An Order issued by the

Telecommunications Regulatory Authority on the

Reference Offer of NBNetCo BSC(c)

03 June 2019

Ref: LAD 0619 178

Purpose: To set the fair, reasonable and non-discriminatory price and non-price terms of the regulated wholesale products and services in NBNetCo BSC(c)'s Reference Offer.

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REFERENCE OFFER ORDER IN RELATION TO NBNetCo (the "SE Order")

1 The Telecommunications Regulatory Authority (the "**Authority**") hereby orders NBNetCo BSC (c) (the "**SE**" or the "**Separated Entity**") to submit for the Authority's approval a reference offer ("**RO**") in respect of the supply of the wholesale products and services specified in this SE Order (the "**RO Services**") in the form and terms (including price and non-price terms) attached to this SE Order.

2 This SE Order is issued by the Authority pursuant to the exercise of its powers under Article 3 of Legislative Decree No. 48 for the year 2002 promulgating the Telecommunications Law (as amended by virtue of Decree No. 38 of 2017) (the "**Law**") and section 4.9 of the Fixed Telecommunications Infrastructure Network Licence granted to the Separated Entity (the "**SE License**").

3 The legal basis and reasoning set out in Annex A forms an integral part of this SE Order.

Price terms of the RO Services

4 The price terms to be implemented by the SE in the RO are set out in the pricing schedule attached at Annex B to this SE Order (Schedule 3 – Pricing). Unless otherwise approved by the Authority in advance, in writing, the SE shall not charge Licensed Operators any additional fees other than those set out in Schedule 3 – Pricing.

Non-price terms of the RO Services

5 The non-price terms to be implemented by the SE in the RO are set out in the following documents attached at Annex C to this SE Order:

5.1 Reference Offer Schedule 1 - Main Body Terms;

5.2 Reference Offer Schedule 2:

5.2.1 Schedule 2.1: Notification and Acceptance of Service Request;

5.2.2 Schedule 2.2: New Service Request;

5.3 Reference Offer Schedule 4 – Billing;

5.4 Reference Offer Schedule 5 – Forecasting;

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5.5 Reference Offer Schedule 6.1 - Wholesale Bitstream Service (WBS) Service Description;

5.6 Reference Offer Schedule 6.2 - Wholesale Data Connectivity (WDC) Service Description;

5.7 Reference Offer Schedule 6.3 - Mobile Backhaul Service (MBS) Service Description;

5.8 Reference Offer Schedule 6.4 - Data Service (DS) Service Description;

5.9 Reference Offer Schedule 6.5 - Optical Wavelength Service (OWS) Service Description;

5.10 Reference Offer Schedule 6.6 – Fibre Fronthaul Service (FFS) Service Description;

5.11 Reference Offer Schedule 6.7 – Facilities Access Service (FAS) Description:

5.11.1 Schedule 6.7.1 – Duct Licence;

5.11.2 Schedule 6.7.2 – Duct Access Policy;

5.11.3 Schedule 6.7.3 – Duct Access Process;

5.12 Reference Offer Schedule 6.8 - Unbundled Metallic Path;

5.13 Reference Offer Schedule 6.9 - Service Node Facilities Management;

5.14 Reference Offer Schedule 6.10 - UMP Backhaul Service;

5.15 Reference Offer Schedule 6.11 - UMP Specific Information;

5.16 Reference Offer Schedule 7 – Service Levels;

5.17 Reference Offer – Schedule 8 – Dictionary;

5.18 Reference Offer – Schedule 9 – Supply Terms.

5.19 The services listed in Schedule 6.8 to Schedule 6.11 inclusive are available only in relation to existing customers of these services under the Reference Offer of the Bahrain Telecommunications Company BSC ("**Batelco**") in force immediately prior to the effective

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date of both this SE Order and the Order on the residual Reference Offer of Batelco regarding the products and services to be provided by the rest of Batelco (referred to as Batelco Retail or BRE) dated 30 May 2019 Ref: MCD/05/19/047) (the "**Previous Batelco Reference Offer**"). The SE shall not offer these services to new customers on or after the effective date of this SE Order.

SE Obligations

6 The SE shall within twenty-four (24) months from the effective date of this SE Order offer the RO Services on an equivalence of inputs ("**EOI**") basis in accordance with paragraph 8 below.

7 The Authority may appoint an independent auditor to: (i) conduct an audit of the SE's systems and processes and to confirm SE's compliance with paragraph 6 above; and (ii) produce an audit report within six (6) months from the effective date of this SE Order, and/or at such other intervals as may reasonably be required by the Authority. The SE shall give its full cooperation to the auditor and shall provide complete and accurate responses to the auditor's requests for information in a timely manner. The Authority, acting reasonably, may require the SE to meet the costs of the auditor.

8 Unless otherwise determined by the Authority, taking into account the results of any audit that may be conducted under paragraph 7 above, the SE shall offer the RO Services on an EOI basis in accordance with the following timetable. The following timelines apply as from the effective date of this SE Order:

- WBS: within nine (9) months;
- WDC: within twelve (12) months;
- MBS and DS: within eighteen (18) months;
- OWS and FFS: within twenty-four (24) months.

9 Any request by the SE to amend the above timeframe must be supported by evidence and will require the Authority's prior written approval. The Authority may consult on any request for an amendment to the above timeframe, if the Authority deems this appropriate.

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10 Unless otherwise determined by the Authority, the SE shall meet the following interim milestones to support the delivery of EOI. The following timelines apply as from the effective date of this SE Order:

- provision of a portal for the automated handover of orders, including updates and completion notifications: within six (6) months;
- provision of a portal for the automated handover of fault reports, including updates and fault clear notifications: within six (6) months;
- access to engineering appointment books: within six (6) months;
- access to an address matching process/system: within six (6) months; and
- access to digital network availability information (by address / customer): within nine (9) months.

11 The Authority may require the SE to build or procure new systems to support EOI.

12 Notwithstanding paragraph 6 above, the SE shall initially offer the RO Services on an equivalence of outputs ("**EOO**") basis.

13 As from the effective date of this SE Order, the SE must have sole legal and/or beneficial ownership of the following assets, and shall not share access to such assets with any company or business unit of Batelco:

Core Network

13.1 All core network fibre cables

13.2 All core network duct routes

13.3 All Exchange buildings

13.4 All equipment (including management platforms) for the Dense Wavelength Division Multiplexing (DWDM) network (including functionality to provide Synchronous digital hierarchy (SDH) services)

Access Network

13.5 All access network fibre cables (including all associated street furniture and joints)

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13.6 All access network copper cables (including all associated street furniture and joints)

13.7 All access network duct routes

13.8 All relevant equipment (including management platforms) for the Optical Line Termination (OLT) network

13.9 All relevant equipment (including management platforms) for the Multi-Service Access Node (MSAN) network

13.10 All relevant equipment (including management platforms) for the Ethernet Switch (ES) network

Operational and Billing Support Systems (OSS/BSS)

13.11 Access to separated functions of OSS/BSS in order to allow the SE to administer matters such as order management, fault management and billing, of the RO Services.

14 The SE shall within two (2) months from the effective date of this SE Order and in accordance with any determination issued by the Authority participate in and give full cooperation to an Equivalence Compliance and Technical Committee ("**ECTC**") that will comprise an industry forum for Licensed Operators to discuss their needs and requirements, including technical requirements, with the SE at regular intervals. The SE shall ensure that it has appropriate representation at each meeting of the ECTC.

15 Within four (4) months from the effective date of this SE Order the SE shall submit for the Authority's approval a joint working manual which provides technical and operational information in relation to the SE's supply of the RO Services. The joint working manual shall be developed by the SE in conjunction with Licensed Operators, taking utmost account of any instructions from the ECTC.

16 The SE will comply with any requirement of the Authority to supply particular customers with bespoke services which may include dark fibre and/or duct access on an exceptional basis, in order to meet the needs of specific policy requirements (so-called "**Exceptional Facilities Access Services**" or "**Exceptional FAS**"). The supply of such Exceptional Facilities Access Services shall be subject to prior approval from the Minister. In considering a request for Exceptional Facilities Access Services to particular customers, the SE shall

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comply with the relevant processes outlined in the Facilities Access Service (Schedule 6.7 – Facilities Access Service) of the RO.

17 In addition to the circumstances referenced in paragraph 16 above, and if determined or ordered by the Authority, the SE will make available a dark fibre product to Licensed Operators in accordance with the terms of such determination and/or order.

Entry into force

18 This SE Order is effective on the date of its issuance.

19 Within five (5) Working Days following the effective date of this SE Order, the SE shall provide to the Authority for its approval a revised RO that implements the terms of this SE Order. The SE shall make such changes to the RO as are necessary to ensure that the revised RO reflects the terms of this SE Order. Failure to submit a revised RO that implements the terms of this SE Order within the specified timeframe will be a material breach of this SE Order.

20 Following receipt of a revised RO (incorporating the required changes) in accordance with paragraph 19 above, the Authority will determine whether the revised RO reflects the terms of this SE Order. In the event that the Authority considers that the revised RO reflects the terms of this SE Order, the Authority shall issue an approval letter to the SE requiring the SE, within fourteen (14) calendar days of the issuance of such approval letter, to:

20.1.1 publish the final approved RO in accordance with the terms of the SE License; and

20.1.2 offer the RO Services in accordance with the final approved RO to all Licensed Operators.

21 If the SE does not submit a revised RO in accordance with paragraph 19 above and/or does not publish the RO in accordance with paragraph 20 above, the version of the RO annexed to the SE Order (or, if applicable, the resubmitted version approved by the Authority) will be considered final and binding on the SE and will be published by the Authority on its website. The SE will be required to supply the RO Services to Licensed Operators, and Licensed Operators will be entitled to rely on, the terms of the version of the RO published on the Authority's website.

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22 This SE 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.

Compliance

23 The SE shall comply with the terms of this SE Order. Failure to comply with the terms of this SE 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 and/or the SE License.

Nasser bin Mohamed Al-Khalifa
Acting General Director
Telecommunications Regulatory Authority of Bahrain
Manama, Bahrain
03 June 2019

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Annex A – Order Legal Basis and Reasoning

Introduction

24 This Annex A contains the legal basis and reasoning for the SE Order.

Background

25 The Fourth National Telecommunications Plan ("**NTP4**") provides for the establishment of a single national broadband network ("**NBN**"). NTP4 further provides for that network to be owned by a separate legal entity, which is legally and functionally separated from Bahrain Telecommunications Company BSC ("**Batelco**"). The single NBN provider is to supply wholesale products and services to all Licensed Operators in the Kingdom of Bahrain.

26 Batelco has established the SE, a legally separated entity, as the single NBN provider.

27 On 20 December 2018, the Authority issued for consultation a draft RO that had been provided by the SE on 13 December 2018, which set out the SE's proposed price and non-price terms for the services it was proposing to provide (the "**RO Consultation**"). On 28 March 2019, the Authority issued for consultation a draft of this SE Order, which included the Authority's proposed amendments to the services and to the underlying price and non-price terms proposed by the SE (the "**ROO Consultation**"). In finalising the SE Order, the Authority has reviewed the comments received in response to the RO Consultation and the ROO Consultation.

Legal basis

28 The SE Order is issued by the Authority pursuant to the exercise of its powers under Article 3 of the Law and section 4.9 of the SE License.

29 Section 4.9 of the SE License requires the SE to submit a draft RO for the Authority's approval setting out the terms, conditions and tariffs for the products and services that the SE is required to supply to other Licensed Operators, including the retail business unit(s) of Batelco. Section 4.9 provides that the Authority will either issue a relevant approval letter or a reference offer order specifying the terms of the draft RO and the process and timeline for resubmission of a revised draft RO by the SE to the Authority for its approval.

30 Section 4.10 of the SE License requires the SE to publish the RO within two (2) weeks of the issuance of the approval letter.

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31 Section 5.4 of the SE License requires the SE to provide the RO Services, during an initial period of twenty-four (24) months, on an EOO basis, unless otherwise required by the Authority.

32 The SE Order reflects these provisions of the SE License. It requires the SE to provide the RO Services initially on an EOO basis and provides for the Authority the right to appoint an auditor to (a) conduct an audit of the SE's and systems and processes; and (b) produce an audit report within six (6) months from the effective date of this SE Order and/or at such other intervals as may reasonably be required by the Authority.

33 The SE is required to achieve full EOI at the latest within twenty-four (24) months of the effective date of the SE Order and within a shorter timeframe for a number of the RO Services. Any request by the SE to amend the timeframe must be supported by evidence and will require the Authority's prior written approval. The Authority may consult on any request for an amendment to the above timeframe, if the Authority deems this appropriate.

RO review process

34 The process for approval of the RO is as follows:

34.1 **Step 1:** The SE submits a draft RO to the Authority, which the Authority reviews.

The draft RO was submitted to the Authority on 13 December 2018 and was published for consultation on 20 December 2018. The deadline for responses to the RO Consultation was 24 January 2019.

34.2 **Step 2:** If the Authority approves the draft RO as submitted, the Authority issues an approval letter.

In this case, and having consulted with stakeholders, the Authority did not consider, for the reasons set out herein, that the draft RO submitted was fit for approval in its submitted format. Rather, the Authority considered that the product set and price and non-price terms of the draft RO required amendment before the RO could be approved.

34.3 **Step 3:** If the Authority does not approve the draft RO as submitted, the Authority issues for consultation a draft SE Order setting out the proposed terms that the SE will be required to reflect in the final version of its RO.

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On 28 March 2019, the Authority issued for consultation the draft SE Order. The deadline for responses was 25 April 2019. On 25 April 2019, the Authority granted a one (1) week extension for responses until 2 May 2019. Following the Authority's review of the responses to the consultation on the draft SE Order, the Authority now issues this SE Order, specifying the terms that must be reflected in the final version of the RO along with the process and timeline for resubmission of a revised RO by the SE for the Authority's approval. If the Authority approves the revised RO as resubmitted by the SE, the Authority will issue an approval letter.

34.4 **Step 4(a):** Once the RO has been approved, the SE must publish within fourteen (14) days on its website the version of the RO approved by the Authority; or

34.5 **Step 4(b):** In the event that the SE does not resubmit a revised RO or the resubmitted RO does not fully reflect the terms of this SE Order, the Authority will consider the version annexed to this SE Order to be final and binding on the SE. When seeking the supply of services from the SE, Licensed Operators will be entitled to rely on the terms of the RO which is annexed to this SE Order and published by the Authority on its website.

35 SCOPE OF THE SE PRODUCT SET

35.1 Rationalisation

35.1.1 In light of the responses to the RO Consultation, the Authority considers that the SE product set should be rationalised and, where possible, simplified. The Authority has also had regard to its understanding of the proposed division of assets between the SE and Batelco, and the implications of this for the delivery of the RO Services by the SE.

35.1.2 Given that the existing copper assets of Batelco are to be transferred by Batelco to the SE, and in order to ensure continuity of service, the following four (4) Schedules under the Previous Batelco Reference Offer, are reflected in the SE's RO:

(a) Unbundled Metallic Path, now Schedule 6.8 of the SE RO;

(b) Service Node Facilities Management, now Schedule 6.9 of the SE RO;

(c) UMP Backhaul Service, now Schedule 6.10 of the SE RO; and

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(d) UMP Specific Information, now Schedule 6.11 of the SE RO.

35.1.3 The inclusion of the above four (4) Schedules into the SE RO (and corresponding withdrawal of these from the residual Reference Offer of BRE) reflects industry feedback received to the Authority's consultation on a draft Order on the residual Reference Offer of Bahrain Telecommunications BSC (the "**Draft BRE Order**") (the "**BRE ROO Consultation**") as well as the position adopted in the final BRE Order (Ref: MCD/05/19/047). The SE should not supply the above four (4) services to new customers, but should instead focus on a fibre-first approach in line with relevant deployment targets in force from time to time.

35.1.4 In the ROO Consultation the Authority considered whether WLA services should be merged with WDC services into a single WDC service description. The Authority understands that as from the effective date of the SE Order, the existing Batelco Multi-Protocol Label Switching (MPLS) network should be operated by BRE. With this in mind, and having reviewed industry feedback to the ROO Consultation, the Authority considers that WLA connections for existing customers which were supplied by Batelco under the Previous Batelco Reference Offer should continue to be delivered by BRE and not by the SE. This reflects the position adopted in the BRE Order (Ref: MCD/05/19/047).

35.1.5 The Authority considers that the WBS, Bitstream and Bitstream Plus should be merged into WBS, a single, technology-agnostic service. In response to industry feedback to the ROO Consultation, the Authority has required a voice only service to be included within WBS. The voice only service should have transmission characteristics capable of supporting minimum 14.4kbps voice transmission.

35.1.6 The Authority considers the above approach to reflect the SE's obligations under the SE License. Under section 5.8 of the SE License, the SE is required within sixty (60) days of a request from the Authority, to produce to the Authority a roadmap for migration of any relevant Licensed Services (i.e., RO Services) that are being provided by the SE over the SE's existing copper and/or copper based assets away from provision over such copper and/or copper based assets to the provision of such services over the SE's fibre based assets.

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35.1.7 The Authority does not consider that MBS and DS should be merged because, based on the submissions received, these services have different quality and performance requirements.

35.2 **New products**

35.2.1 The Authority has also included two (2) additional services in the RO, namely:

(a) Optical Wavelength Access Service (OWS) which is an optical wavelength based active service (Lambda service). The Authority considers that, as the service is wavelength based, it has a greater available capacity than other active services. As a result, the Authority considers that OWS is likely to be suitable to address the current and foreseeable backhaul needs of mobile network operators (MNOs). The Authority notes industry feedback in relation to requiring the SE to make the OWS service available also to non-MNOs. However, given insufficient evidence of demand by non-MNOs for the 40Gbps and 100Gbps OWS at this time, the Authority considers that the availability of OWS should not be extended to non-MNOs. However, the Authority could consider extending the availability of OWS to non-MNOs as part of subsequent reviews of the RO.

The Authority notes that, as OWS is based on the existing DWDM infrastructure of SE, it might require some changes to the interfaces available (cards to terminate the service on) and some degree of preparation in order to enable it to be planned and ordered by MNOs. Accordingly, the Authority considers it reasonable to provide SE with a grace period in which to finalise preparations for the supply of OWS.

While the SE will be expected to acknowledge Service Requests for new OWS Connections from the effective date of this SE Order, it will not be expected to complete new Connections until three (3) months after the effective date. Upon expiry of three (3) months from the effective date of this SE Order, the SE will be expected to meet the Service Levels (Schedule 7 – Service Levels) for all OWS Service Requests from this date onwards.

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(b) Fibre Fronthaul Service (FFS) for MNOs.

The Authority received comments to both the RO Consultation and ROO Consultation from MNO stakeholders that they required a dark fibre service to meet their requirements for fronthaul. Fronthaul is the link between a mobile baseband unit and a remote radio head. The Authority considers that this service is necessary in order to allow MNOs to develop the architecture of their networks and to provide advanced mobile services.

The FFS reflects the Fronthaul Access Service which was included in the ROO Consultation. However, having considered stakeholder responses to both the ROO Consultation and BRE ROO Consultation as well as the Authority's understanding of the division of assets between the SE and Batelco, the Authority considers that the FFS could be delivered using the relevant aspects of the existing Facilities Access Service (FAS) included in the Previous Batelco Reference Offer. The supply of FFS will therefore be based on the following:

(i) Schedule 6.6 of the RO, which contains the Service Description for the Fibre Fronthaul Service. This Schedule describes the process and terms and conditions by which fibre cables for fronthaul will be deployed in SE duct; and

(ii) Schedule 6.7 of the RO, which contains the Service Description for the Facilities Access Service. This Schedule describes the process and terms and conditions by which MNOs will rent duct space from the SE, through which the FFS will be supplied.

Therefore, the Authority has renamed the Fronthaul Access Service that was consulted on in the ROO Consultation to Fibre Fronthaul Service or FFS, so as to distinguish this from the FAS, over which the FFS will be delivered.

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Having regard to the single network objective under NTP4, the FFS Service Description in Schedule 6.6 of the RO indicates that the ownership of the one (1) kilometre fibre cable will remain with the SE. The MNO will be required, for the purposes of requesting this service under the processes outlined in Schedule 6.6 (Fibre Fronthaul Service) and related Schedule 6.7 (Facilities Access Service), to use a contractor that is approved by the SE for the installation works carried out in accordance with the existing duct access process under Schedule 6.7.3 (Duct Access Process).

In addition to the above, the Authority has included process steps in Schedule 6.7 – (Facilities Access Service) of the RO regarding the bespoke services for particular customers that are included in the Exceptional Facilities Access Service, referenced in paragraph 16 of this SE Order.

36 FAIR, REASONABLE AND NON-DISCRIMINATORY TERMS

36.1 Non-price terms

36.1.1 The Authority has reviewed the non-price terms of the draft RO, and made a number of amendments to ensure that the SE meets its obligations set out under the SE License, including the obligation to supply the RO Services on an EOI basis within twenty-four (24) months of the date of the SE Order. Accordingly, and having regard to industry feedback, the Authority has assessed the draft RO non-price related terms with a view to ensuring they are fair, reasonable and non-discriminatory. The Authority considers that such a standard is appropriate and effective for the purposes of promoting downstream competition over the period of the RO.

36.2 Delivery of EOI

36.2.1 The move to EOI for each service is an integral element to the SE achieving the objectives of NTP4. Timeframes for the delivery of EOI are set out in the SE Order, on a service-by-service basis.

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36.2.2 The Authority has also incorporated in the SE Order, specific interim milestones in relation to the development of the SE's systems to support EOI.

36.2.3 In order to facilitate the delivery of EOI in a timely and effective manner, the Authority has included in the SE Order mechanisms to ensure delivery of EOI and transparency and oversight of the SE's progress in this regard. This includes provision for the appointment of an independent auditor.

36.3 **Operational and technical measures**

36.3.1 In light of industry feedback, the Authority considers that a number of additional non-price measures to guard against discrimination are warranted. In particular, the Authority has concluded the following:

(a) Service Levels

- A functional Service Level framework is important to ensure that Licensed Operators' requirements are met in a timely manner, allowing Licensed Operators to meet their own service guarantees to customers. It also ensures that the SE is required to provide services equally to all Licensed Operators.
- The Service Levels and penalties in the draft RO have been amended to include penalties which the Authority considers should better serve as a sufficient deterrence for non-compliance by the SE.
- The key purpose of the delivery times within the RO is to set targets that are achievable and which would result in a limited recourse to the Service Levels and associated penalties. This SE Order will serve as a baseline of performance against which performance targets and penalties can be adjusted. It would therefore not be appropriate to set Service Levels at a level not achievable by the SE.
- The Authority has included Service Levels for FFS based on the process in Schedule 6.7.3 (Duct Access Process) of the Facilities Access Service. Specifically, the SE will be required to deliver the FFS within five (5) Working Days after physical installation works are complete.

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- In order to encourage the SE to improve the delivery of the RO Services, the RO includes Key Performance Indicators (KPIs) which will allow Licensed Operators and the Authority to monitor the SE's performance on a range of measures. The Authority has added relevant KPIs for OWS and FFS. The Authority has also included targets for the SE to address repeat and persistent faults regarding all RO Services.
- Accordingly, the increased penalties and the introduction of KPIs are meant to incentivise the SE to deliver the RO Services in a timely and efficient manner. These will be monitored by the Authority and will be revised if required.

(b) Customer Premises Equipment (CPE)

- In response to industry comments regarding the SE's proposal to mandate a specific CPE, the Authority has included wording in the MBS, WDC and DS Service Descriptions to ensure that Licensed Operators will be able to choose alternative CPEs from multiple vendors. The same Service Levels should apply regardless of the CPE vendor.

(c) Speeds

- A number of Licensed Operators stated that they required 100Gbps speeds on the WDC Service. The speeds available in the draft RO have been increased to include 100Gbps.
- Given that Batelco Retail (BRE) will be best placed to continue to provide existing WLA services, the lower speeds (i.e. below 1Mbps) that the MPLS network allows, are no longer required under the WDC Service Description and therefore have been removed.
- WBS speeds are based on the existing set of SE speeds as well as some changes intended to meet certain requirements put forward by Licensed Operators.
- The WBS is technology agnostic and therefore can be made available over copper where the SE may not yet have rolled out fibre. The full set of speeds includes those which will be provided

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by existing copper networks as well as some that will be provided on the SE's fibre Gigabyte Passive Optical Network (GPON network).

- In response to industry feedback, and in order to avoid certain customers (particularly those customers who might be considered to be vulnerable) from being stranded, the Authority has required the SE to include a voice-only service for WBS, that would have transmission characteristics capable of supporting minimum 14.4kbps voice transmission.
- The Authority considers that the range of WBS speeds will enable Licensed Operators to meet the requirements of residential and non-residential end users.

(d) Aggregation Links (introduction of 100Gbps for WDC, MBS and DS)

- A number of operators requested that an Aggregation Link should be made available on a per service basis.
- Accordingly, additional Aggregation Link speeds have been included in the Service Descriptions. For example, the MBS Service Description envisages provision of an Aggregation Link for speeds of up to 100Gbps.

(e) Monitoring Tool

- The Authority considers that competition and quality of service objectives will be promoted where Licensed Operators have the same opportunity to monitor the performance of their services. Accordingly, the Authority has introduced a monitoring tool for all Service Level related parameters relating to WDC, DS and MBS including link availability, bandwidth utilisation, latency, jitter, frame loss and round trip delay, which are all crucial to service performance. The specific monitoring parameters may differ according to the particular Service i.e., not all of the above parameters are available for WDC, DS and MBS. Additional parameters however can be specified and may be developed through industry discussions within the ECTC.

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(f) Quality of Service (QoS)

- As noted above, the Authority does not consider it necessary to merge MBS and DS Services at this time. This decision is based on the understanding that there remains a demand for differentiated QoS between the two services.
- In response to comments on QoS for the WDC Service, the Authority has incorporated requirements for 100% real-time QoS over Synchronous Digital Hierarchy (SDH) into the RO.
- With regards to WBS, and in order to promote equivalence, the Authority considers that the SE should provide network maintenance and support services to ensure that all of the network elements (including but not limited to the Optical Network Termination (ONT) setup, such as bridge-mode, managed mode) used to provide the WBS Service are provided to all Licensed Operators at the same level of QoS and availability. The SE is also required to provide Licensed Operators for this Service with full visibility on the ONT and ONT management, and have TR69 capability extended where the ONT is (a) supplied by the SE; or (b) self-provided by the Licensed Operator.

(g) Minimum Service Period

- Licensed Operators generally commented that Minimum Service Periods should be reduced or removed. The Authority considers that it is reasonable for there to be Minimum Service Periods for operator specific products. For example, the WDC Service has a twelve (12) month Minimum Service Period, and the MBS and DS Services have a twenty-four (24) month Minimum Service Period to reflect the fact that the SE will be required to support the connection of its network to MNO sites. The Authority has also proposed a twenty-four (24) month Minimum Service Period for OWS and FFS. The Authority considers that at least until there is greater certainty regarding the demand and take-up for these Services, a twenty-four (24) month Minimum Service Period strikes an appropriate balance

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between flexibility for Licensed Operators compared with the SE's planning and investment needs.

- There is no Minimum Service Period for the WBS Service. It is considered that the WBS Service is a wholesale service provided to support competitive mass-market products, and therefore it would not be appropriate to restrict end users' rights to move service provider by imposing a Minimum Service Period. The Authority considers that this position is appropriate given that a customer switching between Licensed Operators is unlikely to require network investment by the SE.

(h) Forecasting

- The Authority is of the view that forecasting is a fundamental input to ensure that the SE is able to meet the service requirements of Licensed Operators. The Authority considers that this is particularly the case in relation to non-mass market related products, where a Licensed Operator is better placed to accurately forecast demand.
- Therefore, the Authority has concluded that WDC, DS and MBS be subject to non-binding quarterly forecasting from all Licensed Operators. In response to industry feedback to the ROO Consultation regarding potential difficulties in providing accurate forecasts for the timeframe envisaged in Schedule 5 (Forecasting), the Authority has included a built-in tolerance of +/-10% so that within this tolerance, the Service Level Terms in Schedule 7 (Service Levels) would still apply. Outside this tolerance, however, the Service Level Terms in Schedule 7 (Service Levels) would not apply to those actual service requests (orders) for services in excess of + 10% of those forecast.
- On the other hand, the Authority considers that forecasts for OWS and FAS must be binding, given that these are new products for which it is reasonable to expect planning will be needed by the SE.
- In the case where the number of actual service requests (orders) is greater in a quarter than the forecasted amount (including the above tolerance), the SE shall use all reasonable endeavours to

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supply the connections requested, but will not be expected to guarantee that the service will be provided in the timescale set out in the Service Levels.

