the exact coverage and usage of Batelco's access network. As a vertically integrated operator, Batelco holds a significant advantage: its enterprise business unit has access to the exact footprint of the access network²³ and can thus be more responsive to any new service request from prospective customers.
346. Furthermore, Batelco's enterprise unit can also be consulted when Batelco's access network unit is planning fibre access extensions. The enterprise business unit can thus prospect future customers well in advance, and can then benefit from a first mover advantage.
347. For ad-hoc requests (i.e. where fibre access is not provided as part of a planned network coverage extension), Batelco's enterprise business is also able to coordinate more efficiently with Batelco's access network unit. They can provide an estimate of the applicable service delivery time to the customer more rapidly, and then they can ensure that the necessary work is effectively carried out according to such an estimate.
348. For the above reasons, the Authority considers that the ability for OLOs to access information on the coverage, usage and future deployment of fibre access lines is an important requirement that Batelco should meet to fulfil the access obligation under Article 57 of the Telecommunication Law.
349. The Authority is therefore of the view that:
- a. Batelco should provide OLOs with online access to a database that contains information on Batelco's access fibre network including planned deployments.
 - b. Until such time as this database is available, there should be an interim solution aimed at reducing the current asymmetry of information. The Authority proposes the introduction of a pre-sale process under which Batelco would inform OLOs in a timely manner of the availability or future availability of fibre access for any given location in Bahrain.

²³ From previous discussions with Batelco, the Authority understands that information on the coverage and usage of access lines is recorded by Batelco in its GIS system and can be consulted by a system module called "Line Plant Assignment Module".

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Introduction of a pre-sale process

350. In the series of meetings held at the end of October 2014, several OLOs explained that the only way for them to find out whether a given location is connected to Batelco's fibre access network is to send a Service Request for a new wholesale service.

351. They stressed the importance of having a presale process by which Batelco would provide information on the availability of fibre access at a given location without having to commit through sending a Service Request.

352. Such a pre-sale process could take the form of an online database that provides details on the availability and usage of fibre access cables in Bahrain. The same database could be accessible by both OLOs and Batelco's retail arm, thus ensuring non-discriminatory access to key information (and as such, resolving some of the issues caused by the current asymmetry of information).

353. However, the Authority is also cognisant that, while all access ducts and all fibre access cables deployed by Batelco are recorded in its Geographic Information System ("GIS"), it is not clear whether the actual usage of fibre pairs by services is being systematically updated in a centralised database. The Authority understands that, at present, Batelco has yet to develop such centralised database, which would include up-to-date information on fibre availability.

354. For the above reasons, the Authority orders the following:

- a. Batelco is required to build a centralised database on fibre access and fibre usage, with the aim of providing remote online access to such database to OLOs and its own retail business units.
- b. The type of information that would be accessed by OLOs and Batelco retail would be determined by the Authority at a later stage following consultation of relevant stakeholders. Initial discussions on the database requirements and service levels, covering accuracy, frequency of updates, information format, may be held during a meeting of the FRO.
- c. The database on fibre access and fibre usage shall be operational and accessible online by OLOs and Batelco retail not later than the 31st December 2016.
- d. Until such time as the database is made available, Batelco shall introduce a pre-sale process that would meet the following requirements:
 - i. upon receiving a pre-sale request from an OLO, Batelco has a maximum of two (2) working days to indicate:
 - whether a location is already connected by a fibre cable, including any relevant information on access redundancy (e.g. business ring);
 - whether a spare fibre is or will soon be made available at such a location for the provisioning of a new service (or spare redundant fibre); and
 - in case of unavailability of fibre, an estimate of the time required to build a new fibre access.
 - ii. the pre-sale process should be provided by Batelco free of charge to OLOs.

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- iii. the pre-sale process should be documented in Batelco's RO in an annex to the WLA and WDC service descriptions.

Q11. Do you agree with the Authority's proposal to order Batelco to build a centralised database on fibre access and fibre usage in Bahrain? Do you agree that until such time as a database is made available, Batelco should introduce a 2-working-day presale process? Please explain and justify your position.

5.4.3 Introduction of additional speeds for the WDC product

355. The Authority considers that there is no need to introduce additional speeds for the WLA.

356. For WDC, the Authority considers that Batelco should introduce new speeds in addition to the current speeds being available for CAT/LLCO connections (i.e. DS-3, STM-1, and STM-4). The new speeds that Batelco should be offering for the WDC Connections are listed in the below table:

Figure 17: List of available speeds for the WDC Connections

WDC Connection speeds (in Mbit/s)	
45	Mbit/s (i.e. DS3)
156	Mbit/s (i.e. STM-1)
300	Mbit/s
400	Mbit/s
500	Mbit/s
622	Mbit/s (i.e. STM-4)
750	Mbit/s
1,000	Mbit/s
1,250	Mbit/s
1,500	Mbit/s
2,000	Mbit/s
2,500	Mbit/s (i.e. STM-16)
5,000	Mbit/s
7,500	Mbit/s
10,000	Mbit/s (i.e. STM-64)

Source: the Authority

Q12. Do you have any comments in relation to the speeds for which the WDC should be made available?

5.4.4 Aggregation Links for the WLA and WDC products

WLA Aggregation Link

357. The Authority is satisfied that the speed of 1Gbit/s offered by Batelco for the WLA Aggregation Link is sufficient at the moment to cater for WLA Connections.
358. The Authority will monitor the uptake of WLA Connections and would determine in the context of the next RO review if there would be some merit in considering the introduction of a 10Gbit/s WLA Aggregation Link (i.e. 10 Gigabit Ethernet (“**GbE**”)).
359. Some OLOs have indicated that they would be interested in having the possibility to choose a higher grade CPE for the WLA Aggregation Link. Such a higher grade CPE should also include some level of redundancy, such as redundant power and processing cards.
360. For the above reason, the Authority considers that, for the WLA Aggregation Links, Batelco should allow OLOs to optionally request a higher grade CPE that includes some level of redundancy. The cost surplus of such a higher grade CPE should be borne by the OLO through the payment of a reasonable NRC.
361. The Authority therefore orders Batelco to make explicit in the WLA service description that an optional higher-grade CPE for the WLA Aggregation Link can be requested by OLOs against the payment of a reasonable NRC to cover for any cost surplus.

WDC Aggregation Link

362. Based on discussions held with Batelco during the presentation of the WOBS dated 9 April 2015, the Authority understands that it would be technically feasible to aggregate all existing CAT/LLCO circuits and future WDC Connections on the same CPE.
363. The Authority considers that such an Aggregation Link should be proposed for the speed 10Gbit/s (i.e. STM-64). This would allow for the efficient and cost-effective aggregation of several WDC Connections.
364. Furthermore, the Authority accepts Batelco’s proposal to offer such WDC Aggregation Link with default protection mechanisms, including:
- a. MSP 1+1 protection (with fully redundant fibre path);
 - b. Sub-Network Connection Protection (SNCP); and
 - c. Silver auto switching of 50ms.
365. The Authority therefore orders Batelco to make explicit in the WDC service description that:
- a. the WDC Aggregation Link(s) is/are provided for a minimum bandwidth of 10 Gbit/s;
 - b. the WDC Aggregation Link(s) is/are delivered over a fully redundant fibre path;
 - c. the WDC Aggregation Link(s) is/are provided with default protection mechanisms, including MSP 1+1, Sub-Network Connection Protection (SNCP), and Silver auto switching of 50ms.
366. The regulated MRC applicable to the WDC Aggregation Link is set in section 6 thereafter.

Q13. Do you have any comments in relation to the proposed technical characteristics for the WLA and WDC Aggregation Links?

5.4.5 Synchronisation feature for the WLA

367. Synchronisation is an important feature for the WLA service to be considered by OLOs for mobile backhaul transmission.

368. While the Authority is of the view that Batelco should introduce a synchronisation feature for the WLA, the Authority is also cognisant that there are various technical options associated with such feature. Furthermore, a synchronisation option for the WLA may not be necessary with the introduction of the WDC product (as WDC uses transmission technologies which are not expected to be affected by jitter).

369. As such, the Authority proposes that the different technical options for WLA synchronisation, if required, are addressed in a meeting of the FRO (see above section 4).

Q14. Would you be interested by the introduction of a synchronisation feature for the WLA? Please explain and justify your position.

5.4.6 Optional levels of protection for the WDC services

370. Batelco should propose different levels of logical and physical protections for the WDC service. In Figure 18 below, the Authority has summarized the different optional levels of protection that Batelco should make available to OLOs for WDC Connections and Aggregation Links.

371. Such optional levels of protection should at least include the following:

- a. Logical protection at the End User Premises/Point of Presence:
 - i. Service, power and logical cards redundancy on CPE; or
 - ii. Fully redundant CPE
- b. Logical protection at the Batelco's ingress Service Node:
 - i. Service card redundancy on the switch/router at the Service Node; or
 - ii. Fully redundant Service Node (i.e. secondary Connection/Aggregation Link connected to a different Service Node than the primary Connection/Aggregation Link)
- c. Physical protection:
 - i. Fibre core redundancy in the same duct path;
 - ii. Duct path redundancy to the same Service Node (with or without redundant duct lead-in); or

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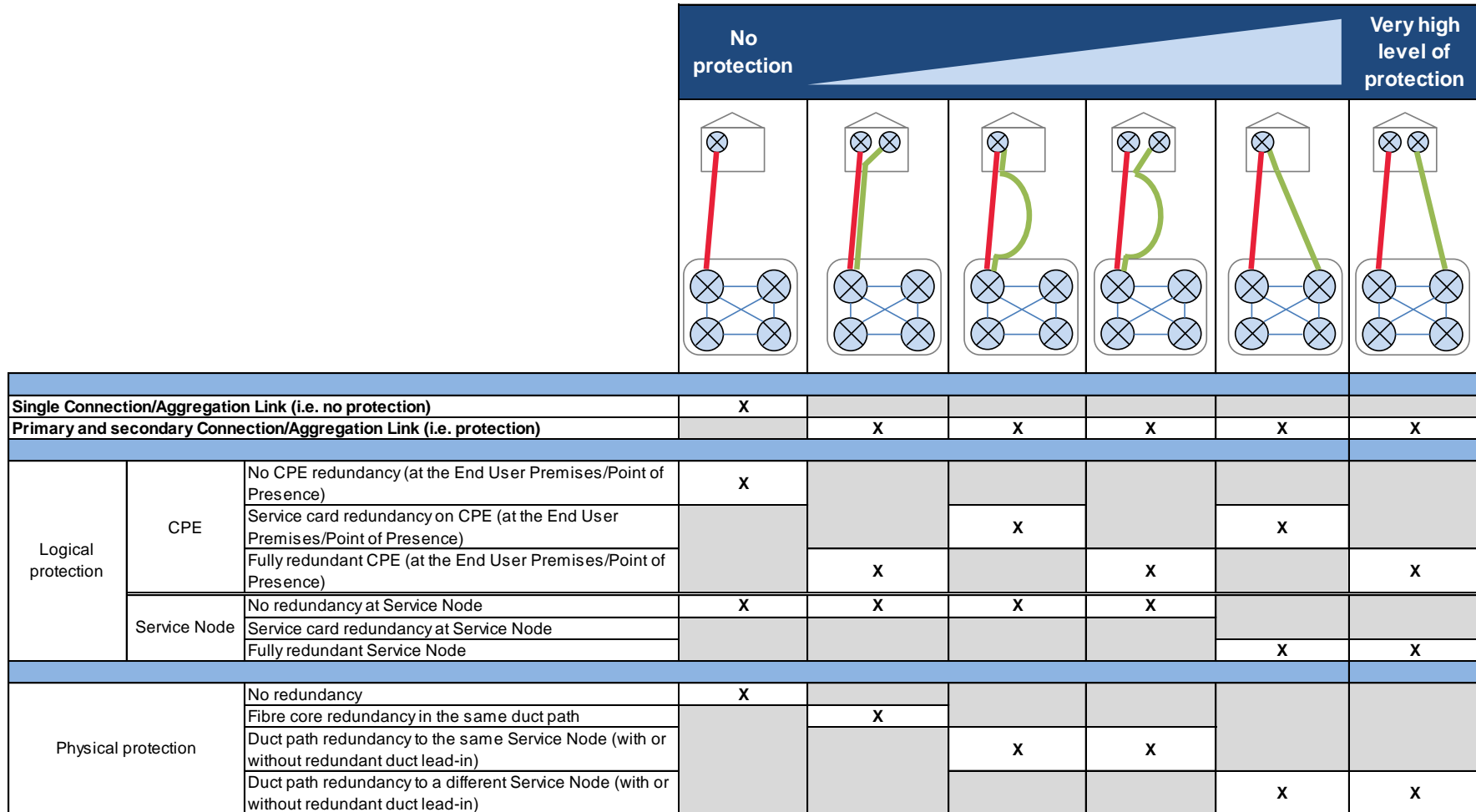
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- iii. Duct path redundancy to a different Service Node (with or without redundant duct lead-in)

372. An OLO may request a full end-to-end physical path redundancy and thus may require Batelco to deliver the secondary Connection/Aggregation Link in a different lead-in duct to the building. The Authority considers that Batelco shall accommodate any such request from an OLO as long as it is reasonable. In such cases, the applicable NRC should be determined in accordance with the cost recovery limitations proposed by the Authority in section 5.4.1.

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Figure 18: Optional levels of protection for WLA and WDC Connections and Aggregation Links



Source: the Authority

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373. The Authority understands that protection can be among the most important features for certain business customers in the data connection market (e.g. banking sector). In order for OLOs to compete on a level playing field with Batelco, the Authority considers that the availability of the above levels of protection shall be provided upon request for WLA and WDC Connections. Protection is also a feature that would be important for the OLOs' own network transmission including radio site backhauling. With optional levels of protections, OLOs would be more inclined to consider WLA and WDC Connections as efficient solutions for meeting their network transmission requirements.

Protection for WDC

374. Full physical and logical protection for the WDC Aggregation Link will be provided by default by Batelco (see paragraph 365 above).

375. However, protection for the WDC Connections will be optional. Batelco shall therefore make it explicit in its WDC service description that optional levels of protection for WDC Connections are available for fair and reasonable additional charges.

376. When the maximum level of protection is required for a WDC Connection (i.e. full end-to-end physical path redundancy coupled with logical protection), the Authority considers that Batelco shall charge a 30% premium on top of the applicable MRC. This would ensure that Batelco recovers the cost of additional active equipment used to deliver such protection.

377. During the provisioning of a WDC Connection for which protection is required, Batelco shall provide the OLO with all the relevant technical details regarding the protection solution, including but not limited to:

- a. the service configuration;
- b. a detailed geographic map of the duct path used by the access fibre cable of the primary and the secondary WDC Connection (from the End User Premise or POP to Batelco's Service Node); and
- c. all the relevant acceptance tests for both the primary and secondary end-to end WDC Connections at RFS (after provisioning). The tests shall also include a simulation of the failure of the primary Connection.

378. The Authority orders Batelco to implement the provisions in paragraphs 374 to 377 in the WDC service description.

Protection for WLA

379. OLOs shall also have the possibility to request optional level of protection for the access network part of the WLA Connections and WLA Aggregation Links. Batelco shall therefore make explicit in its WLA service description that the optional level of protection for WLA Connections are available for fair and reasonable additional charges.

380. When the maximum level of protection is required for a WLA Connection (i.e. full end-to-end physical path redundancy coupled with logical protection), the Authority considers that Batelco shall charge a 30% premium on top of the applicable MRC. This would ensure that Batelco recovers the cost of additional active equipment used to deliver such protection.

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381. When an OLO makes a request for protection, Batelco shall configure the WLA Connection with two distinct VLANs:
- a first VLAN for the primary end-to end WLA Connection which will be active all the time; and
 - a second VLAN for the secondary end-to end WLA Connection which will be set in stand-by mode.
382. In case of failure of the primary end-to end WLA Connection, there shall be a mechanism which ensures that data traffic is automatically switched to the secondary end-to-end WLA Connection within milliseconds when both primary and secondary end-to end WLA Connections are delivered on the same CPE. The Authority understands that this is functionality is sometimes referred to as Ethernet Automatic Protection switching.
383. When the primary and secondary end-to end WLA Connections are delivered on different CPEs, the secondary end-to-end WLA Connection shall be activated by Batelco upon request of the OLO in a matter of minutes.
384. During the provisioning of a WLA Connection for which protection is required, Batelco shall provide the OLO with all the relevant technical details regarding the protection solution, including but not limited to:
- the VLANs configuration;
 - a detailed geographic map of the duct path used by the access fibre cable of the primary and the secondary WLA Connections (from the End User Premise or POP to Batelco's Service Node); and
 - all the relevant service acceptance tests for both the primary and secondary end-to end WLA Connections at RFS (after provisioning). The tests shall also include a simulation of the failure of the primary Connection.
385. If an OLO has more than one WLA Aggregation Link and requires a WLA Connection with protection, the OLO should indicate for such WLA Connection:
- the WLA Aggregation Link that will be the primary Aggregation Link;
 - the WLA Aggregation Link that will be the secondary Aggregation Link (in stand-by mode); and
 - the capacity that should be reserved on the secondary WLA Aggregation Link. This capacity will be guaranteed in case of failure of the primary WLA Connection.
386. For the avoidance of doubt, a WLA Aggregation Link may be the primary Aggregation Link for certain WLA Connections and the secondary Aggregation Link for others.
387. The Authority orders Batelco to implement the provisions in paragraphs 379 to 386 in the WLA service description.

Q15. Do you agree that Batelco should offer as an option the full end-to-end physical and logical protection of a WLA or WDC Connection for an additional 30% mark-up on top of the applicable MRC? Please explain and justify your position.

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Second ingress port on the CPE of WLA/WDC Connections and Aggregation Links

388. The Authority considers that, if required, Batelco shall allow OLOs to ingress their traffic (or their retail customer's traffic) on a second ingress port of the CPE provided for a WLA/WDC Connection or a WLA/WDC Aggregation Link (i.e. customer facing ports).
389. The CPE can then aggregate the traffic of both ingress ports and transmit it to Batelco's network via the same uplink port.
390. When a second port is readily available on the CPE, Batelco shall not seek to charge for this optional service.
391. The Authority orders Batelco to implement the above provision related to the use of a second ingress port on the CPE used to deliver a WLA/WDC Connection or a WLA/WDC Aggregation Link in the WLA and WDC service description respectively.

Q16. Do you agree that Batelco should allow the use of a second ingress ports on a CPE provided for a WLA/WDC Connection or a WLA/WDC Aggregation Link? Please explain and justify your position.

5.4.7 Technical information on CPEs used for WLA/WDC

392. To increase the transparency of the WLA and WDC service descriptions, the Authority considers that Batelco should provide information on the CPEs used for WLA/WDC Connections and WLA/WDC Aggregation Links in the relevant annexes of the WLA/WDC service descriptions.
393. The Authority therefore orders Batelco to include information on the CPEs used to provide WLA/WDC Aggregation Links and WLA/WDC Connections in the WLA and WDC service descriptions. Such information shall at least include for each CPE, the model name and vendor, and the default configuration (number of cards/ports etc.).

Q17. Do you agree that Batelco should provide a minimum set of information on CPEs used for WLA and WDC Aggregation Links and Connections? Please explain and justify your position.

5.4.8 QoS reporting obligation for the WLA and WDC product and services

Quarterly QoS reporting obligation

394. As all licensed operators, Batelco is subject to the Quality of Service ("QoS") Regulation issued by the Authority on 11 September 2008 (ref: LAU/0908/21), and as such, submits quarterly QoS reports which contain information on Batelco's QoS performance for a

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range of telecommunication products and services, including retail and wholesale leased line products and services (hereafter 'General QoS Reports').

395. The General QoS Reports only include aggregate information on leased line products and services: it provides a high-level view of Batelco's QoS performance for such products and services.
396. In addition to submitting General QoS Reports, Batelco also submits more detailed QoS reports on MPLS-based leased line services on a quarterly basis (hereafter 'Detailed QoS Reports'). This reporting requirement was established by the Authority's Decision on the Notified Controlled Tariffs 42 "NCT 42 Local MPLS" issued on 27 March 2012 (ref: MCD/03/12/047).
397. The Detailed QoS Reports provide information on Batelco's QoS performance with regard to the wholesale service WLA, and the retail services Local MPLS and Global MPLS. Such information includes the following items:
- a. the number of active connections;
 - b. the number of new connection delivered during the period;
 - c. the average actual delivery time;
 - d. the number of faults reported by categories;
 - e. the QoS parameters (i.e. MPLS core availability, latency, packet loss and Round Trip Delay);
 - f. the total service revenues; and
 - g. the number and total value of service rebates granted by Batelco during the period.

New reporting obligations

398. The Authority considers that Batelco should provide Detailed QoS Reports on a quarterly basis for WLA and WDC Connections and Aggregations Links. This information would allow the Authority to monitor the QoS performance of WLA and the WDC products.
399. The Authority also requires Batelco to provide raw information on reported WLA faults and reported WDC faults. The report should at least include:
- a. the fault identification number (i.e. trouble ticket number);
 - b. the type of Connection and its identification number (i.e. WLA or WDC)
 - c. the time and date when the fault was reported;
 - d. the type of fault;
 - e. the impact of the fault on the relevant service (i.e. unavailable, partially available etc.);
 - f. the time and date when the connection affected by the fault was restored, i.e. trouble ticket closed);
 - g. the eligibility for service rebate (including justifications, if non-eligible); and
 - h. the amount to be rebated on the next invoice(s) (i.e. number of Service Credits), in case Penalties for Maximum Restoration Time are due.

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400. At present, Batelco only reports the average and the standard deviation of QoS indicators in the Detailed QoS Reports. However, the average and the standard deviation are alone an imperfect source of information as they may hide certain phenomena (e.g. outlier results can skew the average and standard deviation). The Authority considers that the submission of raw information per fault is required to get a better understanding on the distribution of Actual Restoration Time per type of faults. This would allow the Authority to take better informed decisions in the future, should there be a need to revise the Service Level Terms and Penalties applicable to the WLA and the WDC products and services.

401. The Authority therefore orders Batelco to:

- a. continue to provide on a quarterly basis Detailed QoS Reports for the Local MPLS and Global MPLS retail products and services;
- b. provide on a quarterly basis Detailed QoS Reports for WLA Connections and Aggregations Links;
- c. provide on a quarterly basis Detailed QoS Reports for WDC Connections and Aggregations Links;
- d. provide on a quarterly basis raw information on reported WLA faults as detailed in paragraph 399 above; and
- e. provide on a quarterly basis raw information on reported WDC faults as detailed in paragraph 399 above.

Publication of Detailed QoS Reports

402. In order to increase the transparency regarding the performance of Batelco's wholesale and retail data connection products and services, the Authority reserves the right to publish on its website the above reports in their entirety or a redacted summary thereof.

Q18. Do you agree that Batelco should continue to be subject to additional QoS reporting obligations for WLA and WDC? Please explain and justify your position.

5.4.9 Technical test for the WLA and WDC

New test standard for Ethernet Connections

403. Batelco currently tests the WLA service upon its delivery according to the RFC2544 IETF test standard.²⁴

404. The RFC2544 test standard however is obsolete and suffers from certain drawbacks, such as:

- a. QoS parameters are measured based on a sequential series of tests, instead of being measured altogether in one comprehensive test; and
- b. the measurement of jitter is not supported by the RFC2544 test (i.e. frame delay variation cannot be measured).

405. As RFC2544 is not adapted to validate the performance of the WLA service against QoS Parameters, the Authority considers that Batelco should instead follow the ITU-T Y.1564 test methodology, which is defined as:

“Recommendation ITU-T Y.1564 defines a test methodology that may be used in assessing the proper configuration and performance of an Ethernet network to deliver Ethernet-based services. This out-of-service test methodology was created so that service providers may have a standard way of measuring the performance of Ethernet-based services.”²⁵

406. The ITU Y.1564 standard thus provides a test methodology to assess the performance of end-to-end Ethernet-based services. Contrary to RFC2544, ITU Y.1564 includes the measurement of jitter (i.e. Frame Delay Variations) which is one of the QoS Parameters currently defined for the WLA service. The ITU Y.1564 standard includes the following measurements:

- a. Information rate (“**IR**”) or Bandwidth refers to the average bit rate of Ethernet service frames at the measurement point starting with the first MAC address bit and ending with the last FCS bit;
- b. Frame Transfer Delay (“**FTD**”), also known as Round Trip Delay, is the measurement of the time delay between the transmission and the reception of a frame;
- c. Frame Delay Variations (“**FDV**”), also known as Packet Jitter, is the measurement of the variations in the time delay between frame deliveries; and
- d. Frame Loss Ratio (“**FLR**”) is the measurement of the number of frames lost or received errors as a percentage of the total number of frames sent.

407. For the above reasons, the Authority orders Batelco to:

²⁴ See <http://tools.ietf.org/html/rfc2544>

²⁵ See ITU-T Y.1564 : Ethernet service activation test methodology, <https://www.itu.int/rec/T-REC-Y.1564-201103-1/en>

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- a. implement a test methodology based on the ITU Y.1564 standard when the WLA or WDC traffic handed over by the OLO to Batelco is Ethernet traffic;
- b. update the WLA and WDC service descriptions accordingly.

Submission of test results

408. At present, Batelco only provides test results upon request from the OLO. The Authority considers that test results should instead be systematically provided by Batelco to the OLO together with the RFT notice sent to the OLO. A WLA or WDC Connection should not be considered as RFT until such a time that Batelco can provide test results which meet the relevant QoS Parameters, and Acceptance Criteria (i.e. Information rate, Frame Transfer Delay [round-trip delay or latency], Frame Delay Variations [jitter], and Frame Loss Ratio).
409. In the same manner, when a Connection has been affected by a fault and has consequently been restored by a Batelco technician dispatched on site, Batelco should provide results of the tests performed on the such Connection, if any.
410. For the above reasons, the Authority orders Batelco to amend the WLA and WDC service description so that test results are systematically submitted by Batelco to OLOs:
- a. upon the provisioning of a new WLA/WDC Connection or a new WLA/WDC Aggregation Link (i.e. acceptance test). In this case, test results are to be attached to the RFT notice; and
 - b. upon restoration of an existing Connection, when a test has been carried out to check that such Connection is performing according to the QoS Parameters.

Q19. Do you agree that Batelco should implement a test based on ITU-T Y.1564 test methodology and systematically provide a copy of test results to the OLO? Please explain and justify your position.

5.4.10 Access to QoS monitoring platform

411. Batelco has developed a QoS monitoring platform which enables retail and wholesale customers to monitor the performance of MPLS-based data connections against QoS Parameters. Batelco calls such Service Level monitoring platform Batelco Net View (“BNV”).
412. As clarified by Batelco in its letter dated 10 April 2014 (ref: GCL/155/14) in response to the Authority’s request for information dated 25 March 2014 (ref: MCD/03/14/019), the BNV system monitors the following parameters for connections using the MPLS transmission network:
- a. For Layer 3 retail connections (i.e. retail Layer 3 IP-VPN Local MPLS):
 - i. Link availability (%);
 - ii. Jitter (ms);

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- iii. RTD (ms);
 - iv. Packet Loss (%);
 - v. Bandwidth Utilization (Mbps); and
 - vi. Device Performance.
- b. For Layer 2 services retail and wholesale connections (i.e. retail Layer 2 Local MPLS, wholesale WLA):
- i. Link availability;
 - ii. Bandwidth utilization; and
 - iii. Device performance.

413. In the same letter, Batelco specified that the BNV system is a performance monitoring tool, whose capabilities are not extended to testing procedures.

414. On 26 March 2015, Batelco confirmed by email to the Authority (ref: GCL/93/15) that all the WLA Connections at that time were being monitored by the BNV system. In addition, all the OLOs that had at least one WLA Connection at that time were able to access a web-portal version of the BNV system, and thus were able to monitor the availability, bandwidth utilization and device performance of all their WLA Connections.

415. The Authority therefore orders Batelco to:

- a. provide OLOs with login and password information to access the BNV system and monitor the QoS performance of their WLA Connections;
- b. include a description of the BNV system in an annex to the WLA service description. Such a description shall include user information on the BNV system (i.e. how to access, consult, and generate reports etc.).

Q20. Do you agree that OLOs should have access to Batelco's BNV system? Should OLO's customers (i.e. end-users) also have access to such system? Please explain and justify your position.

5.4.11 Payment of penalties for failure to meet the Maximum Restoration Time

416. The Authority notes that, while OLOs have been regularly reporting faults adversely affecting the availability of WLA Connections since the introduction of the WLA product on 28 November 2012, Batelco has not paid any service rebates to date.

417. The Authority understands that one of the main reasons that explains the lack of rebate payments lies with inherent complexity of calculating the Service Availability:

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- a. the calculation of Service Availability is an ad hoc manual process, which has to be performed at the end of the month;²⁶and
- b. the calculation of Service Availability may be subject to several adjustments to reflect any amount of time during which the service is affected by faults falling within the remit of the OLO's or the end-user's responsibility and control.²⁷

418. For such reasons, the Authority considers that the application of penalties for failure to meet the Maximum Restoration Time (i.e. on a per fault basis) rather than penalties linked to the service availability is a more transparent mechanism for binding Service Levels.

419. From a process standpoint, the application of rebates for failure to meet the Maximum Restoration Time Threshold would also simplify the mechanism of calculating penalties:

- a. The OLO reports a fault affecting a Connection and Batelco opens a trouble ticket;
- b. Batelco troubleshoots the fault and seeks confirmation from the OLO that the Connection is now performing in accordance to the QoS Parameters;
- c. Once the OLO confirms that the service is restored, Batelco closes the trouble ticket and informs the OLO whether it is eligible for Service Credits (*N.B. If Batelco provides the OLO with test results proving that the Connection has been restored and now performs as per the QoS Parameters, then Batelco can directly close the trouble ticket without the OLO's confirmation*).
- d. If Penalties for Restoration Time are due by Batelco, then they are directly reflected in the form of Service Credits as early as practicable, within the next two monthly invoices.

420. The above process is in line with the description of the fault management process detailed in subsection 3.2.4 above. The process allows Batelco to credit the next wholesale invoice(s) with the corresponding Service Rebate(s) without having to calculate the service availability at the end of the month – that is, the amount of rebate is to be calculated based on the Actual Restoration Time exceeding the Maximum Restoration Time.

421. For the above reasons, the Authority has decided that penalties should apply on a per fault basis for failure to meet the applicable Maximum Restoration Time defined in the WLA and WDC service description. This is in line with the framework for Service Levels proposed by the Authority (see section 3 above “Framework for defining Service Levels”).

²⁶ As the number of days varies in a given calendar month, the same Service Availability may represent a different Service Downtime. The Authority thus considers that a Service Level Penalty for Service Availability is less transparent than a Service Level Penalty for Restoration Time.

²⁷ While the BNV platform enables the monitoring of MPLS-based WDC services, it only measures the technical availability of services, which is not necessarily equivalent to the Service Availability that is defined in the SLA. For instance, the fault may be due to the negligence of the Access Seeker or the end-user and, in such circumstances, Batelco should not be liable to the payment of service rebates.

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Q21. Do you agree that penalties should be paid on a per fault basis for failure to meet a maximum restoration time rather than based on percentage of service availability? Explain and justify your position.

5.4.12 Service Levels applicable to the WLA and WDC products

International benchmark of Service Levels applicable to regulated wholesale data connection products

422. The Authority has compiled an international benchmark of SLAs applicable to regulated wholesale data connection products. This international benchmark includes four countries:²⁸

- a. UK: BT/Openreach;
- b. France: Orange;
- c. Belgium: Belgacom; and
- d. Ireland: eircom.

423. For ease of comparison, the Service Levels currently applicable to the WLA product have also been included in the first column of the benchmark table (see Figure 19 below).

Figure 19: Benchmark of SLAs applicable to wholesale leased line services in selected countries

Country	Bahrain	UK	France	Belgium	Ireland
Operator	Batelco	BT/Openreach	Orange	Belgacom	eircom
Product Name	Wholesale Local Access (WLA)	Ethernet Access Direct Service (EAD)	Core Ethernet LAN (CE20)	Belgacom Reference Offer for Terminating Segment of Leased Line (BROTSoLL) NGLL	Wholesale Ethernet Access (WEA)
Source/Link	http://portal.batelco.com/main-business/wholesale/reference-offer/	http://www.openreach.co.uk/org/home/products/ethernet-services/contracts/contracts.do	http://www.orange.com/fr/Innovation/Les-reseaux/Documentation	http://www.proximuswholesale.be/wholesale/en/isp/dynamic/product.jsp?displayName=nws_brotsoll	http://www.eircomwholesale.ie/Products/Data/Next_Generation_Ethernet/gll
Notes	Ethernet over MPLS	over legacy or NGN	Ethernet	SDH-based service	Ethernet

²⁸ The Authority notes that the benchmark is not exhaustive. Respondents are invited to provide other benchmark information as part of their submissions to the consultation.

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Country	Bahrain	UK	France	Belgium	Ireland
Operator	Batelco	BT/Openreach	Orange	Belgacom	eircom
Service Request Confirmation	Service Level Terms	Validation Time: 2 WD Within 8 Working Days: provide expected delivery date, and excess construction charges, if any.	By 17.00 hours on the next Working Day: confirm order. Fibre access: Feedback and feasibility study in a maximum of 2 calendar weeks	Copper access: eligibility can be verified by consulting a database accessible through an extranet Initial feedback: 2WD	Order Acknowledgment: 2 WD Order Validation: 10-13 WD Order Forecast: 19-32 WD Delivery Confirmation: Due Delivery Date-1WD
	Service Level Penalties	5% of MRC for each working day exceeding target	None	None	None For Order Acknowledgement Order Validation, Order Forecast, Delivery Confirmation: For speed < 2 Mbit/s: €170 per target missed (max €510) For speed ≥ 2 Mbit/s: €250 per target missed (max €750)
Delivery time	Service Level Terms	Fibre available / Modification: 15 WD Duct available: 30 WD No duct:: Exceptional Delivery Date	30 WD	Copper: max 14 calendar days Fibre available: max 56 calendar days When fibre not available: to be determined by Orange	64 – 128 kbps, n x 64 kbps: 10 WD n x 64 kbps, 2 Mbps: 15WD 34 Mbps: 30WD 155 Mbps: Project Based
	Service Level Penalties	5% of MRC for each working day exceeding target	100% of monthly charge for each additional working day beyond target capped to a maximum of 60 WD (i.e. 6,000 %)	10% of monthly charge for each day exceeding target. Penalty cap: 200% per year	for speed < 2 Mbit/s: 1/21th of the connection charge per day for speed ≥ 2 Mbit/s: 1/22th of the connection charge per day with connection charge ranging from EUR 457 (512 kbit/s) to EUR 679 (10 Mbit/s)
Response time	Service Level	During working hours: 2 working hours Outside working hours: 4 hours	Call centre available 24/7 Acknowledgment: within 1 hour Response: within 4 hours	Call centre available 24/7	Maximum Response Time: 30 min Initial feedback: within 1 hour
	Service Level Penalties	None	None	None	€250 per failure to achieve maximum response time.

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Country	Bahrain	UK	France	Belgium	Ireland
Operator	Batelco	BT/Openreach	Orange	Belgacom	eircom
Restoration time	Service Level Terms 8 hours	5 clock hours	Standard: 4 working hours Premium A: 4 hours Premium B: 2 hours	Disruptions impacting traffic: 4 to 5 Clock Hours (depending on speed) Disruptions not impacting traffic: 3 WD	None
	Service Level Penalties None	15% of MRC for not meeting target + 15% of MRC for each clock hour exceeding target. Total penalty per fault is capped to a maximum of 200 hours (i.e. 3,000% of MRC)	Up to 1 hour beyond target: 50% of monthly charge Up to 2 hours beyond target: 100% of monthly charge Up to 3 hours beyond target: 200% of monthly charge More than 3 hours beyond target: 300% of monthly charge Penalty cap: 600% per year.	> 5 working hours: 10% of the monthly subscription charge > 8 working hours: 15% of the monthly subscription charge > 12 working hours: 20% of the monthly subscription charge > 24 working hours: 25% of the monthly subscription charge > 48 working hours: 30% of the monthly subscription charge > 72 working hours: 35% of the monthly subscription charge	None
Availability	Service Level Terms 99.70%	None	Standard: 13 working hours per year (i.e. 99.58%) Premium A: 13 hours per year (i.e. 99.58%) Premium B: 3 hours (i.e. 99.97%) Premium C: 2 hours (99.99%)	99.9% (on a yearly basis)	99.83%
	Service Level Penalties Penalties increasing from 5% of MRC (i.e. 99.50% < SA ≤ 99.7%) to 100% of MRC (i.e. SA ≤ 75.0%)	None	Up to 2 hours beyond target: 25% of MRC Up to 4 hours beyond target: 50% of MRC Up to 6 hours beyond target: 75% of MRC More than 6 hours beyond target: 100% of MRC	10% of the yearly value of the service	50% of one MRC shall apply for each failure to achieve a minimum level of service availability in a particular quarter to a maximum of 2 MRC in any 12 month period

Source: the Authority from Operators' reference offers as of 30 November 2015

424. In setting the Service Levels applicable to the WDC product and services and revising the Service Levels applicable to the WLA product and services, the Authority has referred to the Service Levels that currently apply for similar regulated products and services in the above benchmark countries. The following section provides the Authority's justifications for the setting of the Service Level Terms and Service Level Penalties applicable to WLA and WDC.

Maximum Time for Service Request Acknowledgment

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425. In line with the service request process proposed by the Authority (see subsection 3.2.1 above) and related definitions (see 3.3 above), the Authority sets the Maximum Time for Service Request Acknowledgment as follow:

- a. during working hours: 15 minutes following receipt of the Service Request; and
- b. outside working hours: 15 minutes following the start of the first working hour after receipt of the Service Request.

426. The Authority notes that Batelco can easily meet this maximum time by setting up an automatic notice of receipt.

Maximum Time for Service Request Confirmation

427. In line with the service request process proposed by the Authority (see subsection 3.2.1 above) and related definitions (see 3.3 above), the Authority sets the Maximum Time for Service Request Confirmation to 2 Working Days (“**WD**”). Absent any formal notice from Batelco during the Maximum Time for Service Request Confirmation, the Service Request is deemed to have been accepted by Batelco.

428. The proposed 2WD are in line with the ‘Validation Time’ currently applicable to the WLA.

429. For the avoidance of doubt, an OLO may attach a presale request to the Service Request it sends to Batelco (see more detailed information on presale requests in paragraph 354.d above). In this case, Batelco shall send the OLO information on the availability of fibre access within the Maximum Time for Service Request Confirmation.

Maximum Time for Notification of Expected RFT and RFS Dates

430. According to the WLA service description, Batelco advises the OLO in writing of the applicable maximum lead delivery time within 7 WD from the date of the acceptance of a Service Request.

431. The Authority considers that the maximum time to provide the notice Expected RFT and RFS Dates should take into account the type of Service Request. Such notice shall be provided earlier when a Connection is already active at the location.

432. The Authority therefore sets the Maximum Time for Notification of Expected RFT and RFS Dates as follow:

- a. 2 WD for a Transfer Request, an Upgrade/Downgrade Request, a Reconfiguration Request, or a Cancellation Request; and
- b. 5 WD for a New Connection Request or a Migration Request.

433. In the case of a Cancellation Request, Batelco shall only provide the Maximum RFS Date, which shall be the expected date of cancellation, taking into account the one-month notice period required for cancellation.

Penalties for Notification of Expected RFT and RFS Dates

434. The Authority considers that it is important for OLO to know the Expected RFT and RFS Dates at an early stage to provide such information rapidly to their retail customers. As

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such, the Authority proposes to set the Penalties for Notification of Expected RFT and RFS Dates as follow:

- a. 5 Service Credits ('**SC**') for each WD after the Maximum Time for Notification of Expected RFT and RFS Dates until such time as the OLO receives the notice.

Maximum Delivery Time, Maximum Validation Time, and Penalties for RFS Date

435. In line with the service delivery process proposed by the Authority (see subsection 3.2.2 above) and related definitions (see subsection 3.3 above), the Authority sets the following Service Levels:

- a. **Maximum Validation Time:** 3 WD. The Authority considers that 3 WD offers ample time for the OLO to check that the Connection is performing according to the Service Acceptance Criteria. The Maximum Validation Time applies to all types of Service Requests except for the Cancellation Request;
- b. **Maximum Delivery Time:** as is currently the case for the WLA, the Authority considers that different Maximum Delivery Time Thresholds should apply to the delivery of the WLA or WDC services depending on the type of Service Request and the availability of fibre access at the location. Accordingly, the Authority set the following Maximum Delivery Time:
 - i. For a Transfer Request, an Upgrade/Downgrade Request, or a Reconfiguration Request, the Maximum Delivery Time is **10 WD**;
 - ii. For a New Connection Request, or a Migration Request:
 - the Maximum Delivery Time is **10 WD** when a fibre is available for a new Connection;
 - the Maximum Delivery Time is **30 WD** when a fibre is not available for a new Connection but there is sufficient duct space to pull an additional fibre access cable;
 - the Maximum Delivery Time is **60 WD** when new ducts must first be installed before deploying a new fibre access cable.
 - iii. For a Cancellation Request, there is not a defined Maximum Delivery Time. The Maximum RFS Date (i.e. expected cancellation date) shall be defined to take into account the required one-month notice period for cancellation.
- c. **Penalties for RFS Date:** they are set at 20 SC for failure to meet the Maximum RFS Date and 10 SC for each additional working day thereafter until the OLO receives the RFS Certificate. The Penalties for RFS Date are also subject to the provisions defined at paragraph 147 above.

436. In cases of Transfer Requests and Migration Requests, Batelco shall coordinate the deactivation and activation of the Connection on the same day to ensure minimum service disruption.

437. The above Service Levels proposed by the Authority are mostly in line with the existing WLA service level terms. However the following terms differ:

- a. The concept of "Exceptional Delivery Date" that is currently applicable to the WLA disappears. The Authority proposes to define a Maximum Delivery Time of 60 WD for

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cases where Batelco is required to install ducts and deploy fibre access cables. The Authority considers that it is important to provide visibility on a maximum delivery time for such cases;

- b. For cases where a Connection is already active, or where a fibre can accommodate a new Connection, the Maximum Delivery Time has been reduced from 15 WD to 10 WD. The Authority considers that 2 weeks provide ample time for Batelco to complete a Service Request in such cases.
- c. The Maximum Delivery Time provides an upper bound limit for the setting of the Maximum RFS Date which shall include a Maximum Validation Time of 3 WD.
- d. The applicable penalties for failure to complete a Service Request on time have been doubled. For the WLA, the penalties are defined as 5 SC per working day exceeding the maximum delivery date. For the WDC, the same penalties are defined as 20 SC for the first working day exceeding the Maximum RFS Date and 5 SC for each additional working day thereafter.

Quality of Service Parameters

438. The Authority sets the following Service Levels for the Quality of Service Parameters, applicable to services end-to-end:

- a. WLA Connections \leq 2 Mbit/s (copper-based):
 - i. Round Trip Delay (Frame Transfer Delay): **20 ms**;
 - ii. Jitter (Frame Delay Variations): **5 ms**; and
 - iii. Frame Loss Ratio: **0.5%**
- b. WLA Connections \geq 4 Mbit/s (fibre-based):
 - i. Round Trip Delay (Frame Transfer Delay): **2 ms**;
 - ii. Jitter (Frame Delay Variations): **0.5 ms**; and
 - iii. Frame Loss Ratio: **0.1%**
- c. WDC Connections (fibre-based):
 - i. Round Trip Delay (Frame Transfer Delay): **2 ms**
 - ii. Jitter (Frame Delay Variations): **0 ms**; and
 - iii. Frame Loss Ratio: **0%**.

439. Before setting the above QoS Parameters, the Authority has carefully considered the QoS performance reported by Batelco on a quarterly basis in the Detailed QoS Reports (see paragraph 397 above). While the QoS Parameters reported by Batelco for MPLS-based services are not measured end-to-end but at core level (i.e. from Provider Edge (“PE”) to PE), the Authority notes that:

- a. the average Round Trip Delay in the core MPLS network never exceeds [~~X~~] ms;
- b. the average Jitter in the core MPLS network is in the range of [~~X~~] ms to [~~X~~] ms and never exceeds 0.05 ms; and
- c. the average Frame Loss Ratio in the core MPLS network never exceeds [~~X~~] %.

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440. Accordingly, the Authority considers that the proposed end-to-end QoS Parameters are set at a conservative level as they leave enough margin to take into account any potential QoS deterioration that may occur in Batelco's network. The Authority has also factored the type of access networks used by the WDC Connection as different QoS Parameters apply when delivered on copper and fibre.

441. Finally, the Authority has also had some regard to the transport technology used by WDC Connections as SDH and DWDM are not expected to be subject to jitter or frame loss.

Fault management (i.e. Maximum Acknowledgment Time, Maximum Response Time, Maximum Restoration Time, and Penalties for Restoration Time)

442. As explained in section 5.4.11 above, the Authority is of the view that Service Levels should no longer apply to service availability but instead to Restoration Time, on per fault basis. Penalties for Restoration Time shall be directly reflected by Batelco in the next monthly invoice(s) without the need for the OLO to claim them.

443. The Authority also considers that Batelco should be offering two levels of support with distinct Service Level Terms and Service Level Penalties:

- a. **Standard Support** which is the default support to all WLA and WDC Connections;
- b. **Premium Support** which is available for:
 - i. all WLA or WDC Connections without protection, for an additional 20% premium on top of the applicable MRC; or
 - ii. all WLA or WDC Connections with end-to-end physical and logical protection (see paragraphs 374 to 387 above) for no additional charge.

444. In accordance with the fault management process proposed by the Authority (see subsection 3.2.4 above) and related definitions (see 3.3 above), the Authority sets the following Service Levels:

- a. Maximum Acknowledgment Time: 15 min.
- b. Maximum Response Time:
 - i. Standard Support: 2 working hours during working hours and 4 hours outside working hours; and
 - ii. Premium Support: 1 hour.
- c. Maximum Restoration Time:
 - i. Standard Support: 6 hours; and
 - ii. Premium Support: 2 hours.
- d. Penalties for Restoration Time:
 - i. Standard Support: 10 SC for failure to meet the Maximum Restoration Time and 5 SC for each hour exceeding the Maximum Restoration Time; and
 - ii. Premium Support: 20 SC for failure to meet the Maximum Restoration Time and 10 SC for each hour exceeding the Restoration Time Threshold.
- e. Maximum Monthly Penalty Cap:

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- i. Standard Support: 300 SC per Connection and per month; and
 - ii. Premium Support: 600 SC per Connection and per month.
445. The Authority considers that the proposed Maximum Restoration Time of respectively 6 hours and 2 hours for the Standard Support and Premium Support are reasonable and in line with the restoration time of similar regulated services offered by dominant operators in benchmark countries. In setting the above Service Levels, the Authority has also considered the Detailed QoS Reports submitted by Batelco on a quarterly basis.
446. The proposed Penalties for Restoration Time are also considered to be fair and reasonable. They are set at a less stringent level than what is currently being offered by Openreach in the UK or Orange in France for similar regulated services. Both the UK and France are two countries with very large geographic areas, where the timely dispatch of a technician on site would likely be more challenging than it is in Bahrain.
447. Service Level Penalties for the WLA are capped at 100% of the applicable MRC on a monthly basis (see Total Monthly Rebate Cap in the WLA service description). The Authority considers that this cap is not set sufficiently high:
- a. it does not reflect the economic harm that a prolonged unavailability of service would cause to the OLO and its customer (i.e. the end-user);
 - b. it does not sufficiently incentivise Batelco to proactively improve its fault management processes, thereby ensuring better quality of service.
448. The Authority also notes that the penalty cap applicable in the UK and in France far exceed one MRC (e.g. UK: 3,000%, or France: 300% per fault capped at 600% per year).
449. The Authority has therefore decided to set the Maximum Monthly Penalty Cap to 300 SC and 600 SC for Standard Support and Premium Support respectively.

Summary of Service Levels applicable to the WLA and WDC products

450. For ease of reference, the Authority has summarized all Service Level Terms and associated Service Level Penalties applicable to the WLA and WDC service in the following tables.

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Figure 20: Summary of the proposed Service Levels for the WLA product and services

Service Levels	Service Level Terms	Service Level Penalties
Service request process		
Service Request Acknowledgment	<u>Maximum Time for Service Request Acknowledgment:</u> During working hours: 15 minutes following receipt of the Service Request Outside working hours: 15 minutes after the start of the first working hour following receipt of the Service Request	
Service Request Confirmation	<u>Maximum Time for Service Request Confirmation: 2 WD</u>	
Service delivery process		
Notification of Expected RFT and RFS Dates	<u>Maximum Time for Notification of Expected RFT and RFS Dates</u> Transfer Request, Upgrade/Downgrade Request, Reconfiguration Request, and Cancellation Request: 2 WD For a Cancellation Request, Batelco shall only provide the Maximum RFS Date, which shall be the expected date of cancellation, taking into account the required notice period for cancellation. New Connection Request and Migration Request: 5WD	<u>Penalties for Notification of Expected RFT and RFS Dates:</u> 5 Service Credits ('SC') for each WD after the Maximum Time for Notification of Expected RFT and RFS Dates until such time as the OLO receives the notice.
RFS Date	<u>Maximum Delivery Time :</u> Transfer Request, Upgrade/Downgrade Request, and Reconfiguration Request: 10 WD New Connection Request, Migration Request: - when a fibre is available for a new Connection: 10 WD - when a fibre is not available for a new Connection but there is sufficient duct space to pull an additional fibre access cable: 30 WD - when new ducts must first be installed before deploying a new fibre access cable: 60WD Cancellation Requests do not have a Maximum Delivery Time: the Maximum RFS Date (i.e. expected cancellation date) must be defined to take into account the one-month notice period required for cancellation. In cases of Transfer Requests and Migration Requests, Batelco shall coordinate the deactivation and activation of the Connection on the same day to ensure minimum service disruption.	<u>Penalties for RFS Date:</u> 20 SC for failure to meet the Maximum RFS Date and 10 SC for each additional working day thereafter until the OLO receives the RFS Certificate.
	<u>Maximum Validation Time: 3 WD</u> The Maximum Validation Time does not apply to Cancellation Request.	

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Service Levels	Service Level Terms	Service Level Penalties
Acceptance Criteria	For Ethernet traffic: the provisioning test shall be based on the ITU Y.1564 standard For other traffic types: to be defined by Batelco in accordance with	
Service quality management		
QoS Parameters	<p>For WLA Connections \leq 2 Mbit/s (copper-based):</p> <ul style="list-style-type: none"> - Round Trip Delay (Frame Transfer Delay): 20 ms - Jitter (Frame Delay Variations): 5 ms - Frame Loss Ratio: 0.5% <p>For WLA Connections \geq 4 Mbit/s (fibre-based):</p> <ul style="list-style-type: none"> - Round Trip Delay (Frame Transfer Delay): 2 ms - Jitter (Frame Delay Variations): 0.5 ms - Frame Loss Ratio: 0.1% 	
Fault management process		
Fault Acknowledgment Time	<u>Maximum Fault Acknowledgment Time:</u> 15 min	
Response Time	<u>Maximum Response Time:</u> For Standard Support: 2 working hours during working hours and 4 hours outside working hours For Premium Support: 1 hour	
Restoration Time	<u>Maximum Restoration Time:</u> For Standard Support: 6 hours For Premium Support: 2 hours	<u>Penalties for Restoration Time:</u> For Standard Support: 10 SC for failure to meet the Maximum Restoration Time + 5 SC for each hour exceeding the Maximum Restoration Time For Premium Support: 20 SC for failure to meet the Maximum Restoration Time and 10 SC for each hour exceeding the Maximum Restoration Time <u>Maximum Monthly Penalty Cap:</u> For Standard Support: 300 SC per Connection and per month For Premium Support: 600 per Connection and per month

Source: the Authority

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Figure 21: Summary of the proposed Service Levels for the WDC product and services

Service Levels	Service Level Terms	Service Level Penalties
Service request process		
Service Request Acknowledgment	<p><u>Maximum Time for Service Request Acknowledgment:</u></p> <p>During working hours: 15 minutes following receipt of the Service Request</p> <p>Outside working hours: 15 minutes after the start of the first working hour following receipt of the Service Request</p>	
Service Request Confirmation	<p><u>Maximum Time for Service Request Confirmation:</u> 2 WD</p>	
Service delivery process		
Notification of Expected RFT and RFS Dates	<p><u>Maximum Time for Notification of Expected RFT and RFS Dates</u></p> <p>Transfer Request, Upgrade/Downgrade Request, Reconfiguration Request, and Cancellation Request: 2 WD</p> <p>For a Cancellation Request, Batelco shall only provide the Maximum RFS Date, which shall be the expected date of cancellation, taking into account the required notice period for cancellation.</p> <p>New Connection Request and Migration Request: 5WD</p>	<p><u>Penalties for Notification of Expected RFT and RFS Dates:</u></p> <p>5 Service Credits ('SC') for each WD after the Maximum Time for Notification of Expected RFT and RFS Dates until such time as the OLO receives the notice.</p>
RFS Date	<p><u>Maximum Delivery Time :</u></p> <p>Transfer Request, Upgrade/Downgrade Request, and Reconfiguration Request: 10 WD</p> <p>New Connection Request, Migration Request:</p> <ul style="list-style-type: none"> - when a fibre is available for a new Connection: 10 WD - when a fibre is not available for a new Connection but there is sufficient duct space to pull an additional fibre access cable: 30 WD - when new ducts must first be installed before deploying a new fibre access cable: 60WD <p>Cancellation Requests do not have a Maximum Delivery Time: the Maximum RFS Date (i.e. expected cancellation date) must be defined to take into account the one-month notice period required for cancellation.</p> <p>In cases of Transfer Requests and Migration Requests, Batelco shall coordinate the deactivation and activation of the Connection on the same day to ensure minimum service disruption.</p> <p><u>Maximum Validation Time:</u> 3 WD</p> <p>The Maximum Validation Time does not apply to Cancellation Request.</p>	<p><u>Penalties for RFS Date:</u></p> <p>20 SC for failure to meet the Maximum RFS Date and 10 SC for each additional working day thereafter until the OLO receives the RFS Certificate.</p>

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Service Levels	Service Level Terms	Service Level Penalties
Acceptance Criteria	For Ethernet traffic: the provisioning test shall be based on the ITU Y.1564 standard For other traffic types: to be defined by Batelco in accordance with	
Service quality management		
QoS Parameters	For WDC Connections (fibre-based): - Round Trip Delay (Frame Transfer Delay): 2 ms - Jitter (Frame Delay Variations): 0 ms - Frame Loss Ratio: 0%	
Fault management process		
Fault Acknowledgment Time	<u>Maximum Fault Acknowledgment Time:</u> 15 min	
Response Time	<u>Maximum Response Time:</u> For Standard Support: 2 working hours during working hours and 4 hours outside working hours For Premium Support: 1 hour	
Restoration Time	<u>Maximum Restoration Time:</u> For Standard Support: 6 hours For Premium Support: 2 hours	<u>Penalties for Restoration Time:</u> For Standard Support: 10 SC for failure to meet the Maximum Restoration Time + 5 SC for each hour exceeding the Maximum Restoration Time For Premium Support: 20 SC for failure to meet the Maximum Restoration Time and 10 SC for each hour exceeding the Maximum Restoration Time <u>Maximum Monthly Penalty Cap:</u> For Standard Support: 300 SC per Connection and per month For Premium Support: 600 per Connection and per month

Source: the Authority

451. For the above reasons and pursuant to Articles 3(b) (1), 57(b) and 57(e) of the Telecommunication Law, and Article 4.2 of the Access Regulation, the Authority orders Batelco to:

- a. adjust existing Service Levels for the WLA product and services so that they are in line with:
 - i. the Service Level Framework detailed in subsection 3.2, page 36;
 - ii. the Service Level definitions detailed in subsection 3.3, page 53;
 - iii. the Service Level Terms and Penalties detailed in Figure 20 above, including the introduction of a Standard Support and a Premium Support;
- b. include a summary table of the Service Level Terms and Penalties in the WLA service description in the format detailed in subsection 3.4 (see Figure 10 above);
- c. implement Service Levels for the WDC product and services in line with:

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- i. the Service Level Framework detailed in subsection 3.2, page 36;
- ii. the Service Level definitions detailed in subsection 3.3, page 53;
- iii. the Service Level Terms and Penalties detailed in above, including the introduction of a Standard Support and a Premium Support; and
- d. include a summary table of the Service Level Terms and Penalties in the WDC service description in the format detailed in subsection 3.4 (see Figure 10 above).

Q22. Do you agree with the Authority’s proposed introduction of a ‘Premium Support’ service for an additional 20% premium on top of the applicable MRC? Please explain and justify your position.

Q23. Do you agree with the Authority’s proposed Service Level Terms and Penalties for the WLA and WDC products and services? Please explain and justify your position.

SUMMARY OF SUBMISSIONS ON SECTION 5

452. This subsection, the Authority summarises the submissions and cross-submissions received from stakeholders on section 5 (Review of non-price terms applicable to wholesale data connectivity products and services). The Authority has grouped these responses by topic for the convenience of the reader.

Q10. Limiting payment of one-off charges in fibre deployment

Submissions

453. Kalaam and Mena agree with the Authority’s proposal.
454. Kalaam has requested for a maximum on the charges for deployment for fibre access protection, as the breakdown for such charges provided by Batelco would vary from site to site.
455. VIVA generally agrees with the proposal but provides suggestions on specific elements of it:
- a. It argues that an active remedy does not remove the need for effective passive remedies: VIVA reiterates its arguments from previous sections that the WDC product is not an adequate alternative for dark fibre access;
 - b. VIVA goes on to provide examples of instances where it believes that relying on active access will be insufficient. These examples include critical routes connecting OLOs’ PoPs and Cable Landing Stations and at Batelco’s Optical Switching Nodes.

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VIVA believes that both duct and dark fibre remedies would be required in addition to regulated collocation space and services at Batelco's facilities.

- c. Batelco's assertions on dark fibre and duct capacity: VIVA considers that the Authority has not sought to confirm Batelco's assertions on issues with its fibre availability database and usage and shortage of fibre pairs. VIVA is concerned that Batelco has incentives to argue that its ducts are unable to reasonably accommodate OLO's fibre or to favour its own needs over those of OLOs.
- d. Requirements that should be imposed on Batelco's duct access: VIVA asserts that the Authority should impose cost-based pricing for Batelco's duct access charge and introduce requirements on the state of the duct infrastructure and monitoring systems. VIVA suggests that these should include an upgrade of Batelco existing duct infrastructure with charges regulated by the Authority, reservation of duct-space for OLOs and repair of ducts to allow space for OLOs.
- e. Risk of a lack of reduction in NRCs: VIVA expresses concern that there is a risk that Batelco does not voluntarily agree to reduce its NRC. VIVA agrees with both options put forward by the Authority (Para 179 and 180).
- f. Refund of NRCs if infrastructure used: VIVA also suggests measures to avoid the risk of "gaming" by Batelco. It proposes that if it is judged that neither another OLO nor Batelco are likely to use the new fibre infrastructure in the next three years, but it is then in fact used, Batelco should refund with interest any NRC paid by the OLO to fund the infrastructure. VIVA also makes more detailed suggestions on the steps involved in this process (notification, etc.).
- g. Limits on time and materials charging: VIVA suggests that limitations be placed on what Batelco can recover on a time and material basis as the cap on the NRC has potential to be reached quickly. VIVA also suggests that rates for technicians and materials be market-based and approved by the Authority and that NRCs should apply only to work that is truly incremental to the work to serve particular end-user sites.

456. Zain too agrees with the Authority's proposed approach but raises concerns regarding Batelco's assertion that there is no spare fibre pair available to fulfil certain WLA orders:

- a. Zain is concerned that there is no mechanism to validate Batelco's feedback on the lack of spare fibre. Zain finds that this could be considered as an implicit refusal to supply and it gives Batelco's enterprise team a competitive advantage due to lower costs.
- b. Zain agrees that the current unit cost of fibre access is sufficient to cover the investment costs of deploying fibre access and also agrees with the principles of cases where access deployment costs may be recovered through NRCs. However, Zain suggests that cases (1) and (3) be based on accessibility of the termination point rather than the number of floors or business size. Zain considers that the NRC should be capped at BD 1,000 and an itemised invoice and map detailing the work be provided.

457. Batelco on the other hand considers that it should be able to recover the costs of fibre in all scenarios where the OLO has initiated the order. It explains that even in Scenario 1 with a multi-story building, there may be only 1-2 occupants. In such a scenario, Batelco finds it unreasonable for it to not recover the costs of this deployment. Batelco further

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considers that Scenario 2 requires Batelco to assume the full risk of future demand projections as it is required to provide the service without any forecast information from the OLOs.

Cross-submissions

458. Mena and Kalaam did not make any comments in this regard in the cross-submission stage.
459. VIVA makes a number of comments in response to Batelco's comments on the need for a WDC product. These have been included as part of section 12, which is where Batelco's comments were made.
460. VIVA disagrees with Batelco's request that it should be able to recover the cost of fibre in all scenarios where the OLO has initiated the order. It also notes that Batelco has not justified this request.
461. VIVA also disagrees with Zain's view that NRCs should be provided based on accessibility of termination points because of the uncertainty of the capacity of access points.
462. In response to Batelco's submission on this question, Zain comments that Batelco's concerns are addressed in its own response. It then describes its suggestion to base charges on accessibility of the termination point. This has been described in detail in Zain's submission above and is not repeated here.
463. Zain agrees with VIVA's submission that active services, WDC in particular, do not eliminate the need for passive services and echoes VIVA's examples of where passive remedies could be used.
464. Zain also agrees with the comments made by VIVA on Batelco's assertions on dark fibre and duct capacity, requirements being imposed on Batelco's duct access, reduction and refund of NRCs and limits on time and materials charging.
465. Batelco refers to its previous comments on issues raised by Zain and VIVA in this regard.

Q11. Centralised database on fibre access and fibre usage

Submissions

466. Both Kalaam and Mena strongly agree with this proposal. They do not provide any further comments.
467. VIVA agrees with the proposal but considers that a real-time business-to-business gateway should be the ultimate goal. It makes some comments on specific elements of the database:
- a. Administrative aspects: VIVA believes that the database should be managed by the Authority rather than Batelco. It also considers that Batelco's downstream unit should be required to use the same centralised database.
 - b. Publication and validation of the database: VIVA believes that Batelco should publish the database within 30 days of the issuance of the revised RO and this should be validated and finalised by the Authority by 31 December 2016.

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- c. Batelco to use the same pre-sale process: VIVA asserts that Batelco's downstream unit should be required to use the same processes as OLOs and not be permitted to obtain this information in other ways.
 - d. Validation by joint-survey: VIVA considers that the pre-sale process should be validated at the request of the OLO with a joint survey if Batelco claims there is no fibre available, at no charge to the OLO. VIVA considers that this survey should take place within a maximum of 2 days of Batelco rejecting a Service Request due to "non-availability". Furthermore, VIVA asserts that if the survey reveals that spare capacity is available, Batelco should be penalised.
468. Zain also agrees with the Authority's proposal but considers that till the time such a data-base is available, Batelco should introduce a 2 WD pre-sale process which Zain describes in detail. Zain also considers that in cases where a point to point dark fibre product is not feasible, the alternative should be dark fibre access to the closest service node where the operator should be allowed to procure a single fibre pair on the junction to link all service nodes.
469. Batelco reiterates its previous response dated 29 June 2014 where it identified the technical difficulties in compiling such a database. Furthermore, Batelco suggest that even if technically possible, such a database would require significant time and investment which it does not think the Authority has considered.

Cross-submissions

470. Kalaam, VIVA and Batelco do not provide any additional comments in the cross-submission stage.
471. Mena states that it does not understand how Batelco monitors its spare duct and fibre without an internal record database. It considers this information critical to the OLOs and important enough to Batelco for it to not reject the Authority's proposal.
472. Zain re-emphasises the importance of such a database in response to Batelco's response on the matter.
473. Zain expresses agreement with VIVA's comments and further emphasises the importance of the database. It states that:
- a. OLOs should have real-time access to the database;
 - b. there should be a set target date in the RO to publish the database;
 - c. Batelco should use the same pre-sale process as the OLOs; and
 - d. OLOs must reserve their rights in a joint survey.

Q12. Speeds of WDC

Submissions

474. Kalaam suggests that the Authority start with E1 speeds as it does not have requirements to connect on E1 capacity. Kalaam further suggests that the 2nd slab start from the DS3 till 10G speeds.