(i) Ordering

- Industry feedback indicated that an online portal would be an efficient means of promoting equivalence with respect to ordering processes.
- The Authority agrees that a portal is an appropriate and effective means for facilitating the placement and tracking of service requests and therefore has required establishment of a portal in the RO. This portal should provide Licensed Operators with access to the same information about fibre deployment and service availability at the same time.
- The Authority has also required in the relevant service descriptions for WBS and WDC that the SE provides access to an online tool that identifies up-to-date accurate digital coverage maps for the areas in Bahrain covered by the relevant WBS / WDC Service and the maximum speed supported for each address (i.e., block or building) and the Connection type (i.e., copper or fibre) to ensure that the right service is offered by the Access Seeker to the End User. This online tool should be updated at least on a monthly basis.
- With respect to certain pre-sale requirements concerning mass-market bitstream, the Authority has concluded that legacy provisioning requirements, such as linking the supply of bitstream to a pre-existing standard telephone service or "useable line", be removed.
- In response to industry feedback, the Authority has also removed the provisions on batching from the WBS Service Description.

(j) Detailed operational processes

- NTP4 and the SE License require the SE to reflect the reasonable product / service requirements of Licensed Operators. To this end,

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the Authority requires that an industry forum is established as part of the ECTC that will enable, among other matters, Licensed Operators to discuss their needs and requirements, including technical requirements, with the SE at regular intervals. The ECTC is to be established within two (2) months from the effective date of the SE Order. The SE must participate in and give its full cooperation to the ECTC.

- The Authority notes that a joint working manual was not produced by the SE and so is not included in the RO. However, the Authority has included a specific requirement in the SE Order for the SE to submit a joint working manual for the Authority's approval within four (4) months of the SE Order. The Authority considers that these timelines must be seen as the maximum permissible for developing the necessary technical and operational processes for the industry. The Authority encourages the SE and Licensed Operators to liaise as soon as reasonably practicable after the ECTC is established to meet and agree these processes.
- The joint working manual should provide technical and operational information in relation to the SE's supply of the RO Services. It may also address matters such as fault management, processing for requesting new services and production of template forms, if required. As indicated above, the Authority envisages that the SE will produce this manual within the framework of the ECTC and in consultation with Licensed Operators.

36.4 Price terms

36.4.1 Having considered the responses to both the RO Consultation and the ROO Consultation, the Authority continues to believe that the four principles set out therein are the most appropriate principles to apply when determining the price terms for RO Services. These principles are that the RO should:

(a) Support the delivery of the NBN;

(b) Promote efficiency in the supply of telecommunications products and services in the telecommunications market in Bahrain;

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(c) Promote service-based competition in the provision of fixed telecommunications services that is fair, effective and sustainable; and

(d) Promote efficient investment and hence support the development of a sustainable, future-proof network.

36.4.2 The Authority considers that, with regards to the RO price terms, these principles mean that the SE must be able, when operating reasonably efficiently, to earn a reasonable return, taking into account its cost of capital. This is because this is necessary to support the delivery of the NBN, promote efficient investment and hence support the development of a sustainable, future-proof network and to promote efficiency in the supply of telecommunications products and services.

36.4.3 At the same time, the SE's prices must support fair, effective and sustainable, downstream competition. This means that the prices for the SE's product set must enable all reasonably efficient downstream operators, to match and profitably compete against, prevailing retail prices today, thus, in turn, stimulating demand for the SE's services and again, ensuring efficiency in the supply of telecommunications products and services to end-customers. Furthermore, such prices should also support investment at all levels of the value chain, including, for example, in promoting efficient investment in high-speed mobile networks, so ensuring the efficient and effective delivery of those services also.

36.4.4 The Authority is satisfied that these core principles i.e., ensuring that the regulated entity has the opportunity to earn a reasonable rate of return and that prices must support fair, effective and sustainable competition, are both widely accepted in the context of economic regulation where multiple players compete to provide services over a single infrastructure and where one downstream player has common ownership with the network provider. Indeed, the Authority considers that such principles should apply regardless of any model of separation that may be applied.

36.4.5 It is in the interests of all stakeholders, including most importantly, consumers, that the SE is successful. That is, it is able to meet the fibre roll out targets set out in NTP4 (and any further future targets which may be imposed) and provide a product set which meets the reasonable demands of Licensed Operators and enables Bahrain's telecommunications sector to be at the forefront of the

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Kingdom's economic development. Crucially, this depends on the long-term financial sustainability of the SE.

36.4.6 The Authority considers it is appropriate and in line with the principles it has set out in both the RO Consultation and ROO Consultation (referenced above), to allow the SE the possibility to earn a return above cost of capital in the short term. That is, it is not setting, as part of this SE Order, RO prices at forward looking cost oriented levels. The Authority believes it is important, for all parties to be able to plan investments effectively, that prices follow a steady trend. Reducing prices now, only to have to increase prices at the time of RO review (in no more than eighteen (18) months' time) would not provide the stability that all parties require and would ultimately damage investment prospects in the sector.

36.4.7 Therefore, the Authority considers that the prices in this RO strike the right balance, at this time.

36.5 **WBS**

36.5.1 In determining the appropriate prices for WBS, the Authority has also reviewed benchmarks, and considered whether, under the price terms, and consistent with the principles set out above, Licensed Operators would have sufficient margin to compete with BRE, given existing Batelco retail prices for broadband services.

36.5.2 The SE Order requires the SE to apply the prices for WBS set out in Schedule 3 (Pricing) of the RO. The Authority considers that these price terms are appropriate and in line with the principles it has applied in its review. Specifically, these allow Licensed Operators to compete with BRE's existing retail broadband services while also, in combination with price terms for other products, allowing the SE the opportunity to earn a reasonable return on its investment.

36.6 **MBS and DS**

36.6.1 The draft RO included two products which can be used for mobile backhaul, MBS and DS, with differentiated pricing. As set out above, the Authority considers it appropriate to retain both Services within the RO, in order to give Licensed Operators a greater range of wholesale services inputs. The Authority

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also believes it is appropriate to retain the price differential between MBS and DS given the different service requirements that are being met by these products. Given this and for the reasons set out in Annex D to this SE Order, the Authority requires the SE to apply a ten per cent (10%) reduction to the MBS and DS prices it proposed in the draft RO, consistent with the proposed prices the Authority put forward in the draft SE Order.

36.6.2 The Authority considers these price terms are appropriate and in line with the principles it has applied in its review. These Services are not used directly to sell retail services to end-consumers and therefore the Authority has not considered the margin available on these Services to MNOs. However, the Authority is satisfied that these price terms, when combined with other aspects of the SE Order, will support MNOs' investment decisions in high-speed 4G and 5G mobile networks and will mean that the price of mobile backhaul products in the RO will have fallen by over fifty per cent (50%) in the last three years. Furthermore, in combination with price terms for other products, the Authority considers that these price terms also allow the SE the opportunity to earn a reasonable return on its investment.

36.6.3 The MBS and DS Service Descriptions in the draft RO (which formed the subject of the RO Consultation) contained provisions that the Licensed Operator would be required to pay an additional non-recurring fee for mobile backhaul services where the deployment cost of additional passive infrastructure required to provide the specified link is more than three (3) times the monthly recurring charge for that Service.

The Authority does not consider that this is appropriate, principally because the SE is required to deploy fibre to one hundred percent (100%) of cell sites and given its position as a monopoly provider of fibre infrastructure, the SE should be in a position to recover these costs through the geographically averaged wholesale charges in the RO. However, the Authority believes that it is reasonable to require MNOs to commit to a certain minimum commitment period in order to prevent the risk of SE investment becoming stranded.

36.7 **WDC**

36.7.1 Again, in considering the price terms for WDC, the Authority has had regard to the need to enable investment in the NBN and to ensure that the SE is financially

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viable, as well as the need to promote fair, effective and sustainable competition. Therefore, for the reasons set out in Annex D to this SE Order, the Authority requires the SE to apply a ten per cent (10%) reduction to the price terms for WDC it proposed in the draft RO. This is, again, consistent with the price terms the Authority put forward in the draft SE Order.

36.7.2 In line with comments received to the RO Consultation, the Authority introduced in the ROO Consultation a requirement for the SE to offer a 100Gbps WDC Service. This requirement is also reflected in the RO. The Authority determined the price for a 100Gbps WDC Service by extrapolating the implied tariff gradient applying to the WDC product for capacities ranging from 1Gbps to 10Gbps.

36.7.3 As set out above in relation to DS and WBS, the Authority also considers that there should be no additional non-recurring fee levied on Licensed Operators when a WDC Service is supplied to either a small business building or cell site that is not connected with fibre.

36.8 **OWS**

36.8.1 In order to limit the risks of inefficient substitution between MBS and OWS, the Authority believes it is important to ensure that the pricing of the OWS product also reflects, as much as possible, the characteristics of that product. One key element to consider is the capacity offered over a wavelength. MBS is sold on a capacity basis (i.e., with different tariffs for different service capacities). In contrast, OWS will be sold by wavelengths. However, through the interface to its optical network equipment, the SE will still be able to control the capacities that MNOs will be able to utilise over OWS, meaning that, in effect, the OWS product can also be sold on a capacity basis.

36.8.2 Specifically, as set out in the OWS Service Description in Schedule 6.5 Optical Wavelength Service (OWS), the Authority requires the SE to offer the OWS product in accordance with the ITU-T recommendation G.709 and in the form of OTU3 and OTU4 signals, corresponding approximately to capacities of 40Gbps and 100Gbps. The Authority has not included lower capacities in the OWS Service Description, as these can be met through the MBS product.

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36.8.3 Therefore, the Authority has set the price for the OWS product by extrapolating the price schedule for MBS to derive equivalent prices for a 40Gbps and a 100Gbps MBS product. The Authority believes this approach most appropriately limits the risk of any cannibalisation of the demand for MBS and so limits the risk to the SE business case model, while also ensuring that should MNOs have a technical requirement for the OWS product they will be able to access such a product, at prices that are consistent with other services in the RO.

36.8.4 In line with the principle of linking the pricing of OWS to the pricing of the MBS, the SE should also be able to charge MNOs a non-recurring fee of four hundred Bahraini Dinar (BHD400) as an installation and configuration charge for OWS Connection and Change Request.

36.8.5 In responding to the ROO Consultation, one stakeholder proposed that the price for OWS should be reduced, based on benchmark information provided by that stakeholder. Having considered that information, the Authority does not consider it would be appropriate to reduce the price terms for OWS. In particular, the Authority notes that the benchmark information provided related to a single country (namely the UK). The Authority considers that a single country does not represent a reasonable sample for a benchmark. Furthermore, the Authority notes that the description of the Openreach service in the UK explicitly prohibits the use of the optical access product in the core of the network. The Openreach service also considers the use of the product for a number of capacities that the Authority clearly considered out of scope for OWS. As such, this differs significantly to the OWS Service Description in the RO. The Authority's reasoning on this issue is discussed in further detail in Annex D to the SE Order.

36.9 Fibre Fronthaul Service (FFS)

36.9.1 In the ROO Consultation, the Authority set out the possibility that the FFS (previous referred to as FAS) could be supplied in one of two ways. Firstly, the FFS could be supplied by the SE, with the SE taking responsibility for the deployment of any required fibre infrastructure. Alternatively, given the nature of the FFS, MNOs could be allowed to self-provide the FFS links.

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36.9.2 Under the first approach in the ROO Consultation, the Authority proposed that price terms should be set on a bespoke basis. The Authority therefore did not include a price for FFS in the ROO Consultation.

36.9.3 Under the second approach in the ROO Consultation, the Authority proposed to allow the SE to levy a monthly recurring charge on MNOs to cover the cost the SE would incur in maintaining and monitoring the links, as well as carrying out any necessary repairs and to make an appropriate contribution to common costs. However, no specific amount was proposed by the Authority.

36.9.4 The Authority has considered industry feedback to the ROO Consultation regarding both the price and non-price terms for FFS. Having taken into account industry feedback, the Authority has amended the FFS Service Description from that included in the ROO Consultation. As noted above, the supply of FFS will be based on the following:

(a) Schedule 6.6 of the RO, which contains the FFS Service Description. This Schedule describes the process and terms and conditions by which fibre cables for fronthaul will be deployed in SE duct; and

(b) Schedule 6.7 of the RO, which contains the FAS Service Description. This Schedule describes the process and terms and conditions by which MNOs will rent duct space from the SE, through which the FFS will be supplied.

36.9.5 As a result of these changes, the Authority believes it is also reasonable to move away from having purely bespoke charges for the FFS Service. In doing so, the Authority believes this should reduce the possibility for the SE to unduly delay the provision of FFS or for the SE to provide the service on different terms to particular MNOs. In particular, the Authority will require:

(a) The Access Seeker (MNO) wishing to use FFS, to pay Non-Recurring Charges to cover the Application, Field Studies and Installation processes.

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(b) The SE to then maintain that fronthaul fibre, including carrying out repairs to the fronthaul fibre in the event of any damage caused to it.[1]

(c) The Access Seeker to pay to the SE a monthly rental charge for the duct space (FAS) used in the provision of the FFS, together with all necessary ancillary charges, as set out in Schedule 3 (Pricing) and consistent, as set out below, with FAS charges.

36.10 Given this, the SE is required to set out in the RO, a fixed, per metre monthly recurring charge for the duct rental aspect of the FAS.

36.11 The FFS is not covered by the SE's interim business case. As such, this does not provide a direct input to determining an appropriate charge for this service. However, the business case model does include duct rental (FAS) revenues for the existing (legacy) duct rental service provided by Batelco to OLOs, with these revenues being based on the duct rental charge included in the Previous Batelco Reference Offer of 189 Fils per metre per duct bore per month. The Authority therefore requires the SE to apply this duct rental charge for the FFS. No additional charges should be levied by the SE on MNOs for the maintenance and monitoring of those links.

36.12 **Exceptional Facilities Access Service (Exceptional FAS)**

36.12.1 The Authority considers Exceptional FAS must be supplied by the SE to Licensed Operators on price and non-price terms that are fair and reasonable. The Authority retains the right to review the SE's price and non-price terms for Exceptional FAS, and request such information as the Authority considers necessary to conduct its review.

36.13 **Legacy services**

36.13.1 The SE is required to include in its RO the following products and services taken from the Previous Batelco Reference Offer. These products and services shall be made available to BRE to enable BRE to continue to serve existing customers of these services:

[1] The Access Seeker will be required to cover the costs of replacing fibre that has degraded through normal wear and tear.

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36.13.2 The Unbundled Metallic Path Service

36.13.3 The Service Node Facilities Management Service

36.13.4 The UMP Backhaul Service

36.13.5 The UMP Specific Information Service.

36.14 In including these services in its RO, the SE is required to migrate all price terms that were included in the Previous Batelco Reference Offer. These prices are reflected accordingly in Schedule 3 (Pricing) of the SE's RO.

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ANNEX B

Price terms of RO Services

The below replicates the following schedule of the revised draft RO:

Schedule 3 – Pricing

1A - MOBILE BACKHAUL SERVICE (MBS)
MONTHLY RECURRING CHARGES

Bandwidth (Mbit/s)	MBS Connection Monthly Recurring Charge (BD)	Monthly Recurring Charge (BD) Volume Discount (50-99 MBS Connections)	Monthly Recurring Charge (BD) Volume Discount (100+ MBS Connections)
500	378.00	340.20	302.40
1,000	540.00	486.00	432.00
1,500	684.00	615.60	547.20
2,000	805.50	725.40	644.40
2,500	913.50	822.60	730.80
5,000	1368.00	1231.20	1094.40
10,000	2088.00	1879.20	1670.40

Bandwidth (Mbit/s)	Monthly Recurring Charge (BD)
10 Gbit/s aggregation link	Included in MRC
100 Gbit/s aggregation link	1,141.17

NON RECURRING CHARGES

Chargeable Activity	Charge (BD)	Charge Basis
Installation and configuration charge for MBS Connection, MBS Aggregation Link and Change Request	400.00	Per event

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1B –DATA SERVICE (DS)
MONTHLY RECURRING CHARGES

Bandwidth (Mbit/s)	DS Connection Monthly Recurring Charge (BD)
500	252.00
1,000	351.00
1,500	441.00
2,000	516.60
2,500	585.00
5,000	867.60
10,000	1,314.00
10 Gbit/s aggregation link	Included in MRC
100 Gbit/s aggregation link	718.15

NON RECURRING CHARGES

Chargeable Activity	Charge (BD)	Charge Basis
Installation and configuration charge for DS Connection, DS Aggregation Link and Change Request	400.00	Per event

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1C – WHOLESALE DATA CONNECTION (WDC)
MONTHLY RECURRING CHARGES

Bandwidth	WDC Connection Monthly Recurring Charge (BD)
9.6 Kbit/s	52.66
14.4 Kbit/s	52.66
19.2 Kbit/s	52.66
64 Kbit/s	52.66
128 Kbit/s	54.87
256 Kbit/s	58.14
512 Kbit/s	60.93
1 Mbit/s	66.42
2 Mbit/s	77.67
4 Mbit/s	121.41
8 Mbit/s	147.15
10 Mbit/s	157.77
15 Mbit/s	180.81
20 Mbit/s	200.79
25 Mbit/s	218.88
50 Mbit/s	292.86
75 Mbit/s	313.47
100 Mbit/s	313.47
150 Mbit/s	365.22
200 Mbit/s	400.77
300 Mbit/s	479.16
400 Mbit/s	541.35
500 Mbit/s	597.87
622 Mbit/s	661.32
750 Mbit/s	731.97
1 Gbit/s	842.49
1.25 Gbit/s	943.20
1.5 Gbit/s	1,036.80

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2 Gbit/s	1,208.61
2.5 Gbit/s	1,365.48
5 Gbit/s	2,160.18
7.5 Gbit/s	2,708.82
10 Gbit/s	3,196.17
100 Gbit/s	12,406.96
1 Gbit/s aggregation link	180.00
10 Gbit/s aggregation link	450.00
100 Gbit/s aggregation link	1,746.82

Chargeable Activity	Charge (BD)	Charge Basis
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.	Per month

NON RECURRING CHARGES

Chargeable Activity	Charge (BD)	Charge Basis
Installation and configuration charge for "soft" Change Request	50.00	Per "soft" change. Applies when no new Network equipment is required (for example, increase or decrease in the bitrate of a Connection). Includes the CPE installation and configuration at both ends.

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Installation and configuration charge for "hard" Change Request	400.00	Per "hard" change. Applies when new Network equipment is required such as new cable access, new network port and/or new CPE (e.g. add a Connection or add an additional Aggregation Link). Include all the work required (e.g. the physical installation and configuration at both ends).
Installation and configuration for "hard" Change Request – Aggregation link	Time and materials	See note above. The necessity of all work chargeable on a time and materials basis shall be fully justified by the SE.

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1D – WHOLESALE BITSTREAM SERVICE (WBS)
MONTHLY RECURRING CHARGES

RESIDENTIAL

Bandwidth (Contention ratio 15:1)	Monthly Recurring Charge (BD)
Voice only	0.928
1.024 Mbit/s downstream / 512 Kbit/s upstream	2.90
2.048 Mbit/s downstream / 1.024 Mbit/s upstream	4.14
3.072Mbit/s downstream / 1.024Mbit/s upstream	4.50
4.096Mbit/s downstream / 1.024Mbit/s upstream	4.86
6.144Mbit/s downstream / 1.024Mbit/s upstream	5.58
8.192Mbit/s downstream / 2.048Mbit/s upstream	6.30
10.240Mbit/s downstream / 2.048Mbit/s upstream	7.02
16.384Mbit/s downstream / 2.048Mbit/s upstream	9.18
20Mbit/s downstream / 2.048Mbit/s upstream	10.04
30Mbit/s downstream / 5.048Mbit/s upstream	16.14
40Mbit/s downstream / 5.048Mbit/s upstream	21.52
80Mbit/s downstream / 10.048Mbit/s upstream	28.69
100Mbit/s downstream / 10.048Mbit/s upstream	32.28
500 Mbits/s downstream/ 50 Mbit/s upstream	75.00
1 Gbit/s Bitstream Plus Aggregation Link	Included in MRC
10 Gbit/s Bitstream Plus Aggregation Link (on request)	358.50

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NON-RESIDENTIAL

Bandwidth (Contention ration 8:1)	Monthly Recurring Charge (BD)
Voice only	1.728
256Kbit/s downstream / 64Kbit/s upstream	3.50
512Kbit/s downstream / 256Kbit/s upstream	3.75
640Kbit/s downstream / 256Kbit/s upstream	3.84
1.024Mbit/s downstream / 512Kbit/s upstream	4.68
2.048Mbit/s downstream / 1.024Mbit/s upstream	4.77
4.096Mbit/s downstream / 1.024Mbit/s upstream	6.99
6.144Mbit/s downstream / 1.024Mbit/s upstream	8.54
8Mbit/s downstream / 2Mbit/s upstream	10.09
10.240Mbit/s downstream / 2.048Mbit/s upstream	11.63
16.384Mbit/s downstream / 2.048Mbit/s upstream	16.27
20Mbit/s downstream / 4.048Mbit/s upstream	21.52
30Mbit/s downstream / 8.048Mbit/s upstream	39.45
40Mbit/s downstream / 8.048Mbit/s upstream	39.45
80Mbit/s downstream / 15.048Mbit/s upstream	53.80
100Mbit/s downstream / 20.048Mbit/s upstream	64.55
500 Mbits/s downstream/ 70 Mbit/s upstream	149.98
1 Gbit/s Bitstream Plus Aggregation Link	Charge included in MRC
10 Gbit/s Bitstream Plus Aggregation Link (on request)	358.50

ADDITIONAL CHARGES WBS

Chargeable Activity	Charge (BD)	Charge Basis
Agreement processing and service setup fee	1,419.00	Once off

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Charges for rejects, reversals and withdrawals associated with the WBS Order	5.00	Per event
Charges for a change of speed	5.00	Per event
External removal charge	10.00	Per event
Port Cessation Charge	10.00	Per event
Charges for a call out for a technician on Access Seeker's request	Time and materials in accordance with Annex 1	Per event
Charges for suspension of WBS at Access Seeker's request	5.00	Per act of suspension and per act of connection
Connection Fee	20.00	Once off

1E – OPTICAL WAVELENGTH SERVICE (OWS)
MONTHLY RECURRING CHARGES

Signal	Monthly Recurring Charge (BD)
OTU3/OTU3e	4,524.00
OTU4	7,646.00

NON RECURRING CHARGES

Chargeable Activity	Charge (BD)	Charge Basis
Installation and configuration charge for OWS Connection and Change Request	400.00	Per event

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1F – FACILITIES ACCESS SERVICE (FAS)

Chargeable Activity	Effective date	Charge	Charge Basis
Processing Access Application Fee	6 August 2006	BD 100	Per application
Site Survey if required	6 August 2006	For duct access, the field study total charge should not exceed BD 0.430 per metre of the duct route	Time and Materials
Reprocessing Fee	6 August 2006	BD 50	Per resubmission or amendment of application
Access Site Lease Administrative Charge	6 August 2006	BD200	Per lease processed
Access Site Sub-Lease Administrative Charge	6 August 2006	BD 900	Per Sub-lease processed
Make Ready and installations charges	6 August 2006	Cost of work	Time and materials basis as set out in Annex 1
Site Space Charge (Facility other than Ducts) - including power supply limited to 10 kw/mth	6 August 2006	BD 25	Per sq metre/Site/month for space occupied or rendered unusable
Tower Sector Fee	6 August 2006	BD 50	Per sector/month
Duct Rental Charge	1 June 2012	189 Fils	Per metre/per duct bore/month (Please Refer to Schedule 6-7-3 for Duct Process) (Maps provided free of charge on request from OLO on completion of the Field Study)
Additional Power Supply or other Equipment Request Charge	6 August 2006	On application	On application

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Security and Site Access Administration Fee	6 August 2006	BD 2	Per card/per site/per month
Scheduled installation, maintenance and removal Charges (Business Hours)	6 August 2006	BD 14	Per hour (two hour minimum call out)
Scheduled installation, maintenance and removal Charges (Out of Hours)	6 August 2006	BD 21	Per hour (two hour minimum call out)
Unscheduled installation, maintenance and removal Charges (Urgency Surcharge)	6 August 2006	BD 36	Per hour (two hour minimum call out)
Additional Requested Services	6 August 2006	Cost of work	Time and materials

1G – FIBRE FRONTHAUL SERVICE
Charges as per the Facilities Access Service

1H – UNBUNDLED METALLIC PATH SERVICE

Chargeable Activity	Effective Date	Charge	Charge Basis
UMPL Connection and Cessation Charges	5 May 2011	BD 25.550	Per event
UMPL Line Continuity Charge	5 May 2011	BD 11.900	Per event
Reject, Reversal, Withdrawal Charge	5 May 2011	BD 5	Per event
UMPL Rental	5 May 2011	BD 4.090	Per line per month
UMPL Rental (premium repair)	5 May 2011	UMPL Rental + 60%	Per line per month
HDF Block Rental	5 May 2011	BD 5	Per month
Tie Cable rental charge	5 May 2011	BD 126	Per event

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Chargeable Activity	Effective Date	Charge	Charge Basis
Tie Cable Duct charge (for Distant OLO Space only) – Setup charge	5 May 2011	BD 0.756	Per event
Tie Cable Duct charge (for Distant OLO Space only) – Rental charge	5 May 2011	Monthly duct rental charge (see FAS charge schedule) + 300% premium	Per cable per month
Wrongful Repair Charge	5 May 2011	Time and material basis (as specified in Schedule 3 Annex 1)	Per wrongful repair request

1I SERVICE NODE FACILITIES MANAGEMENT SERVICE

Chargeable Activity	Effective Date	Charge	Charge Basis
SNFM Order and Cessation Charges	5 May 2011	BD 13.650	Per event
License fee – Co-mingling	5 May 2011	BD 350	Per rack per month
License fee – First Dedicated rack	5 May 2011	BD 1050	For the first rack per month
License fee – Supp. Dedicated rack	5 May 2011	BD 350	For each supp. Rack per month
License fee – Shelter	5 May 2011	BD 25	Per square metre per month
Security ID Cards Charge	5 May 2011	BD 2	Per ID Card per month
Escorted planned normal working hours	5 May 2011	BD 21	Per hour
Escorted planned outside working hours	5 May 2011	BD 29	Per hour
Escorted unplanned normal working hours	5 May 2011	BD 30	Per hour
Escorted unplanned outside working hours	5 May 2011	BD 41	Per hour

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Chargeable Activity	Effective Date	Charge	Charge Basis
Reject, Reversal, Withdrawal Charge	5 May 2011	BD 5	Per event
Additional Power Charge	5 May 2011	BD 70	Per kW and per year
Tie Cable rental charge	5 May 2011	BD 25	Per cable per month
Service Node make ready for LLU	5 May 2011	Time and materials (as specified in Schedule 3 Annex 1)	Per Service Node

IJ UMP BACKHAUL SERVICE

Chargeable Activity	Effective Date	Charge	Charge Basis
Backhaul charges	5 May 2011	Refer to WDC charges	Per circuit / per month
Duct rental	5 May 2011	Refer to Duct Rental charges in FAS	Per metre/per duct bore/month

1K UMP SPECIFIC INFORMATION SERVICE

Chargeable Activity	Effective Date	Charge	Charge Basis
Specific Information request	5 May 2011	BD 336	Per event
Help Desk line	5 May 2011	Free	Per minute

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SCHEDULE 3 – ANNEX 1
RATES FOR TIME AND MATERIALS WORK

Chargeable Activity	Charge	Charge Basis
Time-based work	BD 20	Per hour, subject to minimum of: Four hours for construction work; Two hours for maintenance work; One hour for clerical work; and Two hours for any other work
Materials	Cost plus a fair and reasonable margin	Per item, margin to be assessed and agreed on a case by case basis

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ANNEX D

PRICE TERMS (MONTHLY RECURRING CHARGES)

Having set out the background to this Annex and the principles it has applied in paragraph 36.4.1 of the main body of this Order, the Authority now sets out more details on how it has arrived at the appropriate price terms (monthly recurring charges) for all the RO products and services.

1. Firstly, the Authority sets out the appropriate price terms for all those products and services covered by the SE business model: namely Wholesale Bitstream Service (WBS), the Data Service (DS), Mobile Backhaul Service (MBS) and Wholesale Data Connectivity (WDC). It groups its analysis of these products together, because all four are considered by the SE business case model. Therefore, in this section, the Authority begins by setting out its views on that business case.

2. Secondly, the Authority sets out the appropriate price terms for the proposed Optical Wavelength Service (OWS).

3. Thirdly, the Authority sets out appropriate price terms for the Fibre Fronthaul Service (FFS) and associated Facilities Access Service (FAS).