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475. Mena believes that the current prices of WDC make it a non-viable option and suggests that the Authority introduce volume discounts.
476. VIVA generally agrees with the Authority's proposal but suggests that low speed connections for fibre-based products be provided for both the WDC and WLA wholesale products. This is because VIVA notes that low-speed connections will only be available for WLA using copper-based connectivity; VIVA is concerned that this will hinder the competition from OLOs in offering low-speed connections using fibre.
477. Zain does not have any comments in relation to the speeds of WDC.
478. Finally, Batelco comments that its views remain as per those shared with the Authority in previous discussions. These are that the WDC should only apply for wireless backhauling services from speeds including and above 300 Mbps. Batelco further thinks that the WLA is the appropriate service for all other forms of data connectivity up to and including 1 Gbps.

Cross-submissions

479. Kalaam, Mena and VIVA do not make any comments in addition to those made in their submissions.
480. In response to Batelco's submission, Zain comments that it receives requests from business users for speeds above 1 Gbps. Thus, it considers that an absence of higher speeds and 10 Gbps aggregation links will not allow OLOs to compete with Batelco.
481. Zain also agrees with VIVA's suggestion that low-speed connections should be available for WLA using fibre-based connectivity.
482. Batelco restates its views that WLA is most appropriate for speeds of 1 Gbps and below while WDC should apply only for backhauling for speeds of 300 Mbps and above.

Q13. Technical characteristics of WLA and WDC aggregation links

Submissions

483. Kalaam and Mena do not make any comments in this regard.
484. VIVA partly agrees with the Authority's proposal, but asks for more information on the local loop prevention mechanism/protocols that will be used by Batelco to assure the link's high availability, particularly for WLA aggregation links.
485. Zain is of the view that there should be the flexibility of including both options, 1 Gbps and 10 Gbps in the RO as limiting the default on either will lead to inefficient setup and cost.
486. Batelco states that given its WOBS proposal that the service would only apply for the provision of backhaul services, it does not have any comments other than to state that it can only offer a fully redundant fibre route if there is an alternative route/path that does not require material investment.

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Cross-submissions

487. Kalaam, Mena, VIVA and Batelco do not make any comments in the cross-submission stage.
488. Zain agrees with VIVA's request for more information on the local loop prevention mechanisms and protocols.

Q14. Synchronisation feature for the WLA

Submissions

489. Kalaam states that it would be interested in the introduction of such a feature.
490. Mena does not make any comment in this regard.
491. VIVA considers that such a feature should be mandatory as it is needed to support next generation services which require IEEE1588v2 (Precision Time Protocol).
492. Zain comments that its requirement is for Batelco's network elements to be transparent between Zain's equipment and the CPE at the customer's premises/Zain equipment at the second location. Zain finds that in the future, different technologies may require the synchronisation feature and so, should be included as part of the RO. Furthermore, Zain believes that the RO should allow the provision of multiple VLANs on a single leased link.
493. Finally, Batelco comments that it would only be able to address this issue when it receives the full technical requirements needed by the OLOs.

Cross-Submissions

494. Kalaam, Mena, VIVA and Batelco do not make any comments in the cross-submission stage.
495. Zain comments on VIVA's submission to say that it has confirmed with its technical vendor that the synchronisation feature for WLA should be mandatory as it will be required to support next generation services which need IEEE1588v2.

Q15. Full, end-to-end physical and logical protection of WLA or WDC connection

Submissions

496. Kalaam considers that this should be provided at the same price as the WLA or WDC, if not cheaper, as Batelco will cover its cost in the first link itself.
497. Mena states that it does not consider the current MRC viable.
498. VIVA considers such protection should be provided but is concerned by the proposed price. VIVA considers that there should be cost-based charges for each active equipment under logical protection (CPE and service node) and physical protection (i.e. connection per metre charge). VIVA further suggests that OLOs should have the flexibility to use their

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own CPE, which is consistent with VIVA's request for colocation services to be provided by Batelco.

499. Zain agrees with the proposed protection and the price. However, it considers that Batelco should include the mark-up percentage for each of the six protection scenarios detailed in Figure 16. It further suggests that in the scenario with the highest level of protection, a full end-to-end physical and logical protection be implemented at an additional 30% mark-up on top of the applicable MRC.
500. Batelco considers that the protection option should be treated as a separate circuit and charged at full price rather than an additional 30% mark-up. This is because all WLA circuits are Layer 2 and automatic failover is only possible using another Layer 2 circuit to the same customer location. Batelco considers that, in this regard, it will be for the customer to configure his network and switch over to the back-up link.

Cross-submissions

501. Kalaam, VIVA and Batelco do not make any comments in the cross-submission stage.
502. Mena states that it disagrees with Batelco's suggestions of charging full price for protection and treating such a service as a separate circuit. Mena reemphasises that it considers the 30% mark-up too high.
503. Zain too disagrees with Batelco's suggestion that separate circuits should be acquired by OLOs for protection.
504. On the other hand, Zain agrees with VIVA that the protection should be charged at cost and that OLOs should not be restricted to Batelco's equipment.

Q16. Second ingress port on CPE provided for a WLA/WDC connection or aggregation link

Submissions

505. Kalaam agrees with the Authority's proposal.
506. Mena does not make any comment in this regard.
507. VIVA agrees that Batelco should allow the use of a second ingress ports on a CPE provided for a WLA/WDC Connection or a WLA/WDC Aggregation Link. This is because extra ingress ports provide greater flexibility to OLOs' network planning and design to support network migration and expansion. It further points out that this feature has no incremental cost for Batelco since the standard CPEs have at least 16 ports.
508. Zain also agrees that Batelco should allow the use of a second ingress port as this will support internal redundancy set-up.
509. Batelco states that it is examining this option and hopes to resolve it in any further discussions it has with the Authority.

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Cross-Submissions

510. Kalaam, Mena and VIVA do not make any comments in the cross-submission stage.
511. Zain agrees with VIVA's view that Batelco should allow the use of a second ingress port on a CPE provided for a WLA/WDC Connection or a WLA/WDC Aggregation Link. It also agrees that there should be no charge for this as the CPE usually comes with space for extra ports or cards.
512. Batelco states that it needs clarity on the final form in which the services and related processes will be ordered before it can provide feedback and address this in further discussions with the Authority.

Q17. Minimum set of information on CPEs used for WLA and WDC Aggregation Links and Connection

Submissions

513. Kalaam agrees with the Authority's proposal.
514. Mena does not make any comment on the proposal.
515. VIVA agrees that a minimum set of information should be provided and suggests that it include vendor, model, version, switching capacity as well as layer 2 and layer 3 capabilities in order to improve transparency and develop the relevant database.
516. Zain also agrees that this information would be helpful as it could provide clarity on the integration process and help Zain prepare for any set-up required. Zain requests that for all service requests, the CPE should support the following interfaces at minimum on customer-facing ports:
- a. Ethernet–Copper on both 1Gbps and 10Gbps cards
 - b. fibre (Multi-Mode, Single-Mode) on both 1Gbps and 10Gbps cards
517. Batelco considers that it is not feasible to offer a minimum set of information as this information changes on a regular basis when technology evolves and when models are discontinued or introduced. Batelco suggests that it could offer details of the relevant CPEs used at any given time to OLOs, upon request and on the understanding that these may change from time to time.

Cross-submissions

518. Kalaam, Zain and Batelco do not make any comments in the cross-submission stage.
519. Mena disagrees with Batelco's comment and believes that this information should be published from time to time as it changes due to reasons such as evolving technology and changing supplier.
520. VIVA states that it accepts Batelco's position that information relating to WLA and WDC CPEs can change, but considers that the information provided by Batelco should be valid for at least one year.

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Q18. Additional QoS reporting obligations for WLA and WDC

Submissions

521. Both Kalaam and Mena strongly agree with this proposal.
522. VIVA too agrees with this proposal. VIVA suggests that the QoS should be transparently and publicly available and that the Authority should publish them in their entirety. VIVA finds that this will help pass-on the reputational damage OLOs suffer when Batelco is unable to meet its service promises back to Batelco.
523. Zain also agrees with the proposal as it finds that this will give a better understanding of Batelco's service quality performance and allow regulatory intervention pursuant to Article 3 of the Telecommunications Law in case of a noticeable anomaly.
524. Batelco considers that this measure requires a significant breakdown of details to be provided on a circuit-by-circuit basis. Batelco finds that given it already faces system limitations, these new requirements are not possible to achieve. Batelco proposes to have further discussions with the Authority on the development of a practical list of measures in this regard.

Cross-submissions

525. Kalaam does not make any additional comments in the cross-submission stage.
526. Mena disagrees with Batelco's reasoning for not providing additional QoS as it considers this necessary to provide customers with better service.
527. With regard to Batelco's comment that the reporting requirements are onerous, VIVA quotes BEREC's recommendation on KPIs and the requirement that the KPIs be made available to all operators in the market. It uses this to emphasise the importance of the reporting obligations and urges the Authority to enforce this.
528. Zain, too, emphasises the need for QoS reporting obligations in response to Batelco's comments, as it considers these will enable OLOs to determine if they can meet their customers' requirements.
529. Zain states that it agrees with VIVA that OLOs are suffering from reputational damage as a result of Batelco's inability to meet its service promises and that this mechanism will help pass that damage on to Batelco.
530. Batelco does not make any additional comments but re-states its previous comment on the need for IT developments to implement automated systems for reporting.

Q19. ITU-T Y.1564 test methodology implementation

Submissions

531. Kalaam, Mena, VIVA and Zain agree with this proposal.

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532. VIVA suggests that Batelco should systematically provide a copy of the test results to OLOs to qualify the new services based on the QoS performance parameters indicated in the reference offer and standard SLA for the services.
533. Zain also highlights the flexibility of the Y.1564 test and its features.
534. Batelco notes that it is technically feasible to implement the test, it finds that the current QoS parameters are measured on a “core” basis rather than an “end-to-end” basis and so, there needs to be a revision to these. Batelco instead proposes an alternative set of “average” end-to-end measurement for each QoS parameter.

Cross-submissions

535. Kalaam, Mena and VIVA do not make any additional comments in the cross-submission stage.
536. Zain refers to its comments on the flexibility and features of the Q.164 test in the submission stage, in response to Batelco’s comment.
537. It also agrees with VIVA’s suggestion that Batelco should systematically provide test results to OLOs.
538. Batelco states that it would need further visibility of the final technical specifications before it can provide its feedback on the matter.

Q20. Access to Batelco’s BNV system

Submissions

539. Kalaam agrees that OLOs should have access to the BNV system. However, it considers that for the moment, they can share the related information with the customer as and when required because of the difficulty for an end-user to get access to the system.
540. Mena agrees with the Authority’s proposal but does not offer a view on whether end-users should be allowed access to the BNV system.
541. VIVA agrees that OLOs should have access to the BNV system and that this should be for free. However, it does not believe that end-users should have access to it.
542. VIVA also reiterates that Batelco’s retail unit should have to obtain information regarding OLO connections through the same BNV system as the OLOs to avoid giving it an unfair advantage over the OLOs.
543. VIVA also considers that the QoS reports discussed earlier should include relevant details on each connection and service in the BNV system and be made available in its entirety to OLOs.
544. Zain considers that OLOs and end-users should have access to the BNV system. Zain highlights that it has not received any access details for the web-portal of the BNV system. Zain also considers that the Validation Process following the RFT include the circuit being tested against the BNV system i.e. the link should be provisioned and shown on the BNV system at the RFT date.

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545. Batelco points out that this issue has been discussed with the Authority previously and that following this, all OLOs have been granted access to the BNV system. Batelco reiterates that the BNV is a performance monitoring tool and that its capabilities do not extend to testing procedures. Batelco states that testing is currently carried out at the handover stage and this is performed manually by Batelco (with handheld devices) using the RFC 3544 testing methodology. Layer 2 customers are only able to view information relating to link availability, bandwidth utilization and device performance.
546. Batelco states that it is also required to obtain a licence for each 'user' of the BNV system so it would be a costly exercise to provide all end users with this level of access.

Cross-submissions

547. Kalaam, Mena, VIVA and Batelco do not make any additional comments in the cross-submission stage.
548. Zain comments that contrary to Batelco's response, OLOs only had online access to Batelco's IP Transit service.
549. Zain also agrees with VIVA's suggestions that OLOs should have free access to the BNV system and that Batelco's retail unit should obtain information on OLO connections through the same system.

Q21. Penalties on a per fault basis rather than percentage of service availability

Submissions

550. Both Kalaam and Mena agree that penalties for failure to meet a maximum restoration time should be on a per fault basis.
551. VIVA also agrees that penalties should be on a per fault basis but makes additional suggestions on this and related matters:
- a. VIVA considers that Service Credits be introduced for persistent failure of a connection because such failures, such as "flapping", can cause end-user disruption in the same way as a large one-off failure.
 - b. VIVA suggests that there should be additional compensation for OLOs where there are repeated instances of faults (e.g. three or more total losses of service in a three-month period) and if this is the case, monthly charges should be waived until the circuit has been free of faults for 12 months.
 - c. VIVA is concerned that planned outages could be used by Batelco to defeat the service level regime. VIVA suggests that planned outages should be announced at least 1 month in advance and be conducted after midnight during off-peak hours for no more than 3 hours in total. Further, VIVA recommends that if these requirements are not met, or if there are more than two planned outages per year, then Service Credits should apply.
552. Zain too agrees with this form of penalty as it finds it easier and more realistic to calculate and considers that the number of faults per link will show the pattern and reliability of a circuit.

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553. Batelco states that it is currently reviewing this option and hopes to resolve it with further discussions with the Authority.

Cross-submissions

554. Kalaam and VIVA do not make any additional comments in the cross-submission stage.

555. Mena states that it hopes that Batelco will co-operate with the Authority to come up with a viable penalty system and requests to stay informed about Batelco's review of this option.

556. Zain agrees with VIVA's suggestions that Service Credits should be applicable to small failures such as "flapping" and that there should be additional compensation if there are persistent failures.

557. Batelco states that it would need further visibility of the final technical specifications before it can provide its feedback on the matter.

Q22. Premium Support at a 20% mark-up on the applicable MRC

Submissions

558. Kalaam seeks clarification on whether this is a one-time charge as premium support may only be required during the installation period. Kalaam states that it does not agree with the charge if it applied for the whole contract duration.

559. Mena states that it finds the MRC to be already too high.

560. VIVA disagrees that this support should be offered at a 20% mark-up because of Bahrain's small area and because Batelco's downstream units enjoy this level of support. Thus, VIVA finds that if a robust non-discrimination regime is introduced, this level of support should be the baseline and be available to OLOs and Batelco's downstream unit (at no additional cost).

561. Zain agrees with the proposal of Premium Support and that it should be charged at a mark-up. However, it asks for more detail on how the 20% figure was derived as it considers it to be high.

562. Batelco states that it is open to the idea of premium support where this is charged at a mark-up. However, it considers that the mark-up is still to be agreed and states that it would only be able to offer the timeframes for response and restoration of faults as detailed in its response to Q6.

Cross-submissions

563. Kalaam, Zain and Batelco do not make any additional comments in the cross-submission stage.

564. Mena suggests that all OLOs be allowed to participate in discussions on what the "fair" percentage mark-up for Premium Support would be. However, Mena suggests that these services be delivered in a shorter timeframe, if requested by the OLO.

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565. VIVA disagrees with Zain's view that Premium support be provided at a mark-up and reemphasises its view that this should be the baseline level of support.

Q23. Service Level Terms and Penalties for the WLA and WDC products

Submissions

566. Kalaam agrees with the Authority's proposals but suggests that the maximum delivery time for when new ducts must first be installed before new fibre access cable is deployed be reduced from 60 WD to 45 WD.

567. Mena agrees with the proposals and thinks that these should also be introduced to other wholesale products.

568. VIVA makes a number of comments on various aspects of the Service Level Terms and Penalties proposed, some based on a comparison with RIOs in other countries also outlined in previous responses:

- a. Penalty for failure to acknowledge and confirm Service Request: VIVA considers that this penalty should be 5 SC for each half hour imposed for failure to comply with the Maximum Time for Service Request Acknowledgement and 10 SC for each WD for failure to comply with the Maximum Time for Service Request Confirmation.
- b. Changes to Maximum Delivery Time service levels: VIVA considers that this is critical to ensure that customers are not deterred from switching. To this end, it suggests the following changes:
 - i. For a soft Upgrade/Downgrade Request, Maximum Delivery Time of 2 WD;
 - ii. For transfer, the Maximum Delivery Time of 10 calendar days;
 - iii. For a New Connection Request, or a Migration Request:
 - Maximum Delivery Time of 5 working days when fibre is available for a new Connection;
 - Maximum Delivery Time of [15 calendar days] when a fibre is not available for a new Connection but there is sufficient duct space to pull an additional fibre access cable.
 - Maximum Delivery Time of [30 calendar days] when new ducts must first be installed before deploying a new fibre access cable.
- c. Co-ordination time period: VIVA suggests that there be more stringent requirements around Transfer Requests and Migration Requests. VIVA recommends a service level requiring coordination by Batelco within 2 hours (Maximum Transfer Time) to ensure a seamless service and that failure to meet this service level should result in a service credit of 10 SC per hour for each hour after the Maximum Transfer Time. VIVA also considers that in the case of a Transfer Request, the external relocation from a customer to another customer should be priced at a lower NRC rate than for a new connection.
- d. Penalty for failure to acknowledge and respond to a fault: VIVA finds that even though there is a service level penalty for failure to notify the Expected RFT and RFS Dates,

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there should be a sufficient incentive for Batelco to meet these prior service levels such as a penalty of 15 SC per hour for each ½ Hour after the Maximum Acknowledgement Time and Maximum Response time to fault.

- e. Maximum Restoration Time: VIVA considers that the Maximum Restoration Time for Standard Support should be 4 hours (double) rather than 6 hours (triple) of Premium Support, given the size of the country and Batelco's network. VIVA provides the example of Singapore which it says is a similar size to Bahrain where the Nucleus Connect RIO provides for a 3-hour service level (mean time to repair).
- f. Restoration Time Service Credits: VIVA considers that these credits are not in line with those in the UK, which it considered best practice. It therefore proposes that the Restoration Time penalties align with the United Kingdom levels as follows:
 - i. for Standard Services, 15SC per hour for each hour after the Maximum Restoration Time (and double that for Premium Services); and
 - ii. for Standard Services, a monthly cap of 3000SCs per Connection (and double that for Premium Services)
- g. Alignment with comparator countries: VIVA points out that the Authority notes in para 290 that the proposed service levels are less stringent than in the United Kingdom or France. Given that the geographic areas of those countries are much larger than Bahrain, VIVA considers that the service levels should be made more stringent than these comparators.
- h. On par treatment relative to Batelco Enterprise customer service level: VIVA suggests that the Authority should investigate the service level that Batelco offers its enterprise retail customers and that if this is more favourable than the equivalent in the RO, the draft Order should be adjusted so that OLOs receive the same level of service. VIVA also recommends that Batelco submit its Enterprise customer service level on periodic basis to the Authority.
- i. Review of the price terms applicable to the WLA and WDC products and services: In the interest of transparency, VIVA requests that the Authority disclose the costing elements of Batelco's network used in its analysis in Chapter 6 so that it can compare these costs with the suggested mark-ups. VIVA says that it will agree to reasonable confidentiality protocols for handling of this information within VIVA.

569. Zain states that it generally agrees with the Authority's proposal. However, it considers the 6 hours set as Maximum Restoration Time under Standard Support to be too high; it repeats its earlier point that most of businesses in Bahrain have 8 working hours and so, a 6 hour service level implies a higher probability that service may not be restored in a working day. Zain further points out that BT, Orange and Belgacom have restoration time of less than 6 hours. It therefore suggests that the Maximum Restoration Time under Standard Support for Batelco be revised to 4 hours.

570. Batelco also makes some suggestions regarding the proposed terms:

- a. Batelco considers that there should be forecasting and other relevant obligations on OLOs for products and/or services which have very strict service level terms and penalties. It considers that a complete lack of forecasting obligations on OLOs is not reasonable in light of the capital expenditure imposed on Batelco.

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- b. Batelco also finds that it should have the right to reject where applicable, incorrect and/or irregular forecasting without having to engage in the steps contemplated by the new service processes.
- c. Batelco further suggests that:
 - i. No OLO should be entitled to any reporting of service level performance or any service credit/s unless and until it has established a track record of accurate and proper forecasting; and
 - ii. No service credits should apply and no adjustment should be made to any performance deadline until the industry achieves an accuracy range of forecasting to ordering of +/- 20%).
- d. Batelco says that it would expect a grace period of at least 12 months during which no penalties would apply if the implementation of a completely new product and service is being ordered.

Cross-submissions

571. Kalaam does not make any additional comments in the cross-submission stage.
572. Mena states that it does not understand the significance of forecasting and believes that the focus should be the failure to deliver on time.
573. In response to Batelco's request for forecasting, VIVA restates its view that the service level regime could be undermined if Batelco requires highly accurate forecasting before OLOs are entitled to benefit from the regime.
574. VIVA also disagrees with Batelco's request for a grace period of 12 months for the implementation of a new product. This is because VIVA notes that Batelco is able to provide high speed capacities up to STM-64 at the retail level and so should be able to provide that service at the wholesale level. Furthermore, VIVA considers that the service regime should apply immediately.
575. With regard to the forecasting requirement put forward by Batelco, Zain considers that Batelco itself is best-placed to growth in demand and plan for expansion. It further believes that Batelco's request that no service credit or adjustments be made if forecasts do not achieve an accuracy of +/- 20% should not be considered. This is because Zain thinks that Batelco's inability to achieve a service level may not be caused by a poor forecast, but that this is difficult to prove.
576. Zain agrees with the views expressed by VIVA and also restates its own suggestions from earlier that:
- a. there should be a penalty for failure to acknowledge and confirm a Service Request;
 - b. there should be a penalty for failure to acknowledge and respond to a fault;
 - c. the Maximum Restoration Time should be 4 hours;
 - d. Service Level should be made more stringent; and
 - e. OLOs and Batelco's retail arm should be treated equally.
577. Zain also reemphasises the need for visibility on the cost elements and types of equipment used to be able to comment on the prices for WLA and WDC products and services.

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578. Batelco states that the comments made above, pertaining to the rest of this section, should be considered here.

THE AUTHORITY'S FINAL CONCLUSIONS ON SECTION 5

579. In this subsection, the Authority provides its final views on each question and conclusions with regard to section 5 (Review of non-price terms applicable to wholesale data connectivity products and services).

WDC product as a new remedy

The Authority's final views

580. The Authority's remains of the view that Batelco should introduce the WDC product. Its final views are expressed as part of section 12, which is where most operators' comments on WDC were made.

The Authority's final conclusions

581. The Authority's final conclusions remain as per the draft Order, as reproduced in the following paragraph.

582. The Authority orders Batelco the following:

- a. Batelco shall continue to offer the WLA product which shall be defined as "*The Wholesale Local Access (WLA) product is an active wholesale product providing symmetric and guaranteed data connectivity within the Kingdom of Bahrain between a Point of Presence of an Access Seeker and an End User Premises / Point of Presence.*"
- b. Batelco shall combine the high-speed CAT service and the high-speed LLCO service under a unified service description provisionally called 'Wholesale Data Connection' or 'WDC' product.
- c. Batelco shall offer the WDC product which shall be defined as "The Wholesale Data Connection (WDC) product is an active wholesale product providing symmetric, synchronous, dedicated, and uncontended data connectivity within the Kingdom of Bahrain between a Point of Presence of an Access Seeker and an End User Premises / Point of Presence."
- d. From a technical standpoint, WDC shall correspond to both the high-speed CAT/LLCO and the WOBS proposed by Batelco. WDC Connections shall use Batelco's SDH transmission network or Batelco's DWDM transmission (or a combination of the two). For cost efficiency purposes, Batelco may first aggregate WDC traffic via Ethernet switches or via SDH aggregation rings before transmitting such WDC traffic on its DWDM network.

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- e. Batelco shall consider the current WLA service description as a starting point for the definition of the revised WLA service description and the new unified WDC service description.
- f. Batelco shall ensure that the WLA and WDC service description are standardized to the maximum extent possible:
 - i. the WLA and WDC service descriptions shall have the same structure, including main document and annexes;
 - ii. the main document of the WLA and WDC service descriptions shall be identical, with exception to the product name and product definition.
 - iii. the terms which are specific to either the WLA or the WDC product shall be annexed to the service description. This includes technical parameters, service tests, technical diagram, Service Request Form and other specific information.
- g. On the effective implementation date of this Batelco Order, Batelco shall treat existing CAT, LLCO and WLA Connections as follow:
 - i. the existing low-speed legacy CAT and LLCO circuits shall remain as is;
 - ii. the existing low-speed NGN-based CAT and LLCO circuits (i.e. speed \leq 2 Mbit/s) shall become WLA Connections; and
 - iii. the existing high-speed SDH-based CAT and LLCO circuits (i.e. DS3 speed and above) shall become WDC Connections.

Q10. Limiting payment of one-off charges in fibre deployment

The Authority's final views

583. The Authority notes that the OLOs agree with the Authority's proposal.
584. VIVA and Zain raise a number of concerns regarding passive remedies, duct access, and so on. The Authority here refers to its final position on the matter which can be found at paragraphs 49 to 54 above (see page 24).
585. With regard to Batelco's comments, the Authority would expect Batelco to introduce some form of limitations on the recovery of costs through one-off charges. The Authority would like to emphasise that such a limitation will not reduce Batelco's ability to recover, in all cases, its efficiently incurred costs. Indeed, this principle is further enshrined in NTP4, where paragraph 24(e) states that the functionally separate entity would be allowed to "*recover efficiently incurred costs, including a fair return on its investment*".
586. The Authority would therefore urge that instead of recovering such costs based on both NRCs and MRCs, Batelco should now exclusively recover the costs of deploying a fibre access at a specific location through the MRC of wholesale and retail access products offered at that location.
587. If Batelco does not restructure its charges as per this suggestion, the Authority may at a later stage, examine Batelco's charging structure and if it considers necessary, issue a further Order to Batelco in this regard.

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588. Separately, it is not clear to the Authority how wholesale forecasts would assist Batelco in the proper dimensioning of its fibre access network.
589. This is because fibre access cables have a 20-year asset life, and as such, their dimensioning is usually driven by the type of building that needs to be connected (with an uplift factor for future demand) rather than the forecast number of active connections at that building location at the time of installation.
590. Furthermore, as the price of fibre cables only varies slightly with capacity (e.g. 2, 4, 8, 12, 24 fibres and so on), the incremental cost of installing a larger cable during the initial deployment of the access network is minimal compared to the risk-adjusted cost of having to re-dispatch technicians on site to re-deploy an additional cable when there is a fibre shortage.
591. Finally, the Authority wishes to clarify that there should be no limitation on OLOs extending, or allowing a third party to extend, a fibre or POP to a third party provided that such extension is made within the same tenement. WLA/WDC Connections are wholesale products and OLOs must be able to use them for more than one customer or purpose. Such purposes may, for instance include the provision of connectivity to one or several businesses, backhaul transmission to radio sites, backhaul transmission to cable landing stations, or core network transmission and so on.

The Authority's final conclusions

592. For the reasons set out above, Batelco is hereby invited to amend its RO with regards to these matters as set out in the draft Order, and as set out above in paragraphs 341 and 342.

Q11. Centralised database on fibre access and fibre usage, and pre-sale process.

Centralised database

The Authority's final views

593. Again, the Authority notes that the OLOs agree with the proposal. Batelco raises concerns around the cost and time needed for implementation.
594. The Authority considers it important to emphasise the need for this database. Therefore, the Authority requires that Batelco provide the deployment roadmap for its database as part of its RO.
595. This roadmap shall document all the data fields that will become available to OLOs for consultation. The database shall cover all access networks, including copper and fibre:
- a. information on the copper access network shall be provided on a best effort basis. Batelco shall not be expected to spend time and resources to verify and update its copper access network information.
 - b. information on the fibre access network shall be accurate and up-to-date (physical address, access type (GPON/point-to-point), total number of fibres (used and

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available fibres), planned coverage date (if no fibre access), presence of redundant fibre protection cable (used and available fibres) etc.)

596. Batelco shall provide OLOs with remote access to its access network database as soon as practicable, and in all cases before the end of the year 2016. The Authority understands that this database may not be complete and/or accurate when initially launched. Batelco shall ensure that its access network database is completed before the end of June 2017 (i.e. that by this date, it is complete and accurate, and contains all required information).
597. Batelco shall ensure that the verification and update of its access network database becomes a mandatory step in all its relevant internal processes (e.g. site surveys, fibre network deployment, delivery/cancellation a fibre-based connection, on-site fault restoration etc.)
598. Batelco shall allocate the database implementation cost to all active retail and wholesale access lines as well as its self-supplied fibre-based mobile backhaul (e.g. AN01, AN08, AN14, MN12, MN14, MN15 etc.).

The Authority's final conclusions

599. For the reasons set out above, the Authority hereby orders that:
- a. Batelco shall provide OLOs with online access to a database that contains information on Batelco's access fibre network including planned deployments.
 - b. Batelco shall provide the deployment roadmap for its database as part of its RO.
 - c. This roadmap shall document all the data fields that will become available to OLOs for consultation. The database shall cover all access networks, including copper and fibre:
 - i. information on the copper access network shall be provided on a best effort basis. Batelco shall not be expected to spend time and resources to verify and update its copper access network information.
 - ii. information on the fibre access network shall be accurate and up-to-date (physical address, access type (GPON/point-to-point), total number of fibres (used and available fibres), planned coverage date (if no fibre access), presence of redundant fibre protection cable (used and available fibres) etc.)
 - d. Batelco shall provide OLOs with remote access to its access network database as soon as practicable, and in all cases before the end of the year 2016.
 - e. The Authority understands that such database may not be complete and/or accurate when initially launched. Therefore, Batelco shall ensure that its access network database is completed before the end of June 2017 (i.e. complete and accurate database, containing all required information).
 - f. Batelco shall ensure that the verification and update of its access network database shall become a mandatory step in all its relevant internal processes. These shall include, without limitation, site surveys, fibre network deployment, delivery/cancellation of a fibre-based Connection and on-site fault restoration.
 - g. Batelco shall allocate the database implementation cost to all active retail and wholesale access lines as well as its self-supplied fibre-based mobile backhaul (e.g.

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in its regulatory accounts, network elements AN01, AN08, AN14, MN12, MN14, MN15 etc.).

600. These conclusions replace those in the draft Order, outlined in paragraph 354.

Pre-sale process

The Authority's final views

601. The Authority has considered the particular suggestions made by VIVA. While the Authority disagrees with the suggestions that it should manage the database, it sees merit in the suggestion for a joint survey.
602. To this end, should the Authority receive complaints from OLOs regarding a lack of accuracy in Batelco's database after it is due for completion, the Authority may request Batelco to have its database audited by an independent auditor.
603. Should such audit take place, it would be at Batelco's own expense, and based on the audit recommendations, the Authority may require that Batelco implements corrective actions. Should such an audit reveal that Batelco is in substantial breach of the obligations set in this Order, the Authority could also take other enforcement actions pursuant to the relevant provisions of the Law.
604. Until such time as the access network database is complete and accurate (i.e. by no later than June 2017), Batelco shall provide a free of charge pre-sale process as described below in paragraphs 606 to 606.d.
605. Furthermore, the pre-sale process should be validated with a joint-survey at the request of the OLO if Batelco claims that there is no fibre available. However, the Authority will not be involved in this process.

The Authority's final conclusions

606. For the reasons set out above, the Authority hereby orders Batelco, until such time as its access network database is complete and accurate (i.e. by June 2017 at the latest), to provide a free of charge pre-sale process which shall meet the following requirements:
- a. upon receiving a pre-sale request from an OLO, Batelco has a maximum of two (2) working days to indicate:
 - i. whether a location is already connected by a fibre cable, including any relevant information on access redundancy (e.g. if there is already point to point fibre or if the location is connected to an existing business ring);
 - ii. whether a spare fibre is or will soon be made available at such a location for the provisioning of a new service (or spare redundant fibre); and
 - iii. in case that fibre is unavailable, an estimate of the time required to deploy a new fibre access.
 - b. the pre-sale process shall be provided by Batelco free of charge to OLOs.
 - c. the pre-sale process shall be documented in Batelco's RO in an annex to the WLA and WDC service descriptions.

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- d. the pre-sale process shall be validated with a joint-survey at the request of the OLO if Batelco claims that there is no fibre available. This shall be provided at Batelco’s cost and this cost shall not be recovered from the RO products or included in the cost stack for RO products. Batelco should note that the possibility of requesting a joint survey will continue to apply even after the completion of the database in June 2017.

607. These conclusions replace those in the draft Order, outlined in paragraph 354.

Q12. Speeds of WDC

The Authority’s final views

608. The Authority notes the request from OLOs for lower speeds on the WDC product but considers that the WDC should for the time being be reserved for meeting higher capacity transmission requirements. The Authority also points out that lower speeds are already available with the WLA product.

609. The Authority has nonetheless decided to add the speeds 100 Mbps and 200 Mbps to be offered on the WDC product. These speeds are within the typical requirement for radio site backhauling transmission and should therefore meet the needs of OLOs.

The Authority’s final conclusions

610. The Authority hereby orders Batelco to introduce new speeds of 100 Mbps and 200 Mbps on the WDC product in addition to those listed in the draft Order as per paragraph 356 and as listed in Figure 22 below.

Figure 22: List of speeds to be made available for the WDC Connections

WDC Connection speeds (in Mbit/s)	
45 Mbit/s (i.e. DS3)	1,000 Mbit/s
100 Mbit/s	1,250 Mbit/s
156 Mbit/s (i.e. STM-1)	1,500 Mbit/s
200 Mbit/s	2,000 Mbit/s
300 Mbit/s	2,500 Mbit/s (i.e. STM-16)
400 Mbit/s	5,000 Mbit/s
500 Mbit/s	7,500 Mbit/s
622 Mbit/s (i.e. STM-4)	10,000 Mbit/s (i.e. STM-64)
750 Mbit/s	

Source: the Authority

Q13. Technical characteristics of WLA and WDC aggregation links

The Authority's final views

611. The Authority notes that the operators largely agree with its proposals.
612. Having considered the suggestions made by the operators, the Authority sees merit in allowing OLOs to optionally request higher-grade CPE for the WLA Aggregation Link.
613. Accordingly, the Authority shall require Batelco to include this as part of its Reference Offer.

The Authority's final conclusions

WLA aggregation link

614. As in the draft Order, the Authority hereby orders Batelco to make explicit in the WLA service description that an optional higher-grade CPE for the WLA Aggregation Link can be requested by OLOs against the payment of a reasonable NRC to cover for any additional costs.

WDC aggregation link

615. As per the draft Order, the Authority orders Batelco to make explicit in the WDC service description that:
- a. the WDC Aggregation Link(s) is/are provided for a minimum bandwidth of 10 Gbit/s;
 - b. the WDC Aggregation Link(s) is/are delivered over a fully redundant fibre path;
 - c. the WDC Aggregation Link(s) is/are provided with default protection mechanisms, including MSP 1+1, Sub-Network Connection Protection (SNCP), and Silver auto switching of 50ms.
616. The regulated MRC applicable to the WDC Aggregation Link is set in Section 6 thereafter.

Q14. Synchronisation feature for the WLA product

The Authority's final views

617. The Authority notes the need for the synchronisation feature expressed by the OLOs but also has regard for the fact that this feature is not supported at the moment.
618. The Authority considers that OLOs that require this feature should make use of the WDC product instead. The QoS Parameters for the WDC product specifies zero jitter, indicating that this product has full synchronisation features and is a synchronised service.
619. The need to then extend this feature to the WLA product will be revisited in future reviews, if the WDC product does not meet the OLOs' requirements.

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620. With regard to the provision of multiple VLANs on a single leased link, the Authority notes that Batelco provides for up to 4 VLANs as a default in its retail service. This should therefore also be provided as part of the wholesale offer.

The Authority's final conclusions

621. The Authority does not require Batelco to introduce the synchronisation feature for the WLA product.

622. However, Batelco is hereby ordered to provision up to 4 VLANs on a single leased link for the WLA service at no additional charge.

623. These conclusions replace the discussion in the draft RO, as per paragraphs 367 to 369.

Q15. Full, end-to-end physical and logical protection of WLA or WDC connection

The Authority's final views

624. The Authority has considered the suggestions put forth by the operators.

625. The Authority finds that the highest level of physical and logical protection should be charged at incremental cost and the charge should be capped at a 30% mark-up of the MRC.

626. The Authority expects that Batelco will collect information on the costs of the provision of this service so as to be able to justify fully the exact level of this charge at a later stage.

627. The Authority considers this 30% mark-up is reasonable as Batelco is only required to build the protection in its access network (i.e. redundant fibre access and ports). As transmission links in Batelco's core networks are already protected by default, it is not expected that Batelco would incur additional costs for ensuring the protection of a Connection in its core networks. Furthermore, the Authority understands that Batelco can ensure that only one connection can be used at any given time (one connection active and one in standby mode).

The Authority's final conclusions

628. The Authority's final conclusions remain as per the draft Order, as specified in paragraphs 378 and 387.

Q16. Second ingress port on CPE provided for a WLA/WDC connection or aggregation link

The Authority's final views

629. The Authority notes that the OLOs find that they would benefit from a second ingress port on the CPEs.

630. The Authority therefore maintains its requirement from that draft Order that Batelco provide a second ingress port on CPE for WLA/WDC connections or aggregation links

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The Authority's final conclusions

631. The Authority's final conclusions therefore remains as per the draft Order, outlined in paragraph 391.

Q17. Minimum set of information on CPEs used for WLA and WDC Aggregation Links and Connection

The Authority's final views

632. The Authority recognises that the information relating to WLA and WDC Aggregation Links and Connections can change. However, the Authority maintains that there is merit in Batelco publishing this information.

633. To improve transparency in the RO, the Authority requires that this information shall include the vendor, model, version, switching capacity as well as layer 2 and layer 3 capabilities of the equipment.

634. Therefore, as per the draft Order, the Authority requires that this information be included in the relevant annexes of the WLA/WDC service descriptions and be updated as and when there are changes to the CPEs.

635. However, these updates can take place without requiring a review by the Authority.

The Authority's final conclusions

636. For the reasons set out above, the Authority's decision remains as per the draft Order, as set out in paragraph 393.

637. In addition, the Authority hereby orders Batelco to include this information in the relevant annexes of the WLA/WDC service descriptions and updated when there is a change in the CPE.

Q18. Additional QoS reporting obligations for WLA and WDC

The Authority's final views

638. The Authority notes that OLOs are in agreement with Batelco's QoS reporting obligations and also request that Batelco publishes QoS reports on a quarterly basis. The Authority considers the publication of a summarized version of such reports in Batelco's website to be reasonable.

639. The Authority also considered Batelco's arguments on the difficulty of providing additional details for each fault. However, the Authority does not consider these arguments credible as it is not clear how Batelco currently manages its SLAs without detailed internal reporting.

640. Furthermore, the additional requirement to provide raw information on reported faults shall not represent an additional burden on Batelco as such raw information is used by Batelco to calculate averages and standard deviations for various reported parameters.

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641. However, in the interest of proportionality, the Authority will not require Batelco to process or format the data; it can just submit it to the Authority as extracted by its system. This should reduce regulatory burden while still ensuring transparency and information sharing.

The Authority's final conclusions

642. The Authority therefore maintains its conclusions as per the draft Order, as outlined in paragraph 401.

643. The Authority also orders Batelco to publish a summarised version of its Detailed QoS Reports in the RO section of its website. The template of such summary report shall be proposed by Batelco and submitted to the Authority for its review and approval within 60 days from the issuance of this Batelco Order.

Q19. ITU-T Y.1564 test methodology implementation

The Authority's final views and conclusions

644. In the absence of substantive comments, the Authority maintains its conclusion from the draft Order.

645. The Authority does not find it necessary to require Batelco to publish the test results, in the interest of proportionality.

646. The Authority's conclusions therefore remain as per the draft Order, as outlined in paragraphs 407 and 410.

Q20. Access to Batelco's BNV system

The Authority's final views and conclusions

647. The Authority notes that OLOs should already have access to the BNV system and is concerned by assertions that this may not be the case.

648. The Authority emphasises the need for the OLOs to access the system and requires Batelco to ensure that this happens.

649. The Authority's conclusions therefore remain as per the draft Order, as outlined in paragraph 415.

Q21. Penalties on a per fault basis rather than percentage of service availability

The Authority's final views and conclusions

650. The Authority notes that all OLOs agreed with the proposals in the draft Order.

651. The Authority has considered the suggestions put forward by VIVA and finds them constructive, and may introduce some of the suggestions at a later stage.

652. For the purpose of the final Order, the Authority maintains its conclusions from the draft Order as outlined in paragraph 421.

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Q22. Premium Support at a 20% mark-up on the applicable MRC

The Authority's final views and conclusions

653. The Authority notes that the OLOs consider the charge and the mark-up too high.
654. However, the Authority considers it reasonable to keep the mark-up in place, as a proxy for the maximum level of relevant, efficiently incurred economic costs that Batelco is likely to incur in offering this enhanced service level. Not including this mark-up would mean Batelco would be unable to recover its efficiently incurred costs. However, Batelco must monitor the costs incurred in providing this service so as to be able, in future, to determine this charge with reference to actual costs incurred.
655. The Authority therefore maintains its conclusions from the draft Order, as outlined in paragraph 714.

Q23. Service Level Terms and Penalties for the WLA and WDC products

656. The Authority appreciates that OLOs have sought even stricter terms and penalties. However, as mentioned earlier, this Reference Offer will be a step-change in regulation with the introduction of a Service Level Framework. In the interest of proportionality and ease of transition, the Authority does not, therefore, find it appropriate to introduce all the suggestions for more stringent measures at this point.
657. Furthermore, the Authority notes that some of the measures suggested by the OLOs would require the introduction a higher degree of sophistication in the Service Levels. As Batelco does not appear to have the appropriate systems in place at this point in time, the Authority considers it important to strike the right balance between sophistication and Batelco's practical ability to implement the requirements of this Order.
658. The Authority however takes note of the OLOs' proposed amendments for future review of the Service Levels applicable to the regulated products. Most notably, if the Authority finds that the Service Levels imposed through this Order are not being met, are not sufficient to meet the reasonable demands of OLOs, or are not sufficient to prevent discriminatory behaviour it will, at that point, consider introducing further, stricter, standards.
659. However, the Authority also considers it necessary to add penalties for any failures by Batelco to adhere to the Service Request Process. This is because the Service Request Process is a key stage in the Service Level Framework and delays at this stage would have a knock-on effect on the entire process and affect the quality of service received by the end-consumer.
660. To disincentivise such delays, the Authority is therefore adding a penalty of 5 Service Credits for each Working Day after the Maximum Time for Service Request Confirmation until such time as the OLO receives the confirmation.
661. Furthermore, it concludes that the QoS Parameters included in the draft Order be amended as below, with the amendments in bold red font :

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Figure 23: Final QoS Parameters applicable to WLA and WDC

QoS Parameters	Copper WLA	Fibre WLA	Fibre WDC
Round Trip Delay (Frame Transfer Delay)	≤ 25 ms	≤ 5 ms	≤ 5 ms
Frame loss (Average)	≤ 0.5%	≤ 0.1%	= 0.0% (no loss)
Jitter (Average)	≤ 10 ms	≤ 0.5 ms	0 ms (no jitter)

Source: the Authority

662. Finally, the Authority considers it worth reiterating its position on forecasting. The WDC and revised WLA service descriptions shall be based on the existing WLA service description. Under the existing WLA service description, OLO are requested to provide a forecast. If the number of Connection requested in a given quarter exceed the forecast, then the Service Levels for delivery are no longer binding.

The Authority's final conclusions

663. For the above reasons and pursuant to Articles 3(b) (1), 57(b) and 57(e) of the Telecommunication Law, and Article 4.2 of the Access Regulation, the Authority orders Batelco to:
- a. adjust existing Service Levels for the WLA product and services so that they are in line with:
 - i. the Service Level Framework detailed in in subsection 3.2, page 36 (reflecting the Authority's final conclusions on Section 3, see pages 69 to 79);
 - ii. the Service Level definitions detailed in subsection 3.3, page 53 (reflecting the Authority's final conclusions on Section 3, see pages 69 to 79);
 - iii. the Service Level Terms and Penalties detailed in Figure 24 below, including the introduction of a Standard Support and a Premium Support;
 - b. include a summary table of the Service Level Terms and Penalties in the WLA service description in the format detailed in subsection 3.4 (see Figure 10 above);
 - c. implement Service Levels for the WDC product and services in line with:
 - i. the Service Level Framework detailed in in subsection 3.2, page 36 (reflecting the Authority's final conclusions on Section 3, see pages 69 to 79);
 - ii. the Service Level definitions detailed in subsection 3.3, page 53 (reflecting the Authority's final conclusions on Section 3, see pages 69 to 79);
 - iii. the Service Level Terms and Penalties detailed in Figure 25 below, including the introduction of a Standard Support and a Premium Support; and
 - d. include a summary table of the Service Level Terms and Penalties in the WLA service description in the format detailed in subsection 3.4 (see Figure 10 above);
664. For the avoidance of doubt, the Orders set out in paragraphs 663 replace the conclusions reached in the draft Order, set out in paragraph 451.

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Figure 24: Summary of the Ordered Service Levels for the WLA product and services

Service Levels	Service Level Terms	Service Level Penalties
Service request process		
Service Request Acknowledgment	<u>Maximum Time for Service Request Acknowledgment:</u> During working hours: 15 minutes following receipt of the Service Request Outside working hours: 15 minutes after the start of the first working hour following receipt of the Service Request	
Service Request Confirmation	<u>Maximum Time for Service Request Confirmation: 2 WD</u>	<u>Penalties for Service Request Confirmation:</u> 5 Service Credits ('SC') for each WD after the Maximum Time for Service Request Confirmation until such time as the OLO receives the confirmation.
Service delivery process		
Notification of Expected RFT and RFS Dates	<u>Maximum Time for Notification of Expected RFT and RFS Dates</u> Transfer Request, Upgrade/Downgrade Request, Reconfiguration Request, and Cancellation Request: 2 WD For a Cancellation Request, Batelco shall only provide the Maximum RFS Date, which shall be the expected date of cancellation, taking into account the required notice period for cancellation. New Connection Request and Migration Request: 5WD	<u>Penalties for Notification of Expected RFT and RFS Dates:</u> 5 Service Credits ('SC') for each WD after the Maximum Time for Notification of Expected RFT and RFS Dates until such time as the OLO receives the notice.
RFS Date	<u>Maximum Delivery Time :</u> Transfer Request, Upgrade/Downgrade Request, and Reconfiguration Request: 10 WD New Connection Request, Migration Request: - when a fibre is available for a new Connection: 10 WD - when a fibre is not available for a new Connection but there is sufficient duct space to pull an additional fibre access cable: 30 WD - when new ducts must first be installed before deploying a new fibre access cable: 60WD Cancellation Requests do not have a Maximum Delivery Time: the Maximum RFS Date (i.e. expected cancellation date) must be defined to take into account the one-month notice period required for cancellation. In cases of Transfer Requests and Migration Requests, Batelco shall coordinate the deactivation and activation of the Connection on the same day to ensure minimum service disruption. <u>Maximum Validation Time: 3 WD</u>	<u>Penalties for RFS Date:</u> 20 SC for failure to meet the Maximum RFS Date and 10 SC for each additional working day thereafter until the OLO receives the RFS Certificate.

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Service Levels	Service Level Terms	Service Level Penalties
	The Maximum Validation Time does not apply to Cancellation Request.	
Acceptance Criteria	For Ethernet traffic: the provisioning test shall be based on the ITU Y.1564 standard For other traffic types: to be defined by Batelco in accordance with	
Service quality management		
QoS Parameters	<p>For WLA Connections \leq 2 Mbit/s (copper-based):</p> <ul style="list-style-type: none"> - Round Trip Delay (Frame Transfer Delay): 25 ms - Jitter (Frame Delay Variations): 10 ms - Frame Loss Ratio: 0.5% <p>For WLA Connections \geq 4 Mbit/s (fibre-based):</p> <ul style="list-style-type: none"> - Round Trip Delay (Frame Transfer Delay): 5 ms - Jitter (Frame Delay Variations): 0.5 ms - Frame Loss Ratio: 0.1% 	
Fault management process		
Fault Acknowledgment Time	<u>Maximum Fault Acknowledgment Time:</u> 15 min	
Response Time	<u>Maximum Response Time:</u> For Standard Support: 2 working hours during working hours and 4 hours outside working hours For Premium Support: 1 hour	
Restoration Time	<u>Maximum Restoration Time:</u> For Standard Support: 6 hours For Premium Support: 2 hours	<u>Penalties for Restoration Time:</u> For Standard Support: 10 SC for failure to meet the Maximum Restoration Time + 5 SC for each hour exceeding the Maximum Restoration Time For Premium Support: 20 SC for failure to meet the Maximum Restoration Time and 10 SC for each hour exceeding the Maximum Restoration Time
		<u>Maximum Monthly Penalty Cap:</u> For Standard Support: 300 SC per Connection and per month For Premium Support: 600 per Connection and per month

Source: the Authority

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Figure 25: Summary of the Ordered Service Levels for the WDC product and services

Service Levels	Service Level Terms	Service Level Penalties
Service request process		
Service Request Acknowledgment	<u>Maximum Time for Service Request Acknowledgment:</u> During working hours: 15 minutes following receipt of the Service Request Outside working hours: 15 minutes after the start of the first working hour following receipt of the Service Request	
Service Request Confirmation	<u>Maximum Time for Service Request Confirmation: 2 WD</u>	<u>Penalties for Service Request Confirmation:</u> 5 Service Credits ('SC') for each WD after the Maximum Time for Service Request Confirmation until such time as the OLO receives the confirmation.
Service delivery process		
Notification of Expected RFT and RFS Dates	<u>Maximum Time for Notification of Expected RFT and RFS Dates</u> Transfer Request, Upgrade/Downgrade Request, Reconfiguration Request, and Cancellation Request: 2 WD For a Cancellation Request, Batelco shall only provide the Maximum RFS Date, which shall be the expected date of cancellation, taking into account the required notice period for cancellation. New Connection Request and Migration Request: 5WD	<u>Penalties for Notification of Expected RFT and RFS Dates:</u> 5 Service Credits ('SC') for each WD after the Maximum Time for Notification of Expected RFT and RFS Dates until such time as the OLO receives the notice.
RFS Date	<u>Maximum Delivery Time :</u> Transfer Request, Upgrade/Downgrade Request, and Reconfiguration Request: 10 WD New Connection Request, Migration Request: - when a fibre is available for a new Connection: 10 WD - when a fibre is not available for a new Connection but there is sufficient duct space to pull an additional fibre access cable: 30 WD - when new ducts must first be installed before deploying a new fibre access cable: 60WD Cancellation Requests do not have a Maximum Delivery Time: the Maximum RFS Date (i.e. expected cancellation date) must be defined to take into account the one-month notice period required for cancellation. In cases of Transfer Requests and Migration Requests, Batelco shall coordinate the deactivation and activation of the Connection on the same day to ensure minimum service disruption. <u>Maximum Validation Time: 3 WD</u>	<u>Penalties for RFS Date:</u> 20 SC for failure to meet the Maximum RFS Date and 10 SC for each additional working day thereafter until the OLO receives the RFS Certificate.

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Service Levels	Service Level Terms	Service Level Penalties
	The Maximum Validation Time does not apply to Cancellation Request.	
Acceptance Criteria	For Ethernet traffic: the provisioning test shall be based on the ITU Y.1564 standard For other traffic types: to be defined by Batelco in accordance with	
Service quality management		
QoS Parameters	For WDC Connections (fibre-based): - Round Trip Delay (Frame Transfer Delay): 5 ms - Jitter (Frame Delay Variations): 0 ms - Frame Loss Ratio: 0%	
Fault management process		
Fault Acknowledgment Time	<u>Maximum Fault Acknowledgment Time:</u> 15 min	
Response Time	<u>Maximum Response Time:</u> For Standard Support: 2 working hours during working hours and 4 hours outside working hours For Premium Support: 1 hour	
Restoration Time	<u>Maximum Restoration Time:</u> For Standard Support: 6 hours For Premium Support: 2 hours	<u>Penalties for Restoration Time:</u> For Standard Support: 10 SC for failure to meet the Maximum Restoration Time + 5 SC for each hour exceeding the Maximum Restoration Time For Premium Support: 20 SC for failure to meet the Maximum Restoration Time and 10 SC for each hour exceeding the Maximum Restoration Time
		<u>Maximum Monthly Penalty Cap:</u> For Standard Support: 300 SC per Connection and per month For Premium Support: 600 per Connection and per month

Source: the Authority

6 Review of the price terms applicable to the WLA and WDC products and services

666. In the following section, the Authority reviews the price terms applicable to the WLA and WDC products and services.

CONSULTATION TEXT

6.1 Batelco's proposed charges for the WLA, the CAT and the LLCO connections

6.1.1 Batelco's proposed charges for the WLA Connections

667. As part of the cover letter included in its RO submission dated 16 October 2014, Batelco proposes to freeze the current charges applicable to the WLA Connections.

668. To justify such a prize freeze, Batelco highlights that there has been a shift in costs in 2012 which resulted in significantly increased prices for the lower throughputs delivered on copper (i.e. 2Mbit/s and below) compared with the higher throughputs delivered on fibre (i.e. 4Mbit/s and above). Batelco also submits that 70% of existing customers are subscribed to lower speeds. By proposing to freeze the charges, Batelco hopes to minimize any adverse impact that may be experienced in the majority of the market.

669. While Batelco proposes to freeze the WLA charges, Batelco also provides the cost-stack of the WLA based on the 2012 regulatory accounts (see Figure 26 below).

670. The Authority notes that the WLA charges calculated by Batelco based on 2012 regulatory costs are:

- a. higher than current charges for speeds lower or equal to 1Mbit/s (from +41% for 64 kbit/s to +2% for 1Mbit/s; and
- b. lower than current charges for speeds higher or equal to 2Mbit/s (from -16% for 2Mbit/s to -55% for 1Gbit/s).

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Figure 26: Cost stack submitted by Batelco for the WA service

Chargeable item	CPE	Fibre/Copper cost	MSAN G.SHDSL	Aggregation – distribution (CN19, CN21, CN23, CN40, CN56)	MSAN (CN08)	Core (CN38) Core – Core Link (CN31)	Retail activities Costs	Other Wholesale activities	Total cost
64kbit/s	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	82.601
128kbit/s	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	83.750
256kbit/s	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	86.047
512kbit/s	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	90.642
1Mbit/s	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	99.400
2Mbit/s	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	117.348
4Mbit/s	[X]	[X]		[X]		[X]	[X]	[X]	209.136
8Mbit/s	[X]	[X]		[X]		[X]	[X]	[X]	246.012
10Mbit/s	[X]	[X]		[X]		[X]	[X]	[X]	261.996
15Mbit/s	[X]	[X]		[X]		[X]	[X]	[X]	297.886
20Mbit/s	[X]	[X]		[X]		[X]	[X]	[X]	329.921
25Mbit/s	[X]	[X]		[X]		[X]	[X]	[X]	359.364
50Mbit/s	[X]	[X]		[X]		[X]	[X]	[X]	484.484
75Mbit/s	[X]	[X]		[X]		[X]	[X]	[X]	589.428
100Mbit/s	[X]	[X]		[X]		[X]	[X]	[X]	683.099
150Mbit/s	[X]	[X]		[X]		[X]	[X]	[X]	849.687
200Mbit/s	[X]	[X]		[X]		[X]	[X]	[X]	998.381
300Mbit/s	[X]	[X]		[X]		[X]	[X]	[X]	1,262.824
400Mbit/s	[X]	[X]		[X]		[X]	[X]	[X]	1,498.860
500Mbit/s	[X]	[X]		[X]		[X]	[X]	[X]	1,715.797
1,000Mbit/s	[X]	[X]		[X]		[X]	[X]	[X]	2,637.687
Aggregation Link	[X]	[X]*					[X]*		200.000

* It appears that Batelco has omitted to include the cost of fibre access for the WLA Aggregation Link. This has been corrected by the Authority in the above table
 Source: Batelco's RO submission dated 16 October 2014, 2012 WLA Cost Stacks.xlsx

6.1.2 Batelco’s proposed charges for the high-speed CAT/LLCO connections

671. Batelco no longer offers new TDM-based low-speed CAT/LLCO services to OLOs. However Batelco continues to support all existing low-speed TDM-based connections but intends to gradually migrate such legacy connections to its Next Generation Network (“NGN”) (i.e. Ethernet over MPLS). As such, Batelco does not provide any cost stack for TDM-based low speed CAT/LLCO connections but indicates that the applicable charges will be those of NGN-based connections.

672. As part of its RO Submission, Batelco submitted the following cost stack for the high-speed CAT/LLCO services.

Figure 27: Cost stack submitted by Batelco for the high-speed CAT/LLCO service

speed	WS Factor	Wholesale Activities Cost	Access Fibre Cost for 2 ends	Equipment Cost for two ends	Network Cost	Total cost
DS3	[X]	[X]	[X]	[X]	[X]	3,410
STM-1	[X]	[X]	[X]	[X]	[X]	5,307
STM-4	[X]	[X]	[X]	[X]	[X]	13,695

Source: Batelco’s RO submission dated 16 October 2014, 2012 Based High Speed CAT and LLCO Cost Stacks.xlsx

673. However, Batelco proposes to maintain the same price ceilings for high-speed CAT/LLCO connections that were ordered by the Authority in the RO order dated 14 May 2012.

674. Batelco also expresses the wish to withdraw the high-speed CAT/LLCO connections from the RO “*on the basis that the relevant market is already effectively competitive*”.²⁹

6.1.3 Batelco’s proposed charges for the WOBS

675. Batelco submitted the cost stack of the proposed WOBS service for the Authority’s review on 29 April 2015 (see below table).

²⁹ Batelco’s cover letter for the RO submission dated 16 October 2014 (ref: GCL/389/14)

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Figure 28: Cost stack submitted by Batelco for the proposed WOBS

Speed	WS Factor	Wholesale Activities Cost	Access Fibre Cost	Equipment Cost for Two ends (one in access & one in Hub site)	Network (transmission) Cost	Total cost / prices
300 Mbit/s	[X]	[X]	[X]	[X]	[X]	2,990
500 Mbit/s	[X]	[X]	[X]	[X]	[X]	3,376
1,000 Mbit/s	[X]	[X]	[X]	[X]	[X]	4,160
2,500 Mbit/s	[X]	[X]	[X]	[X]	[X]	5,945
10,000 Mbit/s	[X]	[X]	[X]	[X]	[X]	11,878

Source: Batelco's submission dated 29 April 2015 (ref: GCL/119/15), Wireless backhaul costing 2012 based.xlsx

676. The transmission costs of the WOBS have been derived by Batelco based on the weighted-gradient unit cost of its SDH transmission network.

677. The Authority observes that the total costs of the WOBS do not correspond to the prices proposed by Batelco as part of the WOBS service description submitted on 9 April 2015 (see Batelco proposed prices in Figure 15 on page 94).

6.2 The Authority's review of the WLA and WDC cost stacks

678. In the following sections, the Authority reviews the key components of the WDC cost stacks. As discussed in the above sections, the WDC product would be available in two variants:

- a. WLA; and
- b. WDC

679. Some of the cost components are common to both technical variants of the WDC, while others are specific to the transmission technology used. The following section details the Authority's review of each cost component involved in the provision of WDC Connections and associated services.

6.2.1 CPE costs

CPEs for WLA Connections

680. The Authority has not made any adjustment to the costs that Batelco seeks to recover for the CPEs used at the end-point of WLA Connections (ex-WLA Connections).

CPEs for WDC Connections

681. The Authority has reviewed the costs that Batelco wishes to recover from the WDC Connections.

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682. In an email dated 2 April 2015, Batelco provided price information on some of the CPEs it uses in its network operations. Such CPEs support both SDH and DWDM technologies. They are scalable and their prices vary with the number cards that are installed in the equipment slots for the uplinks and downlinks. However, as part of its email, Batelco did not provide a breakdown of prices sufficiently detailed for the different service cards and processing/memory cards used for such CPEs. Batelco appeared to have instead provided CPE prices for their maximum configuration.

683. Absent detailed and updated information on CPEs that are compatible with both SDH and DWDM technologies, the Authority has used price information provided by Batelco in the context of the core network BU cost model project.

684. The Authority has also made several assumptions to derive a monthly cost of SDH CPEs. Such assumptions are detailed in the below table.

Figure 29: Assumptions taken by the Authority to derive a monthly cost for SDH CPEs

Description	Value	Notes
Asset lives of SDH CPEs (in years)	5	While SDH equipment has an asset life of 10 years in the regulatory accounts when it is used by Batelco for core network transmission purposes, the Authority considers that an asset life of 5 years is more appropriate when the SDH equipment is used as CPE for customers.
Average NBV/GBV ratio	50%	This ratio corresponds to the average life of the equipment over its life span i.e. 2.5 years. This ratio is used to derive the average capital employed and thus the average return on such capital employed.
Weighted Average Cost of Capital ("WACC")	9.50%	As per the Cost of Capital Determination issued on 20 February 2013 (ref: MCD 02/13/018)
Maintenance (% of CAPEX)	10%	The Authority considers that the level of CPE maintenance set at 10% of equipment price is reasonable and in line with international benchmark.
Un-attributable costs (% of depreciation and maintenance OPEX)	[X]%	Un-attributable costs are common costs (i.e. overhead). They represent [X]% of total costs in Batelco's 2012 regulatory accounts. The percentage uplift is therefore calculated as follow: $[X]\% = 1/(1-[X]\%)-1$

Source: the Authority

685. Based on the above assumptions, and based on price information provided by Batelco in the context of the core network BU model project, the Authority has calculated the monthly cost of the CPEs compatible with SDH and DWDM technologies. Details of the calculations are reproduced in the following table:

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Figure 30: The Authority's calculations SDH CPEs monthly cost

	DS3 / STM-1	STM-4	STM-16	STM-64
Rack	[X]	[X]	[X]	[X]
Subrack OSN 1500	[X]	[X]	[X]	
Subrack OSN 3500				[X]
Optical Interface Board 12xSTM1 *	[X] *			
Optical Interface Board 4xSTM4		[X]		
Optical Interface Board 4xSTM-16			[X]	
Optical Interface Board 2xSTM-64				[X]
Total CAPEX	[X]	[X]	[X]	[X]
Depreciation	[X]	[X]	[X]	[X]
Return on capital employed (i.e. WACC)	[X]	[X]	[X]	[X]
Maintenance	[X]	[X]	[X]	[X]
Un-attributable costs	[X]	[X]	[X]	[X]
Total annual cost	[X]	[X]	[X]	[X]
Total monthly cost	[X]	[X]	[X]	[X]

Note: the 2010 prices of equipment have been adjusted for the year 2015 based on an annual price trend of -5%.
 * The Authority does not have any price information for optical interface boards of lesser capacity than 12 STM-1. As a proxy for the price of an optical board of lesser capacity, the Authority has made a downward adjustment of -33% to the price of the optical interface board 12xSTM1. Absent information, the Authority considers such adjustment to be reasonable given price changes between optical interface boards of different capacity (e.g. STM-4 and STM-16) .
 Source: the Authority

6.2.2 Copper access costs and MSAN costs

686. The low-speed WLA Connections are to be delivered by a copper line. As such, they are to use Batelco's access copper network and Multi-Service Access Node ('**MSAN**') which correspond to the following network elements in Batelco's regulatory accounts:

- a. copper access (i.e. network element AN01)
- b. MSAN G.SHDSL access card (i.e. network element AN20) ; and
- c. MSAN common data card (i.e. network element CN08).

687. Based on Batelco's 2014 regulatory accounts and 2014 operational data, the Authority has calculated the 2014 unit cost of the above network elements. Details of the calculations are presented in the below table.