4. Finally, the Authority then sets out the appropriate price terms for the remaining services (such as copper based services which will continue to be available to existing customers on the terms and prices in force immediately prior to the effective date of the SE Oder) which are included in the SE Order and related RO.

Price Terms for WBS, DS, MBS AND WDC

5. In determining price terms, the Authority considers the WBS, DS, MBS and WDC products together. This is because these products are all included in the interim SE business case model. The Authority therefore sets out its views on this business case model before considering, separately, the price terms of each product.

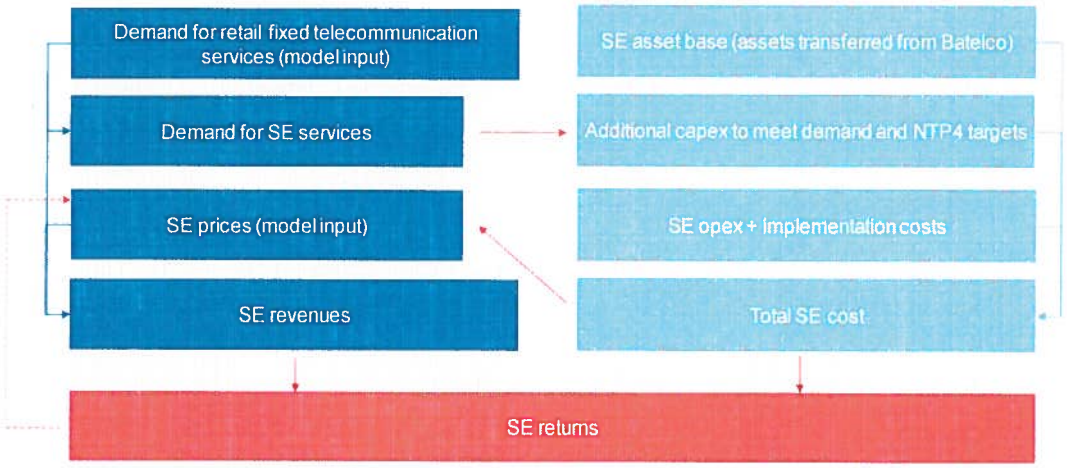
The SE business case model

6. The SE business case model has been developed by the SE. Its purpose is to examine the financial viability of the SE under a range of different assumptions, where "financial viability"

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is measured by the ability (or otherwise) of the SE to earn a reasonable return on capital. This is important, because under NTP4, the Authority must develop a regulatory framework that allows the SE to recover efficiently incurred costs, including a reasonable rate of return and because, as per the principles outlined in paragraph 36.4.1 and that the Authority has applied in its review, it is important to ensure that the RO supports the delivery of the single network.[1]

7. The structure of the SE business model is shown visually, below, in **Error! Reference source not found.**.



8. Given this, the output from the business case model is the expected returns for the SE. This means that both the demand for SE services and the prices charged by the SE for those services are inputs to the model, not outputs. That is, the model is not designed to identify the most appropriate level of prices. Although the model can be used to examine the link between pricing and the financial performance of the SE, the conclusions of such analysis should be treated with caution, because there is no model link between price and demand. That is, while the SE has calibrated the demand and price levels included in the model, the model does not flex demand as price assumptions are changed.
9. Although telecommunications services are often considered, in global studies, to be inelastic in demand, the Authority believes that this is likely to mean that the negative impact of further price reductions on the SE's financial performance would, if estimated

[1] NTP4, paragraph 24(e)(i). The Authority notes that the SE, upon submitting the business case to the Authority, accepted that the model provides sufficient evidence to conclude that the SE will be financially sustainable.

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using the model, be overstated (as price reductions should lead to increases in demand which the model does not capture), while price increases may have a less positive effect on SE revenues than the model would predict (because again, the model does not capture any reductions in demand which could occur if prices increase).

10. While, ideally, the Authority believes that a future, fuller business case model should be more dynamic (i.e., allowing the user to examine more fully the links between prices, demand, revenues and profitability), the Authority considers that the scope of the interim model is, subject to the suitability of the model inputs, fit for its current purpose of assessing SE's viability, particularly given the largely fixed cost nature of the SE business, and as one input into understanding the impact of the RO price terms on the financial sustainability of the SE. However, as set out further below, and in line with the principles it has applied in its review, the Authority has also had regard to other considerations when determining the appropriate price levels for the SE Order.
11. Furthermore, the Authority notes that the SE has stated it will be developing a more detailed economic model of the SE, which will then be used as an input into future RO pricing decisions.
12. The Authority now turns to its views on the model inputs included by the SE. In so doing, however, the Authority notes that it has not conducted a formal audit of the model or the model inputs. Rather, its review has focused on understanding the extent to which the model provides a reasonable view of the likely financial viability of the SE and hence can be used as one input to this SE Order.

Model demand forecasts

13. Demand for SE services can be considered in two parts: the demand for SE services which is directly linked to retail demand for fixed telecommunications services (chiefly, fixed broadband and leased line services); and the demand for SE services which form inputs to other networks. This second category covers, primarily, mobile backhaul services. Although there is some link between the demands for mobile backhaul over fibre and the demand for retail mobile broadband services, the demand for these links is also driven by a number of other factors, such as MNOs' plans for network densification.
14. Demand forecasts in the model are primarily based on total connections currently served by Batelco Retail (BRE) and, also for leased lines, the existing Batelco wholesale business. Given the structure of the retail market, the Authority is satisfied that this is a reasonable

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basis for the demand forecasts used in the model and hence for determining the link between SE pricing in 2019 and its financial viability.

15. Going forward, the model assumes growth in the demand for SE services, especially its fibre bitstream services, with the demand for residential broadband connections increasing by around two-thirds (66%) between 2018 and 2023. Clearly, there is some uncertainty in how the demand for retail fibre broadband services (and hence SE's bitstream services) will change over time. However, the Authority is aware that historically, the take up of fixed fibre broadband has been lower in Bahrain than other countries in the region, with this having been driven both by the limited roll out of fibre and the focus of operators on mobile services. Given this, the Authority considers it is reasonable to expect the demand for fibre broadband to increase from its current levels.

16. For the purpose of determining prices for the current RO, whether the demand forecast for 2023 could be conservative or excessively optimistic, has limited impact. This is because it does not affect the costs or revenues of the SE in the short term. Therefore, the Authority has not engaged, at this time, in an extensive review of the forecast trend for broadband take-up included in the interim business case. This will, however, be reviewed in more detail at the time of the RO review (which the Authority intends to be conducted no more than eighteen (18) months after publication of the RO).

17. In contrast, the Authority does have some concerns about the demand forecast for mobile backhaul services, covering both the forecast number of circuits for 2019 and the future growth in the demand for these circuits. As a result, the Authority sought further clarification from the SE on the demand for these circuits assumed in the model. In its response of February 13, the SE has confirmed that revenue forecasts included in the model are based on assumed demand of 500 backhaul circuits for VIVA and Zain (combined) in 2023, together with the provision of backhaul services for the BRE.

Figure 1 SE interim business case model: Forecast VIVA and Zain demand for mobile backhaul circuits

	2019	2020	2021	2022	2023
VIVA and Zain (combined)	175	350	400	450	500

Source: Batelco SE letter to the TRA, February 13, 2019

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18. In its letter of February 13, the SE states that these demand assumptions could lead to an overstatement of SE revenues in 2019, while it also separately states that the demand from the other MNOs (i.e., VIVA and Zain) could be at risk if the transfer of fibre assets of other Licensed Operators ("**OLOs**") into the SE is delayed. However, in contrast, the Authority believes that the business case model is very likely to understate the demand for fibre backhaul services. This is because the model appears to assume that OLOs will continue to rely on their own fibre networks,[2] and substantially on microwave backhaul, to provide backhaul services.

19. Such assumptions are at odds with the Authority's understanding that there is considerable demand among the MNOs for fibre backhaul and the broader recognition that fibre backhaul, rather than microwave, is a key input to 5G networks. Rather, the Authority would expect that the vast majority of this demand for backhaul would, under appropriate price and non-price terms, migrate to SE backhaul services, if MNOs are to meet their 5G objectives.

20. As such, the Authority believes that the demand forecasts for backhaul services, and therefore forecast SE revenues, may well be understated and are certainly unlikely to be overstated by the model, as suggested by the SE. Given this, the Authority also does not consider that the revenues currently forecast in the business case model would be at risk if the transfer of fibre assets from OLOs to the SE was delayed. This is because the model excludes considerable upside on the demand for mobile backhaul which outweighs any ability the MNOs may have to self-provide backhaul and hence which outweighs any demand side risk from delays to the transfer of OLO assets.

Model cost forecasts

20. The cost forecasts included in the business case model can be considered in three distinct categories: capital costs, operating costs and additional implementation costs.

Capital cost forecasts

21. The capital costs included in the interim business case model are driven by:
    - The transfer of existing assets from the current Batelco business into the SE;
    - Capital expenditure incurred in the deployment of new infrastructure and replacement infrastructure;
    - The depreciation of these assets over time; and

2 The Authority notes that the model includes SE revenues accumulating from the (legacy Batelco) duct rental service.

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- The cost of capital (weighted average cost of capital) which provides the SE with a reasonable return on capital employed.

22. With the exception of the second category, inputs for all of these categories are taken from Batelco's regulatory accounts and / or existing regulatory decisions. That is, the assets which are assumed to be transferred into the SE are transferred at their net book value, while asset lives (used to calculate depreciation charges) are consistent with the lives used in Batelco's regulatory accounts. Furthermore, the cost of capital used in the business case model is 9.5%, equal to the regulatory cost of capital previously determined by the Authority.[3] New capital expenditure is based on Batelco corporate plans.

23. The model assumes that all fixed network passive assets (i.e., not including mobile towers), along with switches and transmission equipment, will be transferred into the SE. For the avoidance of doubt, this also includes legacy copper assets. However, assets which are purely used for voice services, such as media gateways, are assumed to remain with the BRE. The model also assumes that Batelco's international facilities remain with the BRE. While this high level split seems reasonable, the SE will also share use of a number of assets with the BRE. These could include, for example, land and buildings, power, air conditioning and so on. The arrangements governing the sharing of these assets will be set out in the Batelco Asset Transfer and Sharing Agreement (ATSA).

24. However, the model splits the value of shared assets between the BRE and SE based on the split of assets between Batelco's core and access networks from its 2016 regulatory accounts (the last audited set of accounts for which the Authority has information) – with the values of the core and access networks proxying the direct split of assets between the SE and BRE.

3 2013 Cost of Capital: Final Determination (Ref MCD 02/13/018). The Authority will, in future, review whether this rate remains appropriate under the pricing framework set forth in the NERF.

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25. The SE's annual CAPEX forecast is set out below.

Figure 2 SE annual Capital Expenditures

BD m	2019	2020	2021	2022	2023
CAPEX	6.2	12.0	6.5	6.2	6.2

Source: Interim SE business case model

Operating cost forecasts

26. Forecasts of operating costs used in the model are again based on information from Batelco's 2016 regulatory accounts, rolled forward under various assumptions. These forecasts split costs into:
    - Salary / staff costs, which are assumed within the model to grow at 3.4% per annum, with additional staff added to the SE business in 2018;
    - Non-labour operating costs, which are forecast based on SE assumptions;
    - Support costs, which are assumed to increase by 2% per annum, in line with forecast inflation;
    - A contingency, which is included as a 10% mark up on other operating costs, to account for any unexpected cost increases; and
    - A small amount of bad debt cost, which is assumed to be constant in the model.

27. Taken together, the Authority notes that the total operating costs in the model for 2019 are around 40% higher than operating costs included in Batelco's 2016 regulatory accounts for the core and access network business units, combined, with costs growing by, approximately, a further 10% over the period to 2023. Of these, staff costs account for around 25% of total operating costs. As such, the Authority believes this is likely to be a conservative estimate of operating costs, although also recognises the uncertainties associated with the creation of the SE.

Implementation costs

28. In addition to "every day" operating costs, the model also includes a number of costs which are specific to the establishment of the SE and to it meeting its regulatory obligations.

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29. These so-called implementation costs fall into the following categories:

- Cyber and physical security costs
- IT system costs
- Branding costs
- Consultancy costs; and
- Other implementation costs / contingencies.

Within the model, these costs are then capitalised and amortised over a ten (10) year period. As such, the implementation costs have a limited impact on the financial viability of the SE in any one year, with (amortised) implementation costs accounting for around 4.5% of total economic costs (i.e., including operating costs, depreciation and the return on capital at 9.5%) in 2019, increasing to around 8% in 2023.

30. The Authority received relatively limited information from the SE in support of some of these cost estimates (and subsequent updates to these cost figures). That is, it did not, for example, receive a detailed breakdown of IT systems separation costs. However, this is linked to the uncertain nature of implementation costs, both in terms of when the costs would be incurred and at what levels. Indeed, the SE has also highlighted a number of uncertainties in this area. Nevertheless, the Authority does believe it is appropriate to include implementation costs in the business case as they do represent a legitimate source of costs to the SE.

31. Despite this, these costs have a limited impact on the viability of the SE in 2019. Therefore, when determining the future multi-year price control, the Authority would expect to have more detailed information from the SE regarding the costs it has actually incurred in this area. For the avoidance of doubt, however, this does not mean that the Authority has accepted that the implementation costs included in the business case model are appropriate. Rather, these cost items will be the subject of further detailed scrutiny as the establishment of the SE continues.

Model results

32. Based on the above, the Authority set out in Annex 4 to the ROO Consultation, that it was satisfied that the interim business case model demonstrated the financial viability of the SE. That is, in each year of the business case model, it shows the SE earning a positive return, in line with or above the cost of capital. Indeed, the Authority notes that

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when submitting the interim business case, the SE itself accepted that it shows the SE is financially viable.

33. The wholesale prices included in the business case model are below those that were included in the draft RO, with prices for WBS being around 28%-39% lower than those in the draft RO and those for capacity and backhaul services being 10% lower. Despite this, the model shows that even at these lower price levels, the SE could earn excess profit (i.e., profit above the cost of capital) in 2019. This means that setting prices at these levels could therefore satisfy at least one of the overriding principles considered by the Authority in its review – namely that the price set should encourage investment in the NBN and support the delivery of the single network.[4]

34. However, despite these apparent returns, the SE did not, as set out above, put forward in its draft RO, any price reductions. This is because it believed the interim business case did not consider fully the extent of uncertainties that could affect its profitability over the period to 2023. That is, the SE compared the excess profit shown in the model for the period 2019-23 to a set of uncertainties and argued that this showed any excess profit could be wiped out, thus meaning that price reductions in 2019 may not be sustainable. In particular, the SE highlighted concerns in relation to:
    - The costs of branding the SE (in the event of the SE creating a new brand);
    - The costs of IT systems separation;
    - The HR (people) costs associated with separation (including those linked to contract novation and a possible need to increase average salaries for SE staff, relative to existing Batelco staff);
    - The risks to the business case from OLOs being able to continue to use their existing fibre assets; and
    - The financing of the subsequent transfer of these OLO assets into the SE.

35. In the Authority's view, understanding the potential scale of these uncertainties and the likelihood of them materialising is, in line with the principles followed by the Authority in its assessment of the appropriate price terms, one key input to determining the prices

[4] In contrast, the draft RO did not include any price reductions from current levels. If these prices were accepted, the business case model estimates that the RO could earn even greater levels of excess profit in 2019, depending on how these higher prices would affect the demand for SE services.

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for the first SE RO (i.e., the price terms set out in this SE Order). This is because if there is a reasonable likelihood that these uncertainties could materialise in 2019, to the levels suggested by the SE, any reductions in RO prices from the levels set out in the draft RO would need to be considered carefully, to avoid the situation that price reductions now are not sustainable in the future or restrict the financial viability of the SE. The Authority, therefore, raised a number of questions with the SE concerning these uncertainties. Its findings, as included in the ROO Consultation, are summarised in the next section.

The Authority's findings

36. Since the SE submitted its interim business case, the Authority engaged with it to further understand the risks to that business case. Based on further information provided verbally by the SE during this review, together with its letter of February 13, and the Authority's own analysis, the Authority believes that the risks highlighted by the SE in its letter of December 13 (and/or its subsequent letter of February 13) are either unlikely to materialise to the scale indicated by the SE or are unlikely to affect the viability of the SE in 2019.

37. Given this, the Authority does not believe that the concerns identified by the SE give reason, on their own, to accept the prices proposed in the draft RO.

38. The TRA's conclusions on the uncertainties previously identified by the SE are summarised in Figure 3 below.[5]

Figure 3 The Authority's views of the uncertainties previously articulated by the SE on its business case

Area of uncertainty	TRA conclusion
Cost data excluded from the model	The SE accepted that it has largely resolved the data concerns without changes to the model and that any residual concerns would be minor.

5 The Authority's full conclusions are set out in Figure 6 of Annex 4 of the ROO Consultation.

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Separation uncertainties

The Authority has reviewed the three areas of uncertainty related to the costs of separation:

- **Branding.** The Authority believes it could be appropriate to allow the SE to include rebranding costs in its cost base in future. This is because rebranding is a requirement of the Authority's Separation Guidelines. However, this will not have any significant impact on the viability of the SE. Furthermore, before any additional costs could be taken into account in determining the SE's RO price set, the SE will be required to set out more clearly the efficient costs of this activity.

- **Systems separation.** The SE has suggested that these costs are still uncertain and that the initial estimate of these costs included in the business case model may be an underestimate. However, the SE has provided no evidence in support of its views.

  - . Furthermore, the Authority is of the view that the SE is unlikely to incur any significant systems separation cost in 2019.

  - Given this, the Authority does not consider it is appropriate to take account of such possible additional costs when determining appropriate RO price terms for 2019.

- **People costs.**

  - The Authority does not believe that SE salary costs may need to increase due to the changes to the regulatory framework. There is nothing in the regulatory framework that would require the SE to increase salary costs and the Authority is also not

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Area of uncertainty	TRA conclusion
	aware of any other instances where separation has led to an increase in per-head salary costs.
OLO decommissioning risks[6]	The Authority does not accept that this is an incremental risk to the SE business case. While duct rental revenues should decline over the period (as OLO assets are transferred), the Authority considers, as set out above, that the model currently is likely to significantly underestimate the MNOs' demand for fibre backhaul services. As such, the shortfall in those revenues should offset any decline in the demand for duct rental services.
OLO asset financing	The Authority will, in due course, consult with all affected stakeholders on the decommissioning of OLO fibre assets. In addition, the Authority anticipates that any consideration that the SE is expected to pay for these assets should reflect the underlying value of those assets and so could be added to the SE's regulatory asset base. As such, the Authority does not believe it is necessary to include a further allowance for this uncertainty when setting RO prices for 2019.

Conclusion on the SE business case

39. As set out above, the Authority initially concluded, in the ROO Consultation and on the basis of its review, that the SE interim business case provides a reasonable basis for assessing the financial viability of the SE and understanding the link between the SE's viability and the pricing of RO services. Indeed, the Authority noted that Batelco's Board has also accepted that the business case demonstrates the viability of the SE.

6 This was reclassified as "duct revenue risks" in its letter of February 13, 2019.

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40. However, the Authority did not accept the SE's view, as set out in its various letters to the Authority, that uncertainties in the business case mean that the draft RO (and ultimately the final RO) should not include any price reductions from current price levels.[7] Although the Authority accepts that there are uncertainties in the business case, it set out in the ROO Consultation its view that these will not have a significant impact on the SE in 2019. For example, the interim business case model demonstrates that the SE should be in a position to earn a rate of return in 2019 above its cost of capital, thus meaning it can still be in a position in 2019 to earn a reasonable return, consistent with ensuring its ability to invest in the NBN, even if some of these uncertainties do materialise.

41. Furthermore, the Authority noted that, for the purposes of developing a full business case for the period to 2023, the model also assumes further price changes beyond 2019. That is, it assumes a broader price trend, taking into account possible price changes that could come into force following the introduction of the multi-year price control at the time of the RO review. In its analysis of the uncertainties in the model, the SE has also taken account of these price changes, to argue that price reductions in 2019 may not be sustainable. The Authority stated that it did not consider this to be an appropriate comparison. This is because the analysis of whether price reductions in the RO are sustainable should only examine the impact of those price reductions on the profitability of the SE. In fact, by doing such an analysis and assuming prices remain constant throughout the business plan period at the levels set in the SE Order, it is clear that the SE would be in a position to earn excess profits which outweigh the potential uncertainties it has highlighted.

42. Given this, the Authority stated it was aware that it could be possible to use the business case model to support further reductions in RO prices below the levels assumed in the business case model, while arguably still being consistent with the principles laid out at paragraph 36.4 above (and in particular, supporting investment in the NBN). However, the Authority did not propose to do this, given the risk it has identified above of having to increase prices again in future if in the longer term, the SE business case proves to be more challenging than anticipated in the interim model and

[7] Although the SE's letter of 13 December referred to a 5% reduction in the price of WBS, this price reduction was not included in the version of the draft RO which was published, meaning that the draft RO price schedule showed no price reductions.

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the adverse impact that such developments would have on the Authority's principles of promoting fair, effective and sustainable downstream competition and investment at all levels of the value chain. Rather, the Authority stated it believed it was appropriate to revisit some of these uncertainties when examining the longer term price control that will be put in place at the time of the RO review.

43. Overall, therefore, the Authority concluded that, even taking into account the uncertainties inherent in it, the business case provides an appropriate starting point for assessing the level of prices for the services covered by it.

44. However, in determining whether this would result in prices for individual services which are appropriate and in line with its principles, the Authority also considered other matters, as well as industry responses to the ROO Consultation.

Responses to the ROO Consultation

45. Stakeholders raised a number of comments in relation to the SE's business model and proposed RO pricing, and the Authority's review of the same. These are set out in detail in the Consultation Report published alongside this SE Order, which also includes the Authority's responses to the same.

46. In summary, however, the Authority does not believe that the comments from stakeholders change its key conclusions on the SE interim business case, as set out in the ROO Consultation. Zain, in particular, raised a number of concerns about the inputs to the interim business case, arguing that demand was likely to be understated, particularly for mobile backhaul, and that costs may be overstated. The Authority accepts some of Zain's conclusions – indeed, in the ROO Consultation the Authority acknowledged that, in its view, the demand for mobile backhaul services included in the interim business case was likely to be understated. However, as also stated in the ROO Consultation, the Authority expects the SE to provide a more detailed economic model of the business, prior to the RO review, at which point demand and cost forecasts will again be reviewed and reset for the price control. This is because in this current exercise, the Authority is setting prices only for the next 12-18 months (i.e., prior to the RO review). As such, demand and cost forecasts beyond this period do not feed directly into this price determination, other than the Authority seeking to ensure that, if prices were maintained at those levels, the SE could reasonably be expected to continue to

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be financially viable. The Authority is comfortable that this is the case with the price terms set out in the SE Order.

47. The Authority notes that OLOs did not comment on the inputs to the interim business case. VIVA (and Zain) argued that prices should be set at cost based levels and therefore objected to the Authority allowing the SE the possibility to earn a return above cost of capital over the period in which these RO charges will be in force. The Authority has responded to these concerns in the Consultation Report.

RO price terms for the Wholesale Bitstream Service

48. In proposing, in the ROO Consultation, appropriate monthly recurring charges (MRC) for WBS, the Authority also reviewed benchmarks provided by VIVA, as part of its response to the RO Consultation, and considered whether, under the price terms set out in the interim business case, and consistent with the principles set out in the draft SE Order, OLOs would have sufficient margin to compete with BRE, given existing Batelco retail prices for broadband services.

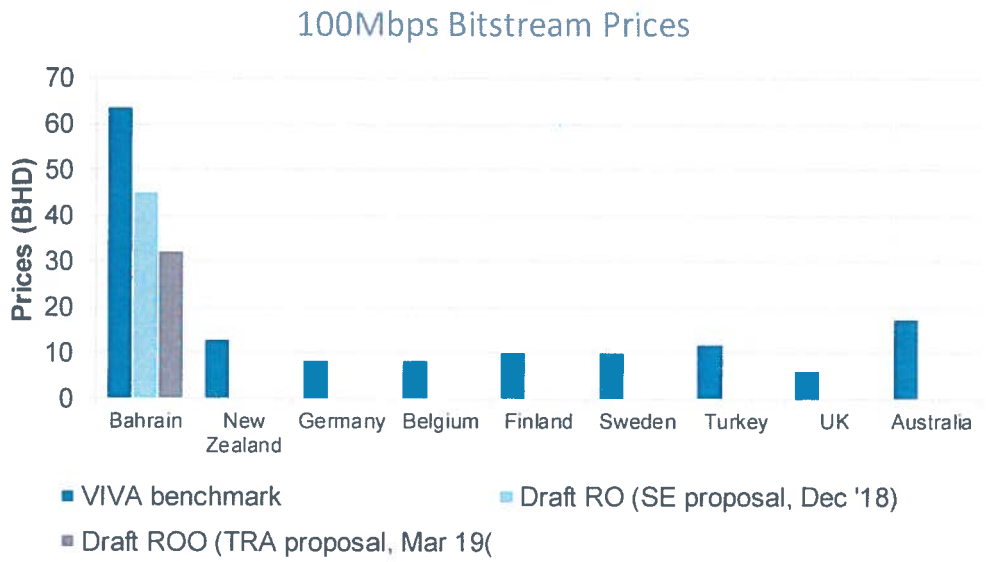
Price Benchmarks

49. In its response to the RO Consultation, VIVA compares the price of 100Mbps bitstream products in a number of European countries, together also with Australia and New Zealand, to the price proposal set out in the draft RO. VIVA's analysis is reproduced below, although has been amended by the Authority to show three price points for Bahrain:

    1. VIVA's benchmark, of BD63.75 per month, which is based on the price of the legacy "Bitstream Plus" service, rather than WBS ("VIVA benchmark");
    2. The MRC for residential WBS 100Mbps proposed by the SE in the draft RO submitted to the Authority in December 2018, of BD45 per month ("RO"); and
    3. The MRC for the WBS 100Mbps service put forward by the Authority in the draft SE Order (in line with the SE interim business case), of BD32 per month .

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Figure 4 VIVA benchmark of 100Mbps bitstream charges



50. At first glance, this suggests prices in Bahrain, under all three price points, are significantly above those elsewhere. As such, broadly, the Authority accepted the results of VIVA's benchmarks. Indeed, a number of other benchmarks from continental Europe confirm VIVA's general findings.

51. However, in responding to VIVA, the Authority set out in the ROO Consultation that there are a number of factors which mean the price differences between Bahrain and other countries are not likely to be as significant as suggested by VIVA. For example, the New Zealand benchmark charge does not include transport costs, while the UK benchmark does not include the line rental charge which must also be paid in the UK.

52. Furthermore, a number of countries no longer have the set of products that the SE proposes to offer. That is, while the SE continues to provide a range of low speed products, other jurisdictions tend to focus on a small set of high speed broadband services. For example:
    - NBN in Australia offers two packages – 50Mbps / 20Mbps (download / upload), and 100Mbps / 40Mbps; while
    - Chorus in New Zealand offers only one bundle below 100Mbps: a package offering 30Mbps / 10Mbps (download / upload).

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53. This implies that all broadband customers in those jurisdictions will be on one of those higher speed products, hence lowering the unit cost that operators incur for those services. In Bahrain, a large share of customers remain on low speed services, such as 10Mbps or below. Unit costs for higher speed services on the fibre network are likely to remain higher if a large share of customers remain on the copper network. The Authority set out, therefore, that a fairer comparison would compare average customer revenues more generally, or the prices of flagship products. For example, the majority of fibre customers in Bahrain are on the 20Mbps product (while 60% of customers remain on 10Mbps and 14Mbps services), for which the price included in the business case model is approximately BD 10. This price is broadly in line with the benchmarks shown by VIVA. For example, further benchmarks identified by the Authority of other island nations show prices at similar levels for 20Mbps products, such as BD 7 and BD 8 in Guernsey and Cyprus respectively.

54. Given this, the Authority concluded that VIVA's benchmarks supported its view that the price levels proposed by the SE in the draft RO for WBS were not appropriate and should be reduced. However, when taking into account other relevant factors, the benchmarks did not suggest that WBS prices needed necessarily to be reduced further below the levels set out in the interim business case for 2019.

Responses to the ROO Consultation on benchmarking WBS charges

55. In its response to the ROO Consultation, VIVA commented on the Authority's analysis and conclusions, as described above. In so doing, VIVA acknowledged that any benchmarks should be used with care, although it stated that because, under Article 57(b) of the Law, the Authority should use either a FL-LRIC model or benchmarks to set prices, the Authority actually had limited scope to consider other factors. VIVA also disagreed with the Authority's proposal that a more valid benchmark would consider average revenues / prices, taking into account take-up of different speed products.
56. The Authority has already set out in the ROO Consultation Report that it does not accept VIVA's interpretation of Article 57 of the Law and does not repeat its reasoning here.
57. As set out in the ROO Consultation, the Authority believes that the benchmarks provided by VIVA for WBS, especially when taking into account the concerns raised by the Authority on those benchmarks and the other benchmarks provided by the

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Authority, do not clearly show that price terms set out in the draft SE Order should be reduced further in the final SE Order. This is particularly the case given the uncertainties inherent in the SE business case. With regards to the specific points made by VIVA:

a. While copper services may still be in use in the benchmarked countries, the pricing of such services is more restricted by higher regulated prices of the local loop (i.e. irrespective of capacity). In Bahrain, a gradient is applied between lower and higher speed services which implies that prices for lower speed services vary and also implies that higher speed service prices can differ more significantly from prices in other jurisdictions.
b. The Authority acknowledges VIVA's acceptance that benchmarks need to be considered with care. However, when taking into account all factors, the Authority does not believe that the benchmarks demonstrate the need, at this time, for further reductions in WBS charges.

Examining the margins available to BRE's retail competitors

58. In line with the principles it has applied in its review, the Authority recognises it is important to ensure that downstream providers have sufficient margin to be able to compete profitably against the retail fixed broadband products already offered in the market. To this end, the Authority compared, in the ROO Consultation, the margins that would be available to OLOs to compete against BRE's headline broadband prices (taken as at February 2019), given the bitstream prices proposed in the SE RO as outlined in the draft SE Order.

This comparison is shown in **Error! Reference source not found.** below.

Figure 8 Margins available given the draft SE RO price terms

Bandwidth	**Proposed WBS price, draft SE RO**	**BRE retail Price**	**Implied margin**
20Mbps downstream / 2.048Mbps upstream	14	20.00	30%

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Bandwidth	**Proposed WBS price, draft SE RO**	**BRE retail Price**	**Implied margin**
30Mbps downstream / 5.048Mbps upstream	22.5	30.00	25%
40Mbps downstream / 5.048Mbps upstream	30	40.00	25%
80Mbps downstream / 10.048Mbps upstream	40	50.00	20%
100Mbps downstream / 10.048Mbps upstream	45	75.00	40%
500Mbps downstream / 50Mbps upstream	135	150.00	10%

59. With the possible exception of the 100Mbps product, the Authority concluded that it did not believe that these margins were sufficient – indeed, it understands that such margins in other countries can often be in the region of 30- 60%.[8]

60. The Authority therefore considered that this was further evidence that WBS prices should be reduced from the levels set out in the draft RO.

61. By way of comparison, Figure 5, below, shows the margins available to OLOs when applying the WBS prices for 2019 from the SE interim business case (assuming no change in retail prices).

[8] For example, based on publicly available information in the UK, margins offered by Openreach are around 50% when compared to BT broadband prices. Information previously supplied by VIVA to the Authority also supports this range of margins.

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Figure 5 Margins available given the interim SE business case price terms

Bandwidth	BC WBS price for 2019	BRE retail Price	Implied margin
20Mbps downstream / 2.048Mbps upstream	10.04	20.00	50%
30Mbps downstream / 5.048Mbps upstream	16.14	30.00	46%
40Mbps downstream / 5.048Mbps upstream	21.52	40.00	46%
80Mbps downstream / 10.048Mbps upstream	28.69	50.00	43%
100Mbps downstream / 10.048Mbps upstream	32.28	75.00	57%
500Mbps downstream / 50Mbps upstream	96.83	150.00	35%

62. This shows that, for all products except the 500Mbps product, the price terms for 2019 included in the interim SE business case should provide sufficient margin for OLOs to compete, while also (as described in the preceding section), allowing the SE to earn a reasonable return on capital employed and having some further headroom to manage the identified residual risks to its business case over the medium term.

63. However, for the 500Mbps product, the Authority considered it would be appropriate to require the SE to increase the margin available to OLOs. Such a change could serve both to incentivise the uptake of the 500Mbps product, while also ensuring sufficient margin for providers offering that service. Given that the average margin across other speeds is around 50%, the Authority proposed, in the draft SE Order, to require the SE to offer the 500Mbps WBS at a price of BD75 per month. Given the limited take-up of

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this service, the Authority was satisfied this change would have very limited impact on the SE's interim business case. In order to maintain the ratio between the prices of residential and non-residential WBS put forward in the draft RO, the Authority also proposed a similar adjustment to the price of the non-residential WBS 500Mbps product.

Responses to the ROO Consultation on WBS margins

64. Only one party made specific comments on the Authority's analysis of broadband margins. Specifically, Kalaam argued that the proposed margins were not sufficient and that retail offers regularly price broadband below the levels of the WBS charges proposed in the draft SE Order. However, Kalaam did not provide any evidence to substantiate this claim and the Authority is not aware of the specific offers to which Kalaam refers. To this end, the Authority is satisfied that the margins available over headline prices should be sufficient. However, the Authority will continue to monitor the market (through, for example, regulatory accounting obligations) to ensure that BRE and SE do not, together, engage in Margin Squeeze and will take any necessary action to prevent such behavior if it does materialize. The Authority does not, at this stage, however, consider it is necessary to further reduce the WBS charges to limit this risk.

Conclusion – WBS price terms (Monthly Recurring Charge)

65. The Authority has reviewed the proposed prices for WBS based on the principles it has set out in the SE Order and taken into account the views and evidence submitted by all parties, covering both the RO Consultation and the ROO Consultation. Given these principles and the Authority's analysis of the SE business case, together with the benchmarking and margin analysis set out above, the SE Order requires the SE to apply the prices for WBS shown below in Figure 6 and Figure 7. For comparison, these tables also show the price terms included by the SE in the draft RO it sent to the Authority in December 2018.[9] The Authority considers that these price terms, as set out in the SE Order are appropriate and in line with the principles it has applied in its review. Specifically, these allow OLOs to compete with BRE's existing retail broadband

[9] No OLO raised concerns about SE's proposal to differentiate prices for services used to supply residential and non-residential customers. The Authority has therefore retained this differentiation although will review more fully, as part of its next RO review, whether this remains appropriate.

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services. Indeed, once implemented these price reductions will mean that since 2017, the price of a 100Mbps residential bitstream connection will have fallen by close to 50%. In addition, and in combination with price terms for other products, allowing the SE the opportunity to earn a reasonable return on its investment, taking into account the uncertainties inherent in its business case and which could lead to it incurring higher than anticipated costs over the next years.

66. Finally, following comments from stakeholders to the ROO Consultation, the Authority has also introduced a specific voice-only bitstream service, such that this can be used by OLOs to continue to serve voice-only retail customers. This has been priced on a "retail minus" basis, taking the current Batelco retail residential and non-residential line rental prices and applying a 20% discount to these prices. This is because the Authority considers it is important to ensure that such voice-only products can still be provided at current price levels.

Figure 6 SE Order price terms (MRC) for WBS – Residential

1. WBS – residential	Draft RO prices put forward by SE	SE Order terms
Voice only		0.928
1.024 Mb / 512 Kb* - Contention ratio 15:1	4.05	2.9
2.048 Mb / 1.024 Mb - Contention ratio 15:1	5.77	4.14
3.072 Mb / 1.024 Mb - Contention ratio 15:1	6.27	4.50
4.096 Mb / 1.024 Mb - Contention ratio 15:1	6.77	4.86
6.144 Mb / 1.024 Mb - Contention ratio 15:1	7.78	5.58

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1. WBS – residential	**Draft RO prices put forward by SE**	**SE Order terms**
8.192 Mb / 2.048 Mb - Contention ratio 15:1	8.78	6.3
10.240 Mb / 2.048 Mb - Contention ratio 15:1	9.79	7.02
16.384 Mb / 2.048 Mb - Contention ratio 15:1	12.8	9.18
20 Mb / 2.048 Mb - Contention ratio 15:1	14	10.04
30 Mb / 5.048 Mb - Contention ratio 15:1	22.5	16.14
40 Mb / 5.048 Mb - Contention ratio 15:1	30	21.52
80 Mb / 10.048 Mb - Contention ratio 15:1	40	28.69
100 Mb / 10.048 Mb - Contention ratio 15:1	45	32.28
500 Mb / 50.048 Mb - Contention ratio 15:1	135	75
1 Gb Aggregation Link	Included in MRC	Included in MRC
10 Gb Aggregation Link	500	358.5

*Note: * There are residential products below speeds of 1 Mbps listed in the RO; however, as the prices for these products are higher than the price for a 1 Mbps product, the*

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Authority proposes that these be rationalised such the 1 Mbps price will apply to all lower speeds.

Figure 7 SE Order price terms (MRC) for WBS – Non-Residential

WBS – non-residential	**Draft RO prices put forward by SE**	**SE Order terms**
Voice only	N/A	1.728
256 Kb/ 64 Kb - Contention 8:1	4.996	3.50
512 Kb/ 256 Kb - Contention 8:1	5.231	3.75
640 Kb/ 256 Kb - Contention 8:1	5.349	3.84
1.024 Mb / 512 Kb - Contention 8:1	5.70	4.68
2.048 Mb / 1.024 Mb - Contention 8:1	6.65	4.77
4.096 Mb / 1.024 Mb - Contention 8:1	8.53	6.99
6.144 Mb / 1.024 Mb - Contention 8:1	10.42	8.54
8 Mb / 2 Mb - Contention 8:1	12.30	10.09
10.240 Mb / 2.048 Mb - Contention 8:1	14.19	11.63
16.384 Mb / 2.048 Mb - Contention 8:1	19.84	16.27
20 Mb / 4.048 Mb - Contention 8:1	30	21.52
30 Mb / 8.048 Mb - Contention 8:1	55	39.45

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WBS – non-residential	**Draft RO prices put forward by SE**	**SE Order terms**
40 Mb / 8.048 Mb - Contention 8:1	55	39.45
80 Mb / 15.048 Mb - Contention 8:1	75	53.80
100 Mb / 20.048 Mb - Contention 8:1	90	64.55
500 Mb / 70.048 Mb - Contention 8:1	250	149.98
1 Gb Aggregation Link	Included in MRC	Included in MRC
10 Gb Aggregation Link	500	358.5

RO price terms for DS and MBS

67. In their responses to the RO Consultation, OLOs also expressed concerns about the proposed price terms for DS and MBS. Again, VIVA, for example, provided benchmarks comparing the proposed SE price terms for DS against point to point Ethernet prices in New Zealand, the UK, Ireland, Germany and the Netherlands. Although these benchmarks showed some variation (with, for example, the price for the 10Gbps Ethernet service in Germany being around three times that in New Zealand), they again suggested that the DS prices proposed by the SE in the draft RO were out of line with experience elsewhere.

68. These benchmarks are reproduced below, although the Authority includes in these charts two price points for Bahrain: the price term (MRC) proposed by the SE in the draft RO and the MRC that the Authority put forward in the draft SE Order.

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Figure 8 Benchmark of 1Gbps DS price

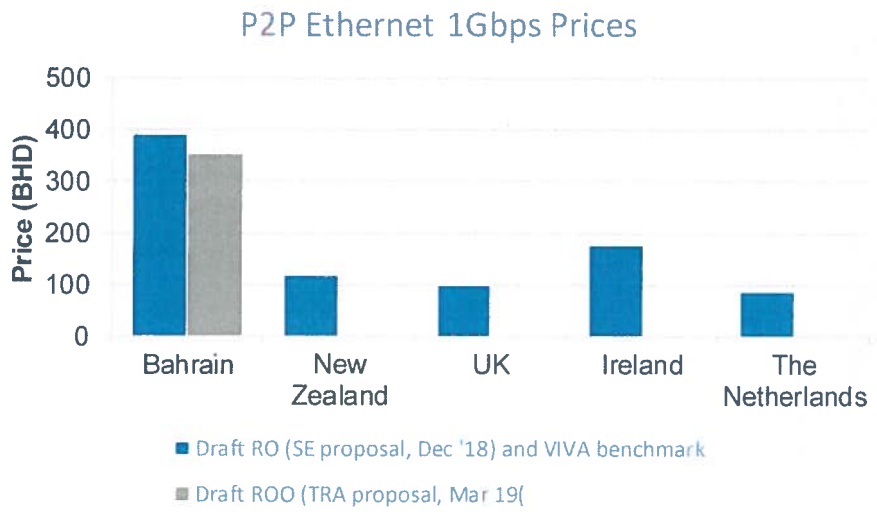
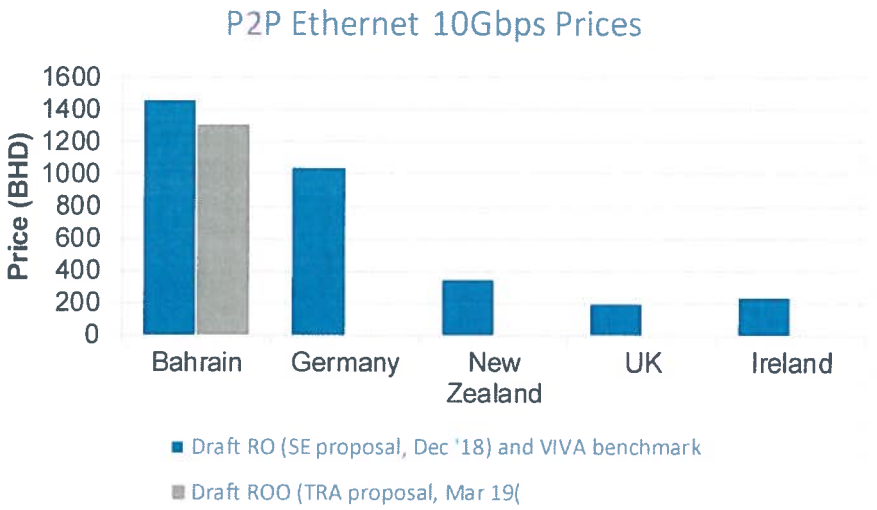


Figure 9 Benchmark of 10Gbps DS price



69. Although the benchmarks suggest that the prices proposed by the SE were above those elsewhere, the Authority set out in the ROO Consultation its view that these benchmarks were inconclusive, particularly given the very small sample size employed

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by VIVA. For example, the Authority found evidence of higher prices in other jurisdictions. For example, Ethernet circuits in Malta are charged at significantly higher prices of ca BD 3,500 for a 10 Gbps service. 10 Gbps services in Guernsey are charged at a similar rate at BD 3,560 while prices in Cyprus are lower at BD 450 for a similar service. This demonstrates a significant variation of prices which could be linked to specific local characteristics.

70. Given this, the Authority also conducted a more detailed examination of the likely costs of DS and MBS in the Kingdom, based on cost information previously provided to it by Batelco, in the context of the determination of transitional prices in 2018.

71. This analysis suggested that while the prices in the interim SE business case for 2019 are still above costs, costs in Bahrain tend to be higher than prices in a number of benchmark jurisdictions.

Responses to the ROO Consultation on the pricing of DS and MBS

72. In responding to the ROO Consultation, VIVA provided updated benchmarks for New Zealand and the UK. According to VIVA, these showed that benchmark prices were between one-third and one-fifth of the proposed price (MRC) in Bahrain for the 1Gbps DS service, with benchmarks for the 10Gbps DS service between one quarter and one eighth of the DS service price.

73. VIVA also stated its belief that MBS prices should not be higher than those for DS.

74. In its response, Zain argued that backhaul prices should be further reduced by 25% (i.e. 30% from the previous price). However, it did not provide any evidence for this view, other than reiterating its view that these services, as inputs to the mobile networks should be priced at cost as a "utility" service.

Conclusion – MBS and DS price terms (Monthly Recurring Charges)

75. Based on its review of the business case, combined with the additional evidence set out above, the Authority concludes that it would be appropriate to require the SE to reduce the prices for DS below the levels included in the draft RO and to incorporate

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into the RO the prices for 2019 assumed in the interim SE business case (i.e., those proposed in the draft SE Order).

76. That is, the Authority does not consider that the submissions made by the parties in response to the ROO Consultation necessitate further reductions in the MRC for the DS service, beyond those reductions set out in the draft SE Order.

77. As set out above and in the main body of this SE Order, the Authority does not consider it is appropriate to move, at this time, to cost based price terms for individual RO products and services. The Authority does intend, however, at the time of the RO review, to introduce the pricing model set out in the NERF.[10] Furthermore, the Authority notes that this is akin to a "utility" model of pricing favoured by Zain.

78. The Authority again notes that its approach to determining the proposed prices set out in the draft SE Order balanced all the evidence available to it, such as service specific cost estimates, the SE's interim business case and international benchmarks – both those provided by VIVA and the additional benchmarks collected by the Authority.

79. The Authority notes that the new benchmarks provided by VIVA are different (lower) from those VIVA previously presented. However, this does not change the conclusion the Authority previously reached. In the ROO Consultation, the Authority identified a number of countries with prices for similar services that are higher than those set out in the draft SE Order for DS, and also highlighted the high degree of variation between price levels across countries. Indeed, VIVA's benchmarks once again demonstrate this point.

80. Furthermore, the Authority does not believe it would be appropriate to set the price terms for DS and MBS based on only one or two benchmarks, without a detailed analysis of how those benchmark price levels were set (including the objectives of the authorities who set them) and to what extent they could be applied in Bahrain without negatively affecting the financial viability of the SE. The Authority has already set out that it is not seeking to set prices equal to forward looking costs as part of this SE Order.

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10 Report on the New Telecommunications Economic Regulatory Framework for the Kingdom of Bahrain, 15 April 2018, Ref: MCD/02/18/005 Final

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As such, identifying price benchmarks from jurisdictions where prices may be based on costs is unlikely to be directly relevant to the situation in Bahrain today.

81. Therefore, the Authority has concluded it is appropriate that the monthly recurring charges for DS should be set at the levels included in the draft SE Order – equivalent to a 10% reduction to those included by the SE in its draft RO.

82. With regards to MBS, and as set out in paragraph 8 of the main body of this SE Order and paragraph 35.1.6 of Annex A to the SE Order, the Authority requires the SE to retain both MBS and DS within the RO, in order to give OLOs a greater range of services from which to choose. The Authority notes that the draft RO included significant differences in the price terms of these services and that VIVA, in particular, has objected to this differential. However, the Authority believes it is appropriate to retain this differential given the different service requirements that are being met by these products, while OLOs should also be able to choose between services, taking into consideration both price and non-price terms for the different services. That is, the Authority believes it is reasonable to allow OLOs (in this case, MNOs) to choose between using the DS and MBS products, taking into account the differences in price and non-price characteristics of these products. The Authority recognizes that, given the price differential, this may lead OLOs to choose DS over MBS. To the extent that the SE wishes to encourage the take-up of MBS, it is free to propose reductions to the charges for that service for the Authority's consideration.

83. Therefore, the Authority also requires, in this SE Order, the SE to apply, from the draft RO terms, a 10% reduction to the monthly recurring charges for MBS , consistent with the price reduction applied to DS in the interim business case. The Authority is satisfied that this reduction in MBS prices should not impact the financial viability of the SE. This is because the interim business case assumes that all mobile backhaul is provided over DS, the cheaper product of the two, rather than MBS. The Authority proposes also to maintain the discount structure included in the MBS price terms.

84. With regards to the discount, the Authority notes that it has not accepted a proposal from the BRE that the SE also apply volume discount terms to WBS. This is because the Authority considers that a volume discount on WBS may be detrimental to competition for fibre broadband services, given the market share of the BRE in that

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market segment. In contrast, MBS is used as an input product to all three mobile licensees' networks and any volume discount scheme is unlikely to have a significant impact on competition, especially given that licensees can also take a DS product at lower monthly recurring charges.

85. Therefore, the SE Order requires the SE to apply the prices for DS and MBS shown below in
86. Figure 10 SE Order price terms (monthly recurring charges) for DS

Bandwidth	Recommended price (BD/month)
500 Mbps	252.00
1,000 Mbps	351.00
1,500 Mbps	441.00
2,000 Mbps	517.60
2,500 Mbps	585.00
5,000 Mbps	868.60
10,000 Mbps	1,314.00
10 Gbps aggregation link	Included in MRC
100 Gbps aggregation link	718.15*

*Notes: *Not included in the business case – 10Gbps aggregation link price included in MRC as per current transitional pricing; 100Gbps aggregation link price has been derived using the ratio between 10Gbps DS and 10Gbps WDC access link prices applied to 100Gbps WDC aggregation link price.*

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Figure 11 SE Order price terms (monthly recurring charges) for MBS

Bandwidth	<50 links (BD/month)	50-99 links (BD/month)	>99 links (BD/month)
500 Mbps	378.00	340.20	302.40
1,000 Mbps	540.00	486.00	432.00
1,500 Mbps	684.00	615.60	547.20
2,000 Mbps	805.50	725.40	644.40
2,500 Mbps	913.50	822.60	730.80
5,000 Mbps	1,368.00	1,231.20	1,094.40
10,000 Mbps	2,088.00	1,879.20	1,670.40
10 Gbps aggregation link			Included in MRC*
100 Gbps aggregation link			1,141.17*

*Notes: *Not included in the business case – 10Gbps aggregation link price included in MRC as per current transitional pricing; 100Gbps aggregation link price has been derived using the ratio between 10Gbps MBS and 10Gbps WDC access link prices applied to 100Gbps WDC aggregation link price.*

87. and **Error! Reference source not found.**. Again, the Authority considers these price terms are appropriate and in line with the principles it has applied in its review set out at paragraph 36.4.1 of Annex A to the SE Order. These services are not used directly to sell retail services to end-consumers and therefore the Authority has not considered the margin available on these services to MNOs. However, the Authority is satisfied that these price terms, when combined with other aspects of the SE Order, will support MNOs' investment decisions in high speed 4G and 5G mobile networks. Indeed, this means that the price of a 10Gbps circuit for mobile backhaul will, upon implementation of the ROO, have fallen by around 60% since 2016. Furthermore, in combination with price terms for other products, the Authority considers that these price terms also allow

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the SE the opportunity to earn a reasonable return on its investment, taking into account the uncertainties inherent in its business case and which could lead to it incurring higher than anticipated costs over the next years.

Figure 10 SE Order price terms (monthly recurring charges) for DS

Bandwidth	Recommended price (BD/month)
500 Mbps	252.00
1,000 Mbps	351.00
1,500 Mbps	441.00
2,000 Mbps	517.60
2,500 Mbps	585.00
5,000 Mbps	868.60
10,000 Mbps	1,314.00
10 Gbps aggregation link	Included in MRC
100 Gbps aggregation link	718.15*

*Notes: *Not included in the business case – 10Gbps aggregation link price included in MRC as per current transitional pricing; 100Gbps aggregation link price has been derived using the ratio between 10Gbps DS and 10Gbps WDC access link prices applied to 100Gbps WDC aggregation link price.*

Figure 11 SE Order price terms (monthly recurring charges) for MBS

Bandwidth	<50 links (BD/month)	50-99 links (BD/month)	>99 links (BD/month)
500 Mbps	378.00	340.20	302.40

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Bandwidth	<50 links (BD/month)	50-99 links (BD/month)	>99 links (BD/month)
1,000 Mbps	540.00	486.00	432.00
1,500 Mbps	684.00	615.60	547.20
2,000 Mbps	805.50	725.40	644.40
2,500 Mbps	913.50	822.60	730.80
5,000 Mbps	1,368.00	1,231.20	1,094.40
10,000 Mbps	2,088.00	1,879.20	1,670.40
10 Gbps aggregation link			Included in MRC*
100 Gbps aggregation link			1,141.17*

*Notes: *Not included in the business case – 10Gbps aggregation link price included in MRC as per current transitional pricing; 100Gbps aggregation link price has been derived using the ratio between 10Gbps MBS and 10Gbps WDC access link prices applied to 100Gbps WDC aggregation link price.*

Other relevant price terms for DS and MBS

88. The Service Descriptions in the draft RO contained provisions that the access seeker (Licensed Operator) would be required to pay an additional non-recurring fee for mobile backhaul services (i.e., MBS and DS) where the deployment cost of additional passive infrastructure required to provide the specified link is more than three (3) times the monthly recurring charge for that service.

89. As also set out in the draft SE Order, the Authority does not consider that this is appropriate. This is for two reasons. Firstly, the SE is required, under NTP4 and, subsequently, the STM, to deploy fibre to 100% of cell sites. As such, the SE interim business case should already include the deployment costs of these fibre connections. Secondly, given its position as a monopoly provider of fibre infrastructure, the SE should be in a position to recover these costs through the geographically averaged wholesale charges in the RO (i.e. whereby the charges in the draft RO are set at a

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single level regardless of the cost of individual links, with links provided in higher cost areas being implicitly subsidised through returns earned on links provided in lower cost areas). However, the Authority will require MNOs to commit, in these circumstances, to a two-year minimum commitment period in order to prevent the risk of SE investment becoming stranded.

Prices for WDC

90. Finally, the draft RO provided by the SE also included price terms for WLA and WDC.

91. However, as set out in paragraph 35.1.4 of Annex A to the SE Order, the Authority requires that the WLA service is not included in the SE RO. Given this, the RO price schedule will only cover the WDC service. However, to ensure that licensees who currently purchase WLA are able to migrate seamlessly to a WDC service, the SE must offer the WDC product at speeds incorporating those speeds previously offered by Batelco for WLA only.

92. Apart from differences in the eligibility and use criteria for the services, WDC is not fundamentally different, from a technical perspective, from the DS and MBS the SE proposes to supply to MNOs. However, the price terms proposed by the SE in its draft RO for WDC were higher than those proposed for DS / MBS, with a 1Gbps WDC product more than two times more expensive than the DS product of the same capacity.

93. This implies that there could be scope for reducing the prices of the WDC product in the SE RO. Therefore, for the purposes of the draft SE Order and in line with the principles applied by the Authority (and in particular, the need to enable investment in the NBN and ensure the SE is financially viable), the Authority proposed to require the SE to include a 10% reduction in prices for the WDC product, to ensure that the RO was consistent with the interim SE business case (which assumed a 10% reduction in these charges).

94. The Authority did not, in the ROO Consultation, propose to require the SE to implement further price reductions for WDC. This was because of the considerable revenues associated with this service for the SE (meaning that any further reduction could have

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a significant impact on the SE business case) and the fact that respondents have raised limited concerns in relation to the prices of these services. [11]

Responses to the ROO Consultation on the pricing of WDC

95. Again, there were relatively limited comments from OLOs on the proposed price terms (monthly recurring charges) for WDC and the Authority has responded to any individual points within the Consultation Report. Zain, however, stated its belief that WDC is a "resale" product and therefore should be priced to ensure a reasonable margin for downstream competitors, although not, therefore, necessarily be priced at cost. This is because, according to Zain, any reductions in the charges for WDC would be passed on as lower retail prices and not benefit, in the long run, either consumers or the industry.

Conclusion – WDC price terms (Monthly Recurring Charges)

96. Taking into account the analysis presented in the ROO Consultation and the responses the Authority received to that, the SE Order requires the SE to apply the prices for WDC shown below in **Error! Reference source not found.**. For comparison, these tables also show the price terms included in the SE's draft RO.

97. In line with the SE Order, the Authority also requires the SE to offer a 100Gbps WDC service. The Authority has therefore determined this price by extrapolating the implied tariff gradient applying to the WDC product for capacities ranging from 1Gbps to 10Gbps.

98. As set out above in relation to DS and WBS, the Authority also considers that there should be no additional non-recurring fee levied on OLOs when a WDC service is supplied to either a small business building or cell site that is not connected with fibre.

11 For example, reducing prices by a further 15% could reduce SE revenues by up to BD1 million. If the other uncertainties highlighted in the business case which could affect 2019 also materialise, such price reductions could begin to affect the viability of the SE.