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Figure 31: 2014 monthly unit costs of network elements AN01, AN20 and CN08

	2014 total cost	Average number of units in 2014	Monthly unit cost
Access copper (AN01)	BD [X]	[X] copper accesses	BD [X] per copper access
MSAN G.SHDSL access card (AN20)	BD [X]	[X] G.SHDSL cards	BD [X] per G.SHDSL card
MSAN Common Card Data (CN08)	BD [X]	[X] Mbit/s (average allocated bandwidth at MSAN)	BD [X] per Mbit/s of bandwidth allocated at MSAN

Source: the Authority, based on Batelco's 2014 regulatory accounts

6.2.3 Fibre access costs

688. According to Batelco's 2014 regulatory accounts, the total cost allocated to fibre access (i.e. network element AN08) is BD [X] for a total average of [X] fibre accesses used for fixed data connections in 2014. The resulting monthly unit cost is BD [X] per fibre access in 2014 (i.e. $BD [X] = BD [X] / [X] \text{ accesses} / [X] \text{ months}$).

6.2.4 MPLS transmission costs

689. In Batelco's regulatory accounts, the cost of MPLS transmission is recorded under the following network elements (in order, from aggregation to core elements):

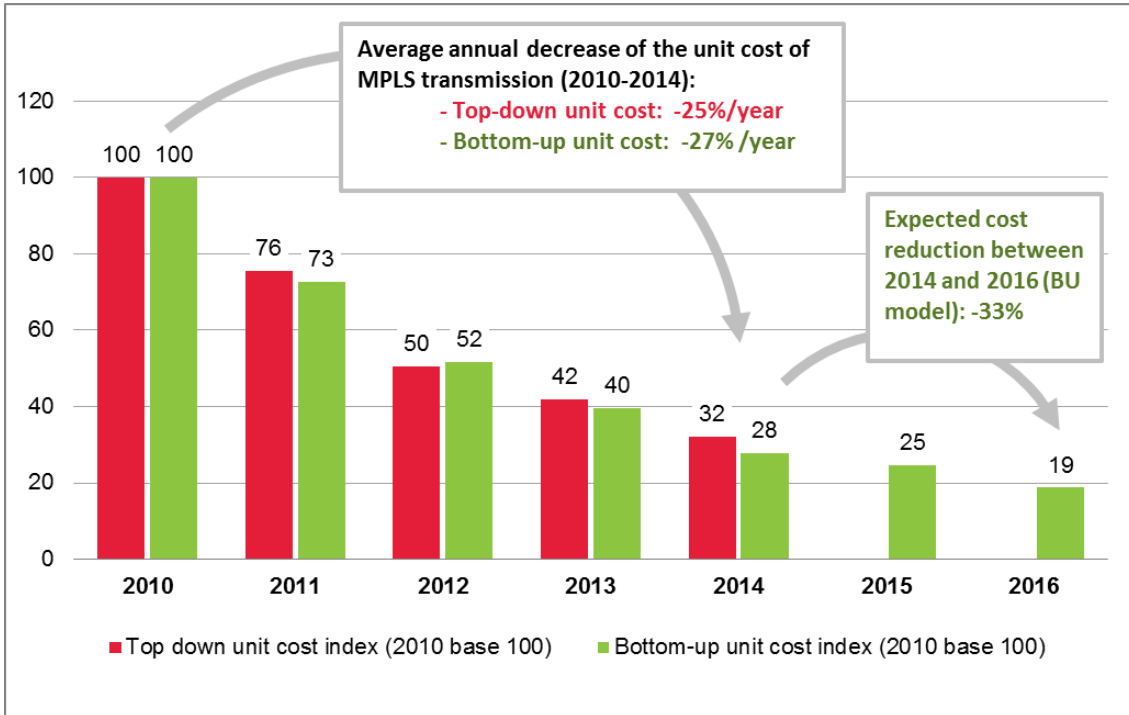
- a. CN23 [MSAN – Aggregation Link (Data)];
- b. CN40 [MPLS Aggregation (Data)];
- c. CN21 [Aggregation – Distribution Link (Data)];
- d. CN56 [MPLS Distribution Routers (Data)];
- e. CN19 [Distribution – Core Link (Data)];
- f. CN38 [MPLS Core Data]; and
- g. CN31 [Core – Core Link (Data)].

690. In order to derive a forward-looking cost of MPLS transmission for 2016, the Authority has updated the core network BU cost model with the latest information on the number of services using the MPLS transmission network (i.e. based on 2011, 2012, 2013 and 2014 routing factor tables, annual market indicators, and the QoS reports for Local MPLS, Global MPLS and WLA services submitted by Batelco on a quarterly basis).

691. The Authority has then run the BU model for the years 2011 to 2016 to derive a trend for the unit cost of MPLS transmission for the period. The resulting trend was compared with Batelco's top-down figures which are available up to 2014 (see below figure).

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Figure 32: Top-down unit cost and bottom-up unit cost of MPLS transmission (2010 base 100)



	2010	2011	2012	2013	2014	2015	2016
Top down unit cost index (2010 base 100)	100	76	50	42 *	32 *	n/a	n/a
Top down annual percentage change	-12%	-24%	-33%	-17%	-23%	n/a	n/a
Bottom-up unit cost index (2010 base 100)	100	73	52	40	28	25	19
Bottom-up annual percentage change		-27%	-29%	-24%	-30%	-11%	-24%

* The 2013 and 2014 MPLS unit costs were calculated by the Authority based on Batelco's 2013 and 2014 regulatory accounts

Source: the Authority based on Batelco's 2010 to 2014 regulatory accounts and the results of the BU model

692. The Authority notes that the BU model provides a good estimate of the actual rate of decrease of the unit cost of MPLS transmission between 2010 and 2014:

- a. based on Batelco's regulatory accounts (i.e. top down costs), the unit cost of MPLS transmission has decreased on average by -25% per year between 2010 and 2014.
- b. for the same period, the BU model provide an estimate of -27% per year.

693. The model estimates that the unit cost of MPLS transmission will decline by a further -33% between 2014 and 2016.

694. To ensure that regulated charges are set based on forward-looking costs, the Authority has decided to apply a downward adjustment of -20% to the 2014 unit cost of MPLS transmission (as calculated from Batelco's 2014 regulatory accounts). While this adjustment is more conservative than the trend anticipated by the BU model, the Authority considers that it provides a fair and reasonable estimate of the unit cost of MPLS transmission for 2016.

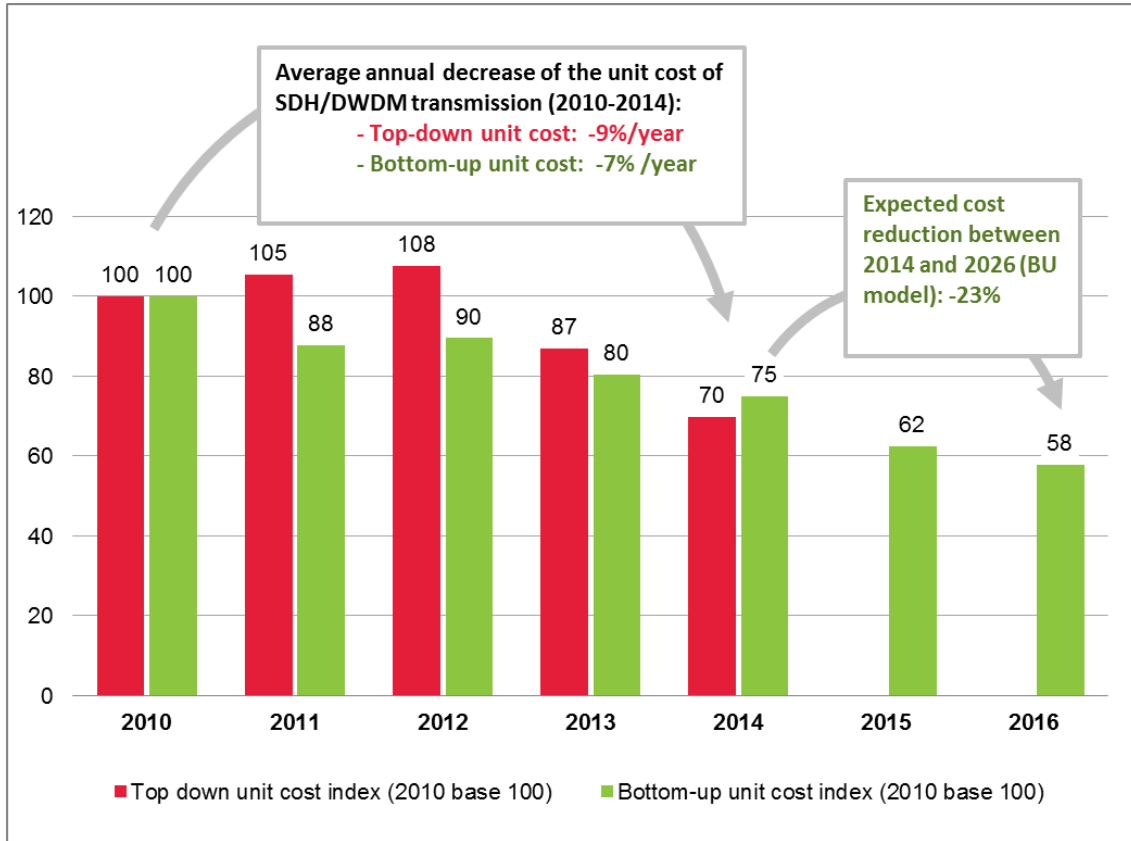
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6.2.5 SDH and DWDM transmission costs

695. In Batelco's 2012 regulatory accounts, the cost of SDH and DWDM transmission is recorded under the following network elements:
- a. CN50 [Transmission DWDM];
 - b. CN51 [UMG – ISDN Link];
 - c. CN52 [Transmission SDH Data];
 - d. CN53 [Transmission ASCOM Data];
 - e. CN54 [Transmission BDDN Data]; and
 - f. CN55 [Transmission- Interconnect Operators].
696. To derive the unit cost of SDH and DWDM transmissions, Batelco sums up the costs of all the above network elements and divides the total by the number of weighted equivalent E1 circuits. As Batelco's DWDM network is used, among other purposes, to offload traffic from its SDH network, it is therefore appropriate to derive an average cost of SDH/DWDM transmission.
697. The costs of the different transmission systems in terms of E1 circuits is obtained using the following conversion factors:
- a. E1 = 1 weighted equivalent E1 circuit;
 - b. DS3 = 8.62 weighted equivalent E1 circuits;
 - c. STM-1 = 23.04 weighted equivalent E1 circuits;
 - d. STM-4 = 42.37 weighted equivalent E1 circuits; and
 - e. STM-16 = 118.95 weighted equivalent E1 circuits.
698. Using the same approach as followed for MPLS transmission (see above paragraphs 690 and 691), the Authority has derived a 'bottom-up' trend for the unit cost of SDH/DWDM transmission during the period 2010-2016. The trend was compared with top-down figures, which are available up to 2014 (see below figure).

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Figure 33: Top-down unit cost and bottom-up unit cost of SDH/DWDM transmission (2010 base 100)



	2010	2011	2012	2013	2014	2015	2016
Top down unit cost index (2010 base 100)	100	105	108	87 *	70 *	n/a	n/a
Top down annual percentage change		5%	2%	-19%	-20%	n/a	n/a
Bottom-up unit cost index (2010 base 100)	100	88	90	80	75	62	58
Bottom-up annual percentage change		-12%	2%	-10%	-7%	-17%	-7%

* The 2013 and 2014 SDH/DWDM unit costs were calculated by the Authority based on Batelco's 2013 and 2014 regulatory accounts
Source: the Authority based on Batelco's 2010, 2011 and 2012 regulatory accounts and the results of the BU model

699. It is worth noting that the BU model provides a good estimate of the decrease in unit cost of SDH/DWDM transmission between 2010 and 2014. The actual decrease of the unit cost was -30% between 2010 and 2014, when the bottom-up provides an estimate decrease of -25% for the same period.

700. The Authority also notes that the unit cost of SDH/DWDM transmission has increased between 2010 and 2012. According to the Authority's analysis, this is mainly due to two factors:

- a. Batelco's investment in DWDM network equipment during the period; and
- b. a slight decrease of total traffic between 2011 and 2012.

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701. The model estimates that the unit cost of SDH/DWDM transmission will decline by a further -23% between 2014 and 2016.
702. To ensure that regulated charges are set based on forward-looking costs, the Authority has decided to apply a downward adjustment of -15% to the 2014 unit cost of SDH/DWDM transmission (as calculated from Batelco's 2014 regulatory accounts). While this adjustment is more conservative than the trend anticipated by the BU model, the Authority considers that it provides a fair and reasonable estimate of the unit cost of SDH/DWDM transmission for 2016.

6.2.6 Non-network costs

703. Prior to the launch of the WLA,³⁰ there was no top-down cost information available on which to base a regulatory pricing decision (i.e. to determine the portion of non-network cost that Batelco would be allowed to recover through the WLA charges). The Authority thus used the retail costs incurred by Batelco for the provision of the Local MPLS service as a proxy of the wholesale costs that Batelco would likely incur for the provision of the WLA service.
704. However, the Authority considers that the approach that was followed at the time may have led to over-estimate the actual costs that are incurred for providing equivalent services at the wholesale level. This is because it is very unlikely that Batelco would incur the same amount of non-network costs per wholesale connection (WLA service) as it does for each retail connection (Local MPLS service). To support such views, the Authority highlights that the non-network costs of the Local MPLS service includes the following cost categories:
- a. Marketing and communication costs (i.e. RA41 and RA24): the marketing and communication costs account for [~~3~~] % of the total non-network costs that Batelco incurred for the Local MPLS service in 2012. As Batelco does not incur any marketing and communication costs for the provision of the WDC service, such costs are not relevant for the WDC service;
 - b. Sales support and management costs (i.e. RA18, RA19, RA20, RA22, RA43, RA44, and RA49): the sales support and management costs represent [~~3~~] % of the total non-network costs in 2012. The technical staff of OLOs are unlikely to require the same ad-hoc and sales support as retail customers would. Furthermore, the WDC is a standard and well-defined service, and Batelco only has a few OLOs as customers for the WDC service compared to the relatively high number of distinct customers at the retail level. The Authority therefore considers that a great majority of sales support and management costs would not be required at the wholesale level.
 - c. Credit control collection and trade debtors (i.e. RA16, RA55): such costs represent [~~3~~] % of the total non-network costs in 2012 ([~~3~~] % of total costs for the "Trade debtors" account [RA55] alone). It is not clear to the Authority whether the whole amount of such retail costs would also be relevant at the wholesale level.

³⁰ The WLA was launched by Batelco on 27 November 2012.

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705. The above cost categories account for [X]% of the total non-network costs allocated to the Local MPLS service. The Authority considers that a great portion of such costs are not relevant to the costs incurred by Batelco for the provision of WLA and WDC Connections.

706. To review the wholesale cost component of the WLA and WDC cost stacks, the Authority has followed the approach detailed in Figure 34 below:

- a. the Authority has first derived gradients for the allocation of such wholesale costs to data connectivity services that would meet the following criteria:
 - i. unlike network costs, the non-network cost allocated for each service should not be strongly correlated with the speed of such a service;
 - ii. the wholesale costs allocated to each WLA or WDC Connection should follow a similar progression with regard to speed to that of the Local MPLS service (see column A); and
- b. based on the above criteria, the Authority proposes the following gradients (see column C):
 - i. For all speeds ≤ 2 Mbit/s: gradient = 1
 - ii. For all speed ≥ 4 Mbit/s: gradient = $\left(\frac{\text{speed in Mbit/s}}{2}\right)^{1/4}$
- c. the Authority has considered the total amount of wholesale costs that Batelco is seeking to recover for the CAT and LLCO services in 2012;³¹
- d. according to the proposed gradients, the Authority has derived a unit cost per gradient-weighted wholesale service of BD [X] (see column G). This unit cost was calculated by dividing the total amount of wholesale costs in 2012 (i.e. BD [X]) by the total gradient-weighted average number of circuits in 2012 (i.e. [X], see total of column F).

³¹ This wholesale cost amount was BD 167,635 in 2012, see cell B42, sheet "BB CAT & LLCO Summary Cost 2012", file "2012 Based High Speed CAT and LLCO Cost Stacks.xlsx", Batelco's RO submission based on 2012 regulatory accounts.

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Figure 34: Approach followed by the Authority to derive a gradient-based allocation of non-network costs to wholesale data connections

Speed	A) Non-network costs allocated to Local MPLS Layer 2 service in 2012	B) Non-network costs allocated to Local MPLS service in 2012 (normalized at 2 Mbit/s = 1)	C) Proposed formula-based gradients by the Authority	D) Column C expressed as a percentage of column B *	E) Average number of CAT/LLCO circuits in 2012	F) Gradient-weighted average number of CAT/LLCO circuits in 2012 (i.e. column C x column E)	G) Monthly wholesale cost per circuit	H) Total annual wholesale cost (i.e. column E x column G x 12)
≥64 Kbps	BD [X]	1.00	1.00	100%	[X]	[X]	BD [X]	BD [X]
128 Kbps	BD [X]	1.00	1.00	100%	[X]	[X]	BD [X]	BD [X]
256 Kbps	BD [X]	1.00	1.00	100%	[X]	[X]	BD [X]	BD [X]
384 Kbps	BD [X]	1.00	1.00	100%	[X]	[X]	BD [X]	BD [X]
512 Kbps	BD [X]	1.00	1.00	100%	[X]	[X]	BD [X]	BD [X]
1 Kbps	BD [X]	1.00	1.00	100%	[X]	[X]	BD [X]	BD [X]
2 Kbps	BD [X]	1.00	1.00	100%	[X]	[X]	BD [X]	BD [X]
4 Mbps	BD [X]	[X]	1.19	[X]			BD [X]	
8 Mbps	BD [X]	[X]	1.41	[X]			BD [X]	
10 Mbps	BD [X]	[X]	1.50	[X]			BD [X]	
15 Mbps	BD [X]	[X]	1.65	[X]			BD [X]	
20 Mbps	BD [X]	[X]	1.78	[X]			BD [X]	
25 Mbps	BD [X]	[X]	1.88	[X]			BD [X]	
30 Mbps	BD [X]	[X]	1.97	[X]			BD [X]	
50 Mbps	BD [X]	[X]	2.24	[X]			BD [X]	
75 Mbps	BD [X]	[X]	2.47	[X]			BD [X]	
100 Mbps	BD [X]	[X]	2.66	[X]			BD [X]	
150 Mbps	BD [X]	[X]	2.94	[X]			BD [X]	
200 Mbps	BD [X]	[X]	3.16	[X]			BD [X]	
300 Mbps	BD [X]	[X]	3.50	[X]			BD [X]	
400 Mbps	BD [X]	[X]	3.76	[X]			BD [X]	
500 Mbps	BD [X]	[X]	3.98	[X]			BD [X]	
1,000 Mbps	BD [X]	[X]	4.73	[X]			BD [X]	
45 Mbps (DS3)			2.18		[X]	[X]	BD [X]	BD [X]
156 Mbps (STM-1)			2.97		[X]	[X]	BD [X]	BD [X]
622 Mbps(STM-4)			4.20		[X]	[X]	BD [X]	BD [X]
2,500 Mbps (STM-16)			5.95		[X]	[X]	BD [X]	BD [X]
Total					[X]	[X]		BD [X]

* The gradients calculated by the Authority based on the formula described in paragraph 706.b provide a similar progression in the allocation of wholesale costs as for the retail costs allocated to the Local MPLS Layer 2 service.

** The monthly unit cost per gradient-weighted wholesale service was calculated as follow: $BD [X] = [X] / [X] \times 1/12$
Source: the Authority

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707. As can be seen in the above table, the approach used by the Authority guarantees that Batelco fully recovers the non-network costs that were incurred in 2012 for the provision of wholesale data connections (i.e. the total of column H is BD [X]).

708. While the monthly wholesale unit cost derived by this approach is BD [X] per Connection, the Authority has decided to use a more conservative value of BD [X] per WLA or WDC Connection (i.e. uplift of 12.4%). This leaves some margin for any unexpected increase in wholesale costs that may be reported by Batelco in future RO submissions.

6.3 The Authority's draft decision on the WLA and WDC charges

709. The revised cost stacks of the WLA and WDC charges are based on:

- a. the unit cost adjustments made by the Authority (see details in previous sections); and
- b. an additional mark-up of 20% on the WLA and WDC charges.

710. The Authority had already applied a 20% mark-up on the introductory MRC of the WLA (see the Authority's letter dated 27 September 2012, ref: MCD/09/12/125). The Authority considers that, in this very situation and with specific reference to the WLA and WDC products, it is still reasonable to consider such mark-up, for the following reasons:

- a. additional costs that Batelco may incur in setting up and managing the Service Level monitoring platform for MPLS-based data connection services (i.e. Batelco NetView system);
- b. additional costs that Batelco may incur in adapting its current wholesale processes and systems to align them with the newly defined service level framework (see section 3 above);
- c. additional costs that Batelco may incur as a result of the revised and more stringent Service Levels applicable to the WLA and WDC products, and in particular, the automatic payment by Batelco of Service Level Penalties for failure to meet the defined Service Level Terms;
- d. the material costs of setting up a centralised geographic database on fibre access and fibre usage which OLOs would be able to consult remotely (see paragraph 354 above);
- e. any unexpected and material changes that may occur in the allocation of MPLS transmission costs for the 2015 and 2016 regulatory accounts (from the 2015 regulatory accounts and onwards, the allocation method of MPLS transmission costs is expected to change from average allocated bandwidth to peak bandwidth);
- f. the uncertainty with regard to the investment required by Batelco to modernize its MPLS transmission network in 2016; and
- g. the uncertainty with regard to the investment required by Batelco to extend the reach of its DWDM core transmission network. In that respect, the Authority notes that the coverage of Batelco's DWDM network is currently limited to 9 service nodes. The 20% mark-up should thus provide Batelco with reasonable incentives to rapidly deploy DWDM equipment in other service nodes.

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711. As the application of a 20% mark-up on the WLA speeds 64kbit/s and 128 kbit/s would result in higher MRC than currently defined for the WLA, the Authority has decided to keep the MRC applicable to such speeds at their current levels. This translates into a lower level of mark-up compared to the calculated cost-based MRC (i.e. mark-up of 13.0%, and 16.3% for the speeds 64kbit/s and 128 kbit/s respectively).
712. The Authority has also set the MRC applicable to the WDC Aggregation Link of 10 Gbit/s (i.e. STM-64) with a fully redundant fibre path at 500 BD/month. The Authority is confident that this amount will allow Batelco to fully recover all associated costs.
713. The Authority considers that the level of NRC which currently apply to the WLA for installation, configuration and additional work (see items 2-16.3 to 2-16.11 in the RO Schedule 3) are appropriate for the WDC.
714. Finally, the Authority sets the following charge premium:
- a. "Premium Support" for a WLA or a WDC Connection: **20% on top of the applicable MRC** (the Premium Support is free when a charge premium is paid for an end-to-end logical and physical protection, see point (b) below); and
 - b. End-to-end physical and logical protection of a WLA or WDC Connection: **30% on top of the applicable MRC.**
715. Pursuant to Article 57 of the Telecommunications Law and Article 5 of the Access Regulation issued 30 April 2005, the Authority sets the fair, reasonable and non-discriminatory MRC for WLA and WDC Connections as presented in Figure 35 and Figure 36 below.

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Figure 35: Cost stack of the fair, reasonable and non-discriminatory WLA MRC (in BD per month)

Speed	CPE	Fibre / copper access	MSAN	MPLS transmission	Non-network i.e. wholesale costs	Additional mark-up of 20%	FRND WLA MRC **	Existing WLA MRC	% difference
64	kbit/s	[X]	[X]	[X]	[X]	6.74	58.508	58.508	0.0%
128	kbit/s	[X]	[X]	[X]	[X]	8.53	60.963	60.963	0.0%
256	kbit/s	[X]	[X]	[X]	[X]	10.84	64.600	65.872	-1.9%
512	kbit/s	[X]	[X]	[X]	[X]	11.29	67.700	75.692	-10.6%
1	Mbit/s	[X]	[X]	[X]	[X]	12.33	73.800	97.143	-24.0%
2	Mbit/s	[X]	[X]	[X]	[X]	14.46	86.300	138.879	-37.9%
4	Mbit/s	[X]	[X]	[X]	[X]	22.54	134.900	259.927	-48.1%
8	Mbit/s	[X]	[X]	[X]	[X]	27.33	163.500	344.053	-52.5%
10	Mbit/s	[X]	[X]	[X]	[X]	29.30	175.300	380.519	-53.9%
15	Mbit/s	[X]	[X]	[X]	[X]	33.51	200.900	462.398	-56.6%
20	Mbit/s	[X]	[X]	[X]	[X]	37.18	223.100	535.482	-58.3%
25	Mbit/s	[X]	[X]	[X]	[X]	40.60	243.200	602.652	-59.6%
50	Mbit/s	[X]	[X]	[X]	[X]	54.24	325.400	888.095	-63.4%
75	Mbit/s	[X]	[X]	[X]	[X]	65.43	392.300	1,127.512	-65.2%
100	Mbit/s	[X]	[X]	[X]	[X]	75.16	450.900	1,341.209	-66.4%
150	Mbit/s	[X]	[X]	[X]	[X]	92.28	553.600	1,721.257	-67.8%
200	Mbit/s	[X]	[X]	[X]	[X]	107.40	644.100	2,060.482	-68.7%
300	Mbit/s	[X]	[X]	[X]	[X]	133.93	803.100	2,663.772	-69.9%
400	Mbit/s	[X]	[X]	[X]	[X]	157.30	943.500	3,202.255	-70.5%
500	Mbit/s	[X]	[X]	[X]	[X]	178.66	1,071.700	3,697.169	-71.0%
1,000	Mbit/s	[X]	[X]	[X]	[X]	268.47	1,610.600	5,800.336	-72.2%
WLA Aggregation Link (1GbE; fibre-based)	[X]	[X]			[X]		200.000	200.000	0%

* for the speeds 64 kbit/s and 128 kbit/s, the Authority has decided to keep the charges at their current levels. The applicable % mark-up for such speeds is therefore less than 20%.

** The Authority has rounded-up WLA charges to the nearest decimal.

NB. As proposed by Authority in paragraph 387 above, the full end-to-end physical and logical protection shall be available for an additional 30% premium on top of the applicable MRC for the Connection. As proposed by the Authority in paragraph 443 above, the Premium Support shall be available for an additional 20% premium on top of the applicable MRC for the Connection.

Source: the Authority

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Figure 36: Cost stack of the fair, reasonable and non-discriminatory WDC MRC (in BD per month)

Speed	CPE	Fibre access	SDH/DWDM transmission *	Non-network i.e. wholesale costs	Additional mark-up of 20%	FRND WDC MRC **	Existing CAT/LLCO price ceilings (in black) and Batelco's proposed MRC for WOBS (<i>in italic blue</i>)	% difference
45 Mbit/s (or DS3)	[X]	[X]	[X]	[X]	58.77	352.700	2,512.24	-86.0%
156 Mbit/s (or STM-1)	[X]	[X]	[X]	[X]	89.19	535.200	3,552.33	-84.9%
300 Mbit/s	[X]	[X]	[X]	[X]	118.89	713.400	<i>3,787.00</i>	<i>-81.2%</i>
400 Mbit/s	[X]	[X]	[X]	[X]	135.34	812.100		
500 Mbit/s	[X]	[X]	[X]	[X]	150.31	901.900	<i>4,046.00</i>	<i>-77.7%</i>
622 Mbit/s (or STM-4)	[X]	[X]	[X]	[X]	167.16	1,003.000	8,185.21	-87.7%
750 Mbit/s	[X]	[X]	[X]	[X]	185.54	1,113.300		
1,000 Mbit/s	[X]	[X]	[X]	[X]	214.92	1,289.600	<i>4,574.00</i>	<i>-71.8%</i>
1,250 Mbit/s	[X]	[X]	[X]	[X]	241.75	1,450.500		
1,500 Mbit/s	[X]	[X]	[X]	[X]	266.71	1,600.300		
2,000 Mbit/s	[X]	[X]	[X]	[X]	312.57	1,875.400		
2,500 Mbit/s (or STM-16)	[X]	[X]	[X]	[X]	354.50	2,127.000	<i>5,775.00</i>	<i>-63.2%</i>
5,000 Mbit/s	[X]	[X]	[X]	[X]	561.08	3,366.500		
7,500 Mbit/s	[X]	[X]	[X]	[X]	708.17	4,249.000		
10,000 Mbit/s (or STM-64)	[X]	[X]	[X]	[X]	838.91	5,033.500	<i>9,769.00</i>	<i>-48.5%</i>
WDC Aggregation Link (10 GbE/STM-64; fibre-based; including end-to-end physical and logical protection)	[X]	[X]		[X]		500.00		

* As initially proposed by Batelco for the WOBS costing, the Authority has allocated SDH/DWDM transmission costs based on a costing gradient defined as: $\text{gradient} = (\text{speed in Mbps} / 2)^{2/3}$

** The Authority has rounded-up the WDC charges to the nearest decimal.

NB. As proposed by Authority in paragraph 387 above, the full end-to-end physical and logical protection shall be available for an additional 30% premium on top of the applicable MRC for the Connection. As proposed by the Authority in paragraph 443 above, the Premium Support shall be available for an additional 20% premium on top of the applicable MRC for the Connection.

Source: the Authority

SUMMARY OF SUBMISSIONS ON SECTION 6

716. This sub-section summarises operator responses to Section 6. However, as there were no specific questions relating to this section, operators' views on pricing have been captured in other sections. Only VIVA has made a comment explicitly relating to this Section.
717. In the interest of transparency, VIVA requests that the Authority disclose the costs of the network elements used in its analysis in Chapter 6 so that it can compare these costs with the suggested mark-ups.
718. VIVA states that it will agree to reasonable confidentiality protocols for handling of this information. It notes that the accounting separation regulations and international best practices contemplate appropriate disclosure of regulatory accounts to the public. It further notes that accounting information may be disclosed by NRAs under the EC Access Regulation.
719. Zain echoes this view in the cross-submission stage, requesting visibility on the costing elements and equipment used in determining the WDC and WLA prices, subject to reasonable confidentiality protocols.

THE AUTHORITY'S FINAL CONCLUSIONS ON SECTION 6

720. In this subsection, the Authority provides its final views and conclusions with regard to section 6 (Review of the price terms applicable to the WLA and WDC products and services).
721. The Authority notes that the key concerns of the operators relate to the absolute levels of the prices and whether the price levels set out in the draft Order should be implemented immediately, or via a glide path.
722. Batelco found the proposed prices are too low and so underestimate the relevant, efficiently incurred economic costs of providing these services. It has therefore suggested that the proposed charges should be introduced via a glide path. The OLOs find that the prices proposed by the Authority for the WDC product are too high and do not reflect an efficient level of costs that should be incurred to deliver the product.
723. The Authority has investigated the matter further and sets out its views and prices for the Final Order.

WLA Charges

The Authority's final views

724. The Authority has reviewed its approach to determining the appropriate level of WLA prices and continues to believe that this is appropriate. However, it recognises the potential benefit of introducing the charges via a short glide path. This will support the

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development of the WLA service and the use of the WLA service by OLOs, without creating sudden changes in market conditions which could be to the detriment of efficient investment. As almost all the current wholesale connections use the WLA product, a glide-path will prevent rapid reduction in wholesale revenues. Any excess profit can then be used by Batelco to invest in networks and systems such as the SLA management platform, the database to monitor fibre availability, and so on.

725. Furthermore, the Authority is confident that even with the use of the glide path, the OLOs will be able to compete in downstream markets (for example to serve corporate users) with the proposed WLA charges. The Authority will continue to monitor the market to ensure there is no margin squeeze.

The Authority's final conclusions

726. For the reasons set out above, Batelco is ordered to apply the MRCs set out in Figure 37 for the WLA service, in line with the glide-path described below.