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Figure 12 Draft SE Order price terms for WDC (BD / month)

Bandwidth	Draft RO price term (WLA)	Draft RO price term (WDC)	Proposed price term
19.2 kbps	58.51	276.40	52.66
14.4 kbps	58.51	276.40	52.66
9.6 kbps	58.51	276.40	52.66
64 kbps	58.51	276.40	52.66
128 kbps	60.96	276.40	54.87
256 kbps	64.60	276.40	58.14
512 kbps	67.70	276.40	60.93
1 Mbps	73.80	276.40	66.42
2 Mbps	86.30	276.40	77.67
4 Mbps	134.90	276.40	121.41
8 Mbps	163.50	276.40	147.15
10 Mbps	175.30	276.40	157.77
15 Mbps	200.90	276.40	180.81
20 Mbps	223.10	276.40	200.79
25 Mbps	243.20	276.40	218.88
50 Mbps	325.40	276.40	292.86
75 Mbps	392.30	348.30	313.47
100 Mbps	450.90	348.30	313.47
150 Mbps	553.60	405.80	365.22

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Bandwidth	Draft RO price term (WLA)	Draft RO price term (WDC)	Proposed price term
200 Mbps	644.10	445.30	400.77
300 Mbps	803.10	532.40	479.16
400 Mbps	943.50	601.50	541.35
500 Mbps	1,071.70	664.30	597.87
622 Mbps	1,610.00	734.80	661.32
750 Mbps	1,610.00	813.30	731.97*
1 Gbps	1,610.00	936.10	842.49
1.25 Gbps	N/A	1,048.00	943.20*
1.5 Gbps	N/A	1,152.00	1,036.80*
2 Gbps	N/A	1,342.90	1,208.61*
2.5 Gbps	N/A	1,517.20	1,365.48
5 Gbps	N/A	2,400.20	2,160.18*
7.5 Gbps	N/A	3,009.80	2,708.82*
10 Gbps	N/A	3,551.30	3,196.17
100 Gbps	N/A	N/A	12,406.96**
1 Gbps aggregation link	200	N/A	180.00
10 Gbps aggregation link	N/A	500	450.00*
100 Gbps aggregation link	N/A	500	1,746.82*

*Notes: * Not included in the business case – 10Gbps aggregation link price has been derived using the same 10% reduction applied to other WLA/WDC products; 100Gbps aggregation link price has been derived using the ratio between 10Gbps aggregation and access link prices applied to 100Gbps access link price.*

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*** based on extrapolating from capacities 1Gbps to 10Gbps using the formula price = 13.969 x capacity$^{0.5897}$*

RO PRICE TERMS FOR THE OPTICAL WAVELENGTH SERVICE

99. The Authority notes that OWS could, in some circumstances, be a substitute to the active mobile backhaul products (i.e., MBS and DS) included in the SE draft RO. This is because MNOs could choose to use OWS as a source of backhaul or core connectivity: for a given link, an MNO[12] could substitute multiple DS or MBS circuits for a single OWS, due to the greater available capacity on a wavelength or to benefit from direct access to the transport layer of the network, or both.[13]

100. The Authority is also aware that the interim SE business case model does not consider OWS. Therefore, in identifying appropriate price terms for this product, the Authority has had careful regard to the potential impact that OWS could have on the viability of the SE, in line with the principle of promoting investment in the NBN.

101. Given this, the Authority set out, in the ROO Consultation, that it believed it is reasonable to link the pricing of OWS to the price schedule set out in the draft SE Order for the active backhaul products. This is because, by linking the pricing of these two products, the Authority can ensure that MNOs receive efficient pricing signals about the relative resource costs of each product, while also limiting the potential for substitution between these products caused only by the prices having been set on different bases. For example, if the price of OWS was set equal to efficient cost of providing that services (including a reasonable rate of return), this could lead to significant substitution from DS / MBS to OWS. Although such substitution may, in the short term, benefit MNOs, the Authority does not believe it would be to the overall benefit of the market as it could undermine the viability of the SE and lead to instability in the market. This is because such substitution would, effectively, be based on MNOs "arbitraging" between the different pricing methods used to set the monthly recurring

12 As set out in the Schedule 6.5 – Optical Wavelength Service (OWS) Service Description – of the Draft Amended Reference Offer, the OWS product will only be available to MNOs.

13 The Authority notes that the capacity available over a wavelength may depend on the type of equipment that SE uses in its transport network.

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charges for OWS and DS/MBS, respectively, rather than differences in the actual underlying costs of the services.

102. In linking the price of OWS to the active backhaul products included in the draft RO, the Authority considered, in the draft SE Order and ROO Consultation, whether to make that link between the price of OWS and DS, or the price of OWS product and MBS. In so doing, the Authority considered that the OWS product will enable MNOs to control QoS and so potentially benefit from enhanced QoS compared to using the existing active backhaul products. It will also give MNOs greater ability to manage their networks and services. As such, the Authority recognized that OWS does not map directly to either MBS or DS. However, the MBS product offers higher QoS (e.g., less jitter, lower round time delay and so on) than DS. Given that one of the objectives of OWS is to offer MNOs higher quality of service than either DS or MBS, the Authority considered that it would be most reasonable to link the price of OWS to MBS, rather than DS. This is because MBS would appear to be the closest substitute product to OWS.

Deriving the appropriate price term

103. To limit the risks of inefficient substitution between MBS and OWS, the Authority believes it is important to ensure that the pricing of the OWS product also reflects, as much as possible, the characteristics of that product. One key element to consider is the capacity offered over a wavelength. This is because MBS is sold on a capacity basis (i.e., with different tariffs for different service capacities). In contrast, OWS will be sold by wavelengths. However, through the interface to its optical network equipment, the SE will still be able to control the capacities that MNOs will be able to utilise over the OWS, meaning that, in effect, the OWS product can also be sold on a capacity basis.

104. Specifically, as set out in the draft OWS Service Description in Schedule 6.5 – Optical Wavelength Service (OWS) Service Description of the Draft Amended Reference Offer which was included in the ROO Consultation, the Authority proposed to require the SE to offer the OWS product in accordance with the ITU-T recommendation G.709 and in the form of OTU3 and OTU4 signals, corresponding approximately to capacities of 40Gbps and 100Gbps. While other OTU signals,

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corresponding to lower capacities, could also be offered, the Authority does not propose to include those in the OWS Service Description for the SE's RO (as included in this SE Order), on the basis that such lower capacities can be met through the MBS product.

105. The Authority proposed, therefore, to set the price for the OWS product by extrapolating the price schedule for MBS to derive equivalent prices for a 40Gbps and a 100Gbps MBS product and to use this as the basis for the OWS tariffs. It believes this most appropriately limits the risk of any cannibalisation of the demand for MBS and so limits the risk to the SE business case, while also ensuring that should MNOs have a technical requirement for the OWS product they will be able to access such a product, at prices that are consistent with other services in the RO.

106. The Authority has considered, in the ROO Consultation, whether any further adjustments should be made to those prices in order to derive an appropriate OWS price (such as adjustments to reflect the costs that the SE will avoid, over the longer term, by providing OWS rather than MBS).

Considering further adjustments to the price of anchor MBS link.

107. By deriving a price for OWS according to the price of the MBS product, the risk of any inefficient substitution between OWS and MBS and hence the risk to the viability of the SE, should be limited. However, this would also mean that, in the long run, OWS would be more expensive for an OLO than using MBS, as this option does not take into account the costs the OLO incurs itself when using this service. While this could be reasonable, if this additional cost is offset by the additional benefits MNOs enjoy by using a wavelength service, it also risks undermining the demand for OWS.

108. The Authority therefore, also considered in the ROO Consultation, adjusting the implied prices of the higher capacity MBS links to account for the costs that the SE will, in the longer term, save by MNOs switching demand from MBS (and DS) to OWS (or equivalently), as well as the additional costs that MNOs would incur when using OWS. The Authority notes that such a pricing approach would be akin to the "active minus"

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approach proposed by Ofcom for pricing dark fibre services.[14] If applied correctly, and leaving aside other non-cost advantages of the OWS, this could then leave both the MNOs and the SE indifferent from the point of view of each party's business case, between which service the MNO takes.

109. In considering such an approach, the Authority noted that the transport related infrastructure and equipment including DWDM equipment represents 55% of costs in Batelco's 2016 regulatory accounts for leased line services. Taking the network costs for leased line services as a proxy for MBS / DS services the Authority believes this could provide a possible basis for estimating the costs the SE would avoid. This could suggest that it would be appropriate, in deriving the price terms for OWS, to deduct 45% from the price of the theoretical MBS product. However, the Authority is aware that this estimate of the avoided costs is necessarily subject to some error, due to the level of granularity in Batelco's regulatory accounts.

ZAIN'S PROPOSED APPROACH TO THE PRICING OF OWS

Following one of the workshops the Authority held with Licensees, Zain provided the Authority with a bottom-up estimate of the costs of providing OWS. This was provided to support Zain's view that it would be appropriate to price OWS at a price equivalent to the price of a 2.5Gbps DS link. Indeed, according to Zain's estimate, the cost of OWS would be below such a tariff.

Zain's cost estimate is derived from a number of inputs related to the dimensioning of the network, unit costs of equipment, the costs of network roll out (e.g., the cost of laying duct and fibre cable) and assumptions on the capacity of wavelengths available through this equipment and infrastructure.

As set out above, the Authority does not believe it would be appropriate to require the SE to offer, at this time, OWS priced at incremental cost. Furthermore, while the Authority accepts the principle of linking the price of OWS to the pricing of the existing RO backhaul products, it does not believe that the 2.5Gbps product should form the basis for this link –

14 Ofcom, Business Connectivity Market Review, 2016. Although this was later revoked, the Authority understands this was due to a procedural issue related to market definition and not related to the proposed pricing of a dark fibre service.

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because of the considerably greater capacity that can be carried over one Lambda wavelength.

Nevertheless, the Authority reviewed the reasonableness of Zain's cost estimation, and used this as a further cross-check against its tariff proposal. Based on its review, however, the Authority concluded, in the ROO Consultation, that Zain's cost estimate was unlikely to provide a reasonable estimate of the true economic cost of the OWS in Bahrain. For example:

- The inputs and assumptions used in Zain's calculation are not appropriately documented. In a number of cases this means it is not possible for the Authority to verify them.

- The calculation does not make any assumptions regarding the utilisation of equipment and infrastructure. Rather, it implicitly assumes that all infrastructure is fully utilised. This means that, in the event that the OWS price was set equal to the cost estimate provided by Zain, the access provider (i.e., the SE) would only recover its cost if the equipment and infrastructure was fully utilised. The Authority considers that such a scenario is unlikely, given the necessary provision of spares for cases of faults, and variations of traffic and service requirements across the network.

- The calculation also takes no account of the cost capital of 9.5% or operating expenses and therefore understates economic costs.

Responses to the ROO Consultation on the pricing of OWS

110. As set out in more detail in the ROO Consultation Report, both Zain and VIVA commented on the proposed price terms for OWS.

111. As with MBS and DS, Zain again argued that OWS is a utility service and therefore should be priced at much lower levels than set out in the draft SE Order. It did not make a specific price proposal although it also sought to rebut the Authority's views on its own (i.e., Zain's) cost estimate for OWS.

112. VIVA provided a price benchmark from Openreach and argued that this showed that the comparable product offered by Openreach was between one-thirteenth and

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one-twentieth of the prices proposed in the draft ROO. It argued that if the average gap between price benchmarks and the draft SE Order price terms had also been applied to OWS, then the price of OWS should be around five times that of the benchmarks – equivalent to reducing the proposed price by 50—75%. VIVA then argued that the proposed price terms could undermine MNOs' business cases for 5G and small cell roll out.

113. Other parties did not comment specifically on OWS pricing. Although the SE suggested it did not support the proposed price terms, it did not make alternative proposals.

Conclusion – OWS Price terms (monthly recurring charges)

114. Given that this is the first SE Order imposed on the SE, the uncertainties highlighted above in respect of the SE business case and the fact that this is the first time a OWS product has been introduced in the Kingdom, the Authority requires the SE, in the SE Order, to set a monthly recurring charge for the OWS product as set out in **Figure 13**, below. The Authority believes that such terms are consistent with the principles set out above – in particular, these terms should continue to support investment in the NBN, while also supporting MNOs in deploying high speed 4G and 5G mobile networks.

115. The Authority does not consider it would be appropriate to reduce the price terms for OWS based on the benchmark information provided by VIVA. In particular, the Authority notes that a single country does not represent a reasonable sample for a benchmark. Furthermore, the Authority notes that the description of the Openreach service Viva refers to explicitly prohibits the use of the optical access product in the core of the network.15 The service also considers the use of the product for a number of capacities that the Authority clearly considered out of scope for OWS. As such, this differs significantly to the OWS Service Description in the draft SE Order that was consulted on in the ROO Consultation and that in this final SE Order. Finally, even if the services were equivalent, it is not clear to the Authority that the price benchmark

[15] Openreach, "Optical Spectrum Access: OSA FSP3000 (inc. Filter Connect) and OSA XG210 Filter Connect", October 2018

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provided by VIVA is complete. That is, the benchmark VIVA seems to refer to is for a single equipment unit for establishing an optical network link.16 It seems at least two of those units would be required for establishing such a link, while the access seeker would also have to pay a charge per meter for the length of that link.

116. The Authority also notes that Zain has again referred to pricing OWS as a utility product. However, for the reasons set out in the ROO Consultation and the ROO Consultation Report and reiterated above, the Authority does not consider it is appropriate to use different approaches for pricing OWS and other products which can be used for backhaul. It also notes Zain's response to its (the Authority's) review of Zain's own pricing proposal. However, again, as set out above, it does not consider that a bottom-up cost estimate is an appropriate basis for setting the OWS monthly recurring charges at this time.

117. Finally, the Authority notes that no party commented on its proposal to link OWS prices to the price terms for MBS or DS, or on the Authority's alternative consideration to set a price based on an "active minus" approach. As such, the Authority has maintained the approach set out in the ROO Consultation. It does, however, recognize that the OWS product will be a new product for the sector in the Kingdom. It is, therefore, committed to monitoring the take-up of the service, and how this affects the take-up of other mobile backhaul products, in order to review the appropriate price terms for OWS in more detail, at the time of the RO review.

Figure 13 SE Order price terms (monthly recurring charges) for OWS (BD / month)

1. Signal	**Price term**
OTU3/OTU3e*	4,524
OTU4*	7,646

16
https://www.openreach.co.uk/orpg/home/products/pricing/loadProductPriceDetails.do?data=NYi8APidowr%2Bbghg2bp1ITA1Qq62Iq84hjXAzqsrsMlZ6rNZujnCs99NbIKJZPD9hXYmiijxH6wrCQm97GZMyQ%3D%3D

*Note: *Prices extrapolated on the basis of 500Mbps to 10Gbps MBS prices and the functional relationship derived thereof at price = 547.09 x capacity* $^{0.5727}$

118. In addition, and in line with the principle of linking the pricing of OWS to the pricing of the MBS, the SE should also be able to charge MNOs a non-recurring fee of BD400 as an installation and configuration charge for OWS Connection and Change Request.

PRICE TERMS FOR THE FIBRE FRONTHAUL SERVICE AND FACILITIES ACCESS SERVICE

119. In the draft RO Consultation, the Authority set out the possibility that the FFS could be supplied in one of two ways. Firstly, the FFS could be supplied by the SE, with the SE taking responsibility for the deployment of any required fibre infrastructure. Alternatively, given the nature of the FAS, MNOs could be allowed to self-provide the FAS links. Under the first approach, the ROO Consultation proposed that price terms should be set on a bespoke basis, while under the second approach the Authority proposed to allow the SE to levy on MNOs a monthly recurring charge to cover the cost it would incur in maintaining and monitoring the links, carrying out any necessary repairs and to make an appropriate contribution to common costs. However, no specific amount was proposed by the Authority.

Responses to the ROO Consultation on the pricing of FFS

120. In responding to the ROO Consultation, VIVA argued that the Authority should set price terms for FFS to be included in the SE RO, in order to prevent the SE from being able to game the price-setting process. It then proposed, in its ROO Consultation response, two possible price mechanisms: a fixed charge, equivalent to the charge levied by Chorus in New Zealand for a point to point dark fibre service, and a per metre charge. On the latter, VIVA then stated (in its response to Question 4 of the ROO Consultation) that it had previously demonstrated to the Authority that the monthly rental fee for duct should be 47 fils per metre per month.

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Conclusion – FFS and Facilities Access Price terms

121. In their responses to the ROO Consultation, MNOs also made a number of comments related to the proposed service description of the FFS. Having taken into account these comments (as summarized in the Consultation Report), the Authority has amended the FFS Service Description from that included in the draft SE Order. That is, the SE Order and the relevant Service Descriptions in Schedule 6 of the ROnow consist of two related Service Descriptions:

- The Service Description for the Fibre Fronthaul Service, which describes the process and terms and conditions by which fibre cables for fronthaul will be deployed in SE duct; and
- A related Service Description for the Facility Access Service, which describes the process and terms and conditions by which MNOs will rent duct space from the SE, through which the FFS will be supplied.

122. As a result of this, the Authority believes it is also reasonable to move away from having purely bespoke charges for this service. By so doing, the Authority believes it will reduce the possibility for the SE to unduly delay the provision of FFS or provide the service on different terms to particular MNOs. In particular, the Authority will require:

- The Access Seeker (MNO) wishing to use the FFS, to pay Non-Recurring Charges to cover the Application, Field Studies and Installation processes.
- The SE to then maintain that fronthaul fibre, including carrying out repairs to the fronthaul fibre in the event of any damage caused to it which is not the fault of the Access Seeker.
- The Access Seeker to pay to the SE a monthly rental charge for the duct space (FAS) used in the provision of the FFS, together with all necessary ancillary charges, as set out in Schedule 3 (Pricing) and consistent, as set out below, with FAS charges.

123. Given this, the SE is required to set out in its RO, a fixed, per metre monthly recurring charge for the duct rental aspect of the FAS and which should apply where fronthaul fibre is deployed by MNOs in SE duct infrastructure.

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124. The FFS is not covered by the SE's interim business case. As such, this does not provide a direct input to determining an appropriate charge for this service. However, the business case model does include duct rental (FAS) revenues for the existing (legacy) duct rental service provided by Batelco to OLOs, with these revenues being based on the duct rental charge included in Batelco's existing RO of 189 Fils per metre per duct bore per month. The Authority therefore requires the SE to apply this duct rental charge for the FFS. No additional charges shall be levied by the SE on MNOs for the maintenance and monitoring of those links.

125. The Authority notes that this is above the charge level proposed by VIVA in its response to Question 4 of the ROO Consultation. However, VIVA has not provided any evidence to the Authority in support of its proposal. Given this, the Authority proposes to maintain the duct rental charges, and all FAS charges, as set out in the current Batelco wholesale RO in force immediately prior to the effective date of this SE Order.

PRICE TERMS FOR OTHER SE RO PRODUCTS

126. As set out in the main body of the SE Order, the SE shall also include in its RO, the following products taken from Batelco's existing wholesale Reference Offer (in force immediately prior to the effective date of the SE Order), which shall be made available to BRE to continue to serve existing customers of these services:

- The Unbundled Metallic Path Service;
- The Service Node Facilities Management Service;
- The UMP Backhaul Service; and
- The UMP Specific Information Service.

127. In including these services in its RO, the SE shall migrate all price terms from the existing Batelco wholesale RO.

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ANNEX C

Non-price terms of RO Services

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Schedule 1 - Main Body Terms

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THIS REFERENCE OFFER IS MADE BY:

NBNetCo (also referred to as the "SE" or "Access Provider")

ON: 30 May 2019

BACKGROUND:

A. Under Article 40(bis)(a) of the Telecommunications Law (the "**Law**"), it is stated that the Authority "*... shall make the Fixed Telecommunications Infrastructure Network License available. Unless the Authority determines otherwise, non-holders of this license shall not deploy or maintain a fixed telecommunications infrastructure in the Kingdom, including in relation to the deployment and ownership of ducts and fibre optics.*" On 30 May 2019 the Authority, pursuant to the requirements of Article 40(bis)(a) of the Law, granted the SE the Fixed Telecommunications Infrastructure Network License (the "**SE License**").

B. The SE License requires the SE to provide all Licensed Operators with wholesale services and products on the terms set out in this Reference Offer and/or as required by the Law and/or the SE License.

C. Pursuant to section 4.9 of the SE License, the SE is required "*At the request of the Regulator and/or every twenty-four (24) months (whichever is the shorter)... [to] submit a draft Reference Offer for the Regulator's approval within a period of time determined by the Regulator*".

D. Pursuant to section 4.10 of the SE License, following approval by the Authority of the draft Reference Offer, the SE shall "*within two weeks of the approval... publish the Reference Offer in the version approved on its website... Any proposed change (including updates) to the terms of the Reference Offer shall require the prior written approval of the Regulator*".

E. Pursuant to section 4.1.2 of the SE License the SE is obligated to abide by the terms of this Reference Offer.

F. Pursuant to section 27.1 of the SE License, the SE is obligated, from the Effective Date of the SE License, to provide the Licensed Services in accordance with the Reference Offer.

G. All terms used but not otherwise defined shall have the meanings ascribed to them in the Law or the SE License (as appropriate).

1 UNDERSTANDING THE STRUCTURE OF THIS REFERENCE OFFER

1.1 This Reference Offer comprises:

(a) Clauses 1 to 6, which are the Main Body Terms of this Reference Offer;

(b) Reference Offer – Schedule 2 – Notification and Acceptance of Service Request,

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and New Service Request;

(c) Reference Offer – Schedule 3 – Pricing;

(d) Reference Offer – Schedule 4 – Billing;

(e) Reference Offer – Schedule 5 – Forecasting;

(f) Reference Offer – Schedule 6– Service Descriptions;

(g) Reference Offer – Schedule 7 – Service Levels Schedule;

(h) Schedule 8 – Dictionary; and

(i) Schedule 9 - Supply Terms.

2 MAKING AN AGREEMENT UNDER THIS REFERENCE OFFER

2.1 The Access Provider considers that it is valuable to establish one single integrated contracting framework between the Access Provider and each Access Seeker. As such, the Access Provider has developed this Reference Offer.

2.2 The Supply Terms relate only to the supply of wholesale services set out in the Schedules of the Reference Offer.

3 SUPPLY OBLIGATION

3.1 If, in accordance with Schedule 2 – (Notification and Acceptance of Service Request, and New Service Request as appropriate) of the Reference Offer, a Service Request for a specified Service has been submitted by an Access Seeker authorised to make such a Service Request and has been accepted by the Access Provider, the Access Provider shall supply the requested Service:

(a) at the Charges specified in Schedule 3 – (Pricing) of the Reference Offer or as otherwise approved by the Authority;

(b) in accordance with the Supply Terms set out in Schedule 9 – (Supply Terms) of the Reference Offer.

3.2 The Access Provider shall not provide, nor shall it enter into an agreement to provide, services outside the scope of Schedule 6 - (Service Descriptions) of the Reference Offer, without the prior written approval of the Authority.

3.3 The timetable for the Access Provider to comply with processing orders and provisioning of Services shall be in accordance with Schedule 7 – (Service Levels Schedule) of the Reference Offer.

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4 VARIATION OF THE REFERENCE OFFER

4.1 The Access Provider (on first obtaining any approval from the Authority as required by the SE License), and subject to the terms of section 5.2 of the SE License, may amend or vary the Reference Offer, including:

(a) offering any New Service and any amendment or variation to the Reference Offer arising from the New Service, in accordance with clause 6; or

(b) cancelling any Service and any terms or conditions, and any amendment or variation to the Reference Offer arising from the cancellation of that Service.

5 STRUCTURE OF AGREEMENTS

5.1 The Access Provider agrees to provide and the Access Seeker agrees to procure the supply of Services in accordance with, and incorporating the following documents, whether physically assembled as a single document or not:

(a) Schedule 9 – The Supply Terms;

(b) The relevant Service Descriptions set out in Schedule 6 (Service Descriptions) of the Reference Offer;

(c) Schedule 2: Notification and Acceptance of Service Request, and New Service Request;

(d) Schedule 3: Pricing;

(e) Schedule 4: Billing;

(f) Schedule 5: Forecasting;

(g) Schedule 7: Service Levels Schedule;

(h) Schedule 8: Dictionary; and

(i) Joint Working Manual (once developed by the Access Provider in conjunction with Licensed Operators, taking utmost account of any instructions from the Equivalence Compliance and Technical Committee ("**ECTC**"), in accordance with the terms and timelines in the Reference Offer Order).

6 ADDING NEW SERVICES TO THE REFERENCE OFFER

6.1 The following is the framework that the Access Provider shall use for the development of New Services, which a party may wish to add to the Reference Offer. If an Access Seeker wishes the Access Provider to supply to it a New Service, it may submit to the Access Provider a written request to that effect ("**New Service Request**") pursuant to Schedule 2 (New Service Request).

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6.2 When making a New Service Request the Access Seeker shall ensure it includes:

(a) a reasonably detailed description of the proposed New Service;

(b) an outline of the technical and functional specifications which the Access Seeker considers should apply to the New Service;

(c) the Access Seeker's opinion of the likely scope of the New Service including a preliminary forecast of the Access Seeker's' expected use of the New Service.

6.3 On receipt by the Access Provider of a New Service Request from an Access Seeker, the Access Provider shall promptly notify other Licensed Operators of the New Service Request and shall provide updates to the other Licensed Operators at reasonable intervals throughout discussions and development of the New Service.

6.4 The Access Provider will consider in good faith any New Service Request provided to it. The Access Provider shall notify the Access Seeker within one (1) week of the receipt of the New Service Request, and propose a reasonable timeframe for the Access Provider and the Access Seeker to meet to discuss the New Service Request.

6.5 If, after preliminary discussions, the Access Provider and the Access Seeker agree to explore in detail any of the relevant conditions (technical, commercial, legal, etc) which might apply to the supply of the New Service, or if the Access Provider is obliged to provide the New Service within the regulatory framework applicable in Bahrain, the parties shall as soon as reasonably practicable refer the matter to the ECTC for discussion and/or development of the following:

(a) an appropriate agreed technical and functional definition of the New Service and outline of its scope;

(b) appropriate commercial terms applicable to the scoping, development, testing, implementation and supply of the New Service, including:

(i) the charges and pricing regime to apply to any or all of those activities considering the likely time and resources required;

(ii) the framework, dependencies for, and scope of, any proposed testing and acceptance processes;

(iii) a draft timetable for the scoping, development, testing, implementation and supply of the New Service; and

(iv) any other matters relevant to the New Service Request.

6.6 When the ECTC has concluded those preliminary discussions the Access Seeker, taking into account the ECTC's conclusions, shall:

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(a) submit to the Access Provider a comprehensive Statement of Requirements, setting out in detail the proposed aspects of the New Service as identified in clause 6.5;

(b) provide to the Access Provider any further information the Access Provider reasonably requires to enable it to properly scope, develop, implement or supply the New Service; and

(c) revise and reissue the Statement of Requirements as required by the Access Provider where the Access Provider considers that the Statement of Requirements does not properly reflect the positions covered in the discussions in the ECTC.

6.7 Once a Statement of Requirements is finalised, the Access Provider will prepare a New Service Proposal applicable to the New Service which New Service Proposal shall

(a) be submitted to the Authority for approval; and

(b) published by the Access Provider for general availability, as part of a Reference Offer.

6.8 The parties may consider this process to be at an end if:

(a) matters negotiated between them including the terms of the Statement of Requirements or the New Service Proposal and relevant commercial terms cannot be agreed within ninety (90) days of the receipt of the New Service request, or any lesser period set out in the Law in respect of specific services; or

(b) there is no legal obligation on the Access Provider to provide the New Service; or

(c) without prejudice to any duty of confidentiality, the other party has failed to treat any information arising out of or in connection with the discussions between them as confidential.

6.9 Negotiations in relation to the supply of a New Service shall continue while the parties are engaged in any dispute resolution, provided that:

(a) the Access Seeker demonstrates financial stability (failing which the continuation of negotiations shall be at the Access Provider's discretion); and

(b) the negotiations are strictly confidential and without prejudice.

6.10 The Access Provider considers that the following table gives a reasonable indication of the timescales for the development and implementation of New Services. An ability to comply with the timetable depends on the timely delivery of information and reply to

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correspondence; prompt attendance at meetings by the right personnel; a commercial approach to negotiation; the complexity of the New Service sought and the availability of access services necessary to support the New Service; timely availability and delivery of equipment and other factors. A particular case may vary between being Simple, Intermediate or Complex at different stages of the process.

	Simple Case	**Intermediate Case**	**Complex Case**
Initial Processing of New Service Request and arrangements for preliminary discussions	One week	Two weeks	Three weeks
Discussions between Operators	Two weeks	Four weeks	Six weeks
Planning for New Service	One week	Two weeks	Four weeks
Development and Testing of New Service	One week	Four months	Six months
Implementation of New Service	One month	Four months	Six months

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Schedule 2.1 – Notification and Acceptance of Service Request

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SCHEDULE 2.1 – NOTIFICATION AND ACCEPTANCE OF SERVICE REQUEST

DEFINITIONS

Capitalised terms not defined in this Schedule are defined in Schedule 8 of this Reference Offer. Terms defined in this Schedule are specific to it.

FIRST SERVICE REQUEST

1. Where a Service Request is a First Service Request, the Access Seeker must submit at the same time as the Service Request a signed copy of the Access Provider's Confidentiality Agreement (unless one has already been signed). The confidentiality terms do not limit the disclosure of completed interconnection agreements to the Authority as required by the Telecommunications Law.