727. Batelco shall apply a two-step glide-path:

- a. **1st step: From implementation following issuance of this Batelco Order to 30 September 2017:** MRCs for WLA service set half way between current charges and final charges (i.e. final charges in Figure 37)
- b. **2nd step: from 1 October 2017 onwards:** MRCs for WLA services to be set equal to the Final charges presented in Figure 37

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Figure 37: Cost stack of the fair, reasonable and non-discriminatory WLA MRC (in BD per month)

Speed	CPE	Fibre / copper access	MSAN	MPLS transmission	Non-network i.e. wholesale costs	Additional mark-up of 20%	FRND WLA MRC **
64	kbit/s	[X]	[X]	[X]	[X]	6.74	58.508
128	kbit/s	[X]	[X]	[X]	[X]	8.53	60.963
256	kbit/s	[X]	[X]	[X]	[X]	10.84	64.600
512	kbit/s	[X]	[X]	[X]	[X]	11.29	67.700
1	Mbit/s	[X]	[X]	[X]	[X]	12.33	73.800
2	Mbit/s	[X]	[X]	[X]	[X]	14.46	86.300
4	Mbit/s	[X]	[X]		[X]	22.54	134.900
8	Mbit/s	[X]	[X]		[X]	27.33	163.500
10	Mbit/s	[X]	[X]		[X]	29.30	175.300
15	Mbit/s	[X]	[X]		[X]	33.51	200.900
20	Mbit/s	[X]	[X]		[X]	37.18	223.100
25	Mbit/s	[X]	[X]		[X]	40.60	243.200
50	Mbit/s	[X]	[X]		[X]	54.24	325.400
75	Mbit/s	[X]	[X]		[X]	65.43	392.300
100	Mbit/s	[X]	[X]		[X]	75.16	450.900
150	Mbit/s	[X]	[X]		[X]	92.28	553.600
200	Mbit/s	[X]	[X]		[X]	107.40	644.100
300	Mbit/s	[X]	[X]		[X]	133.93	803.100
400	Mbit/s	[X]	[X]		[X]	157.30	943.500
500	Mbit/s	[X]	[X]		[X]	178.66	1,071.700
1,000	Mbit/s	[X]	[X]		[X]	268.47	1,610.600
WLA Aggregation Link (1GbE; fibre-based)	[X]	[X]			[X]		200.000

* for the speeds 64 kbit/s and 128 kbit/s, the Authority has decided to keep the charges at their current levels. The applicable % mark-up for such speeds is therefore less than 20%.

** The Authority has rounded-up WLA charges to the nearest decimal.

NB. As proposed by Authority in paragraph 387 above, the full end-to-end physical and logical protection shall be available for an additional 30% premium on top of the applicable MRC for the Connection. As proposed by the Authority in paragraph 443 above, the Premium Support shall be available for an additional 20% premium on top of the applicable MRC for the Connection.

Source: the Authority

WDC Charges

The Authority's final views

728. Given the comments received, the Authority has further reviewed the prices for the WDC product and made a number of amendments to ensure that the final charges set out in this Order are consistent with the relevant, efficiently incurred economic costs of providing this product. Specifically:

- a. The additional mark-up of 20% has been removed. This was originally intended to capture costs of implementing the new requirements in the Order such as the service level monitoring platform, adapting wholesale processes to align them with the new service levels, and so on.– However, with the increasing capacity per radio site (LTE), the need for a high-capacity, fibre-based wholesale product has become pressing. Since the OLOs have no other alternative to provide backhaul capacity other than microwave links, it is important for the WDC product to be cost-effective. Furthermore,

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since the deployment of the product will be phased (with full coverage required over 18 months), the costs of deployment are now lower than those envisaged in the Annex to the draft Order and so the mark-up is, in the Authority's opinion, no longer justified. Furthermore, the Authority considers that, given the importance of OLOs having non-discriminatory access to services, the costs that OLOs incur for backhaul services should not be out of line with the costs of Batelco's own, self-supplied mobile backhaul. Based on Batelco's CCA FAC regulatory accounts for 2014, the Authority estimates that Batelco incurs backhaul costs of, on average, [X] BD/radio site (FAC CCA 2014). Given the removal of the 20% mark-up, the Authority is satisfied that the WDC prices are now more consistent with the cost incurred by Batelco for its own radio site backhaul. Furthermore, the Authority considers it important to emphasise that despite the removal of the mark-up, the charges so set are fair and reasonable in that they continue to be sufficient to allow Batelco to recover relevant, efficiently incurred, forward-looking incremental costs (including the regulated rate of return on capital employed).

- b. The Authority has increased the adjustment applied to the 2014 transmission costs to derive the 2016 costs from -15% to -30%- According to Batelco's presentation "MPLS Modernization" dated October 2015, the current utilization of its DWDM network is [X]% (for both Enterprise and Mobile transmission). Therefore, a reasonable forward-looking utilization of [X]% implies a decrease in unit cost of approximately -30% (i.e. [X]). Furthermore, Government policy as set out in NTP4 proposes that there should be a single entity in Bahrain which is able to established, operate and maintain the NBN. As such, it is expected that the WDC would be a highly in demand service generating large economies of scale, thereby justifying the change in adjustment.

729. Additional speeds - as set out above in paragraph 610, the Authority is now ordering Batelco to add speeds of 100 Mbps and 200 Mbps to its WDC portfolio as these speeds may better meet OLOs' mobile backhaul capacity requirements. The Authority has determined prices for these WDC speeds using the same methodology as that for other WDC speeds.

The Authority's final conclusions

730. Given the above, Batelco is hereby ordered to apply the charges for the WDC product as set out in Figure 40 below. These prices replace those in the draft Order.³²

³² The Authority notes that these prices are in line with those found in an international price benchmarking study for similar leased line products by the Spanish Telecommunications National Regulatory Authority, CNMC (previously CMT). The study "*Proyecto de medida relativo a la modificación de los precios de los servicios contenidos en la Oferta de Referencia de líneas alquiladas de Telefónica de España, S.A.U.*" is available at www.cnmc.es.

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Figure 38: Cost stack of the fair, reasonable and non-discriminatory WDC MRC (in BD per month)

Speed		Gradients for network cost allocation	Gradients for non-network cost allocation	CPE	Fibre access	SDH/DWDM transmission *	Non-network i.e. wholesale costs	Draft charges	Final FRND WDC MRC **	% difference (final vs draft MRC)
45	Mbit/s (or DS3)	7.97	2.18	[X]	[X]	[X]	[X]	352.700	276.400	-22%
100	Mbit/s	13.57	2.66	[X]	[X]	[X]	[X]	N/A	348.300	new
156	Mbit/s (or STM-1)	18.26	2.97	[X]	[X]	[X]	[X]	535.200	405.800	-24%
200	Mbit/s	21.54	3.16	[X]	[X]	[X]	[X]	N/A	445.300	new
300	Mbit/s	28.23	3.50	[X]	[X]	[X]	[X]	713.400	532.400	-25%
400	Mbit/s	34.20	3.76	[X]	[X]	[X]	[X]	812.100	601.500	-26%
500	Mbit/s	39.69	3.98	[X]	[X]	[X]	[X]	901.900	664.300	-26%
622	Mbit/s (or STM-4)	45.90	4.20	[X]	[X]	[X]	[X]	1,003.000	734.800	-27%
750	Mbit/s	52.00	4.40	[X]	[X]	[X]	[X]	1,113.300	813.300	-27%
1,000	Mbit/s	63.00	4.73	[X]	[X]	[X]	[X]	1,289.600	936.100	-27%
1,250	Mbit/s	73.10	5.00	[X]	[X]	[X]	[X]	1,450.500	1,048.000	-28%
1,500	Mbit/s	82.55	5.23	[X]	[X]	[X]	[X]	1,600.300	1,152.000	-28%
2,000	Mbit/s	100.00	5.62	[X]	[X]	[X]	[X]	1,875.400	1,342.900	-28%
2,500	Mbit/s (or SMT-16)	116.04	5.95	[X]	[X]	[X]	[X]	2,127.000	1,517.200	-29%
5,000	Mbit/s	184.20	7.07	[X]	[X]	[X]	[X]	3,366.500	2,400.200	-29%
7,500	Mbit/s	241.37	7.83	[X]	[X]	[X]	[X]	4,249.000	3,009.800	-29%
10,000	Mbit/s (or SMT-64)	292.40	8.41	[X]	[X]	[X]	[X]	5,033.500	3,551.300	-29%
WDC Aggregation Link (10 GbE/STM-64; fibre-based; including end-to-end physical and logical protection)				[X]	[X]		[X]	500.000	500.000	0%

* As initially proposed by Batelco for the WOBS costing, the Authority has allocated SDH/DWDM transmission costs based on a costing gradient defined as: gradient = (speed in Mbps / 2)^{2.3}

** The Authority has removed the 20% mark-up and rounded-up the WDC charges to the nearest decimal.

NB. As proposed by Authority in paragraph 387 above, the full end-to-end physical and logical protection shall be available for an additional 30% premium on top of the applicable MRC for the Connection. As proposed by the Authority in paragraph 443 above, the Premium Support shall be available for an additional 20% premium on top of the applicable MRC for the Connection.

Source: the Authority

7 Review of the non-price terms applicable to the Bitstream product and services

731. In the following section, the Authority reviews the non-price terms applicable to the Bitstream product and services.

CONSULTATION TEXT

732. As part of its review of the non-price terms applicable to the Bitstream product and services, the Authority has taken into account all reasonable comments received from OLOs in the past few years (either via letters or in meetings).

733. The Authority is of the view that the Bitstream service description should be clear to a non-technical reader and should detail all processes and interactions that Batelco and OLOs may have during the service request, delivery, and management of the Bitstream product and services.

7.1 General modifications to the Bitstream service description

Bitstream product for business and mass-market packages

734. Since the issuance on 27 March 2014 of the final “Determination of Significant Market Power and Determination of Dominant Position in the Markets for Provision of Broadband Internet Access Services from a Fixed Location” (ref: MCD/03/14/018), Batelco no longer holds a Dominant Position in the wholesale broadband access market for the supply of mass-market broadband internet access services from a fixed location. However, the Authority has determined that Batelco continues to hold a Dominant Position in the wholesale broadband access market for the supply of business broadband internet access services from a fixed location.³³

735. Accordingly, the Authority considers that Batelco shall make clear that the Bitstream product and services are regulated for business packages but unregulated for mass-market packages.

No minimum service period

736. There is no mention of a Minimum Service Period in the current service description.

737. The Authority considers that the absence of a Minimum Service Period shall be made explicit in the Bitstream service description.

³³ For more information on the Determination, please refer to page

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Bitstream available over GPON access

738. Batelco currently delivers Bitstream Connections over its GPON access network.

739. The Authority considers that this shall be reflected in the service description. As such, Batelco shall make the following changes to the Bitstream description:

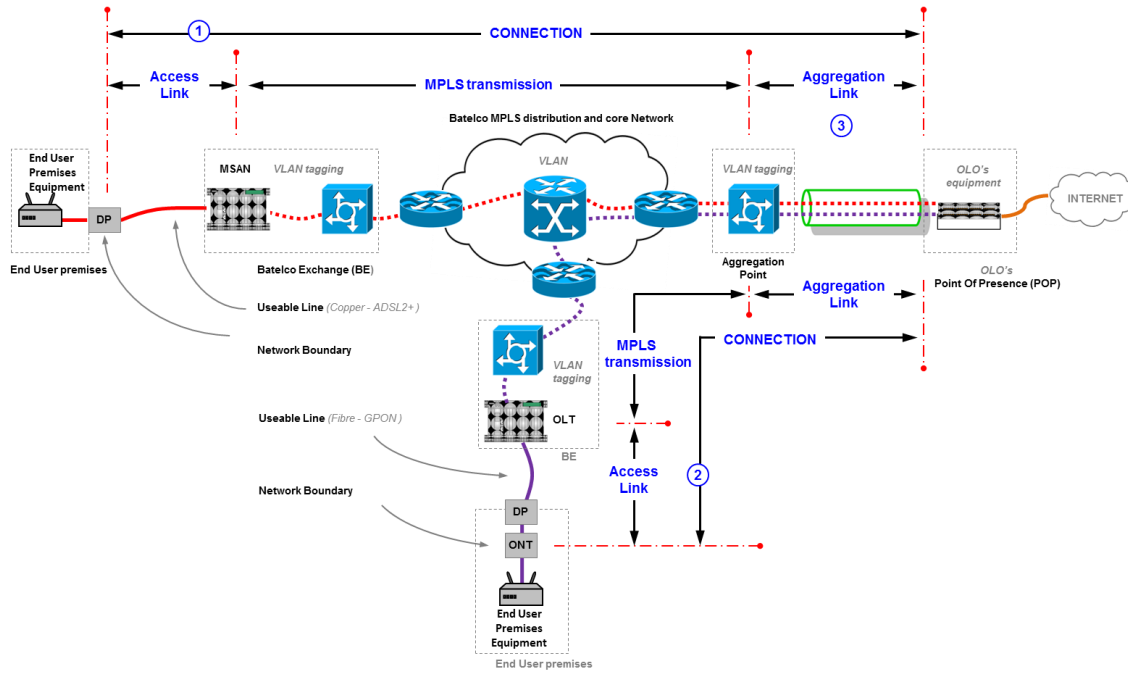
- a. the definition of “ADSL Link” shall be replaced by “**Access Link** means the digital point-to-point communications between an End User Premises and the MSAN or OLT nearest to that End User Premises.”;
- b. the word “DSL” shall be removed from the definition of “End User Premises Equipment”;
- c. the definition of “MSAN” shall be amended to “**MSAN** means multi-service access node, network equipment in Batelco Exchange used in the provision of Bitstream Connections when the Access Link is based on ADSL technology (copper-based access).”;
- d. the definition of “Useable Pair” shall be amended to “**Useable Line** means the copper access line or fibre access line to the End User over which the End User is acquiring a standard suite of telephone services provided by Batelco.”;
- e. the definition of “Batelco Exchange (BE)” shall be amended to “**Batelco Exchange (BE)** means an exchange which has MSANs or OLTs installed at the time of the Service Request. The exchanges at which the Bitstream service is available are listed in annex.”;³⁴
- f. the following definitions of GPON, OLT and ONT shall be added:
 - i. “**GPON** means gigabit passive optical networks, an access technology used by Batelco to provide a fibre-based asymmetric connection at a fixed location.”
 - ii. “**OLT** means optical line terminal, network equipment in Batelco Exchange used in the provision of a Bitstream Connection when the Access Link is based on GPON technology (fibre-based access).”;
 - iii. “**ONT** means optical network terminal, network equipment in the End User Premises used in the provision of a Bitstream Connection when the Access Link is based on GPON technology (fibre-based access). The ONT is supplied, supported and maintained by Batelco.”
- g. the definition of “Network Boundary” shall be amended to “**Network Boundary** means, for a copper-based Access Link, the Batelco distribution point at the End User Premises, and for a fibre-based Access Link, the ONT at the End User Premises.”
- h. a technical diagram of the Bitstream service shall be added in an annex of the service description. The technical diagram shall represent a copper-based Access Link and a fibre-based Access Link. The Authority proposes the following technical diagram (see Figure 39 below).

³⁴ Batelco should ensure that the list of Batelco Exchanges included in annex is up to date.

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740. All the above changes to the definitions shall also be reflected in the Bitstream service description, and adjustments shall be made where necessary.

Figure 39: The Authority’s proposed technical diagram for the Bitstream Connection



Source: the Authority

741. The above diagram is a technical description of the Bitstream product:

- a. Bitstream Connections can be provided over two types of Access Links:
 - i. Copper-based DSL Access Link (see on ① the left end side of the diagram)
 - ii. Fibre-based GPON Access Link (see on ② the bottom end side of the diagram).
- b. the traffic of the two Bitstream Connections is aggregated in the Aggregation Link and handed over at the OLO’s POP (see on the ③ right end side of the diagram).

Other changes to the definitions of the Bitstream service description

742. To improve the overall clarity and transparency of the Bitstream service description, and to align it with the framework for Service Levels defined in subsection 3.2 above, Batelco shall introduce, amend or remove the following definitions:

- a. the terms “Connection” and “product” shall be introduced in the Bitstream definition. The Bitstream definition shall therefore be amended to “The **Bitstream** product is an access product which enables the Access Seeker to provide high speed products and services to its End Users via Connections over a digital pathway across the Access Provider’s network. The digital pathway consists of one or more Connections,

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involving one or more Access Links between End User premises and one or more Aggregation Links.”

- b. the definition of “Connection” shall be introduced: “**Connection**” means the digital pathway that provides one end-to-end connection between one specific End User premises and the Access Seeker’s POP.”
- c. the definition of “Aggregation Link” shall be amended to “**Aggregation Link** means the logical or physical link between an Aggregation Point and an Access Seeker’s Point Of Presence. For the avoidance of doubt, an Access Seeker must have Batelco establish at least one Aggregation Link before the implementation of the first Service Request.”
- d. the definition of “Aggregation Point” shall be added: “**Aggregation Point** means the point on Batelco’s network where the Aggregation Link is connected.”
- e. the definition of “ADSL” shall be expanded to describe this acronym completely.
- f. the definitions of “Bitstream Change”, “Bitstream Change Request”, “Bitstream Request” and “Reversal Request” shall be removed and replaced by the following definitions:³⁵
 - i. “**Service Request**: means a formal request for a service of the Bitstream product. Service Requests for the Bitstream product include New Connection Request, Change Request, Reversal Request, Transfer Request, and Cancellation Request.”
 - ii. “**New Connection Request**: means a Service Request for establishing a new Bitstream Connection for the provision of services to an End User at the premises of such End User.”
 - iii. “**Transfer Request**: means a Service Request for transferring an existing connection from one operator to another operator. For the avoidance of doubt, the existing connection may be provided as retail broadband service by Batelco and transferred as a Bitstream Connection to an OLO.
 - iv. “**Upgrade/Downgrade Request**: means a Service Request to upgrade /downgrade the speed of an existing Connection, where a Connection is already provided by an OLO for the provision of services to an End User at the same location.”
 - v. “**Reconfiguration Request**: means a Service Request for reconfiguring the technical parameters of an existing Connection.”
 - vi. “**Reversal Request**: means a Service Request for returning a Bitstream Service to its setup or configuration prior to the most recent Service Request. For the avoidance of doubt this type of Service Request can either be made by

³⁵ The Authority does not propose to define a Migration Request for Bitstream.

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the OLO (on behalf of the End User) to Batelco or by the End User directly to Batelco.”³⁶

- vii. **“Cancellation Request:** means a Service Request for discontinuing a Bitstream Service.”
- g. the definition of “Invalid Transfer” shall be amended to **“Invalid Transfer means a Service Request:**
 - (a) where the End User (or its/her/his agent) did not request the services that the Access Seeker intended to supply via a Bitstream Service;
 - (b) where a valid written End User Consent cannot be produced by the Access Seeker to support the Service Request; or
 - (c) which resulted from a processing error.”
- h. the word “incompatibility” in paragraph (d) of the “Service Qualification” definition shall be capitalized. The Authority understands that, in this context, the word “incompatibility” has the meaning provided by the definition of “Incompatibility”.

743. All the above changes to the definitions shall also be reflected in the Bitstream service description, and adjustments shall be made where necessary.

Removal of the forecasting obligation

744. Pursuant to clause 7 of the Bitstream service description, OLOs must submit a 6-month forecast of the expected requests for the Bitstream Service at the beginning of each calendar month.

745. The Authority considers that OLOs should not have to submit such forecasts to Batelco for the Bitstream Service. The Authority is of the view that Bitstream Connection forecasts are of limited use to Batelco for the following reasons:

- a. Forecasts are normally used by operators to plan ahead the dimensioning of the network (e.g. placing orders for additional network cards from the equipment vendor, installing additional uplink transmission capacity etc.), as well as to plan the workforce (i.e. additional recruitment that may be required to cope with an expected high increase in demand). Any variations in the quantity of Bitstream Service Requests from one month to the other would only have a very limited incidence on Batelco’s planning of operations as the number of Bitstream Connections is relatively low compared to the overall number of retail broadband subscriptions.
- b. Batelco has a better visibility on the potential evolution of the number of Bitstream Service Requests than any single OLO. Batelco has past information on the total volumes of retail broadband, WDSL and Bitstream services (broken down per OLO). No other operator than Batelco has a better visibility of the evolution of the business broadband market. Based on retail and wholesale information, Batelco’s network

³⁶ The Authority understands that a Reversal Request will occur when a recent change has been implemented to a Bitstream Service. If the configuration or setup is incorrect then either the OLO or the End User may request Batelco to revert to the most recent Bitstream Request.

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teams can benefit from a consolidated view of current demand and can thus derive more accurate forecast. In other words, a forecast based on consolidated historic information would be more robust than the sum of forecast provided by OLOs.

- c. As risk and uncertainty are central to forecasting, it is considered best practice that telecom operators carefully plan their operations by considering a margin of error (e.g. capacity mark-up for network dimensioning). While an unexpected, sudden and permanent change in the volume of Bitstream Connections is unlikely to occur, the Authority is nonetheless confident that Batelco would be prepared for such an eventuality.

746. The Authority is also of the view that the removal of the Bitstream forecasting requirement on OLOs would be equally beneficial to Batelco in so far as it simplifies the Bitstream overall process by reducing its 'procedural' aspect to the strict necessary.

747. Finally, the removal of the forecasting obligation from the Bitstream service description does not prevent Batelco's wholesale team from developing and maintaining regular interactions with its wholesale customers. Through regular interactions with OLOs, Batelco can easily obtain their views on sales forecasts without the need of a formal process.

748. For the above reasons, the Authority considers that the forecasting requirement for Bitstream shall no longer be imposed on OLOs.

Extension of the notice period applicable to service termination

749. Under clause 3.3 of the current Bitstream service description, Batelco may cease to supply the Bitstream Service to an Access Seeker on 3 months prior written notice if a regulatory obligation to support or supply any specific Bitstream Service no longer applies.

750. The Authority considers that, in such case, a notice period of 3 months does not provide sufficient time for the concerned OLO to plan the migration of its existing retail customers to a similar or equivalent service using another wholesale service provided by Batelco or using its own network.

751. As such, the Authority considers that Batelco should change the notice period in this particular case from 3 months to 12 months.

752. The Authority also considers that OLOs should be the only party responsible for informing End Users (i.e. their retail customers) if their existing service will be migrated to another network at the end of the notice period.

Summary of the general modifications to be made to the Bitstream service description

753. In accordance with the above paragraphs, the Authority orders Batelco to modify its service description as follow:

- a. **Bitstream product for business and mass-market packages:** Batelco shall make clear that the Bitstream product and services are regulated for business packages but unregulated for mass-market packages;
- b. **No minimum service period:** Batelco shall explicitly mention that there is no minimum service period applicable to the Bitstream product;

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- c. **Bitstream available over GPON access:** Batelco shall modify the Bitstream service description in accordance with the requirements set in paragraphs 739 and 740 above;
- d. **Other changes to the definitions of the Bitstream service description:** : Batelco shall modify the Bitstream service description in accordance with the requirements set in paragraphs 742 and 743 above;
- e. **Removal of the forecasting obligation:** the Authority orders Batelco to remove the forecasting requirement currently imposed on OLOs for the Bitstream product (i.e. clause 7 of the Bitstream service description) and to adjust the Bitstream service description accordingly.
- f. **Extension of the notice period applicable to service termination:** the Authority orders Batelco to extend the notice period provided for by clause 3.3 of the service description from 3 months to 12 months. Batelco shall also make clear that, in case of notice under clause 3.3, the OLO shall be the only party responsible for informing End Users (i.e. their retail customers) if their existing service will be migrated to another network at the end of the notice period.

Q24. Do you agree with the Authority's proposed modifications of the Bitstream service description? Please explain and justify your position.

7.2 Introduction of Service Levels for the Bitstream product and services

754. As indicated in subsection 3.1 page 33, the Authority is of the view that Batelco should introduce Service Levels for the Bitstream product and services in respect of business packages (hereafter business Bitstream).

755. In this section, the Authority sets the Service Levels that it considers fair and reasonable for the business Bitstream product and services.

756. Before setting the Service Levels of the business Bitstream, the Authority has considered the QoS performance reported by Batelco in the General QoS Reports (see paragraph 394 above) as well as international benchmarking where available. In setting the Service Levels, the Authority also took into consideration consumer protection aspects in line with its duties under Article 3(b) of the Telecommunications Law.

Maximum Time for Service Request Acknowledgment

757. In line with the service request process proposed by the Authority (see subsection 3.2.1 above) and related definitions (see subsection 3.3 above), the Authority sets the Maximum Time for Service Request Acknowledgment as follow:

- a. during working hours: 15 minutes following receipt of the Service Request; and
- b. outside working hours: 15 minutes following the start of the first working hour after receipt of the Service Request.

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758. The Authority notes that Batelco can easily meet this maximum time by setting up an automatic notice of receipt.

Maximum Time for Service Request Confirmation

759. According to the Bitstream service description (see paragraphs 1.3 and 2.2 in “ANNEX 1 – BITSTREAM REQUEST PROCESS), Batelco notifies the OLO of the acceptance or rejection of a Bitstream Service Request within 5WD. The Authority considers that 5 WD is excessive. One working day should be amply sufficient for Batelco to check that the Service Request Form is correctly filled out and meets all the requirements set in the service description. A parallel can, for instance, be made with the equivalent retail process: when a business customer wishes to sign-up for an internet broadband service, he will not leave the Batelco retail shop before a complete application form and contract have been signed.

760. In line with the service request process proposed by the Authority (see subsection 3.2.1 above) and related definitions (see subsection 3.3 above), the Authority therefore sets the Maximum Time for Service Request Confirmation to 1 WD. Absent any formal notice from Batelco during the Maximum Time for Service Request Confirmation, the Service Request is deemed to have been accepted by Batelco.

Maximum Time for Notification of Expected RFT and RFS Dates

761. The Authority considers that Batelco should provide the notice of Expected RFT and RFS Date within 2 WD from the acceptance of the Service Request.

762. In the case of a Cancellation Request, Batelco shall only provide the Maximum RFS Date, which shall be the expected date of cancellation.

Penalties for Notification of Expected RFT and RFS Dates

763. The Authority proposes to set the same Penalties for Notification of Expected RFT and RFS Dates as it did for the WDC:

- a. 5 Service Credits (**‘SC’**) for each WD after the Maximum Time for Notification of Expected RFT and RFS Dates until such time as the OLO receives the notice.

Acceptance Criteria and Quality of Service Parameters

764. The Authority is of the view that Batelco should provide a clear description of the Acceptance Criteria that would be applicable to the Bitstream Service. The underlying process should also be documented in the Bitstream service description.

765. The same requirement applies to the QoS Parameters which shall also be proposed by Batelco and documented in the Bitstream service description.

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Maximum Verification Time, Delivery Time Threshold, and Delivery Time Penalties

766. In line with the service delivery process proposed by the Authority (see subsection 3.2.2 above) and related definitions (see subsection 3.3 above), the Authority sets the following Service Levels:

- a. **Maximum Validation Time:** 2 WD. The Authority considers that 2 WD offers ample time for the OLO to check that the Connection has been correctly provisioned.
- b. Maximum Delivery Time: 7 WD; and
- c. **Penalties for RFS Date:** 20 SC for failure to meet the Maximum RFS Date and 10 SC for each additional working day thereafter until the OLO receives the RFS Certificate. The Penalties for RFS Date are also subject to the provisions defined at paragraph 147 above.

767. In cases of Transfer Requests, Batelco shall coordinate the deactivation and activation of the Connection on the same day to ensure minimum service disruption.

768. The Authority has set the Maximum Delivery Time at 7 WD based on the average Bitstream delivery time from 2012 to 2014, as reported by Batelco in the General QoS Reports (see below figure).

Figure 40: Batelco's reported QoS performance for the Delivery of the Bitstream Service (2012-2014)

	2012				2013				2014			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
New additions of Bitstream Service during the quarter	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Mean Delivery (in days)	1.4	0.6	0.5	1.4	0.8	0.9	1.3	1.3	2.3	1.5	1.0	1.1
Standard Deviation (in days)	2.4	1.5	2.0	5.1	3.1	3.3	2.7	3.4	6.1	7.5	3.2	5.3
Supply Time (95th percentile) (in days)	6.7	2.7	2.3	5.7	5.3	4.0	6.0	6.3	8.2	5.2	4.1	2.7

Source: General QoS Reports submitted by Batelco pursuant to the QoS Regulation

769. Over the 2012-2014 period, the Authority notes that:

- a. the average delivery time of the Bitstream Service was 1.2 days; and
- b. at the 95th percentile, Bitstream Connections were delivered in 5.1 days.

770. The Authority therefore concludes that, as the 7-WD Maximum Delivery Time includes the 2-WD Maximum Validation Time, it is set at the right level to incentivize Batelco to improve the performance of the business Bitstream delivery.

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Fault management (i.e. Maximum Acknowledgment Time, Maximum Response Time, Maximum Restoration Time, and Penalties for Restoration Time)

771. In line with the fault management process proposed by the Authority (see subsection 3.2.4 above) and related definitions (see subsection 3.3 above), the Authority sets the following Service Levels:

- a. Maximum Acknowledgment Time: 1 hour
- b. **Maximum Response Time:** 5 working hours during working hours and 12 hours outside working hours;
- c. Maximum Restoration Time: 24 hours
- d. **Penalties for Restoration Time:** 10 SC for failure to meet the Maximum Restoration Time and 5 SC for every 4 hours exceeding the Maximum Restoration Time; and
- e. **Maximum Monthly Penalty Cap:** 300 SC per Connection and per month.

772. The Authority has considered the General QoS Reports submitted by Batelco when setting the Maximum Restoration Time. Based on such reports, the Authority has derived the following average indicators for the period 2012-2014 (see below Figure)

Figure 41: 2012-2014 average fault repair time for the Bitstream and the Batelco retail broadband services

	Bitstream Service	Retail broadband service
2012-2014 average monthly fault rate (in % of services)	2.0%	2.2%
2012-2014 average fault repair time (in hours)	71.9 hours	21.9 hours
2012-2014 95th percentile average fault repair time (in hours)	237.9 hours	199.0 hours

Source: The Authority based on the General QoS Reports submitted by Batelco

773. While Bitstream and Batelco’s retail broadband present similar fault rates over the 3-year period, the Authority notes that it takes, on average, 3.3 times more time for a Bitstream fault to be repaired (71.9 hours) than a retail broadband fault (21.9 hours).

774. It is not clear to Authority why there is such a large difference between the average restoration time of retail and wholesale services. In all cases, the Authority considers Batelco’s fault management performance to be very unsatisfactory.

775. Internet access and other connectivity services are becoming more and more important for the day-to-day business activities. The Authority considers that 24 hours should be the maximum time allowed for restoring a Connection used by a business customer.

776. The Authority proposes to set the Maximum Monthly Penalty Cap for business Bitstream at 300 SC (i.e. 300% of the regulated monthly charge).

Summary of Service Levels applicable to the Bitstream product and services used for businesses

777. For ease of reference, the Authority has summarized all Service Levels and associated Service Level Penalties applicable to the business Bitstream product and services in the following table.

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Figure 42: Summary of the proposed Service Levels for the Bitstream product and services used for businesses

Service Levels	Service Level Terms	Service Level Penalties
Service request process		
Service Request Acknowledgment	<u>Maximum Time for Service Request Acknowledgment:</u> During working hours: 15 minutes following receipt of the Service Request Outside working hours: 15 minutes after the start of the first working hour following receipt of the Service Request	
Service Request Confirmation	<u>Maximum Time for Service Request Confirmation:</u> 1 WD	
Service delivery process		
Notification of Expected RFT and RFS Dates	<u>Maximum Time for Notification of Expected RFT and RFS Dates:</u> 2 WD For a Cancellation Request, Batelco shall only provide the Maximum RFS Date, which shall be the expected date of cancellation, taking into account the required notice period for cancellation.	Penalties for Notification of Expected RFT and RFS Dates: 5 Service Credits ('SC') for each WD after the Maximum Time for Notification of Expected RFT and RFS Dates until such time as the OLO receives the notice.
Service Level for RFS Date	<u>Maximum Delivery Time:</u> 7 WD In cases of Transfer Requests, Batelco shall coordinate the deactivation and activation of the Connection on the same day to ensure minimum service disruption. <u>Maximum Validation Time:</u> 2 WD	Penalties for RFS Date: 20 SC for failure to meet the Maximum RFS Date and 10 SC for each additional working day thereafter until the OLO receives the RFS Certificate.
Acceptance Criteria	To be defined by Batelco	
Service quality management		
QoS Parameters	To be defined by Batelco	
Fault management process		
Fault Acknowledgment Time	<u>Maximum Fault Acknowledgment Time:</u> 1 hour	

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Service Levels	Service Level Terms	Service Level Penalties
Response Time	<u>Maximum Response Time: 5 working hours during working hours and 12 hours outside working hours</u>	
Restoration Time	<u>Maximum Restoration Time: 24 hours</u>	Penalties for Restoration Time: 10 SC for failure to meet the Maximum Restoration Time + 5 SC for every 4 hours exceeding the Maximum Restoration Time
		Maximum Monthly Penalty Cap: 300 SC per Connection and per month

Source: the Authority

778. For the above reasons and pursuant to Articles 3(b) (1), 57(b) and 57(e) of the Telecommunication Law, and Article 4.2 of the Access Regulation, the Authority orders Batelco to:

- a. implement Service Levels for the business Bitstream product and services in line with:
 - i. the Service Level Framework detailed in subsection 3.2, page 36;
 - ii. the Service Level definitions detailed in subsection 3.3, page 53;
 - iii. the Service Level Terms and Penalties detailed in Figure 42 above;
- b. define and document in the service description the Acceptance Criteria and QoS Parameters that shall be applicable to the business Bitstream;
- c. include a summary table of the Service Level Terms and Penalties in the Bitstream service description in the format detailed in subsection 0, page 58 (see Figure 42 above).