2. By submitting the First Service Request, the Access Seeker becomes bound by the provisions of this Schedule.

3. The Access Seeker's First Service Request must contain:

   (a) the list of Services requested. If there is any doubt, the Access Seeker shall consult with the Access Provider before submitting a First Service Request;

   (b) type of Licence held by the Access Seeker;

   (c) the Access Seeker's designated contact person, and contact details; and

   (d) either evidence that the Access Seeker has an Acceptable Long Term Credit Rating or credit information relevant to Access Provider's assessment of the Access Seeker's creditworthiness.

4. By submitting a First Service Request, the Access Seeker represents and warrants that:

(a) it has in full force and effect the authorisations necessary to enter into the Supply Terms, observe obligations under it and allow it to be enforced;

(b) its obligations under the Supply Terms will be valid and binding and are enforceable against it in accordance with its terms;

(c) the information provided in its Service Request is complete, true, accurate, and not otherwise misleading; and

(d) it is not a trustee of any trust or settlement.

5. The Access Seeker agrees to indemnify the Access Provider on demand for any liability, loss, damage, cost or expense (including legal fees on a full indemnity basis) incurred or suffered by the Access Provider, which arise out of or in connection with any breach of any of the representations or warranties given in paragraph 4 above, subject to the Access Provider using all reasonable endeavours to mitigate against the effects of any such breach of the representations or warranties.

6. If the Access Seeker does not submit an Acceptable Long Term Credit Rating as part of its First Service Request or another acceptable evidence of its creditworthiness in accordance with paragraph 3(d) in its First Service Request to the Access Provider, then, subject to and without limiting the provisions of clause 19 of the Supply Terms:

(a) The Access Provider shall notify the Access Seeker in writing that it is a condition of entry into the Supply Terms for the supply by the Access Provider of the Services specified in the Access Seeker's Service Request, that the Access Seeker first provide to the Access Provider a specified initial Security; and

(b) if the Access Seeker continues to seek the Services specified, the Access Seeker must provide that initial Security to the Access Provider on or before the execution of the Supply Terms.

7. The amount of the initial Security required under paragraph 6 shall be calculated by reference to the same statement of general principle set out at clause 19.10 of the Supply Terms.

8. The Access Provider shall consider a First Service Request to be non-conforming where:

   (a) the Access Seeker is not a Licensed Operator or does not hold an appropriate Licence;

   (b) the services requested are not Services; or

   (c) the Access Seeker has not provided adequate information under paragraph 4.

9. If the Access Provider finds a First Service Request to be non-conforming under paragraph 8, it shall:

   (a) notify the Access Seeker in writing within the timescales specified in Schedule 7 (Service Levels);

   (b) provide reasons for rejection to the Access Seeker with the notice in paragraph 9(a); and

   (c) not be required to enter into the Supply Terms for the Services specified in the First Service Request.

Schedule 2.2 – New Service Request

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Schedule 2.2 - SERVICE REQUEST (NEW SERVICE)

To: **NBNetCo BSC (c) (the "Access Provider")**

From: **[*Insert name*] (the "Requesting Operator")**

Date: **[*Insert date*]**

SERVICE REQUEST IN RELATION TO THE ACCESS PROVIDER'S REFERENCE OFFER

Is the service an Access Service? Please explain the basis on which the Requesting Operator considers that this is the case.

In addition, please provide the following:

(a) a reasonably detailed description of the proposed New Service;

(b) an outline of the technical and functional specifications which the Requesting Operator considers should apply to the New Service;

(c) the Requesting Operator's opinion of the likely scope of the New Service including a preliminary forecast of the Requesting Operators' expected use of the New Service covering at least the period in Schedule 5 – (Forecasting), identified quarterly.

SIGNED by **[insert name of REQUESTING OPERATOR]** by:

Signature of Director	Signature of Director/Secretary
Name of Director (print)	Name of Director/Secretary (print)

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Schedule 4 – Billing

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Schedule 4 – Billing

1. Charging and invoicing

1.1 The SE (the **Billing Party**) shall invoice the Access Seeker (the "**Billed Party**") (each a "**Party**" and together the "**Parties**") for Services in accordance with the charges set out in this Schedule and in Schedule 3 – (Pricing) of the Reference Offer.

1.2 Unless mutually agreed otherwise, recurring charges for Services will be payable in advance on a quarterly basis (the "**Billing Period**"). Charges for the first quarter in which a Service is supplied to the Access Seeker shall be pro-rated from the relevant RFS Date to the end of the first quarter in which the RFS Date occurred.

1.3 For each Service, charging shall commence upon the RFS Date or as otherwise agreed between the Parties.

1.4 The Billing Party shall provide the Billed Party with an invoice setting out the Charges payable by the Billed Party in respect of that Billing Period (an "**Invoice**").

1.5 Unless mutually agreed otherwise, the Billing Party shall deliver each Invoice by e-mail to the Billed Party's Billing Representative. Upon receiving an Invoice, the Billed Party's Billing Representative shall confirm receipt by e-mail to the Billing Party's Billing Representative.

1.6 The Billing Party shall ensure that:

(a) all amounts in an Invoice are stated in Bahraini Dinars;

(b) all Invoices set out the following information:

i. the invoice number;

ii. the name and address of the Billing Party;

iii. the due date for payment and the amount due; and

iv. sufficient information to enable the Billed Party to verify the amount of the Charges specified in the Invoice, including an itemised breakdown of the individual Services and charges covered by the Invoice.

An Invoice cannot be rejected for formatting reasons, if all information above is provided in the Invoice.

2. **Payment**

2.1 The Billed Party must pay each Invoice within thirty (30) calendar days after the Due Date, except where an Invoice is subject to a Billing Dispute, in which case the Billed Party must pay those parts of the Invoice that are not subject to the Billing Dispute.

2.2 All payments must be:

(a) paid by electronic funds transfer directly to the nominated account of the Billing Party, or such other means as may be agreed by the Parties; and

(b) paid without any set-off or counter-claim and free of any withholding or deduction, unless otherwise agreed by the Parties.

2.3 Payments are deemed to be received on the date the electronic funds are cleared in the Billing Party's bank account, unless the payment is subsequently dishonoured, in which case payment is deemed not to have been received until cleared funds are received by the Billing Party that are net of any associated bank charges or transfer fees, together with any dishonour fees and other related charges.

3. **Late Payment Charge**

3.1 If the Billed Party fails to pay an Invoice (or part of it) by the Due Date, the Billing Party shall charge the Billed Party daily compounding interest on the overdue amount for each day after the Due Date until and including the date of actual payment, at a rate which is five percentage points above the base rate in effect during each day interest is charged ("**Late Payment Charge**"). The base rate for these purposes shall be the interest rate set by the Central Bank of Bahrain for lending to other banks in the Kingdom[1].

3.2 A Late Payment Charge:

(a) shall be payable by the Billed Party if an Invoice (or part of it) is subject to a Billing Dispute and the disputed amount is determined to have been correctly included in

[1] https://www.cbb.gov.bh/facilities-interest-rates/

the Invoice; and

(b) shall not be payable by the Billed Party if the Invoice (or part of it) is subject to a Billing Dispute and the disputed amount is determined to have been incorrectly included in the Invoice.

3.3 The Billing Party shall include a Late Payment Charge in the Invoice for the Billing Period that immediately follows the Billing Period that was the subject of the late payment or in a later Invoice, except where the Invoice (or part of the Invoice) that remains unpaid is subject to a Billing Dispute, in which case the Billing Party shall include the Late Payment Charge in the Invoice for the Billing Period following a resolution that the disputed amount was correctly included in the disputed Invoice.

4. Overpayment

4.1 If the Billed Party makes an overpayment in error, it shall notify the Billing Party within thirty (30) Working Days after the date of the overpayment with sufficient details for the Billing Party to identify and verify the overpayment, including the invoice number, the amount that should have been paid and the reason for the overpayment.

4.2 The Billing Party shall, acting reasonably and in good faith, verify the overpayment within thirty (30) Working Days after receipt of notice of overpayment, and shall refund the overpaid amount to the Billed Party within thirty (30) Working Days after the date of verification of the overpayment.

5. Billing Disputes

5.1 A Party raising a Billing Dispute shall serve on the other Party a Billing Dispute Notice.

5.2 A Billing Dispute Notice shall specify:

(a) details of the amounts in dispute, including a copy of any records that the Party is relying on to support its claims;

(b) an explanation or the reasons that the amounts are disputed; and

(c) sufficient information for the other Party to properly assess the disputed amounts.

5.3 The Parties and in particular the Billing Representatives shall use best endeavours to resolve a Billing Dispute within thirty (30) Working Days after the date of receipt of the

Billing Dispute Notice, or such other period that may be agreed by the Parties.

5.4 If the Parties are unable to resolve a Billing Dispute within thirty (30) Working Days after the date of receipt of the Billing Dispute Notice (or such other period that is agreed between the Parties), the Billing Dispute shall be escalated for resolution by representatives of each Party that have the authority to settle the Billing Dispute (such representatives to be at a higher level of management than the Billing Representatives). The designated representatives must meet as often as they reasonably deem necessary to discuss the Billing Dispute and negotiate in good faith in an effort to resolve that Billing Dispute. Each Party must meet all reasonable requests for relevant information received from the other Party during these negotiations to assist with the resolution of the Billing Dispute.

5.5 If a Billing Dispute is not resolved within twenty (20) Working Days of the date of escalation, either Party may, by written notice to the other Party, request referral of the matter to an independent qualified accountant (**"Billing Expert"**) to investigate the source of the discrepancy and reach an equitable solution.

5.6 If the Parties agree to such a referral:

i. the Billing Expert to be engaged shall be mutually agreed between the Parties prior to engagement;

ii. the Parties shall procure that the Billing Expert resolve the Billing Dispute within twenty (20) Working Days of being appointed or as otherwise agreed;

iii. the findings of the Billing Expert shall be binding on both Parties; and

iv. the Parties shall each bear half the costs of the Billing Expert.

5.7 Billing Disputes may not be referred for resolution in accordance with the Dispute Resolution Procedures.

5.8 If the Billing Dispute is resolved:

(a) against the Billed Party, the Billed Party shall pay any outstanding disputed amount

to the Billing Party within thirty (30) Working Days after the date of resolution of the Billing Dispute; or

(b) in favour of the Billed Party, the Billing Party shall refund any disputed amount previously paid by the Billed Party to the Billing Party within thirty (30) Working Days after the date of resolution, plus any Late Payment Charge previously paid by the Billed Party.

5.9 Nothing in this clause 5, except clause 5.7, limits any rights or remedies which may be enforced by a Party in connection with a Billing Dispute at law or otherwise.

Schedule 5 – Forecasting

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SCHEDULE 5 – FORECASTING

1 FORECASTING

1.1 By the start of every quarter commencing from the relevant Service Commencement Date, the Access Seeker shall supply to the Access Provider a forecast for each Service supplied to the Access Seeker covering each of the five (5) quarters following the date of the forecast.

1.2 The Access Seeker must submit forecasts to the contact nominated by the Access Provider.

1.3 On receipt of a forecast, the Access Provider shall review the forecast based on the following acceptance criteria:

a) Where relevant, compliance with the requirements of the relevant Service Description;
b) Completeness;
c) Timely submission; and
d) Adherence to the forecasting thresholds (as set out in paragraph 1.4 below).

1.4 In order to adhere to the forecasting thresholds, the actual percentage difference, for a given quarter, between the forecast and the previous forecast must fall within the following thresholds for each quarter covered by the forecast:

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Forecast percentage Q1 = ($Q2_{previous}$ - $Q1_{current}$) / $Q2_{previous}$

SUBMIT	Q1	Q2	Q3	Q4	Q5	Q6
Submission Date Q1	Q1 Capacity Forecast (ORDER)	Q2 Capacity Forecast (+/- 10%)	Q3 Capacity Forecast (+/- 15%)	Q4 Capacity Forecast (+/- 25%)	Q5 Capacity Forecast. (+/- 35%)	
Submission Date Q2		Q1 Capacity Forecast (ORDER)	Q2 Capacity Forecast (+/- 10%)	Q3 Capacity Forecast (+/- 15%)	Q4 Capacity Forecast (+/- 25%)	Q5 Capacity Forecast. (+/- 35%)
Submission Date Q3			Q1 Capacity Forecast (ORDER)	Q2 Capacity Forecast (+/- 10%)	Q3 Capacity Forecast (+/- 15%)	Q4 Capacity Forecast (+/- 25%)
Submission Date Q4				Q1 Capacity Forecast (ORDER)	Q2 Capacity Forecast (+/- 10%)	Q3 Capacity Forecast (+/- 15%)
Submission Date Q5					Q1 Capacity Forecast (ORDER)	Q2 Capacity Forecast (+/- 10%)
Submission Date Q6						Q1 Capacity Forecast (ORDER)

1.5 If the forecast adheres to the acceptance criteria, then the Access Provider shall accept the forecast within five (5) Working Days. If the forecast does not

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adhere to the acceptance criteria, the Access Provider shall reject the forecast within five (5) Working Days clearly specifying the reasons for rejection.

1.6 If the Access Provider does not send a notification within five (5) Working Days then the forecast shall be deemed to be accepted.

1.7 Following rejection, the Access Seeker may resubmit a revised forecast within five (5) Working Days of the notification of rejection.

1.8 When the Access Seeker does not submit (or re-submit) a forecast, the Access Provider shall accept the most recently submitted forecast (if any) as the Access Seeker's signed off forecast.

1.9 During the period that the forecasted volume is the actual new Connections / Installations volume (Q1 in the diagram) then the actual number of new Connections / Installations processed can vary by +/- 10% of those forecasted during that quarter.

1.10 At the end of the period (Q1) any variance between forecasted Connections / Installations and actual new Connections / Installations during that preceding quarter cannot be rolled over into the subsequent quarter (i.e., when Q2 becomes Q1).

1.11 The Service Level terms in Schedule 7 (Service Levels) shall apply to the actual number of all new Connections / Installations up to the tolerance level of +10% of those forecasted for that quarter (as indicated in paragraph 1.9).

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Schedule 6.1 - Wholesale Bitstream Service (WBS) Service Description

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SCHEDULE 6.1 – SERVICE DESCRIPTION
WHOLESALE BITSTREAM SERVICE (WBS)

1. THE SERVICE

1.1 The Wholesale Bitstream Service (**WBS**) is a service 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.

1.2 The digital pathway consists of one or more Connections, involving one or more Access Links between End User Premises and one or more Aggregation Links.

1.3 The WBS Service is available to Access Seekers holding an ISP Class License.

2. DEFINITIONS

Capitalised terms not defined in this Service Description are defined in Schedule 8 - (Dictionary) of the Reference Offer. Terms defined in this Service Description are specific to it.

Access Link means the digital point-to-point communications between an End User Premises and the OLT nearest to that End User Premises.

Aggregation Link means the logical or physical link between an Aggregation Point and an Access Seeker's Point of Presence (POP). An Access Seeker shall have the Access Provider establish at least one Aggregation Link before the implementation of a New Connection Request.

Aggregation Point means the point on the Access Provider's Network where the Aggregation Link is connected.

Access Provider Exchange means an exchange which has OLTs installed at the time of the Service Request.

Connection means the digital pathway that provides one end-to-end connection between one specific End User Premises and the Access Seeker's POP.

End User Premises Equipment means a splitter and modem, or other equivalent technology, necessary to support the End User's ability to use a WBS Service.

GPON means a gigabit passive optical network, an access technology used by the Access Provider to provide a fibre based Connection at a fixed location.

IP means Internet protocol.

JUMBO frame means an Ethernet frame with a payload greater than the standard MTU of 1,500 bytes.

MTU means a Maximum Transmission Unit.

Network Boundary means, for a fibre based Access Link, the ONT at the End User Premises.

Non-Access Provider Equipment means any End User Premises Equipment which is not supplied, supported, and maintained by the Access Provider.

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Non-residential means an End User with a commercial registration (CR).

OLT means optical line terminal, network equipment in the Access Provider Exchange used in the provision of a WBS Connection.

ONT means optical network terminal, network equipment in the End User Premises used in the provision of a WBS Connection. The ONT is supplied, supported and maintained by the Access Provider and the Access Provider reserves the right to change or replace the ONT at any given time.

VLAN means the broadcast domain that is partitioned and isolated in the Access Provider's Network at the data link layer (OSI layer 2).

3. SERVICE TERMS

3.1 The WBS Service shall be made available to any End User on the basis of a Service Request of an Access Seeker. The Access Seeker may not resell the WBS Service to another Licensed Operator.

3.2 The WBS Service shall enable each Access Seeker to connect a minimum of three (3) VLANs to cover data, voice and IPTV.

3.3 Where an Access Seeker deploys multicasts in the Access Seeker's core Network, the Access Seeker shall be able to use the WBS Service to pass multicast traffic over the Access Provider's Network transparently.

3.4 The WBS Service shall support MTU and JUMBO frames. Where required by an Access Seeker, the WBS Service shall support 1,700 byte frames.

3.5 There is no Minimum Service Period per Connection for the WBS Service.

3.6 If the Access Provider terminates the WBS Service in its entirety, then each WBS Access Link will terminate.

3.7 The Access Provider should ensure that all communications with the Access Seeker should be confidential and shall not be disclosed to other Licensed Operators.

3.8 The Access Seeker shall be the unique point of contact for its End User for all issues, including but not limited to issues related to the installation of the Access Provider ONT and any relevant Access Seeker equipment on the End User Premises.

4. END USER ACCESS

4.1 The Access Seeker acknowledges that where GPON fibre is available, the Access Provider will only supply a fibre-based WBS Service. Where GPON fibre is not available, the Access Seeker may request that:

a) the WBS Service is provided over existing copper cable; and

b) the Access Provider provides its roadmap for deploying GPON fibre in the relevant area.

4.2 GPON fibre will be considered available where a fibre access cable has been dropped to the fibre distribution point nearest to that End User Premises and that

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End User Premises can be connected to the Network upon request within the timeframes provided for in Schedule 7 - (Service Levels) of the Reference Offer.

Installation or Transfer of End User Access

4.3 For each Service Request the Access Seeker shall inform the End User that the installation and operation of the WBS Service may require changes to the placement of existing telecommunications devices or changes of equipment.

4.4 Data transport using the WBS Service between an OLT and an Access Provider Aggregation Point, or MSAN equipment and an Access Provider Aggregation Point are available for the range of WBS products identified in Annex 1.

4.5 Maximum attainable WBS speed shall be subject to the physical distribution of the bandwidth set out at Annex 1.

4.6 The Access Provider shall provide access to an online tool that identifies up-to-date accurate digital coverage maps for the areas in the Kingdom of Bahrain covered by the WBS Service and the maximum speed supported for each address (i.e., block or building) and the Connection type (i.e., copper or fibre) to ensure that the right service is offered by the Access Seeker to the End User. This online tool should be updated at least on a monthly basis.

4.7 The Access Provider is responsible to ensure that its Network has the required number of ports and Network elements to fulfill the Access Seekers' requests in accordance with the Service Level Terms in Schedule 7 – (Service Levels) of the Reference Offer.

4.8 On the completion of a Service Request, the Access Provider will ensure that the WBS Service is tested in accordance with ITU Y.1564 standard.

5. MAINTENANCE

5.1 The Access Provider shall provide Network maintenance and support services, including without limitation, ONT replacement and fibre patch cord replacement, in accordance with the Service Levels set out in Schedule 7 - (Service Levels) of the Reference Offer.

5.2 The Access Provider shall ensure that all of the Network elements used to provide the WBS Service are provided to the Access Seeker at the same level of quality of service and availability as provided for the equivalent WBS Service elements supplied to all Access Seekers, including but not limited to the ONT setup (such as bridge-mode, managed mode).

5.3 The Access Provider shall provide the Access Seeker with full visibility on the ONT and ONT management and the Access Seeker shall have TR69 capability extended where the ONT is (a) supplied by the Access Provider; or (b) self-provided by Access Seeker.

5.4 The Access Seeker shall report a Fault to the Access Provider's nominated contact point which shall be available twenty-four (24) hours per day every day. The Access Provider shall record the Fault using a unique reference number which it shall pass to the Access Seeker at the same time as acknowledging the Fault in accordance

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with Schedule 7 – (Service Levels) of the Reference Offer. The Access Provider shall commence repair of the Fault within:

- Five (5) hours during Working Hours; or
- Twelve (12) hours outside of Working Hours,

from the time of the Access Seeker reporting the Fault, and shall restore the WBS Service in accordance with the Service Levels. The Access Provider shall advise the Access Seeker's nominated contact point once the Fault is clear and both parties shall record the time of this clearance.

6. EQUIPMENT

6.1 The provision of a WBS Service or the implementation or transfer of the WBS Service does not include the provision of any cabling or any End User Premises Equipment. The Access Provider shall clearly define the demarcation point of its access Network and therefore of the WBS Service.

6.2 The Access Seeker shall ensure that Non-Access Provider Equipment supplied by the Access Seeker for the purposes of a WBS Connection:

(a) meets the specifications and requirements defined by relevant international telecommunications and engineering standards; and

(b) is equipment approved under Article 38 of the Law.

7. CONNECTION

The Access Provider shall connect the WBS Service by the relevant RFS Date. The Access Provider shall notify the Access Seeker when the Connection has been effected in accordance with the Service Request procedures set out in this Service Description.

8. SERVICE REQUEST PROCESS

8.1 The Access Provider and the Access Seeker shall comply with this paragraph 8 of this Service Description when processing and/or fulfilling any Service Request.

8.2 The Access Seeker shall establish robust procedures to ensure an appropriate End User Consent is received and properly recorded before any Service Request is notified to the Access Provider.

8.3 The Access Seeker shall, upon a reasonable and justified request, provide the Access Provider with a copy of the End User Consent and CR for Non-Residential End Users. The Access Provider shall treat the copy of the End User Consent as confidential and shall not disclose a copy of the End User Consent to other Licensed Operators under any circumstances.

Service Request

8.4 The Access Provider shall send the Access Seeker an acknowledgement of the Service Request within fifteen (15) minutes of receipt of the Service Request. If the Service Request is submitted outside Working Hours, the Access Provider shall

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acknowledge the Service Request within fifteen (15) minutes following the start of the first Working Hour after receipt of the Service Request.

8.5 A Service Request must be in the format notified by the Access Provider from time to time, and be submitted by electronic mail (or other electronic format, which may include via an online digital interface) to the address notified to the Access Seeker by the Access Provider, from time to time.

8.6 The Access Provider shall, within one (1) Working Day of receipt of any Service Request, notify the Access Seeker whether the Service Request is:

(a) accepted; or

(b) rejected.

If a notification is not provided under (a) or (b) above within one (1) Working Day of receipt of the relevant Service Request, the Service Request shall be deemed accepted by the Access Provider.

8.7 The Access Provider may reject a Service Request if:

(a) it is incomplete or incorrect or illegible or cannot reasonably be understood;

(b) it does not properly identify the End User Premises (including such identification in line with paragraph 1.2);

(c) a valid written End User Consent cannot be produced by the Access Seeker to support the Service Request; and/or

(d) it resulted from a processing error.

8.8 At the time of rejection, the Access Provider shall provide sufficiently detailed written reasons for rejection to the Access Seeker.

8.9 The Access Provider may in its sole discretion elect to accept any Service Request notwithstanding that there is any defect in that Service Request if the Access Provider considers that such defect does not have a material effect on the Access Provider's ability to process the Service Request and provide the WBS Service.

8.10 The Access Provider shall within one (1) Working Day from the acceptance of the Service Request provide the Access Seeker with Notification of the Expected RFT and RFS Dates.

WBS Change Request

8.11 To initiate a change to an existing WBS Service used by the Access Seeker to supply a service to an End User, the Access Seeker shall provide the Access Provider with a properly completed WBS Change Request, in the format notified by the Access Provider from time to time, submitted by electronic mail (or other electronic format, which may include an online digital interface) to the address notified to the Access Seeker by the Access Provider, from time to time.

8.12 The Access Provider shall respond to the WBS Change Request in accordance with the process detailed for Service Requests at paragraphs 8.6 to 8.8 inclusive.

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8.13 In addition to the rejection reasons set out at paragraph 8.7, the Access Provider may also reject a WBS Change Request if it is not submitted in accordance with paragraph 8.11.

8.14 The Access Provider may in its sole discretion elect to accept any WBS Change Request notwithstanding that there is any defect in that WBS Change Request, if the Access Provider considers that such defect does not have a material effect on the Access Provider's ability to process the WBS Change Request and provide the WBS Service.

Completion of Request

8.15 If the Access Provider notifies the Access Seeker that the Service Request is accepted, then the Access Provider shall, subject to the exceptions, limitations and conditions specified in this Service Description and/or Supply Terms, provision and deliver the WBS Service on or before the RFS Date and in accordance with Schedule 7 – (Service Levels) of the Reference Offer.

8.16 The parties acknowledge and accept that exceptional circumstances, such as those set out below, may give rise to delays in any stage of the acceptance, provisioning and delivery of a Service Request. If the occurrence of any of the events below takes place, the Access Provider shall communicate the Exceptional Delivery Date to the Access Seeker and shall not be held liable for the Service Level Penalties. The exceptional circumstances shall only comprise:

(a) a Force Majeure Event or a Regulatory Event;

(b) Emergency Maintenance; or

(c) any material breach of the Access Seeker's obligations.

8.17 The Access Provider shall, in notifying the Access Seeker of the Exceptional Delivery Date, provide sufficient evidence so as to justify the reasons for the delay of the delivery.

8.18 The Access Provider shall not be obliged to further process a Service Request where:

(a) the relevant WBS Service cannot meet Service Qualification; or

(b) following the provision of reasonable notice by the Access Provider, an authorised person from the End User or the Access Seeker is not available to provide further information when requested.

Notification of Completion of Request

8.19 The Access Provider shall, on the same Working Day of completion of a Service Request or a Change Request, notify the Access Seeker of completion.

8.20 In the case of a Service Request, the Access Provider is entitled to rely on a Request as evidence that the relevant End User:

(a) has given a valid End User Consent in relation to the requested Service Request; and

(b) in the case of a Change Request understands and has requested the Change.

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Reversal of a Service Request

8.21 Within thirty (30) days of the successful completion of a WBS Service Request, the previous Access Seeker may make a request to the Access Provider to verify that an End User Consent has been obtained. Where there has been no End User Consent provided to the new Access Seeker, the previous Access Seeker may make a Reversal Request.

8.22 On receipt of the Reversal Request, the Access Provider shall on the same Working Day: (a) process the Reversal Request; and (b) notify the new Access Seeker that the Reversal Request has been processed.

9. CHARGES

9.1 The Access Seeker shall pay to the Access Provider the relevant Charges set out in Schedule 3 - (Pricing) of the Reference Offer.

9.2 All Charges and sums due from one party to the other under this Agreement are exclusive of VAT. Any VAT shall be charged in accordance with the relevant regulation in force at the time of making the taxable supply and shall be paid by the paying party following receipt from the billing party of a valid VAT invoice.

10. RESPONSIBILITIES

10.1 From the time of the completion of a WBS Transfer Request, the relevant End User will no longer be a customer of the Licensed Operator who was previously the Access Seeker supplying services to them using the WBS Service, but will instead (in respect of the relevant services) become a customer of the Access Seeker to whom the WBS Service has been transferred.

10.2 From the time of completion of a WBS Transfer Request, the Access Seeker shall provide End User Management to support the WBS Services. However, if requested by the Access Seeker, the Access Provider shall provide technical support in relation to problems End Users may report with services supplied to the End Users using the WBS Service, including fault management, and support and maintenance for which the Access Seeker shall pay the Charges set out in Schedule 3 - (Pricing) of the Reference Offer.

10.3 Following completion of its own Fault diagnosis the Access Seeker shall contact the Access Provider for all maintenance, replacement or repair of the WBS Service and the Network on the Access Provider's side of the Network Boundary and will pay the Access Provider the Charges at the rate specified (or if not specified, on a time and materials basis) for all such work.

10.4 The Access Seeker is responsible for billing the customer for the services supplied to End Users using the WBS Services provided since the date of the completion of the Service Request.