Q25. Do you agree with the Authority’s proposed Service Level Terms and Penalties for the business Bitstream product and services. Please explain and justify your position.

SUMMARY OF SUBMISSIONS ON SECTION 7

779. In this subsection, the Authority has summarised the submissions and cross-submissions received from stakeholders on section 7 (Review of the non-price terms applicable to the Bitstream product and services).

Q24. Modifications to Bitstream service description

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Submissions

780. Kalaam agrees with the Authority's proposed modifications of the Bitstream service description. However, it requests the Authority should revise the Bitstream pricing as it states that it was most affected by the Bitstream price increase of 2014. It also suggests that higher Bitstream packages (more than 16 Mbps) should be offered so that it can compete better with LTE. It therefore requests that speeds of 300 Mbps be offered, which are consistent with the speeds offered by Batelco through GPON.
781. Mena agrees with the Authority's modifications but states that it does not understand why it has not conducted reviews of other services as well.
782. VIVA agrees with the Authority's proposed modifications and does not make any further comments on the matter.
783. Zain agrees with the Authority's proposed modifications but expresses its view that higher speeds of wholesale Bitstream should be available in the RO. Zain notes that Batelco is able to offer speeds of above 16 Mbps to its retail customers and so, there should not be any technical barriers to it offering the higher speeds for wholesale as well.
784. Batelco notes that the Authority is proposing to remove the forecasting requirement currently imposed on OLOs for the business product. Batelco reiterates its earlier view on the matter, highlighting the importance of such forecasts and the need for revised service processes.

Cross-submissions

785. Kalaam, Mena and Batelco do not make any further comments in the cross-submission stage.
786. VIVA agrees with Zain's suggestion that higher speeds of wholesale Bitstream should be made available in the RO.
787. Zain notes Batelco's emphasis on forecasting requirements and repeats its earlier view that Batelco is in a better position to forecast market demand. Zain's views are not repeated here as they have been outlined in detail above.

Q25. Service Level Terms and Penalties for business Bitstream

Submissions

788. Kalaam believes the RFS date should be made quicker to enable it to compete with LTE providers who can offer services to their retail customers within 1 day. However, Kalaam agrees with the SLAs and penalties proposed.
789. Here too, Mena agrees with the Authority's modifications but states that it does not understand why it has not conducted reviews of other services as well.
790. VIVA generally agrees with the proposed service level terms and penalties. It notes that given these are similar to those for WDC and WLA, its comments and concerns around the service level and penalties for those products apply here as well.

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791. Zain also agrees with the proposed service level terms and penalties. However, it asserts that the maximum restoration time should be the same for WDC and WLA and that a maximum restoration time of 24 hours may give Batelco the opportunity to prioritise its own orders from enterprise customers over those of OLO's enterprise customers. It also expresses concern around the lack of a penalty for failure to comply with Service Request Acknowledgment.
792. Batelco asks that its comments regarding the service level terms and penalties for WLA and WDC be considered for business Bitstream as well.

Cross-submissions

793. Mena, Kalaam, Zain and Batelco do not make any further comments in the cross-submission stage.
794. VIVA restates its views that the Service Level Terms and Penalties for business Bitstream should be the same as those for WLA and WDC. It also agrees with Zain's comment that the Maximum Restoration Time of 24 hours is not an acceptable and reliable service level for Bitstream.

THE AUTHORITY'S FINAL CONCLUSIONS ON SECTION 7

795. In this subsection, the Authority provides its final views on each question and conclusions with regard to section 7 (Review of the non-price terms applicable to the Bitstream product and services).

The Authority's final views

Q24. Modifications to Bitstream service description

796. There are no substantive comments from OLOs and Batelco in this regard.
797. The Authority is not convinced by Batelco's request for forecasting and stands by its decision to remove the forecasting requirement from the Bitstream product for the reasons outlined in the annex to the draft Order, which it does not repeat here.
798. The Authority further wishes to emphasise that in the event that Batelco's retail arm introduces new services within its broadband business product range, equivalent Bitstream products must be introduced to allow OLOs to offer business products that match the speeds offered by the retail arm of Batelco.
799. Furthermore, Batelco is not permitted to introduce new business broadband products (including new speeds) without notifying the Authority under the Retail Tariff Notification Regulation. To be implemented, the tariffs must be compliant with various tariffs controls,

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including a test demonstrating that the proposed tariffs do not constitute a margin squeeze test (which implies that OLOs are able to replicate the new proposed retail package).³⁷

Q25. Service Level Terms and Penalties for business Bitstream

800. The Authority notes that the concerns raised here are the same as those raised for the terms and penalties for the WDC and WLA products. These have been addressed in previous questions and the Authority's responses are not repeated here.
801. With regard to the desire for stricter service levels from the OLOs, the Authority emphasises that this is the first time service levels are being introduced for the Bitstream service. Therefore, the Authority believes that the service levels introduced are a proportionate response, given the step-change their introduction represents. The Authority will monitor the service quality and, should there be a need to do so, will review the service level terms and penalties in the future.
802. The Authority therefore applies the same change to the Service Level Terms and Penalties for Bitstream as it has for the WDC and WLA products. Namely, Batelco will be required to include a penalty provision should it fail to meet the service level target for the Service Request Confirmation step. The reasoning for this has been outlined in paragraph 659.

The Authority's Final Conclusions

803. The Authority's conclusions on the general modifications to be made to the Bitstream service description remain as per the draft Order, as outlined in paragraph 753.
804. That is, pursuant to Articles 3(b) (1), 57(b) and 57(e) of the Telecommunication Law, and Article 4.2 of the Access Regulation, the Authority orders Batelco to:
- a. implement Service Levels for the business Bitstream product and services in line with:
 - i. the Service Level Framework detailed in subsection 3.2, page 36 (reflecting the Authority's final conclusions on Section 3, see pages 69 to 79);
 - ii. the Service Level definitions detailed in subsection 3.3, page 53 (reflecting the Authority's final conclusions on Section 3, see pages 69 to 79);
 - iii. the Service Level Terms and Penalties detailed in Figure 43 below;
 - b. define and document in the service description the Acceptance Criteria and QoS Parameters that shall be applicable to the business Bitstream;
 - c. include a summary table of the Service Level Terms and Penalties in the Bitstream service description in the format detailed in subsection 3.4 (see Figure 43 below).
805. Paragraph 803 replaces that set out in the draft Order, outlined in paragraph 778.

³⁷ N.B. The Authority wishes to highlight that OLOs can at the moment use the ADSL bonding technology to provide higher broadband speeds to businesses (i.e. bonding multiple Bitstream Connections).

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Figure 43: Summary of the Ordered Service Levels for the Bitstream product and services used for businesses

Service Levels	Service Level Terms	Service Level Penalties
Service request process		
Service Request Acknowledgment	<u>Maximum Time for Service Request Acknowledgment:</u> During working hours: 15 minutes following receipt of the Service Request Outside working hours: 15 minutes after the start of the first working hour following receipt of the Service Request	
Service Request Confirmation	<u>Maximum Time for Service Request Confirmation: 1 WD</u>	<u>Penalties for Service Request Confirmation:</u> 5 Service Credits ('SC') for each WD after the Maximum Time for Service Request Confirmation until such time as the OLO receives the confirmation.
Service delivery process		
Notification of Expected RFT and RFS Dates	<u>Maximum Time for Notification of Expected RFT and RFS Dates: 2 WD</u> For a Cancellation Request, Batelco shall only provide the Maximum RFS Date, which shall be the expected date of cancellation, taking into account the required notice period for cancellation.	Penalties for Notification of Expected RFT and RFS Dates: 5 Service Credits ('SC') for each WD after the Maximum Time for Notification of Expected RFT and RFS Dates until such time as the OLO receives the notice.
Service Level for RFS Date	<u>Maximum Delivery Time: 7 WD</u> In cases of Transfer Requests, Batelco shall coordinate the deactivation and activation of the Connection on the same day to ensure minimum service disruption. <u>Maximum Validation Time: 2 WD</u>	Penalties for RFS Date: 20 SC for failure to meet the Maximum RFS Date and 10 SC for each additional working day thereafter until the OLO receives the RFS Certificate.
Acceptance Criteria	To be defined by Batelco	
Service quality management		
QoS Parameters	To be defined by Batelco	
Fault management process		

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Service Levels	Service Level Terms	Service Level Penalties
Fault Acknowledgment Time	<u>Maximum Fault Acknowledgment Time:</u> 1 hour	
Response Time	<u>Maximum Response Time:</u> 5 working hours during working hours and 12 hours outside working hours	
Restoration Time	<u>Maximum Restoration Time:</u> 24 hours	Penalties for Restoration Time: 10 SC for failure to meet the Maximum Restoration Time + 5 SC for every 4 hours exceeding the Maximum Restoration Time
		Maximum Monthly Penalty Cap: 300 SC per Connection and per month

Source: the Authority

8 Review of price terms applicable to the Bitstream and Business WDSL products and services

CONSULTATION TEXT

806. The Authority does not propose any modifications to the regulated charges applicable to the Bitstream and the Business WDSL products and services.
807. The regulated MRC were extensively reviewed by the Authority in 2014, following the submission by Batelco of the Notified Controlled Tariffs 59 (“NCT 59 Business Broadband Retail Tariff Notification”) pursuant to provisions of the Retail Notification Regulation dated 21 February 2010 (ref: LAU/0509/119).
808. As part of the NCT 59, Batelco was proposing to reduce the prices of its retail business broadband packages. To prevent any margin squeeze occurring between the proposed revised retail prices and the wholesale charges, the Authority had to review the regulated charges applicable to the Business WDSL and Business Bitstream services. They were implemented by Batelco on 3 March 2014.
809. While the review of the charges was based on Batelco’s 2011 regulatory accounts (i.e. the latest regulatory accounts available at the time), the Authority had made several forward-looking adjustments to the cost components of the charges (e.g. MPLS transmission, Inet Platform and International Uplinks).
810. Based on the MPLS transmission cost trend derived from the core network BU cost model (see paragraphs 690 to 694 above), the Authority notes that it could have ordered lower MRC for the business Bitstream in the region of -10% to -25%. However, such reductions should not be considered in the present context for the following reasons:
- Introduction of a binding Service Levels for business Bitstream: the Authority anticipates that Batelco may incur additional costs for the introduction and management of the new Service Levels for Bitstream; and
 - No margin squeeze: There remains sufficient margin between the retail and wholesale product prices for OLOs to compete against Batelco in the relevant retail markets;
 - Promotion of fibre access roll-out: the Authority is also minded to maintain Batelco’s incentives to further deploy its fibre access network in Bahrain.

Q26. Do you agree with the Authority’s proposal to freeze the charges applicable to the business Bitstream and business WDSL? Please explain and justify your position.

SUMMARY OF SUBMISSIONS ON SECTION 8

811. This subsection summarises the submissions and cross-submissions received from stakeholders on section 8 (Review of price terms applicable to the Bitstream and Business WDSL products and services).

Submissions

812. Kalaam disagrees with the Authority's proposal to freeze the charges applicable to the business Bitstream and business WDSL services. It states that an increase in price has an impact on it, being the operator with the highest number of Bitstream lines. Kalaam therefore urges the Authority to provide a discount based on the number of subscribed lines and also to introduce higher Bitstream packages for business customers.

813. Mena makes no comment in this regard.

814. VIVA expresses concern that charges will be frozen despite the Authority's statements in Para 404 that Batelco could have set 10-25% lower MRCs for the business Bitstream product. It asks for further justification for the additional costs that Batelco will incur in meeting the requirements of the RO and urges the Authority to investigate this further before considering such a cost-uplift. VIVA also considers it inconsistent for the Authority to be "cool" on the idea of passive access because the NBN policy has not been released but at the same time, allow the uplift on Bitstream charges (even though the policy has not been released). VIVA therefore suggests that the uplift be disregarded for now and be revisited when the NBN policy is released.

815. Zain agrees with Authority's proposal to freeze the charges but urges the Authority to calculate the MRC of requested additional higher speeds in a fair, reasonable, non-discriminatory and forward looking manner. It also suggests that the Authority monitor the anticipated uptake of active Business Bitstream services, and intervene when required.

816. Batelco agrees with the Authority's proposal.

Cross-submissions

817. Kalaam, Mena, VIVA and Batelco do not make any further comments in the cross-submission stage.

818. Zain restates the view expressed in its submission. This is not repeated here.

THE AUTHORITY'S FINAL CONCLUSIONS ON SECTION 8

819. In this subsection, the Authority will provide its final views and conclusions with regard to section 8 (Review of price terms applicable to the Bitstream and Business WDSL products and services).

820. The Authority notes the OLOs disagree with the proposal to freeze the charges applicable to the business Bitstream and business WDSL services.

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821. The Authority recognises that the unit costs of providing Bitstream services are likely to have declined since prices were last set. On its own, this would point to it being reasonable to require Batelco to make further price reductions. However, the Authority is aware that other aspects of this Order are likely to increase the costs that Batelco incurs when providing the Bitstream service.
822. Taking both these factors into account, the Authority has concluded that the proposal to freeze charges continues to be appropriate and provides a reasonable proxy for relevant, efficiently incurred economic costs.

9 Review of ISI/CSI link services

CONSULTATION TEXT

823. Batelco submits the following cost stacks for the ISI and CSI link services (see Figure 44 below).

Figure 44: Cost stack submitted by Batelco for the CSI and ISI link services

CSI Link Service – Yr 2012 Cost (LRIC)					
SDH Transmission	1 to 14	15 to 28	29 to 42	43 to 63	Signalling
LRIC SDH Transmission cost 2012	[X]	[X]	[X]	[X]	
E1 total capacity	[X]	[X]	[X]	[X]	
Total cost per E1	[X]	[X]	[X]	[X]	[X]
Additional Network Elements					
DDF Cost	[X]	[X]	[X]	[X]	
ODF Cost	[X]	[X]	[X]	[X]	
Core Huawei port per OLO	[X]	[X]	[X]	[X]	
OSN 3500 per OLO	[X]	[X]	[X]	[X]	
Average no. of E1 per OLO	[X]	[X]	[X]	[X]	
Minimum	[X]	[X]	[X]	[X]	
Maximum	[X]	[X]	[X]	[X]	
Cost per E1	[X]	[X]	[X]	[X]	[X]
Cost per Port	[X]	[X]	[X]	[X]	
Access Fibre Cost					
<i>(as TRA's order 2009)</i>					
Access Fibre Cost	[X]	[X]	[X]	[X]	
total number of fiber pairs	[X]	[X]	[X]	[X]	
Annual access fibre cost per access	[X]	[X]	[X]	[X]	
Annual access fibre cost per E1	[X]	[X]	[X]	[X]	
Total cost per E1 pa	[X]	[X]	[X]	[X]	[X]
Total cost per E1 pm	[X]	[X]	[X]	[X]	[X]
Total cost per Port pa	[X]	[X]	[X]		
Total cost per Port pm	[X]	[X]	[X]		
Total per mth	284.45	163.72	138.22	121.73	25.21

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ISI Link Service – Yr 2012 Cost (LRIC)					
SDH Transmission	1 to 14	15 to 28	29 to 42	43 to 63	Signalling
LRIC SDH Transmission cost 2012	[X]	[X]	[X]	[X]	
E1 total capacity	[X]	[X]	[X]	[X]	
Total cost per E1	[X]	[X]	[X]	[X]	[X]
Additional Network Elements					
Core Huawei port per OLO	[X]	[X]	[X]	[X]	
Joining Box	[X]	[X]	[X]	[X]	
Average no. of E1 per OLO	[X]	[X]	[X]	[X]	
Cost per E1	[X]	[X]	[X]	[X]	[X]
Fibre Cost					
<i>(as TRA's order 2009)</i>					
Access Fibre Cost	[X]	[X]	[X]	[X]	
total number of fiber pairs	[X]	[X]	[X]	[X]	
Annual access fibre cost per access	[X]	[X]	[X]	[X]	
Annual access fibre cost per E1	[X]	[X]	[X]	[X]	[X]
Total cost per E1 pa	[X]	[X]	[X]	[X]	[X]
Total cost per E1 pm	[X]	[X]	[X]	[X]	[X]
Total per mth	123.88	107.71	104.30	102.56	25.21

Source: Batelco's RO submission dated 16 October 2014 (ref: GCL/389/14), 2012 Based CSI_ISI Cost Stacks.xlsx

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824. The Authority notes that the charges proposed by Batelco for the ISI and CSI services are considerably higher than the current regulated charges (see Figure 45 below).

Figure 45: Comparison of current ISI/CSI charges with Batelco's proposed charges

Chargeable activity	Currently implemented charges	Batelco's submitted charges in October 2014	Difference (in %)
ISI Link services (1-1)			
in BD			
1-1.5A – ISI Link – Port and E1 line rental for unilateral traffic routes – 1-14 links	48,599	123,880	154,9%
1-1.5B – ISI Link -Port and E1 line rental for unilateral traffic routes – 15-28 links	30,181	107,710	256,9%
1-1.5C – ISI Link -Port and E1 line rental for unilateral traffic routes – 29-42 links	26,002	104,300	301,1%
1-1.5D – ISI Link -Port and E1 line rental for unilateral traffic routes – 43-63 links	24,003	102,560	327,3%
1-1.12 – ISI Link -Signalling Link rental	25,366	25,210	-0,6%
CSI Link services (1-2)			
in BD			
1-2.2A – CSI Link Rent (Basic) – 1-14 Links	169,039	284,450	68,3%
1-2.2B – CSI Link Rent (Basic) – 15-28 Links	73,195	163,720	123,7%
1-2.2C – CSI Link Rent (Basic) – 29-42 Links	51,447	138,220	168,7%
1-2.2D – CSI Link Rent (Basic) – 43-63 Links	41,046	121,730	196,6%
1-2.11 – CSI Link -Signalling Link rental	25,366	25,210	-0,6%

Source: the Authority

825. Following the review of the above cost stacks, the Authority notes that Batelco has significantly departed from the costing methodology set by the Authority in the Reference Offer Order issued on 14 May 2012 (ref: 05/12/072):

- a. Batelco has not applied the approach followed by the Authority to derive the cost of network equipment:
 - i. The price of equipment has not been adjusted to reflect the downward annual price trend of electronic equipment;
 - ii. The return on capital employed has been calculated by multiplying the WACC by the equipment price, instead of multiplying the WACC by the average Net Book Value of such equipment; and
 - iii. The equipment maintenance cost has been derived based on maintenance mark-up applicable to the passive assets of Batelco's access network (assets which are very different from active equipment both in terms of investment and maintenance requirements)).

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b. Batelco has not applied the approach followed by the Authority to derive the cost of access fibre. Based on Batelco's calculations, the full unit cost of fibre access is wrongly allocated to each E1 when it should be allocated on a per link basis.

826. For the above reasons, the Authority considers that the charges proposed by Batelco are unfair and unreasonable.

827. The Authority has revised Batelco's calculations based on the costing methodology set in the 2012 RO Order.

828. While the Authority's calculations have resulted lower charges than current regulated charges (~ -15% to -25% lower), the Authority nonetheless considers that the current ISI/CSI charges are fair and reasonable, and should not be reduced.

829. To justify its decision, the Authority notes that ISI and CSI charges are already subject to a reassessment mechanism which is detailed in the Annex 2 of the RO Schedule 3 ("SCHEDULE 3 – ANNEX 2 CALCULATION OF TRAFFIC BASED REASSESSMENT OF E1 CHARGES). The Authority therefore does not consider appropriate to further reduce ISI/CSI charges, and as such, has decided to freeze them at their current level.

Q27. Do you agree with the Authority's proposal to freeze the charges applicable to the ISI and CSI link services? Please explain and justify your position.

SUMMARY OF SUBMISSIONS ON SECTION 9

830. In this subsection, the Authority summarises the submissions and cross-submissions received from stakeholders on section 9 (Review of ISI/CSI link services).

Submissions

831. Batelco, Kalaam and Zain agree with the Authority's proposal to freeze charges applicable to the ISI and CSI link services and make no further comment.

832. Mena does not make any comment in this regard.

833. VIVA believes that the cost of interconnect links between Batelco and OLOs should be shared between both parties based on the traffic carried from each party on a pro rata basis.

Cross-submissions

834. Kalaam, Mena, VIVA and Batelco do not make any further comments in the cross-submission stage.

835. Zain agrees with VIVA's view that the cost of interconnect links between Batelco and OLOs should be shared between both parties based on the traffic carried from each party

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on a pro rata basis. Alternatively, Zain considers that the cost could be shared between Batelco and the OLOs equally.

THE AUTHORITY'S FINAL CONCLUSIONS ON SECTION 9

836. In this subsection, the Authority provides its final views and conclusions with regard to section 9 (Review of ISI/CSI link services).

837. The Authority notes that there are no significant comments from the operators.

838. With regard to VIVA's suggestion that the costs of interconnection links should be shared between the parties, the Authority points out that there is already such a mechanism in Batelco's RO. The calculation used for sharing interconnection links costs are described in Annex 2 of RO Schedule 3 (CALCULATION OF TRAFFIC BASED REASSESSMENT OF E1 CHARGE).

839. The conclusions in the final Order therefore remain as per the draft Order, outlined in paragraph 828 above.

10 Review of other wholesale services

CONSULTATION TEXT

840. The other wholesale services reviewed in this section include:

- a. the emergency call access service (199,999,99x);
- b. the directory assistance service (181 and 188);
- c. the inter-operator transit service; and
- d. the carrier preselect access service.

10.1 Cost stacks submitted by Batelco for the other wholesale services

841. Batelco submitted the following cost stacks for the ancillary wholesale services:

Figure 46: Cost stack submitted by Batelco for the emergency call access service (199,999,99x)

Item Ref	Code	Network Element	AS cost per minute LIRIC	Routing Factor %	2012 Cost
950g Emergency Call Access Service (199,999,99x)					
	CN04	CN04 [Soft Switch (inc MRS)]		[X]	[X]
	CN05	CN05 [MSAN Common Card Voice]	[X]	[X]	[X]
	CN06	CN06 [Universal Media Gateway (UMG)]	[X]	[X]	[X]
	CN07	CN07 [ICG Soft Switch]		[X]	[X]
	CN20	CN20 [Distribution - Core Link (Voice)]	[X]	[X]	[X]
	CN22	CN22 [Aggregation - Distribution Link (Voice)]	[X]	[X]	[X]
	CN24	CN24 [MSAN - Aggregation Link (Voice)]	[X]	[X]	[X]
	CN30	CN30 [MPLS Distribution Routers (Voice) - UMG Link]	[X]	[X]	[X]
	CN32	CN32 [Core - Core Link (Voice)]	[X]	[X]	[X]
	CN39	CN39 [MPLS Core Voice]	[X]	[X]	[X]
	CN41	CN41 [MPLS Aggregation (Voice)]	[X]	[X]	[X]
	CN57	CN57 [MPLS Distribution Routers (Voice)]	[X]	[X]	[X]
SUBTOTAL			0.333		[X]
	CN90	CN90 [Interconnect Specific]	[X]	1.000	[X]
TOTAL					5.403

Source: Batelco's RO submission dated 16 October 2014 (ref: GCL/389/14)

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Figure 47: Cost stack submitted by Batelco for the directory assistance service (181 and 188)

Item Ref	Code	Network Element	AS cost per minute LIRIC	Routing Factor %	2012 Cost
950l Directory Assistance Service (181&188)					
	CN04	CN04 [Soft Switch (inc MRS)]		0.007	[X]
	CN05	CN05 [MSAN Common Card Voice]	[X]	1.000	[X]
	CN06	CN06 [Universal Media Gateway (UMG)]	[X]	1.000	[X]
	CN07	CN07 [ICG Soft Switch]		0.005	[X]
	CN20	CN20 [Distribution - Core Link (Voice)]	[X]	1.000	[X]
	CN22	CN22 [Aggregation - Distribution Link (Voice)]	[X]	1.000	[X]
	CN24	CN24 [MSAN - Aggregation Link (Voice)]	[X]	1.000	[X]
	CN30	CN30 [MPLS Distribution Routers (Voice) - UMG Link]	[X]	1.000	[X]
	CN32	CN32 [Core - Core Link (Voice)]	[X]	1.000	[X]
	CN39	CN39 [MPLS Core Voice]	[X]	1.000	[X]
	CN41	CN41 [MPLS Aggregation (Voice)]	[X]	1.000	[X]
	CN57	CN57 [MPLS Distribution Routers (Voice)]	[X]	1.000	[X]
	CN63	CN63 [Directory Services (DQ)]	[X]	1.000	[X]
	MN25	MN25 [MGW - SMS platform Link]	[X]	1.000	[X]
	MN40	MN40 [SMS Platform]	[X]	1.000	[X]
SUBTOTAL					[X]
	CN90	CN90 [Interconnect Specific]	[X]	1.000	[X]
		DQ specific cost (Customer Assistance Centre)	[X]	1.000	[X]
TOTAL					186.970

Source: Batelco's RO submission dated 16 October 2014 (ref: GCL/389/14)

Figure 48: Cost stack submitted by Batelco for the inter-operator transit service

Item Ref	Code	Network Element	AS cost per minute LIRIC	Routing Factor %	2012 Cost
950q ITAS (Inter-Operator Transit Service)					
	CN06	CN06 [Universal Media Gateway (UMG)]	[X]	2.000	[X]
	CN07	CN07 [ICG Soft Switch]		0.016	[X]
SUBTOTAL					[X]
	CN90	CN90 [Interconnect Specific]	[X]	1.000	[X]
TOTAL					1.551

Source: Batelco's RO submission dated 16 October 2014 (ref: GCL/389/14)

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Figure 49: Cost stack submitted by Batelco for the carrier preselect access service

Item Ref	Code	Network Element	AS cost per minute LIRIC	Routing Factor %	2012 Cost
950r CPS (Carrier Preselect Access Service)					
	CN04	CN04 [Soft Switch (inc MRS)]		0.004	[X]
	CN05	CN05 [MSAN Common Card Voice]	[X]	1.000	[X]
	CN06	CN06 [Universal Media Gateway (UMG)]	[X]	1.000	[X]
	CN07	CN07 [ICG Soft Switch]		0.003	[X]
	CN20	CN20 [Distribution - Core Link (Voice)]	[X]	1.000	[X]
	CN22	CN22 [Aggregation - Distribution Link (Voice)]	[X]	1.000	[X]
	CN24	CN24 [MSAN - Aggregation Link (Voice)]	[X]	1.000	[X]
	CN30	CN30 [MPLS Distribution Routers (Voice) - UMG Link]	[X]	1.000	[X]
	CN32	CN32 [Core - Core Link (Voice)]	[X]	1.000	[X]
	CN39	CN39 [MPLS Core Voice]	[X]	1.000	[X]
	CN41	CN41 [MPLS Aggregation (Voice)]	[X]	1.000	[X]
	CN51	CN51 [UMG - ISDN Link]	[X]	0.569	[X]
	CN57	CN57 [MPLS Distribution Routers (Voice)]	[X]	1.000	[X]
SUBTOTAL					[X]
L					
	CN90	CN90 [Interconnect Specific]	[X]	1.000	[X]
TOTAL					2.826

Source: Batelco's RO submission dated 16 October 2014 (ref: GCL/389/14)

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Annex A – Order Legal Basis and Reasoning

10.2 The Authority's review of the ancillary wholesale services charges

842. The Authority makes the following comments on the above cost stacks:

- a. **Soft Switch** (i.e. CN04 [Soft Switch (inc MRS)]): the Authority notes that in 2011, Batelco changed the cost allocation driver of the network element CN04 'Soft Switch (inc MRD)' from capacity traffic to transactional traffic, i.e. from number of minutes to number of calls. The change of cost allocation driver has had a significant impact on the unit cost of CN04 for several interconnection services;
- b. **Interconnection gateway** (i.e. CN07 [ICG Soft Switch]): The cost allocation driver of CN07 has also changed from capacity traffic to transactional traffic in 2012;
- c. **Interconnect Specific Charge** (i.e. CN90 [Interconnect Specific]): the Authority notes that the unit cost of CN90 has almost doubled between 2011 and 2012. This is mainly due to an increase in total interconnect specific cost and a decrease of interconnection traffic; and
- d. **Emergency services**: it would appear that Batelco proposes to merge all call access services to emergency services under one service charge.

843. The Authority has reviewed the cost stacks submitted by Batelco.

844. The Authority considers that the above proposed charges have been correctly and fairly calculated by Batelco. As such, the Authority approves Batelco's proposed charges.

845. However, in relation to the Carrier Pre-Select ("**CPS**") Service, the Authority is of the view that cost recovery surcharge (see charge item 2-13.8 in Schedule 3 of Batelco's RO), which is currently set at 4.2 fils/min, is no longer justified. The Authority expects that all costs incurred by Batelco for conveying CPS calls through its network are already recovered by the CPS Call Origination charge (see charge item 2-13.8 in Schedule 3 of Batelco's RO).³⁸

846. For the above reason, the Authority orders Batelco to remove the CPS cost recovery surcharge (see charge item 2-13.8 in Schedule 3 of Batelco's RO).

Q28. Do you have any comments in relation to the Authority's review of the other wholesale services (emergency call access, DQ assistance, inter-operator transit, and CPS services)? Please explain and justify your position.

³⁸ The Authority has reviewed the cost drivers and cost allocation destinations documented in Batelco's 2014 APM and has not identified any costs incurred for the provision of CPS calls other than the cost elements already included in the CPS Call Origination cost stack.

SUMMARY OF SUBMISSIONS ON SECTION 10

847. This subsection summarises of the submissions and cross-submissions received from stakeholders on section 10 (Review of other wholesale services).

Submissions

848. Kalaam agrees with the Authority's proposal.

849. Mena expresses surprise that some services have seen an increase in costs at this stage but does not elaborate on this view.

850. VIVA considers that the charges for emergency call access service and CPS call origination should be aligned with the fixed termination rate. It states further that the fixed one-off charges for CPS of BD10K should be removed.

851. Zain comment that in the absence of cost details, it cannot comment on the Authority's review of these other wholesale services.

852. Batelco states that it does not have any major comment in this regard.

Cross-submissions

853. Kalaam, Mena, VIVA and Batelco do not make any further comments in the cross-submission stage.

854. Zain agrees with VIVA's suggestion that the charges for emergency call access service and CPS call origination be aligned with the fixed termination rate. It again requests for additional details on the costs of these services to be released, so that it can evaluate the prices suggested by the Authority.

THE AUTHORITY'S FINAL CONCLUSIONS ON SECTION 10

855. In this subsection, the Authority provides its final views and conclusions with regard to section 10 (Review of other wholesale services).

856. The Authority disagrees with the suggestion to charge emergency calls as per the FTR. This is because the limited volume of emergency calls would not allow Batelco to recover the costs it incurs in providing this service. In other words, setting the charge at the FTR would not constitute a fair and reasonable tariff as described in Section 1.4.

857. Given that there were no other substantive comments, the Authority's decision remains as per the draft Order, with the charges for the emergency call service unchanged as per Figure 46

858. In addition, as per paragraph 846; the Authority orders Batelco to remove the CPS cost recovery surcharge from its RO (see charge item 2-13.8 in Schedule 3 of Batelco's RO).

11 Review of the duct access product

CONSULTATION TEXT

859. The Authority has started the review of the regulated duct access product³⁹ and will conduct such review as part of a separate process. The review of the duct access product and service terms is thus not being covered in this RO draft Order.

Q29. Do you have any comments in relation to the Authority's decision to review the duct access product as part of a separate proceeding? Please explain and justify your position.

SUMMARY OF SUBMISSIONS ON SECTION 11

860. In this subsection, the Authority summarises the submissions and cross-submissions received from stakeholders on section 11 (Review of the duct access product).

Submissions

861. Kalaam asks for more clarity on the decision to review the duct access product and when this review will take place.

862. Mena considers this an important aspect of the review and urges the Authority to review the matter urgently.

863. VIVA refers to the views it has expressed in response to previous questions on the importance of duct access and urges the Authority to proceed quickly on the review of the duct access product. It also states that it does not see a strong case for reviewing this product as part of a separate proceeding and that the Authority should complete its work on the RO as soon as possible.

864. Zain asserts that a duct rental service would help support the growth in bandwidth demand and provide a most cost-efficient backhaul solution. It points out that duct rental was set as a remedy for three wholesale markets and that it has submitted applications to Batelco to utilise this regulated service for backhauling purposes, reaching international submarines' landing stations and enterprise buildings to compete with other Licensees. Zain is

³⁹ The Authority has initiated the review of the duct access product in August 2015 by requesting information on pending Service Request for duct access. OLOs and Batelco have since submitted information which is currently being analyzed by the Authority.

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concerned that at the moment, only Batelco can leverage its fibre infrastructure to cater for its backhaul, international and enterprise requirements. Zain states that it has the right to duct access as an IMT holder and that the Authority's delay in processing its request is in breach of the Article 57 of the Telecommunications Law, Article 13 of Batelco's Individual License for National Fixed Services and Batelco's Reference Offer. Zain is of the view that it is not reasonable to suspend a regulated service that serves the requirements of OLOs till the NBN study is completed. Finally, given the cost structure of the new WDC product, Zain does not consider it a feasible substitute for the duct access service. Thus, Zain feels that its lack of access to ducts is a punitive action against it.

865. Batelco states that it would welcome a review of the duct rental product but disagrees that this product should be supplied alongside other additional remedies until those have been considered fit for purpose. Batelco also confirms its right to comment on a consultation on duct rental.

Cross-submissions

866. Kalaam, Mena and VIVA do not make any further comments in the cross-submission stage. Batelco restates the views it expressed in the submission stage and these are not repeated here.

867. Zain disagrees with Batelco that duct rental should not be supplied alongside additional fit-for-purpose remedies. Zain then repeats its views from the submission stage that it is unreasonable to suspend a regulated activity till the study on NBN is completed. Its views are set out above and are not repeated here.

THE AUTHORITY'S FINAL CONCLUSIONS ON SECTION 11

868. In this subsection, the Authority provides its final views and conclusions with regard to section 11 (Review of the duct access product).

869. The Authority has considered the submissions and cross-submissions put forward by operators and acknowledges that they all support the review of the duct access terms.

870. However, for the reasons expressed above at paragraphs 49 to 54 (see page 24), the Authority's conclusions remain as per the draft Order. That is, the review of the duct access terms is not covered in this RO Order.

12 Other concerns related to Batelco's RO

CONSULTATION TEXT

871. The Authority has included the above heading in this draft Order to allow respondents to raise any other concerns they may have on Batelco's RO.

Q30. Do you have any other additional comments with regard Batelco's RO? Please explain and justify your position.

SUMMARY OF SUBMISSIONS ON SECTION 12

872. This subsection summarises the submissions and cross-submissions received from stakeholders on section 12 (Other concerns related to Batelco's RO).

Submissions

873. Kalaam does not make any other comments.

874. Mena states that it welcomes the Authority's efforts but finds that the beneficial impact on it is minimal. It therefore looks forward to the Authority's review of other wholesale services including duct rental, access to fibre and fibre to the home products for both residential and business services. Furthermore, Mena also makes the following points:

- a. The draft RO does not cover Batelco's GPON network, which it uses to deliver higher speeds to customers.
- b. Mena considers that the Authority has not addressed residential broadband packages where current retail prices are lower than wholesale prices.
- c. Mena considers the last mile fibre access costs are too high and suggests that they be lowered.

875. VIVA provides a number of additional comments:

- a. WLC/WDC MRC charges: VIVA disagrees with the Authority's proposal of two sets of MRC charges for the same speeds provided over WLA and WDC respectively. VIVA believes that the MRC charges of Batelco's WLA active products should be reduced to align with similar speeds for WDC active products, as OLOs request active products based on available speeds rather than type of network components deployed. VIVA also believes that the increase in MRC for speeds higher than 1 GB is unjustified as the incremental hardware required to support higher speeds is

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minimal (i.e. it only requires an install additional card interface in the same network component used to deliver circuits with lower speeds). Hence, VIVA believes relevant MRCs should be adjusted based on forward-looking costing principle.

- b. Uplift on WLA/WDC charges: VIVA notes that there is an uplift of 20% on the cost adjustments which is different to that of Premium Support. VIVA states that it is concerned by the level of proposed WLA and WDC prices and so considers that an additional 20% uplift appears generous to Batelco. VIVA therefore recommends that the Authority investigate that 20% is a reasonable approximation of the costs of complying with a strengthened reference offer.
- c. Impact of forecasting: Noting that there will be no service credit if actual service requests are less than 70% of the OLO's forecast or greater than 130%, VIVA asks the Authority to consider whether a tight reliance on a long term forecast is appropriate. VIVA considers that Batelco has the best dataset and view of market demand because it is the largest retail provider and is the provider of the OLOs. VIVA recommends either removing entirely the linkage between forecasting and payment of service credits or allow for a much greater tolerance
- d. Suspension rights: VIVA notes that the current RO permits Batelco to suspend service to an OLO for material breach. VIVA fears that this gives Batelco too much power over an OLO and suggests that it should have to obtain consent from the Authority before suspending service because of a material breach.
- e. Exclusion of liability: VIVA seeks more clarity on the exclusions of liability granted to Batelco in the RO.

876. Zain considers that Service Levels for duct access should be included even though the service is still under review. Zain states that it is not able to reach any international landing stations in the absence of duct access, obliging it to acquire international connectivity from its competitor rather than be independent. Zain considers that Batelco is the only operator with access to all international landing stations, and in the absence of duct rental products, Zain thinks that Batelco is dominant, should be regulated and should provide regulated IPLC products in the RO.

877. Batelco makes a number of additional comments.

878. Batelco considers that the WDC service in addition to WLA enhancements and new service levels and processes require a fundamental and material restructure of Batelco's Wholesale, Network and Delivery and IT divisions. It envisages that it does not have the resources or pathway to implement and comply with the changes proposed in the RO within the ordered timescales.

879. Batelco also raised a number of other concerns:

- a. **Material costs, pricing principles and timing:** Batelco considers that the changes proposed in the RO, in particular the introduction of the WDC service if fully implemented, would take [X] months to implement. Batelco further finds that the RO requires development and resourcing above what has been experienced to date and that these costs cannot be recovered from regulated charges. Batelco considers that it would be unreasonable to be subject to a large new set of onerous requirements with immediate effect

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Annex A – Order Legal Basis and Reasoning

- b. **Policy Formation:** Batelco believes further alignment and consideration of proportionate and achievable fit for purpose wholesale remedies in these regulatory markets are necessary in light of the RO proposals and the ongoing review of the duct rental product.
- c. **WDC as a Remedy:** Finally, Batelco disagrees with the Authority that a new WDC product for higher capacity throughputs to any “B” end site in Bahrain is a proportionate remedy for the following reasons:
- i. Batelco considers that CAT/LLCOs and the WLA already exist in the wholesale market for domestic data connectivity and Batelco thinks these are being enhanced and proposed prices reduced in the RO. Further, Batelco finds that aside from wireless backhaul over fibre to replace microwave, there is no demonstrated critical demand “gap” requiring a new regulated wholesale input to address the perceived market failure.
 - ii. According to Batelco, ordering a new WDC product at these price points which it considers are significantly below retail rates reduces its incentives to invest in future fibre for the business/enterprise market.
 - iii. As a result of the Authority’s previous policy of encouraging provision of passive wholesale remedies (2006 Reference Access Order onwards), by January 2016 approximately [~~3~~]km of duct is leased to wholesale customers, and these leases are concentrated in the parts of Bahrain where most businesses are located (or on routes to international gateways or main service nodes). The continuing future status of this remedy is not known, but Batelco notes that wholesale customers are continued to be supplied with such a wholesale input.
 - iv. Batelco notes that bespoke arrangements can still be entered into at commercially acceptable reasonable rates to meet immediate critical requirements.
 - v. Batelco is concerned that in the absence of any batching of orders, phased approach, committed forecast or equivalent order management, the investment, delivery and demand risks are (with the exception of a low level cancellation charge) passed on to it.

Cross-submissions

880. Kalaam and Batelco do not make any further comments in the cross-submission stage.
881. Mena considers that the market uncompetitive and it rejects Batelco’s suggested timeframe for implementation. Mena believes that it is important for Batelco to publish its prices and SLA immediately, and it should not need more time given the time it has already had to prepare for this.
882. VIVA disagrees with the arguments made by Batelco regarding the need for WDC as a remedy:
- a. Availability of alternative, enhanced remedies: VIVA finds that Batelco’s point is unclear. VIVA also disagrees that there is no demonstrated demand for WDC other than for backhaul services. It refers to the examples of other services WDC could be

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Annex A – Order Legal Basis and Reasoning

used for as stated by the Authority in the RO, including core transmission capacity between OLO's core nodes, data connections to large corporate entities or transmission links from cable landing stations.

- b. Impact on investment incentives: VIVA accepts that pricing is relevant to the incentive to invest but considers that effective competition is the key factor encouraging investment. To this end, VIVA believes that the WDC product and passive remedies will be critical. It recommends that the Authority follow BEREC's recommendation (made with regard to leased line regulation) and prevent Batelco from engaging in margin squeeze.
- c. Availability of duct access in business areas: VIVA does not agree with Batelco's argument in this regard. It reemphasises the importance of duct access and states that passive access should be complementary to active products, rather than a substitute for it.
- d. Availability of commercial deals: VIVA expresses scepticism on this point and requests Batelco for evidence to support this claim.
- e. Demand risk: Here too, VIVA expresses scepticism on Batelco's concern regarding the demand risk associated with the WDC service. This is because VIVA believes that Bahrain, as an important country for business, will have business customers who demand high performance, high capacity products.

883. VIVA also notes Zain's view that regulated IPLC products should be included in the RO. VIVA expresses the view that if duct access and regulated access facilities in Batelco's cable landing stations are not provided as part of the RO, which it considers would be unlawful, the wholesale market for international capacities should be reconsidered and Batelco should be found dominant. It reemphasises the Authority's statements regarding duct access in the context of the market for international capacity, implying that duct access is important to provide a competitive constraint on Batelco. VIVA believes that there is no justifiable reason for only IFC services being regulated.

884. VIVA therefore urges the Authority to extend the current RO to mandate the supply of wholesale services for access to all submarine cable landing stations (comprising connection links, licensed international facilities, and management space and support facilities) on fair, reasonable and non-discriminatory terms.

885. Zain states that it agrees with VIVA's comments in the submission stage.

THE AUTHORITY'S FINAL CONCLUSIONS ON SECTION 12

886. In this subsection, the Authority provides its final views and conclusions with regard to section 12 (Other concerns related to Batelco's RO)

887. With regard to Zain's comment, the Authority notes that NTP4 requires it to conduct a review of the supply chain for international capacity, including the provision of cross-border dark fibre. Further, it requires the Authority to then adopt measures it deems necessary for the efficient functioning of the relevant markets.

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Annex A – Order Legal Basis and Reasoning

888. Furthermore, NTP4 also requires the Authority to conduct a review of the effectiveness of current regulation relating to the ability of licensed operators to access international capacity at cable landing stations in Bahrain and, where necessary, to adopt effective interim measures to minimise the anti-competitive impacts of any bottlenecks.
889. The Authority will undertake these reviews as part of its work programme associated with NTP4. Should it conclude from these reviews that further changes to Batelco's RO are necessary, including, for example, the provision of additional access services to remedy any bottlenecks that may be found in the supply chain for international capacity, it will consult on such amendments.
890. With regard to VIVA's request for clarification on Batelco's exclusions of liability, under Batelco's RO Supply Terms (see clause 13.1 of Schedule 9), either party already has the right to refer to the Authority in case of imminent suspension. As such, the Authority does not consider that further amendments to Batelco's RO are necessary at this time:
- “ 13.1 A party (the Suspending Party) may only suspend these Supply Terms or any Service to the extent necessary to address the relevant suspension event. The parties acknowledge that suspension may be potentially disruptive for users of telecommunications networks in Bahrain and note here that an assessment of whether or not to suspend the Supply Terms or any Service in particular circumstances should consider the interests of potentially affected users as a whole. The parties further acknowledge that, except in the case of an urgent suspension under clause 13.3, either party is free to copy or forward correspondence relating to an imminent suspension to the Regulator and that any such action is a permitted disclosure under clause 21.”*
891. Finally, the Authority disagrees with Batelco's assertion that the WDC product is not a proportionate remedy. This is because there is no active wholesale product available in the current RO that is suitable for meeting OLOs' high capacity transmission requirements (>1 Gbps). Absent any other alternatives, WDC will be their only choice. Therefore, the introduction of the WDC product and accurate pricing is important and proportionate for the effective development of competitive downstream markets.
892. The Authority considers it has addressed the other comments made by the operators in this section in previous sections of this Annex. These responses are not repeated here.

Annex B – Regulatory activities carried-out in 2014 and 2015 impacting this RO review

893. During the course of 2014 and 2015, the Authority has initiated or finalised several activities which are described in the following sections. The Authority has taken into considerations the outcomes of such activities during its review of Batelco's RO submission.
894. In the following subsections, the Authority provides a summary of each of those regulatory activities and indicates how each one has influenced this review of Batelco's RO.

B.1 Bottom-up cost models (2012-2014)

895. The Authority has finalised the fixed access network, fixed core network and mobile network bottom-up ("BU") cost models in the first part of 2014. The final versions of BU models and documentations have been issued to Batelco, VIVA and Zain on 15 May 2014.
896. The review of Batelco's 2014 RO submission is no longer based on a single source of costing information, i.e. Batelco's 2012 regulatory accounts. The Authority can now also take into account the results of the BU models.
897. The main assumptions and parameters of the BU models were extensively discussed with operators during the data collection and validation phases of the BU models project. Several meetings and conference calls took place to ensure that the dimensioning rules and input parameters were appropriately implemented in the BU models. The draft BU models were issued for consultation and the various comments received by operators were taken into account, resulting in final adjustments being made to the final BU models.
898. The final models have since been subject to on-going updates by the Authority to reflect the latest information available on the number of subscriptions and service usage. When necessary, the forecast demand included in the BU models has been adjusted by the Authority.
899. In this review of Batelco's RO, the Authority has used the results of the core network BU model to derive a cost trend that has then been applied to the unit cost of MPLS and SDH transmission networks. For more information, you can refer to section 6 above (*Review of the price terms applicable to the WLA and WDC products and services*).

B.2 Broadband market review (2013-2014)

900. On 27 March 2014, the Authority published the final "Determination of Significant Market Power and Determination of Dominant Position in the Markets for Provision of Broadband Internet Access Services from a Fixed Location" (ref: MCD/03/14/018) which concluded its review of the broadband markets.

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901. In the Determinations, the Authority identified and defined the following relevant retail and wholesale markets:

a. Retail markets:

- i. the retail market for the supply of mass-market broadband internet access services from a fixed location, in which the Authority determines that no licensee has a Position of Significant Market Power; and
- ii. the retail market for the supply of business broadband internet access services from a fixed location, in which the Authority determines that Batelco has a Position of Significant Market Power.

b. Wholesale markets:

- i. the wholesale physical network infrastructure access market for the supply of mass-market broadband internet access services from a fixed location, in which the Authority determines that no licensee holds a Dominant Position;
- ii. the wholesale physical network infrastructure access market for the supply of business broadband internet access services from a fixed location, in which the Authority determines that Batelco holds a Dominant Position;
- iii. the wholesale broadband access market for the supply of mass-market broadband internet access services from a fixed location, in which the Authority determines that no licensee holds a Dominant Position; and
- iv. the wholesale broadband access market for the supply of business broadband internet access services from a fixed location, in which the Authority determines that Batelco holds a Dominant Position.

902. As part of the broadband market review, the Authority also stressed the importance of fit-for-purpose wholesale access services in supporting competition in the downstream retail market for the supply of business broadband services:

“489. Given the importance of wholesale access services in supporting competition in the downstream retail market for the supply of business broadband services, the Authority expects that these wholesale access services, independent of the underlying infrastructure, are made available to OLOs on terms that enable competitors to compete with Batelco in the relevant retail markets.

490. These terms must include comprehensive Service Level Agreements (SLAs) which include all relevant processes and targets relating to the delivery of business broadband services, including (but not necessarily limited to) ordering, provisioning, quality of service, and fault restoration processes, as well as penalties to be imposed upon Batelco for failing to adhere to these processes or targets. The Authority emphasises that under Article 57(e) of the Telecommunications Law, the terms and conditions and tariffs offered by Batelco for access to its networks shall be fair, reasonable, and non-discriminatory.

491. In this regard, the Authority intends to issue a Draft Order for consultation with interested parties. The Draft Order will cover the

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non-price terms and conditions on which Batelco must offer its Bitstream service in respect of business broadband services. This will include the Authority's preliminary views on appropriate performance thresholds and penalties for key processes such as those mentioned in the preceding paragraph."

903. In this review of Batelco's RO, the Authority proposes several amendments to the non-price terms applicable to the Bitstream product that take into account the findings of the broadband market review. as part of this review of Batelco's RO. Such amendments include the introduction of binding Service Levels. For more information, you can refer to section 7 above (*Review of the non-price terms applicable to the Bitstream product and services*).

B.3 Domestic data connectivity market review (2013-2014)

904. On 10 April 2014, the Authority published the final "Determination of Significant Market Power and Determination of Dominant Position in the Markets for Domestic Data Connectivity Services" (ref: MCD/04/14/026) which concluded its review of the domestic data connectivity markets.

905. In the Determinations, the Authority identified and defined the following relevant retail and wholesale markets:

- a. the retail market for the supply of domestic data connectivity services in Bahrain, with the exception of Amwaj Islands, in which the Authority determines that Batelco has a Position of Significant Market Power.
- b. the wholesale market for the supply of domestic data connectivity services in Bahrain, with the exception of Amwaj Islands, in which the Authority determines that Batelco holds a Dominant Position.

906. As part of the domestic data connectivity market review, the Authority also stressed the importance of fit-for purpose wholesale access products and services in supporting competition in the downstream retail market for the supply of domestic data connectivity services. In that regard, the Authority refers to the last section of the Reasoning for the Final Determination (i.e. section 8: Summary of final views and implications) which details the changes to the wholesale access products and services that the Authority considers would be required to ensure a sustaining effective competition in the relevant downstream markets. Such changes notably include:

- a. the introduction and/or enhancement of comprehensive end-to-end Service Levels covering service ordering, provisioning, and fault restoration;
- b. the introduction of optional levels of protections;
- c. the potential introduction of a regulated dark fibre product; and
- d. the support of synchronisation by wholesale data connection products for wireless site backhauling.

907. In this review of Batelco's RO, the Authority proposes the following changes which take into account the findings of the domestic data connectivity market review:

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- a. the grouping of the existing high-speed CAT and LLCO services under a single service description called “Wholesale Data Connection” (“**WDC**”);
- b. the introduction of additional WDC speeds, offering higher speeds up to 10 Gbit/s;
- c. the proposed introduction of limitations on the amount of costs that Batelco should recover for the expansion of its fibre access network through one-off charge based time and material;
- d. the creation of a database for OLO’s to check fibre access coverage and availability, and in the interim, a pre-sale process to obtain the same information;
- e. the review of the non-price terms applicable to the WLA and WDC products and services including the introduction of binding Service Levels and the payment of automatic rebates;
- f. the introduction of an option for end-to-end physical and logical protection;
- g. the introduction of a ‘Premium Support’; and
- h. the introduction of lower regulated recurring charges for the WLA and WDC products and services.

B.4 Strategic Market Review (2014-2015)

908. Throughout the second half of 2014, the Authority has been undertaking a comprehensive strategic market review (‘SMR’) of the telecommunications sector in Bahrain and subsequently published the SMR draft report for consultation on 15 December 2014 (ref: 12/14/127).
909. The responses submitted by the operators were reviewed and considered by the Authority to produce the final SMR report (ref: MCD/08/15/062) and the External Response Document (ref: MCD/08/15/063) which were both published on 31 August 2015.
910. The purpose of the SMR report is to review how competition has developed across the telecommunications sector in Bahrain with a view to ensuring that the regulatory framework is adapted to reflect the recent market and technological developments.
911. The SMR report confirms that significant competition has developed in Bahrain in the last years, notably for broadband and mobile services. Consumers in Bahrain have today, in general, a wide range of choices for telecommunications services. The development of effective competition in particular markets has led to substantial price reductions and new service innovations for consumers and businesses in Bahrain.
912. In the SMR report, the Authority has identified a number of markets which are likely to be susceptible to ex-ante regulation going forward. Importantly, as competition develops, the Authority also proposes to remove some currently regulated retail markets from ex-ante regulatory scrutiny. The proposed changes to the list of relevant markets is summarized in the below table.

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Annex B – Regulatory activities carried-out in 2014 and 2015 impacting this RO review

Figure 50: Relevant retail and wholesale markets susceptible to future ex-ante regulation

Retail markets	
Withdrawn	<ul style="list-style-type: none"> • Retail market for dial-up internet access services from a fixed location • Retail market for fixed narrowband access services for residential customers • Retail market for fixed originated domestic calls for residential customers to either fixed or mobile subscribers within the Kingdom of Bahrain • Retail market for fixed originated international calls to Zone 1 countries • Retail market for fixed originated international calls to Zone 3 countries
Maintained⁴⁰	<ul style="list-style-type: none"> • Retail broadband internet access from a fixed location for business users • Retail domestic data connectivity services • Retail international leased lines (connectivity services)
Redefined	<p>Currently:</p> <ul style="list-style-type: none"> • Retail market for fixed narrowband access services for non-residential customers • Retail market for fixed originated domestic calls for non-residential customers to either fixed or mobile subscribers within the Kingdom of Bahrain <p>Proposed:</p> <ul style="list-style-type: none"> • Retail market for premium⁴¹ access to call services and domestic calls from a fixed location
Wholesale markets	
Withdrawn	<ul style="list-style-type: none"> • “Freephone originating access”⁴² (wholesale call origination)
Maintained	<ul style="list-style-type: none"> • Wholesale domestic data connectivity services • Wholesale broadband access for business users • Wholesale physical infrastructure access for business users
Redefined	<p>Currently:</p> <ul style="list-style-type: none"> • Call termination on Batelco’s fixed network • Wholesale market for termination services on Batelco mobile network, on Zain mobile network and on VIVA mobile network <p>Proposed:</p> <ul style="list-style-type: none"> • Wholesale call termination on individual fixed networks • Wholesale call termination on individual mobile networks

Source: the Authority’s draft Strategic Market Review report issued on 15 December 2014 (ref: 12/14/127)

⁴⁰ However, the stated retail markets should only be maintained on the list until such point where proportionate but effective (market-tested) wholesale remedies are available in the relevant upstream market(-s).

⁴¹ Premium access includes ISDN type products, and IP-based solutions serving business users with demand for multiple channels and lines but excludes standard business subscriptions such as PSTN or fixed-wireless.

⁴² However, noting that this wholesale product was never based on a dominance determination and remedy was never enforced by the Authority.

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Annex B – Regulatory activities carried-out in 2014 and 2015 impacting this RO review

B.5 Regulation of Wholesale International Inbound Call Services and Review of Call Termination Rates (2015)

913. On 23 April 2015, the Authority issued a consultation titled “Regulation of Wholesale International Inbound Call Services and Review of Call Termination Rates” (ref: MCD/04/15/022). In the consultation document, the Authority proposes to review the current regulatory treatment of international inbound traffic and to introduce lower call termination rates in respect of domestically originated calls through a price glide path.
914. The Authority invited all interested parties to submit a response to the consultation no later than 28 May 2015. After due consideration of the operators’ submissions, the Authority issued its final decision in September 2015.
915. The final decision consists of two documents:
- a. The Resolution No14 of 2015 which was published on 14 September in the Official Gazette. This resolution repeals the Regulation on Wholesale International Inbound Telecommunications Services as of 1 October 2015 (i.e. no more price floors applicable to the wholesale international inbound call services); and
 - b. The Reference Offer Orders on Batelco, VIVA and Zain setting the regulated call termination rates which were issued on 17 September 2015 (ref: MCD/09/15/067). The Reference Offer Orders introduce as of 1 October 2015:
 - i. higher call termination charges for internationally originated calls to Batelco fixed and mobile network, VIVA mobile network and Zain mobile network; and
 - ii. lower call termination charges through a three-year price glide path for domestically originated calls to Batelco fixed and mobile network, VIVA mobile network and Zain mobile network.
916. The applicable call termination rates from 1 October 2015 and onwards are summarized in the below table:

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Annex B – Regulatory activities carried-out in 2014 and 2015 impacting this RO review

Figure 51: Regulated call termination rates from 15 September 2015 and onwards

	From: 1 October 2015 To: 30 September 2016	From: 1 October 2016 To: 30 September 2017	From: 1 October 2017 onwards
Mobile termination rate for domestically originated calls i.e. with Bahrain CLI (in fils per minute, chargeable per second)			
Mobile termination rate	4.50	3.30	2.40
Mobile termination rate for internationally originated calls or for originated calls with absent or unclear CLI (in fils per minute, chargeable per second)			
Mobile termination rate	37.68		
Fixed termination rate for domestically originated calls i.e. with Bahrain CLI (in fils per minute, chargeable per second)			
Fixed termination rate	1.92	1.38	1.02
Fixed termination rate for internationally originated calls (in fils per minute, chargeable per second) or for originated calls with absent or unclear CLI			
Fixed termination rate	30.12		

Source: the Authority, see “Reference Offer Orders on Bahrain Telecommunications Company B.S.C., VIVA Bahrain B.S.C, and Zain Bahrain B.S.C. setting the regulated call termination rates” issued 17 September 2015 (ref: MCD/09/15/067)

917. Accordingly, the review of the call termination rates to Batelco’s fixed and mobile lines is not covered in this document.

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Annex C – List of acronyms and definitions

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ADSL	Asymmetric Digital Subscriber Line
APM	Accounting Procedures Manual
Batelco	Bahrain Telecommunications Company B.S.C
BB	Broadband
BD	Bahraini Dinar
BU	Bottom-up
CAPEX	CAPital EXpenditure
CAT	Customer Access Tail
CSI	Customer Sited Interconnect
DSL	Digital Subscriber Line
DWDM	Dense Wavelength-Division Multiplexing
FAC	Fully Allocated Cost
FRO	Forum on Batelco's Reference Offer
GbE	Gigabit Ethernet
Gbit/s or Gbps	Gigabits per second
GPON	Gigabit Passive Optical Network
ISC	Interconnect Specific Charge
ISI	In-Span Interconnect
kbps or kbit/s	Kilobits per second
LLCO	Local Leased Circuit for OLO
LLU	Local Loop Unbundling
LRIC	Long Run Incremental Cost
MB	Megabytes
Mbps or Mbit/s	Megabits per second
MPLS	Multiprotocol Label Switching
MRC	Monthly Recurring Charge
MSAN	Multi-Service Access Node
NA	Network Activity
NB	Narrowband
NGN	Next Generation Network
NRA	National Regulator Agency
NRC	Non-Recurring Charge
OLO	Other Licensed Operator
OLT	Optical Line Terminal
ONT	Optical Network Terminal
PE	Provider Edge
POP	Point Of Presence
RAN	Radio Access Network

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Annex C – List of acronyms and definitions

RFT	Ready For Test
RFS	Ready For Service
RO	Reference Offer
SDH	Synchronous Digital Hierarchy
SHDSL	Symmetrical High-speed Digital Subscriber Line
TD	Top down
TRA	Telecommunications Regulatory Authority of the Kingdom of Bahrain
WACC	Weighted Average Cost of Capital
WD	Working Day(s)
WDC	Wholesale Data Connection
WDSL	Wholesale Digital Subscriber Line
WLA	Wholesale Local Access
WOBS	Wireless Operator Backhaul Service

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Annex E – List of questions

Annex E – List of questions

Q1. Please provide any comments you may have in relation to the Authority's premise of fair, reasonable and non-discriminatory terms, conditions and tariffs for regulated RO products and services.

Q2. Do you agree with the Authority's proposed general amendments to be made to Batelco's RO? Please explain your position. If you disagree, please propose an alternative.

Q3. Do you agree with the Authority's proposal to mandate the introduction of Service Levels for the Wholesale Data Connection and the Bitstream products and services? Please explain and justify your position.

Q4. Do you agree with the Authority's proposed definition and description of the service request process? Please explain and justify your position.

Q5. Do you agree with the Authority's proposed definition and description of the service delivery process? Do you agree with the proposed provisions that the Authority considers should apply in case an OLO cancels a Service Request during the delivery process? Please explain and justify your position.

Q6. Do you agree with the Authority's proposed definition and description of the fault management process? Please explain your position.

Q7. Do you agree with the Authority's proposed process for the payment of Service Level Penalties? Do you agree that the corresponding rebate(s) shall not be claimed by OLOs but directly reflected by Batelco in the next invoice(s)? Please explain and justify your position.

Q8. Do you have any comments on the Service Level definitions proposed by the Authority? Please explain and justify your position.

Q9. Do you agree with the Authority's proposed creation of a Forum on Batelco's RO? Please explain and justify your position. According to you, what should be the terms of reference of such forum to ensure its effectiveness?

Q10. Do you agree with the Authority's proposed approach aiming at limiting the payment of one-off charges for the deployment of a fibre access? Please explain and justify your position.

Q11. Do you agree with the Authority's proposal to order Batelco to build a centralised database on fibre access and fibre usage in Bahrain? Do you agree that until such time as a database is made available, Batelco should introduce a 2-working-day presale process? Please explain and justify your position.

Q12. Do you have any comments in relation to the speeds for which the WDC should be made available?

Q13. Do you have any comments in relation to the proposed technical characteristics for the WLA and WDC Aggregation Links?

Q14. Would you be interested by the introduction of a synchronisation feature for the WLA? Please explain and justify your position.

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Annex E – List of questions

Q15. Do you agree that Batelco should offer as an option the full end-to-end physical and logical protection of a WLA or WDC Connection for an additional 30% mark-up on top of the applicable MRC? Please explain and justify your position.

Q16. Do you agree that Batelco should allow the use of a second ingress ports on a CPE provided for a WLA/WDC Connection or a WLA/WDC Aggregation Link? Please explain and justify your position.

Q17. Do you agree that Batelco should provide a minimum set of information on CPEs used for WLA and WDC Aggregation Links and Connections? Please explain and justify your position.

Q18. Do you agree that Batelco should continue to be subject to additional QoS reporting obligations for WLA and WDC? Please explain and justify your position.

Q19. Do you agree that Batelco should implement a test based on ITU-T Y.1564 test methodology and systematically provide a copy of test results to the OLO? Please explain and justify your position.

Q20. Do you agree that OLOs should have access to Batelco's BNV system? Should OLO's customers (i.e. end-users) also have access to such system? Please explain and justify your position.

Q21. Do you agree that penalties should be paid on a per fault basis for failure to meet a maximum restoration time rather than based on percentage of service availability? Explain and justify your position.

Q22. Do you agree with the Authority's proposed introduction of a 'Premium Support' service for an additional 20% premium on top of the applicable MRC? Please explain and justify your position.

Q23. Do you agree with the Authority's proposed Service Level Terms and Penalties for the WLA and WDC products and services? Please explain and justify your position.

Q24. Do you agree with the Authority's proposed modifications of the Bitstream service description? Please explain and justify your position.

Q25. Do you agree with the Authority's proposed Service Level Terms and Penalties for the business Bitstream product and services. Please explain and justify your position.

Q26. Do you agree with the Authority's proposal to freeze the charges applicable to the business Bitstream and business WDSL? Please explain and justify your position.

Q27. Do you agree with the Authority's proposal to freeze the charges applicable to the ISI and CSI link services? Please explain and justify your position.

Q28. Do you have any comments in relation to the Authority's review of the other wholesale services (emergency call access, DQ assistance, inter-operator transit, and CPS services)? Please explain and justify your position.

Q29. Do you have any comments in relation to the Authority's decision to review the duct access product as part of a separate proceeding? Please explain and justify your position.

Q30. Do you have any other additional comments with regard Batelco's RO? Please explain and justify your position.