10.5 In respect of each Service Request submitted by the Access Seeker to the Access Provider, the Access Seeker shall ensure that:

(a) the Access Seeker has a valid End User Consent;

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(b) the Access Seeker retains records of the End User Consent and the retention is in accordance with the reasonable and justified requirements notified to the Access Seeker by the Access Provider from time to time;

(c) the Access Seeker has used its reasonable endeavors to ensure that the information in the Service Request is complete and correct;

(d) the processing of each Service Request, at the time it is submitted, does not breach any party's contractual or other rights (however, a valid End User Consent shall be deemed to be a valid notification to the Access Provider to terminate the relevant Access Provider services);

(e) the Access Seeker has used its reasonable endeavors to provide the End User with sufficient information to make an informed choice about transferring their service, including informing the End User that:

(i) the End User remains liable for the amount of any pre-existing charges and possible termination expenses; and

(ii) the Access Seeker has complied with any relevant legislation or other industry code of practice.

10.6 The Access Seeker shall in respect of this WBS Service comply in all respects with its obligations under Article 78 of the Law and any regulation or decision issued by the Authority in relation to lawful access.

10.7 The Access Seeker indemnifies the Access Provider, subject to the Access Provider using all reasonable endeavors to mitigate the effect of the occurrence of the indemnified event, in respect of any loss, liability or cost incurred by the Access Provider (including third party claims or claims by any End User) in connection with a breach by the Access Seeker of its obligations and warranties given under this Service Description.

11. BILLING PERIOD

11.1 The Billing Period in respect of the WBS Service shall be thirty (30) days. The Billing Period shall commence on the date of the first billing date of the Access Provider billing cycle after the Service Commencement Date and may include billing on a pro rata time basis for the period between the Service Request to the next billing cycle to ensure compatibility with the Access Provider's billing cycle.

12. AGGREGATION LINK

12.1 Following a request from the Access Seeker, the Access Provider shall provide a 10Gbit/s WBS Service Aggregation Link at the Charges set out in Schedule 3 - (Pricing) of the Reference Offer.

12.2 The initial aggregation of 1 Gbit/s can be provided for a maximum of two (2) geographically dispersed Access Seeker Points of Presence. In the event that the Access Seeker requests additional bandwidth, the Access Seeker will be required to procure the upgrade of 10 Gbit/s as set out in this Service Description and as priced in Schedule 3 – (Pricing) of the Reference Offer.

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ANNEX 1

WBS PRODUCT LIST

WBS Services are defined for both residential End Users and Non-Residential End Users as shown in the tables below:

Residential	
Download Speed	Upload Speed
Voice only*	Voice only*
1.024Mbit/s	512kbit/s
2.048Mbit/s	1.024Mbit/s
3.072Mbit/s	1.024Mbit/s
4.096Mbit/s	1.024Mbit/s
6.144Mbit/s	1.024Mbit/s
8.192Mbit/s	2.048Mbit/s
10.240Mbit/s	2.048Mbit/s
16.384Mbit/s	2.048Mbit/s
20Mbit/s	2.048Mbit/s
30Mbit/s	5.048Mbit/s
40Mbit/s	5.048Mbit/s
80Mbit/s	10.048Mbit/s
100Mbit/s	10.048Mbit/s
500Mbit/s	50.048Mbit/s

Non-Residential	
Download Speed	Upload Speed
Voice only*	Voice only*
256kbit/s	64kbit/s
512kbit/s	256kbit/s
640kbit/s	256kbit/s
1.024Mbit/s	512kbit/s
2.048Mbit/s	1.024Mbit/s
4.096Mbit/s	1.024Mbit/s
6.144Mbit/s	1.024Mbit/s
8.192Mbit/s	2.048Mbit/s
10.240Mbit/s	2.048Mbit/s
16.384Mbit/s	2.048Mbit/s
20Mbit/s	2.048Mbit/s
30Mbit/s	5.048Mbit/s
40Mbit/s	5.048Mbit/s
80Mbit/s	10.048Mbit/s
100Mbit/s	10.048Mbit/s
500Mbit/s	50.048Mbit/s

Aggregation Link 1Gbit/s
Aggregation Link 10Gbit/s (on request)

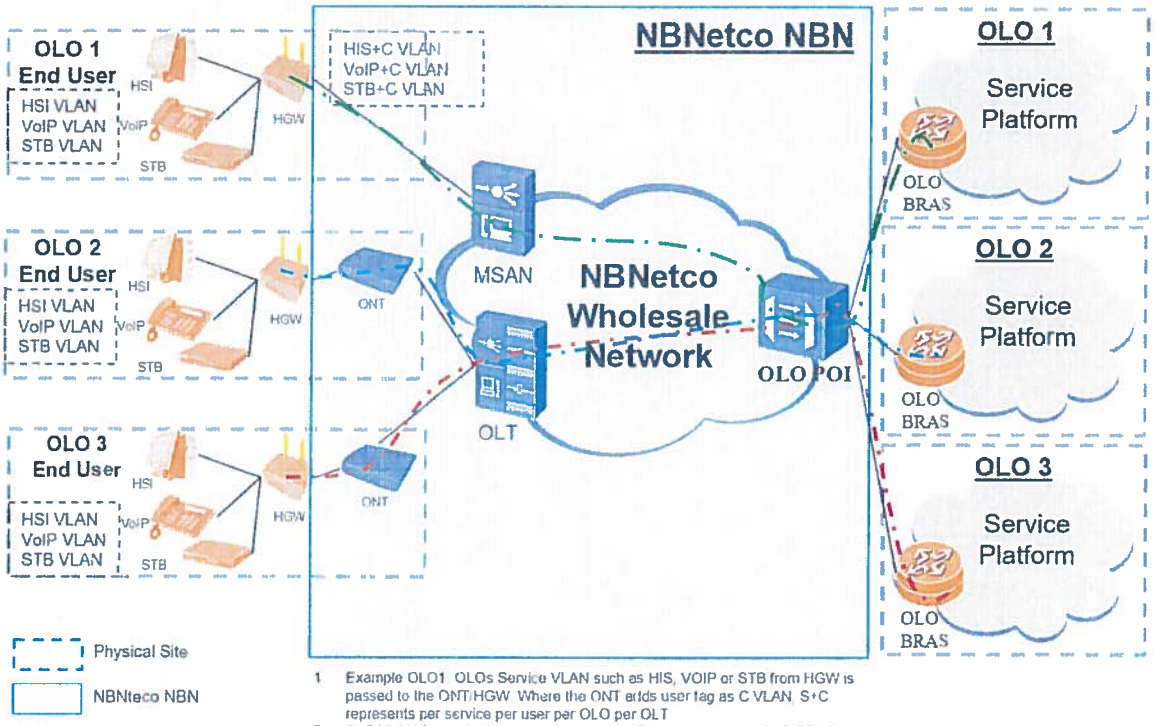
* Transmission characteristics capable of supporting minimum 14.4kbps voice transmission.

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ANNEX 2

WBS SERVICE – TECHNICAL DIAGRAM

GPON Based Network Topology:



1 Example OLO1 OLOs Service VLAN such as HIS, VOIP or STB from HGW is passed to the ONT/HGW. Where the ONT adds user tag as C VLAN. S+C represents per service per user per OLO per OLT

2 S+C VLAN forwards transparently through NBNetco network to OLO BRAS

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Schedule 6.2 - Wholesale Data Connectivity (WDC) Service Description

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SCHEDULE 6.2 - SERVICE DESCRIPTION
WHOLESALE DATA CONNECTION SERVICE (WDC)

1. THE SERVICE

1.1 The Wholesale Data Connection (**WDC**) Service provides symmetric, synchronous, dedicated and uncontended data connectivity within the Kingdom of Bahrain between:

(a) two of the Access Seeker's Points of Presence; or

(b) an Access Seeker's Point of Presence and its End User Premises; or

(c) an Access Seeker's Point of Presence and the Point of Presence of another Licensed Operator.

1.2 The WDC Service is provided with a number of options. These are specified in Annex 1 of this Service Description.

1.3 The WDC Service is available to Access Seekers that are Licensed Operators.

1.4 The WDC Service provides the following Quality of Service performance:

(a) Round Trip Delay (Frame Transfer Delay): 2ms

(b) Jitter (Frame Delay Variations): 1ms

(c) Frame Loss Ratio: 0%

2. DEFINITIONS

Capitalised terms not defined in this Service Description are defined in Schedule 8 - (Dictionary) of the Reference Offer. Terms defined in this Service Description are specific to it.

Aggregation Link means the connectivity established between a Point of Presence of the Access Seeker and an Access Provider access node, as further detailed in Annex 2 and Annex 3 of this Service Description.

Connection means an individual WDC Service as described in paragraph 1.1.

Customer Premises Equipment or CPE means the Equipment more particularly specified under Annex 2 (Technical Characteristics) of this Service Description.

JUMBO frame means an Ethernet frame with a payload greater than the standard MTU of 1,500 bytes.

Minimum Service Period means an applicable minimum period of twelve (12) calendar months for which the WDC Service shall be provided, such period commencing from the Service Commencement Date.

MTU means a Maximum Transmission Unit.

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Point of Presence means a permanent physical location where an aggregation link or connection of a relevant Service is terminated at premises owned or leased by the Access Seeker or at the Access Provider's colocation facility, but for the avoidance of doubt cannot be an earth station, manhole, power room, lead-in pipe, duct, outdoor cabinet, MDF, riser room or anywhere not on the main island of Bahrain unless connected by a permanent physical connection above sea level and accessible the Access Provider.

Renewed Minimum Service Period means an applicable minimum period of one (1) calendar month for which the WDC Service shall be provided, such period commencing from the expiry of a Service Period.

Service Period means the Minimum Service Period or Renewed Minimum Service Period.

WDC Amended Service means a WDC Service that is amended by a Change Request.

3. FORECASTING

3.1 The Access Seeker shall provide the Access Provider with a non-binding forecast of the number of new Connections. These forecasts shall be provided every quarter (three (3) months) commencing from the Service Commencement Date.

3.2 The period of each forecast shall cover the following information for the subsequent five (5) quarters:

(a) The number of new Connections per Access Provider exchange area; and

(b) Capacity required per new Connection.

3.3 The Access Seeker shall use all reasonable endeavours to forecast accurately given that the Access Provider is placing reliance on those forecasts. The forecasting process is set out in Schedule 5 - (Forecasting) of the Reference Offer.

3.4 New Connections can only be guaranteed to be provided up to the numbers forecasted. For actual new Connections in excess of those forecasted, the Access Provider shall use all reasonable endeavours to provide those Connections requested but cannot guarantee that they will be provided within the timescale set out in Schedule 7 – (Service Levels) of the Reference Offer.

3.5 The forecast provided represents a good faith expectation of the Access Seeker of its requirement for new Connections. In the event that the actual number of new Connections is less than forecasted, no penalty will be incurred by the Access Seeker.

Supply of Service

3.6 The Service Level Terms shall apply to:

(a) New Connection - provide a new WDC Service as requested by the Access Seeker;

(b) Upgrade or Downgrade;

(c) Reconfiguration - reconfigure technical parameters of an existing Connection; and

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(d) Cancellation - the Access Seeker requests the cessation of an existing Connection.

3.7 Where an Access Seeker deploys multicasts in the Access Seeker's core Network, the Access Seeker shall be able to use the WDC Service to pass multicast traffic over the Access Provider's Network transparently.

3.8 The WDC Service shall support MTU and JUMBO frames. Where required by an Access Seeker, the WDC Service shall support 1,700 byte frames.

3.9 The Access Provider shall provide access to an online tool that identifies up-to-date accurate digital coverage maps for the areas in the Kingdom of Bahrain covered by the WDC Service and the maximum speed supported for each address (i.e., block or building) and the Connection type (i.e. copper or fibre) to ensure that the right service is offered by the Access Seeker to the End User. This online tool should be updated at least on a monthly basis.

3.10 The Access Seeker shall submit a Service Request to the Access Provider to request supply of the WDC Service in the manner communicated by the Access Provider. The Access Seeker may not resell the WDC Service to another Licensed Operator.

3.11 The Access Provider shall within two (2) Working Days notify the Access Seeker if the Service Request is accepted or rejected and where applicable state the required corrections. If a notification is not provided within two (2) Working Days of receipt of the relevant Service Request, the Service Request shall be deemed accepted by the Access Provider.

3.12 In the event a Service Request is rejected then the Access Provider shall provide the Access Seeker with clear reasons for the rejection at the same time of the rejection and identify the changes required to enable the Service Request to be accepted.

3.13 If the Access Seeker submits a Cancellation Request three (3) or more Working Days after the Notification of Expected RFT and RFS Dates and where this is not related to delay in the Actual RFT Date or Actual RFS Date by the Access Provider, the Access Seeker shall (subject to receipt of an appropriate invoice) be liable to pay one (1) MRC to the Access Provider.

3.14 Within five (5) Working Days from the date of the acceptance of the Service Request, the Access Provider shall notify the Expected RFT and RFS Dates to the Access Seeker in writing, as specified in Schedule 7 – (Service Levels) of the Reference Offer. The Access Provider reserves the right to reject the Service Request during this stage if it is found that the WDC Service is not supported or if the Access Provider's point to point fibre Network does not extend to the requested area within the Kingdom of Bahrain.

3.15 The Access Provider shall deliver the WDC Service on or before the standard time scales summarised in Schedule 7 – (Service Levels) of this Reference Offer. The parties acknowledge and accept that exceptional circumstances, such as those set out below, may give rise to delays in any stage of the acceptance, provisioning and delivery of a Service Request. If the occurrence of any of the events below takes place, the Access Provider shall communicate the Exceptional Delivery Date to the Access Seeker and shall

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not be held liable for the Service Level Penalties. The exceptional circumstances shall only comprise:

(a) a Force Majeure Event or a Regulatory Event;

(b) Emergency Maintenance; or

(c) any material breach of the Access Seeker's obligations.

The Access Provider shall, in notifying the Access Seeker of the Exceptional Delivery Date, provide sufficient evidence so as to justify the reasons for the delay of the delivery.

3.16 If the Access Provider's technician shall be present at the End User Premises to install a WDC Service, and if, for any reason, the Access Seeker and/or the End User cannot be available on the Expected RFT Date for such installation, the Access Seeker shall give the Access Provider a minimum written notice of one (1) Working Day. The revised Expected RFT and Expected RFS dates are then set following the below principles:

(a) The Access Provider shall propose the next earliest date(s) for which the Access Provider's technician would be available for the installation which shall be a minimum of one (1) Working Day notice, unless waived by the Access Seeker. The proposed date(s) shall not exceed two (2) Working Days from the previously notified Expected RFT and Expected RFS Dates.

(b) The previously notified Expected RFS Date is also modified and is set apart from the revised Expected RFT Date by the Maximum Validation Time of three (3) Working Days (see Schedule 7 – (Service Levels) of the Reference Offer). The revised Maximum RFS Date is then set equal to the revised Expected RFS Date.

(c) The Access Provider shall send the Access Seeker a Notification of revised Expected RFT Date and revised Expected RFS Date.

3.17 In addition, if at least one of the following two conditions is met (i) the Access Seeker does not provide the Access Provider a minimum written notice of two (2) Working Days to inform of its unavailability; or (ii) the Access Provider sends a technician who is not able to access the site to install the WDC Service, then except for the cases of Force Majeure affecting the Access Seeker, the Access Seeker is liable to pay the installation and configuration charge for the requested WDC Service as specified in Schedule 3 - (Pricing) of the Reference Offer. In such case, the modification and Notification of the revised Expected RFT Date, the revised Expected RFS Date, and the revised Maximum RFS Date follow the same principles as described in paragraph 3.16.

3.18 The Access Provider's technician shall attend the Access Seeker's site or the End User Premises during Working Hours and at least have called the Access Seeker's representative if it appears that the Access Seeker's technician is not present at the relevant time (and where requested provide evidence of this). The Access Seeker shall, in this case, be liable to pay only the incurred man-day costs of the Access Provider technician.

3.19 In addition, if the Access Provider does not provide the Access Seeker with a written notice of a minimum of two (2) Working Days to rearrange a site visit under paragraph 3.16

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above, then the Access Provider is liable to waive an amount equal to one installation and configuration charge for the WDC Service.

3.20 Subject to the Access Seeker fulfilling its obligations set out in paragraphs 3.32 to 3.36 below, the Access Provider shall provide and the Access Seeker shall acquire the WDC Service either within the standard timescales or by the Exceptional Delivery Date as appropriate.

3.21 Where the Access Provider has accepted a Service Request which requires the deployment of fibre access in a particular area, the Access Provider may also seek to recover the costs of such deployment through a NRC when the additional passive infrastructure required would be for the Access Seeker's exclusive use in the foreseeable future. Such instances shall be determined on an ad-hoc basis and include, but are not limited to, the following examples:

			Further details
1	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).	The Access Provider shall 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). The recoverable portion of civil works per fibre access shall be zero, as this is being recovered through the MRC. Payment by the Access Seeker should be made against the Access Provider's submission of an itemised invoice and a map detailing the work performed.

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2	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).	The Access Provider shall be able to fully recover the costs incurred in deploying a new fibre protection path by charging the Access Seeker an NRC. Payment by the Access Seeker should be made against the Access Provider's submission of an itemised invoice and a map detailing the work performed.
3	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.).	The Access Provider shall be able 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 Access Seeker an NRC. Payment by the Access Seeker should be made against the Access Provider's submission of an itemised invoice (broken down by time and materials) and, if available, a map detailing the work performed.

3.22 Withdrawal of a speed as a result of any amendments to this Service Description approved by the Regulator will not affect the unexpired portion of any Service Period of a WDC Service unless the Access Provider is willing to Upgrade the product for the same Charge.

3.23 The technical specifications of the WDC Service and protection options available for the WDC Service to Access Seekers are set out in Annex 1 and Annex 2 to this Service Description.

3.24 Upon request from an Access Seeker and where other ingress ports are available on the Customer Premises Equipment, the Access Provider shall allow an Access Seeker to ingress its traffic on the other ingress ports of the Customer Premises Equipment (free of charge) provided for a WDC Connection or WDC Aggregation Link.

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3.25 The Access Provider shall provide to the Access Seeker a monitoring tool, which shall enable the Access Seeker to monitor the WDC Service against the following minimum parameters and other monitoring parameters in accordance with the technical parameters defined in the Joint Working Manual. This monitoring tool shall provide monitoring facilities 24 hours a day, 7 days a week, 365 days a year. The minimum parameters shall include:

(a) Link availability;

(b) Bandwidth Utilisation;

(c) Latency per circuit;

(d) Jitter per circuit;

(e) Frame Loss per circuit; and

(f) Round trip delay per circuit.

Termination

3.26 Where the Minimum Service Period has not expired, the Access Seeker shall be entitled to terminate the WDC Service on at least one (1) month's written notice to the Access Provider and shall be liable to pay liquidated damages as calculated by the following formula.

Formula for calculating liquidated damages:

LD = MRC x (12-M)

where:

LD = liquidated damages to be paid.

MRC = Monthly Recurring Charge for the WDC Service.

M = number of months between the Actual RFS Date and the removal order date rounded-up to the next full month.

3.27 The Access Seeker shall not be liable to pay liquidated damages where the Access Seeker terminates the WDC Service as a result of and/or arising out of a material breach of the Reference Offer by the Access Provider.

3.28 The Access Seeker expressly acknowledges that liquidated damages as calculated above form a reasonable pre-estimate of the loss which the Access Provider would suffer as a result of early termination by the Access Seeker. Such liquidated damages shall be the Access Provider's sole and exclusive damages or monetary remedy for such early termination.

3.29 Following the expiry of any Minimum Service Period the WDC Service shall be automatically renewed for successive Renewed Minimum Service Periods unless and until terminated by the Access Seeker, provided that the Access Seeker supplies the Access

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Provider with a termination notice at least one (1) month prior to the expiry of the current Service Period.

Amendment to the WDC Service

3.30 The Access Seeker shall be entitled to amend a WDC Service by requesting a WDC Amended Service where this is an Upgrade by providing an Upgrade Request to the Access Provider. The Access Seeker shall only be entitled to Downgrade the throughput of a Connection when the Minimum Service Period has expired. Where the Access Seeker requests a WDC Amended Service, then the Service Request procedure set out in this Service Description shall apply to that request. Where the Access Seeker requests a WDC Amended Service that requires any new Network resources and/or facilities then a new Minimum Service Period shall commence and the Access Provider shall provide a WDC Amended Service for the new Service Period.

3.31 The Access Seeker shall not be liable for any termination or additional recurring charges in respect of a request for a WDC Amended Service which is for a relocation. The Access Provider shall charge a once off charge in accordance with Schedule 3 - (Pricing) of the Reference Offer for the relocation unless the Access Seeker requires both Connections to be operational in parallel. The Access Provider shall not terminate the Connection which is subject to relocation until the Service Commencement Date of the new Connection.

Access Seeker Obligations

3.32 The Access Seeker shall provide the Access Provider with suitable space for, and access during Working Hours to, any Access Provider Equipment required to be located in any building in which the WDC Service is located within the control of the Access Seeker. If consent is required from a third party, such as the building owner, the Access Seeker shall procure such consent. The Access Provider is not required to pay the Access Seeker for the preparation or use of, or access to, space provided pursuant to this sub-paragraph.

3.33 Where an End User Premises is a VIP location in the Kingdom of Bahrain which is not subject to the exemption under the Law, the Access Seeker may request use of the Access Provider VIP team (free of any additional charge), if the Access Seeker can provide to the Access Provider a written valid official justification for the need for such services from the Regulator or an equivalent authority. On or before receipt by the Access Provider of the written valid official justification, the Service Request shall be suspended pending receipt of a written confirmation of the approval or if is not received within thirty (30) days of the Service Request, a cancellation.

3.34 If the Access Provider's Equipment requires electricity supply and electricity connection points, they shall be supplied, in the location specified by the Access Provider, by the Access Seeker at the Access Seeker's expense according to the equipment specification. Such electricity shall be available at the same level of supply, protection and continuity as that available to the Access Seeker's or End User's Equipment, as appropriate.

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3.35 The Access Seeker shall be solely responsible for any loss, theft or destruction of, or damage (reasonable wear and tear excepted) to the Access Provider's Equipment required to be located in the building where the WDC Service is provided and which is within the control of the Access Seeker or End User, occurring any time and howsoever caused (unless caused by the Access Provider or its agents).

3.36 The Access Seeker shall provide the Access Provider and any authorised employee, agent, affiliate or contractor of the Access Provider with all information and assistance that person may reasonably require to design, test, commission and maintain the WDC Service (which may include participation in testing procedures as and when reasonably requested by the Access Provider).

3.37 The Access Seeker may require their agent to be present during the installation, testing or commissioning done by the Access Provider but not so as to affect the Service Commencement Date.

Variation or Withdrawal

3.38 The Access Provider may upon providing three (3) months' written notice to the Access Seeker and subject to the approval of the Regulator, vary the WDC Service or withdraw the WDC Service relating to the terms and Annexes in this Service Description, by issuing a revised Service Description.

3.39 Notwithstanding paragraph 3.38 above, unless the Access Provider and Access Seeker agree otherwise at the time, any withdrawal or variation of the WDC Service, or any amendment to the Charges payable for the WDC Service in accordance with this Service Description and Schedule 3 – (Pricing) of the Reference Offer, shall also apply to existing WDC Services provided under the Supply Terms, which shall continue in force in accordance with its terms and conditions until renewed or terminated in accordance with this Service Description or the Supply Terms.

Planned and Emergency Maintenance

3.40 The Access Provider may suspend any WDC Service in order to carry out Planned or Emergency Maintenance.

3.41 In the case of Planned Maintenance, this shall be carried out as far as possible during the night or at weekends or other quiet periods. The Access Provider shall give ten (10) Working Days' notice of each Planned Maintenance activity affecting a particular WDC Service or group of WDC Services. This shall include the circuits affected, the date and time of the suspension and the likely duration of the suspension. The Access Provider shall use its reasonable endeavours to take into account the reasonable operational concerns of the Access Seeker before implementing any Planned Maintenance.

3.42 In the case of Emergency Maintenance, the Access Provider shall give the Access Seeker via email five (5) Working Days' notice in advance. The notice shall include the affected circuit(s), the date and time of the Emergency Maintenance and the expected duration of the Emergency Maintenance. The Access Provider shall use its best endeavours to carry

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out maintenance outages as much as possible during the night, at weekends or at a time agreeable with the Access Seeker.

3.43 In cases of Emergency Maintenance, the Access Provider shall advise the Access Seeker within five (5) hours after service is restored with a report of the cause of the Fault.

Maintenance and support

3.44 The Access Provider shall provide maintenance and support services in respect of the WDC Service in accordance with the Schedule 7 – (Service Levels) of the Reference Offer.

3.45 The Access Seeker shall report a Fault to the Access Provider's nominated contact point which shall be available twenty-four (24) hours per day every day. The Access Provider shall record the Fault using a unique reference number which it shall pass to the Access Seeker at the same time as acknowledging the Fault in accordance with Schedule 7 – (Service Levels) of the Reference Offer. The Access Provider shall commence repair of the Fault within:

(a) One (1) hour during Working Hours; or

(b) Two (2) hours outside of Working Hours,

from the time of the Access Seeker reporting the Fault, and shall restore the WDC Service in accordance with the Service Levels. The Access Provider shall advise the Access Seeker's nominated contact point once the Fault is clear and both parties shall record the time of this clearance.

Protection

3.46 The Access Provider shall provide full physical and logical protection only for the WDC Aggregation Link by default.

3.47 The Access Seeker may request an optional level of protection for the access network part of the WDC Connections and WDC Aggregation Links as further detailed in Annex 2 and at Charges set out in Schedule 3 – (Pricing) of the Reference Offer. If the Access Seeker opts for protection of a particular WDC Connection then the Access Provider shall also provide free of charge premium support (Premium Support) services for that Connection, the details of which are set out in the Schedule 7 – (Service Levels) of the Reference Offer.

3.48 Maximum level of protection is available for a WDC Connection (that is, full end-to-end physical path redundancy coupled with logical protection) at a Charge of 30% premium in addition to the applicable MRC. Service Credits should apply if the primary WDC Connection or Aggregation Link fails and the secondary WDC Connection is activated.

3.49 During the provisioning of a WDC Connection for which protection is required, the Access Provider shall provide the Access Seeker with the technical details regarding the protection solution, including the following:

(a) the service configuration;

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(b) a geographic map of the duct path used by the access fibre cable of the primary and the secondary WDC Connection (from the End User Premises or Point of Presence to the Access Provider's Service Node); and

(c) the relevant acceptance tests for both the primary and secondary end-to-end WDC Connections at RFS (after provisioning). The tests shall include a simulation of the failure of the Primary Connection.

3.50 If the Access Seeker has more than one WDC Aggregation Link and requires a WDC Aggregation Link with protection, the Access Seeker should indicate for such WDC Connection:

(a) the WDC Aggregation Link that will be the primary Aggregation Link;

(b) the WDC Aggregation Link that will be the secondary Aggregation Link (in stand-by mode); and

(c) the capacity that should be reserved on the secondary WDC Aggregation Link. This capacity will be guaranteed in case of failure of the primary WDC Connection.

4. CHARGES

4.1 The Access Seeker shall pay to the Access Provider the relevant Charges determined in accordance with Schedule 3 – (Pricing) of the Reference Offer.

4.2 All Charges and sums due from one party to the other under this Agreement are exclusive of VAT. Any VAT shall be charged in accordance with the relevant regulation in force at the time of making the taxable supply and shall be paid by the paying party following receipt from the billing party of a valid VAT invoice.

5. SERVICE LEVELS

5.1 The Access Provider shall provide the WDC Service in accordance with the Service Levels specified in Schedule 7 – (Service Levels) of the Reference Offer.

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ANNEX 1

CIRCUIT SPEEDS, DEFINED INTERFACES, MEDIA AND TOPOLOGY

Service element	Speed	Interface	Connector	Topology	Access
Connection terminating at End-User Premises or Point of Presence	64kbit/s to 2Mbit/s	Ethernet 10/100 BASE-TX	RJ45	Ethernet service point-to-point	Copper
Connection terminating at End-User Premises or Point of Presence	2 Mbit/s to 10 Gbit/s	gigabit Ethernet 1000BASE-LX gigabit Ethernet 1000BASE-SX	SC/LC	Ethernet service point-to-point	Fibre
Connection terminating at End-User Premises or Point of Presence	2 Mbit/s, 45 Mbit/s STM-1, STM-4, STM-16, STM-64 100 Gbit/s	Ethernet/FE/GE/SDH	RJ45/SC/LC	Synchronous Digital Hierarchy (SDH) point-to-point	Fibre
Aggregation Link terminating at the Point of Presence of the Access Seeker	1 and 10 Gbit/s	gigabit Ethernet 1000BASE-LX gigabit Ethernet 1000BASE-SX	SC/LC	Ethernet service point-to-point	Fibre
Aggregation Link terminating at the Point of Presence of the Access Seeker	100 Gbit/s	Ethernet/SDH	RJ45/SC/LC	Synchronous Digital Hierarchy (SDH) point-to-point	Fibre

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ANNEX 2

TECHNICAL CHARACTERISTICS

Service Type	Service Attribute	
Ethernet service point-to-point or Ethernet service point-to-multipoint (Pseudowire Ethernet tagged mode with port-based aggregation or virtual aggregation) providing guaranteed symmetrical bandwidth	Interface	Copper Access: Ethernet 10/100 BASE-TX Optical Access: 1. FE1000 BASE-LX 2. GE:1000BASE-SX , 1000BASE –LX. 3. 10GE:10G BASE –SR, 10G BASE LR, 10G BASE –ZR,10GE LAN, 10GE WAN. 4. STM16/FC200/FC100/STM4/ESCON/STM1/OS-3/OC-12/OC-48/DVB-ASI/STM64/OC-192/FC1200/FC800. 5. OTU2/OTU2e.
	Connector	Copper Access: RJ45 Fibre Access: SC/Single mode LC
	Speed	Please refer to Annex 1
	Mode	Duplex
	MAC Layer Supported	Yes
	MAC Address Learning	Yes
	Frame Size	Copper: 512 (Jumbo Not Supported)* Fibre: Min 1518, Max 9600 (Jumbo Frame), default 1700
	Class of Service	100% Real-Time. No Over Utilisation
	Maximum Number of CE-VLANs	4096
	CE-VLAN – PE-VLAN ID Map	Multiple VLAN per Connection
	CE-VLAN ID Preservation	Yes
	CE-VLAN COS Preservation	Yes
	Unicats Traffic Limit	None (Copper) / Yes (Fibre)
	Multicast Traffic Limit	None (Copper) / Yes (Fibre)
	Broadcast Traffic Limit	None (Copper) / Yes (Fibre)
	Protocol Treatment	Spanning Tree Protocol (STP), Rapid Spanning Tree Protocol (RSTP), Multiple Spanning Tree Protocol (MSP)
		Pause (802.3x)

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		Link Aggregation Protocol (LACP)
		(802.1AG),(802.1Q),(802.1D), (802.1P)
		Marker Protocol
		All LAN Bridge Management Group Block of Protocols
		Generic Attribute Registration Protocol (GARP) Block of Protocol
		Cisco Delivery Protocol (CDP)
		Cisco VLAN Trunking Protocol (VTP)
		OAM CM/Y1731 PDUs
	Quality of Service	Round Trip Delay (Frame Transfer Delay): 2ms Jitter (Frame Delay Variations): 1 ms Frame Loss Ratio: 0%

Information relating to existing CPEs used for the provision of the WDC Service:

Vendor: Huawei

Model: AR1220E

Technical Specifications

WAN speed with services (IMIX): 400Mbp/s

Fixed Port: 8 x GE (can be configured as WAN interfaces), 2 x GE Combo

Slot: 2 x SIC

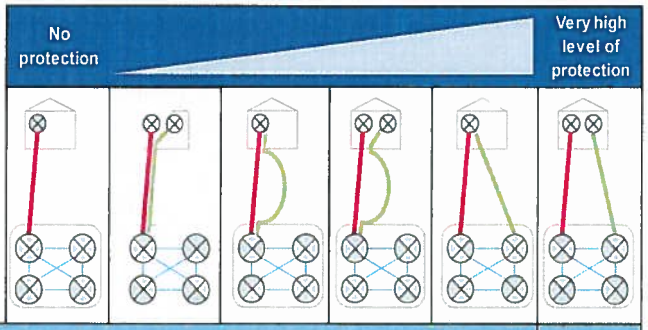
Dimensions (H x W x D): 44.5mm x 390mm x 220mm

The Access Provider shall include multiple CPE options, to include CPE options which are available from alternative vendors. The Access Provider must apply the same Service Levels, and reserves the right to vary the CPE from time to time.

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Optional Levels of Protection available for the WDC Service:

The Access Provider provides below a summary of the various levels of protection available for the WDC service:



Single Connection/Aggregation Link (i.e. no protection)			X					
Primary and secondary Connection/Aggregation Link (i.e. protection)				X	X	X	X	X
Logical protection	CPE	No CPE redundancy (at the End User Premises/Point of Presence)	X					
		Service card redundancy on CPE (at the End User Premises/Point of Presence)			X		X	
		Fully redundant CPE (at the End User Premises/Point of Presence)		X		X		X
	Service Node	No redundancy at Service Node	X	X	X	X		
		Service card redundancy at Service Node						
		Fully redundant Service Node					X	X
Physical protection		No redundancy	X					
		Fibre core redundancy in the same duct path		X				
		Duct path redundancy to the same Service Node (with or without redundant duct lead-in)			X	X		
		Duct path redundancy to a different Service Node (with or without redundant duct lead-in)					X	X

The Access Provider may also consider a request from an Access Seeker for a full end-to-end physical path redundancy that requires delivery of a secondary Connection/Aggregation Link in a different lead-in duct to the building, where this is reasonable. In such cases, the applicable NRC shall be determined in accordance with the provisions of paragraph 3.21 above.

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ANNEX 3

AGGREGATION LINK TECHNICAL SPECIFICATIONS

Where the WDC Service is provided using the Access Provider's Copper-based Network:

Aggregation Link (technical specifications): fibre link(s) with optical interface / gig Ethernet / modular / LC connector at the CPE. The Access Seeker will need to provide VLAN tag to Access Provider service team in order to ensure the correct mapping between the Access Seeker CPE and the Access Seeker's Equipment.

Upon request from an Access Seeker, the Access Provider shall provide quotations for higher-grade CPEs that may be used for the WDC.

Where the WDC Service is provided using the Access Provider's Fibre Based Network:

The WDC Aggregation Link(s) is/are:

(a) provided for a minimum bandwidth of 10 Gbit/s;

(b) delivered over a fully redundant fibre path; and

(c) provided with default protection mechanisms, including MSP 1+1, Sub-Network Connection Protection (SNCP), and Silver auto switching of 50ms.

The regulated MRC applicable to the WDC Aggregation Link is determined in accordance with Schedule 3 – (Pricing) of the Reference Offer.

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ANNEX 4

PROVISIONING VALIDATION TEST

The following provisioning validation test will only be carried out for the WDC Service where the WDC traffic handed over by the Access Seeker to the Access Provider is Ethernet traffic:

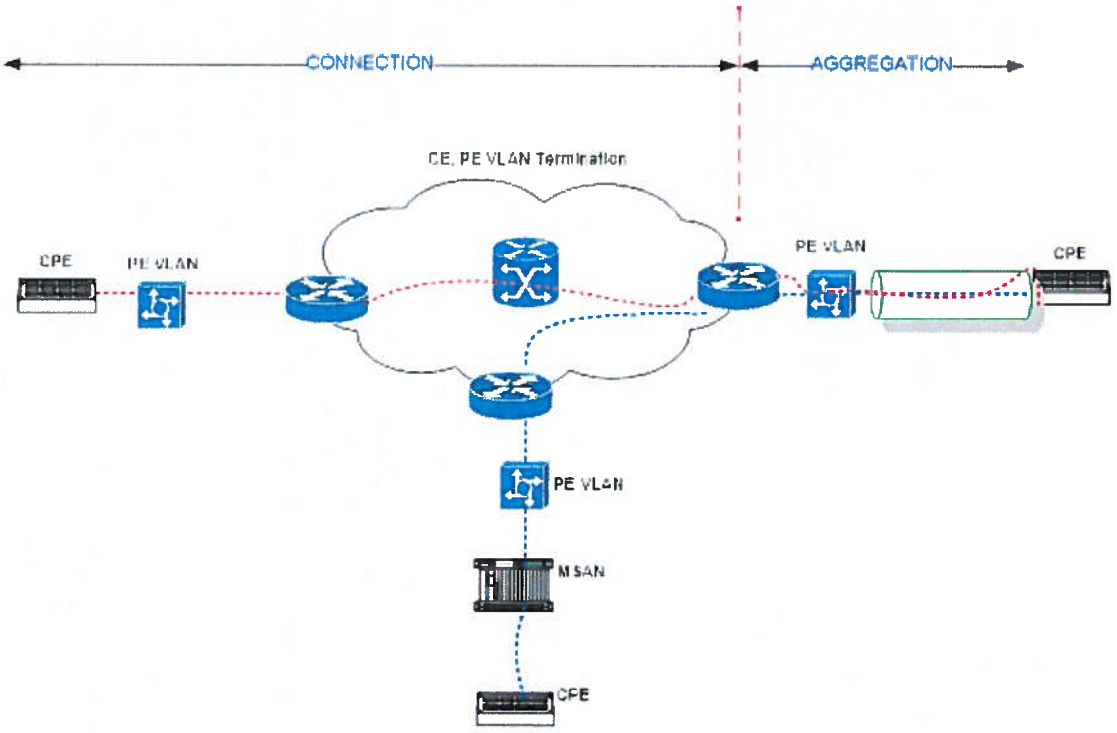
Provisioning Validation Test	
Testing Methodology	ITU-T Y.1564
Testing Mode	Layer 1-2 Loopback test. Tester simulates CPE
Parameters tested	Throughput, Frame loss, Latency & Jitter
Tester Speed Setting	WDC Service Speed
Tester Frame Size	Configuration & Performance Test Frame Size = 9600
Acceptance criteria	Link verification using the ITU-T Y.1564 methodology Minimum test time is 15 minutes.
Test Results	Copy provided to the Access Seeker upon request at time of testing

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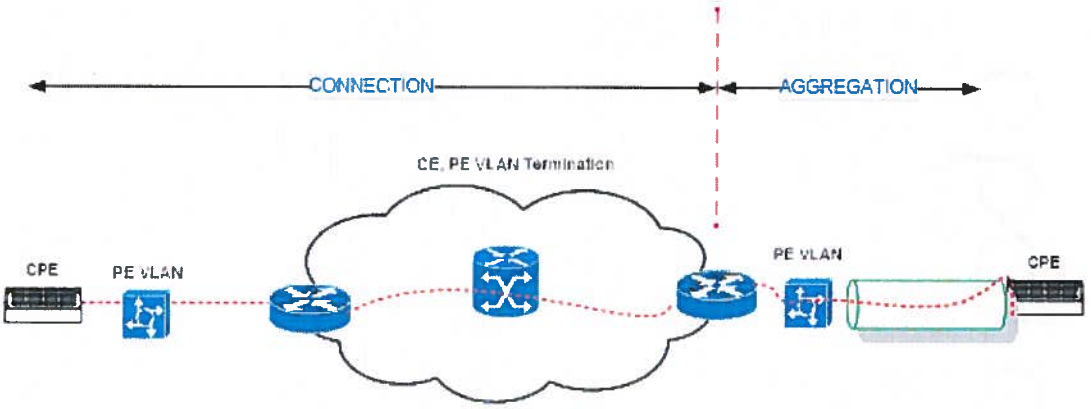
ANNEX 5

WDC SERVICE DIAGRAM AND IMPLEMENTATION INFORMATION

Copper-based Service:

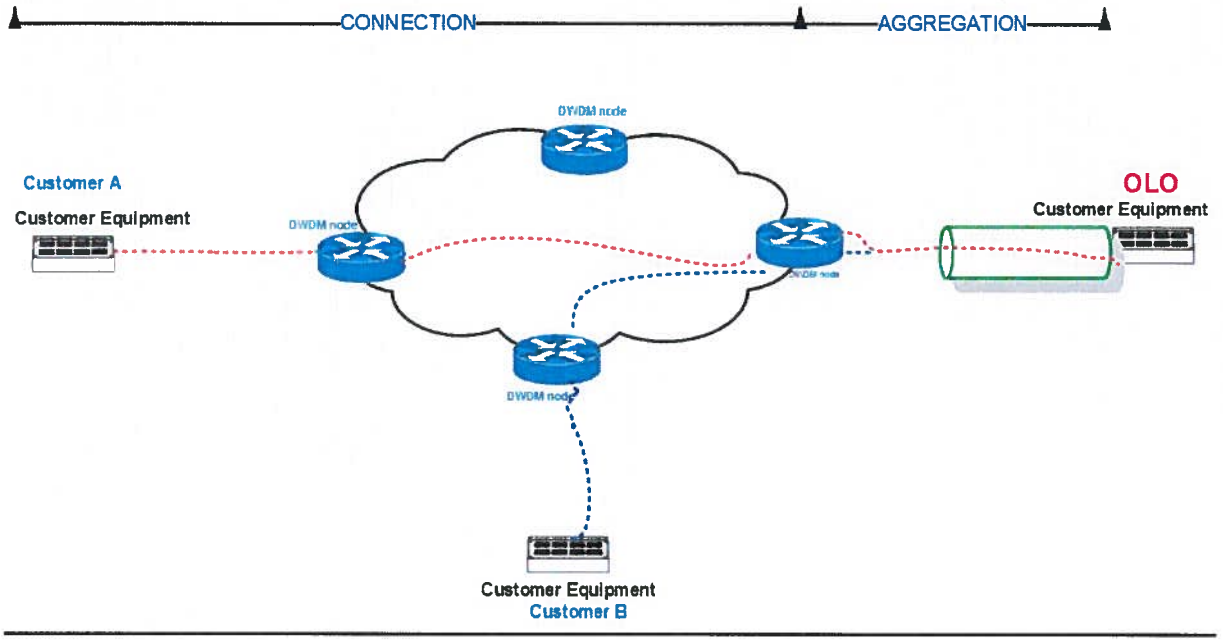


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Fibre-based Service:



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Schedule 6.3 - Mobile Backhaul Service (MBS) Service Description

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SCHEDULE 6.3 - SERVICE DESCRIPTION
MOBILE BACKHAUL SERVICE (MBS)

1. THE SERVICE

1.1 The Mobile Backhaul Service (**MBS**) provides an uncontended, symmetrical, dedicated point-to-point private leased circuit service within the Kingdom of Bahrain between an Access Seeker's Point of Presence and a Wireless Radio Site.

1.2 The MBS Service is provided with a number of options. These are specified in Annex 1 of this Service Description.

1.3 The MBS Service is available to Access Seekers holding an Individual Mobile Telecommunications License.

1.4 The MBS Service provides the following Quality of Service performance:

(a) Round Trip Delay (Frame Transfer Delay): 2ms

(b) Jitter (Frame Delay Variations): < 1ms

(c) Frame Loss Ratio: 0%

2. DEFINITIONS

Capitalised terms not defined in this Service Description are defined in Schedule 8 - (Dictionary) of the Reference Offer defined in this Service Description are specific to it.

Access Seeker Core Mobile Site means a location in the Kingdom of Bahrain owned or controlled by the Licensed Mobile Operator which hosts equipment for mobile control functionality on its Mobile Network.

Aggregation Link means the connectivity established between a Point of Presence of the Access Seeker and the Access Provider access node, as further detailed in Annex 1 of this Service Description.

Connection means an individual MBS Service as described in paragraph 1.1.

Customer Premises Equipment or CPE means the Equipment forming part of the MBS at the Wireless Radio Site more particularly specified under Annex 2 (Technical Characteristics).

MBS Amended Service means an MBS Service that is amended by a Change Request.

Minimum Service Period means an applicable minimum period of twenty-four (24) calendar months for which the MBS Service shall be provided, such period commencing from the Service Commencement Date.

Renewed Minimum Service Period means an applicable minimum period of one (1) month for which the MBS Service shall be provided, such period commencing from the expiry of a Service Period.

Service Period means the Minimum Service Period or Renewed Minimum Service Period.

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3. TERMS

Forecasting

3.1 The Access Seeker shall provide the Access Provider with a non-binding forecast of the number of new Connections. These forecasts shall be provided every quarter (three (3) months) commencing from the Service Commencement Date.

3.2 The period of each forecast shall cover the following information for the subsequent five (5) quarters:

(a) The number of new Connections per Access Provider exchange area; and

(b) Capacity required per new Connection.

3.3 The Access Seeker shall use all reasonable endeavours to forecast accurately given that the Access Provider is placing reliance on those forecasts. The forecasting process is set out in Schedule 5 – (Forecasting) of the Reference Offer.

3.4 New Connections can only be guaranteed to be provided up to the numbers forecasted. For the number of actual new Connections in excess of those forecasted, the Access Provider shall use all reasonable endeavours to provide the Connections requested but cannot guarantee that they will be provided within the timescale set out in the Schedule 7 – (Service Levels) of the Reference Offer.

3.5 The forecast provided represents a good faith expectation of the Access Seeker of its requirement for new Connections. In the event that the actual number of new Connections is less than forecasted, no penalty will be incurred by the Access Seeker.

Use of Service

3.6 The MBS Service shall only be made available to connect an Access Seeker's Point of Presence and Wireless Radio Site, and not any other residential or non-residential entity. The Access Seeker may not resell the MBS Service to another Licensed Operator.

3.7 Where the Access Provider reasonably suspects breach of paragraph 3.6 it may refer the matter as a complaint for investigation by the Regulator.

3.8 Where the Regulator establishes after an investigation under paragraph 3.7 that an Access Seeker is not using the MBS Service in accordance with this Service Description, the Access Provider, without prejudice to any other rights and remedies under the Supply Terms, may by immediate written notice suspend or terminate the specific MBS Connection and the Access Seeker shall be liable to pay the Access Provider liquidated damages, calculated in accordance with paragraph 3.23.

Supply of Service

3.9 The Access Seeker shall submit a Service Request to the Access Provider to request supply of the MBS Service in the manner communicated by the Access Provider.

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3.10 The Access Provider shall within two (2) Working Days notify the Access Seeker if the Service Request is accepted or rejected, and where applicable, state the required corrections. The Access Provider does not have the right to reject the Service Request during this stage if the Access Provider's point to point fibre Network does not extend to the requested area within the Kingdom of Bahrain. If a notification is not provided within two (2) Working Days of receipt of the relevant Service Request, the Service Request shall be deemed accepted by the Access Provider.

3.11 In the event a Service Request is rejected then the Access Provider shall provide the Access Seeker with clear reasons for the rejection at the same time of the rejection and identify the changes required to enable the Service Request to be accepted.

3.12 If the Access Seeker submits a Cancellation Request three (3) or more Working Days after the Notification of the Expected RFT and RFS Dates and where this is not related to delay in the Actual RFT or Actual RFS Date by the Access Provider, the Access Seeker shall, (subject to receipt of an appropriate invoice) be liable to pay three (3) MRCs to the Access Provider.

3.13 Within five (5) Working Days from the date of the acceptance of the Service Request, the Access Provider shall notify the Expected RFT and RFS Dates to the Access Seeker in writing as specified in Schedule 7 – (Service Levels) of the Reference Offer.

3.14 The Access Provider shall deliver the MBS Service on or before the standard time scales set out in Schedule 7 – (Service Levels) of the Reference Offer. The parties acknowledge and accept that exceptional circumstances, such as those set out below, may give rise to delays in any stage of the acceptance, provisioning and delivery of a Service Request. If the occurrence of any of the events below takes place, the Access Provider shall communicate the Exceptional Delivery Date to the Access Seeker and shall not be held liable for the Service Level Penalties. The exceptional circumstances shall only comprise:

(a) a Force Majeure Event or a Regulatory Event;

(b) Emergency Maintenance; or

(c) any material breach of the Access Seeker's obligations.

The Access Provider shall, in notifying the Access Seeker of the Exceptional Delivery Date, provide sufficient evidence so as to justify the reasons for the delay in delivery.

3.15 If the Access Provider's technician shall be present at the Wireless Radio Site to install a MBS Service, and if, for any reason, the Access Seeker cannot be available on the Expected RFT Date for such installation, the Access Seeker shall give the Access Provider a minimum written notice of one (1) Working Day. The revised Expected RFT and Expected RFS Dates are then set following the below principles:

(a) The Access Provider shall propose the next earliest dates for which the Access Provider's technician would be available for the installation which shall be a minimum of one (1) Working Day notice, unless waived by the Access Seeker. The proposed date(s) should not exceed two (2) Working Days from the previously notified Expected RFT and Expected RFS dates.

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(b) The previously notified Expected RFS Date is also modified and is set apart from the revised Expected RFT Date by the Maximum Validation Time of three (3) Working Days (see Schedule 7 – (Service Levels) of the Reference Offer). The revised Maximum RFS Date is then set equal to the revised Expected RFS Date.

(c) The Access Provider shall send the Access Seeker a Notification of the revised Expected RFT Date and revised Expected RFS Date.

3.16 In addition, if at least one of the following two conditions is met (i) the Access Seeker does not provide the Access Provider a minimum written notice of two (2) Working Days to inform of its unavailability; or (ii) the Access Provider sends a technician who is not able to access the Wireless Radio Site to install the MBS Service, then except for cases of Force Majeure affecting the Access Seeker, the Access Seeker is liable to pay the installation and configuration charge for the requested MBS Service as specified in Schedule 3 - (Pricing) of the Reference Offer. In such case, the modification and Notification of the revised Expected RFT Date, the revised Expected RFS Date, and the revised Maximum RFS Date follow the same principles as described in the above paragraph 3.15.

3.17 The Access Provider's technician must attend the Access Seeker's site during Working Hours and at least have called the Access Seeker's representative if it appears that the Access Seeker's technician is not present at the relevant time and, where requested, provide evidence of this. The Access Seeker shall, in this case, be liable to pay only the incurred man-day costs of the Access Provider technician.

3.18 In addition, if the Access Provider does not provide the Access Seeker a written notice of a minimum of two (2) Working Days to rearrange a site visit under paragraph 3.15 above, then the Access Provider is liable to waive an amount equal to one installation and configuration charge for the MBS Service.

3.19 Subject to the Access Seeker fulfilling its obligations set out in paragraphs 3.28 to 3.33 below, the Access Provider shall provide and the Access Seeker shall acquire the MBS Service either within the standard timescales or by the Exceptional Delivery Date as appropriate.

3.20 The Service Level Terms shall apply to:

(a) New Connection – provide a new Connection as requested by the Access Seeker;

(b) Upgrade or Downgrade;

(c) Hot and Cold Migration – change the Wireless Radio Site 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;

(d) Reconfiguration – reconfigure technical parameters of an existing Connection; and

(e) Cancellation – the Access Seeker requests the cessation of an existing Connection.

3.21 Further information relating to the applicable Service Levels Terms and Service Level Penalties for the above is detailed in the Schedule 7 – (Service Levels) of the Reference Offer.

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3.22 The Access Provider shall provide to the Access Seeker a monitoring tool, which shall enable the Access Seeker to monitor the MBS Service against the following minimum parameters and other monitoring parameters in accordance with the technical parameters defined in the Joint Working Manual. This monitoring tool shall provide monitoring facilities (24) twenty-four hours a day, (7) seven days a week, (365) three-hundred and sixty-five days a year. The minimum parameters shall include:

(a) Link availability;

(b) Bandwidth Utilisation;

(c) Latency per circuit;

(d) Jitter per circuit;

(e) Frame Loss per circuit; and

(f) Round trip delay per circuit.

Termination

3.23 Where the Minimum Service Period has not expired, the Access Seeker shall be entitled to terminate the MBS Service on at least one (1) month's written notice to the Access Provider and will be liable to pay liquidated damages as calculated by the following formula.

Formula for calculating liquidated damages:

LD = MRC x (24-M)

where:

LD = liquidated damages to be paid.

MRC = Monthly Recurring Charge for the MBS Service.

M = number of months between the Actual RFS Date and the removal order date rounded-up to the next full month.

The Access Seeker shall not be liable to pay liquidated damages where the Access Seeker terminates the MBS Service as a result of and/or arising out of a material breach of the Reference Offer by the Access Provider.

3.24 The Access Seeker expressly acknowledges that liquidated damages as calculated above form a reasonable pre-estimate of the loss that the Access Provider would suffer as a result of early termination by the Access Seeker. Such liquidated damages shall be the Access Provider's sole and exclusive damages or monetary remedy for such early termination.

3.25 Following the expiry of any Minimum Service Period the MBS Service shall be automatically renewed for successive Renewed Minimum Service Periods unless and until terminated by the Access Seeker, provided that the Access Seeker supplies the Access

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Provider with a termination notice at least one (1) month prior to the expiry of the current Service Period.

Amendment to the MBS Service

3.26 The Access Seeker shall be entitled to amend a MBS Service by requesting a MBS Amended Service where this is an Upgrade by providing an Upgrade Request to the Access Provider. The Access Seeker shall only be entitled to Downgrade the throughput of a Connection when the Minimum Service Period has expired. Where the Access Seeker requests an MBS Amended Service, then the Service Request procedure set out in this Service Description shall apply to that request. Where the Access Seeker requests a MBS Amended Service that requires any new network resources and/or facilities then a new Minimum Service Period shall commence and the Access Provider shall provide a MBS Amended Service for the new Service Period.

3.27 The Access Seeker shall not be liable for any termination or additional recurring charges in respect of a request for a MBS Amended Service which is for a relocation. The Access Provider shall charge a once off charge for the relocation in accordance with Schedule 3 – (Pricing) of the Reference Offer unless the Access Seeker requires both Connections to be operational in parallel. The Access Provider shall not terminate the Connection which is subject to relocation until the Service Commencement Date of the new Connection.

Access Seeker Obligations

3.28 The Access Seeker shall provide the Access Provider with suitable space for, and access during Working Hours to, any Access Provider Equipment required to be located in any building in which the MBS Service is located within the control of the Access Seeker. If consent is required from a third party, the Access Seeker shall procure such consent. The Access Provider is not required to pay the Access Seeker for the preparation or use of, or access to, space provided pursuant to this sub-paragraph.

3.29 When provisioning a Service Request requiring new Duct build, the Access Provider is responsible for construction of the Duct on public land up until the demarcation point being the boundary of the plot where the Wireless Radio Site is located. The Access Seeker is responsible for construction of the lead-in Duct or in-building Duct or conduit from the demarcation point to the Wireless Radio Site and/or aggregation Point of Presence.

3.30 If the Access Provider's Equipment requires electricity supply and electricity connection points, they shall be supplied, in the location specified by the Access Provider, by the Access Seeker at the Access Seeker's expense according to the equipment specification. Such electricity shall be available at the same level of supply, protection and continuity as that available to the Access Seeker's Equipment.

3.31 The Access Seeker shall be solely responsible for any loss, theft or destruction of, or damage (reasonable wear and tear excepted) to the Access Provider's Equipment required to be located in the building where the MBS Service is provided and which is within the control of the Access Seeker, occurring at any time and howsoever caused (unless caused by the Access Provider or its agents).

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3.32 The Access Seeker shall provide the Access Provider and any authorised employee, agent, affiliate or contractor of the Access Provider with all information and assistance that person may reasonably require to design, test, commission and maintain the MBS Service (which may include participation in testing procedures as and when reasonably requested by the Access Provider).

3.33 The Access Seeker may require their agent to be present during the installation, testing or commissioning done by the Access Provider but not so as to affect the Service Commencement Date.

Planned and Emergency Maintenance

3.34 The Access Provider may suspend any MBS Service in order to carry out Planned or Emergency Maintenance.

3.35 In the case of Planned Maintenance, this shall be carried out as far as possible during the night or at weekends or other quiet periods. The Access Provider shall give ten (10) Working Days' notice of each Planned Maintenance activity affecting a particular MBS Service or group of MBS Services. This notice shall include the circuits affected, the date and time of the suspension and the likely duration of the suspension. The Access Provider shall use its reasonable endeavours to take into account the reasonable operational concerns of the Access Seeker before implementing any Planned Maintenance.

3.36 In the case of Emergency Maintenance, the Access Provider shall give the Access Seeker notice via email five (5) Working Days in advance. The notice shall include the affected circuit(s), the date and time of the Emergency Maintenance and the expected duration of the Emergency Maintenance. The Access Provider shall use its best endeavours to carry out maintenance outages as much as possible during the night, at weekends or at a time agreeable with the Access Seeker.

3.37 In cases of Emergency Maintenance, the Access Provider shall advise the Access Seeker within five (5) hours after service is restored with a report of the cause of the Fault.

Maintenance and Support

3.38 The Access Provider shall provide maintenance and support services in respect of the MBS Service in accordance with the Schedule 7 – (Service Levels) of the Reference Offer.

3.39 The Access Seeker shall report a Fault to the Access Provider's nominated contact point which shall be available twenty-four (24) hours per day every day. The Access Provider shall record the Fault using a unique reference number which it shall pass to the Access Seeker at the same time as acknowledging the Fault in accordance with Schedule 7 – (Service Levels) of the Reference Offer. The Access Provider shall commence repair of the Fault within:

(a) One (1) hour during Working Hours; or

(b) Two (2) hours outside of Working Hours,

from the time of the Access Seeker reporting the Fault, and shall restore the MBS Service in accordance with the Service Levels in Schedule 7 – (Service Levels) of the Reference

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Offer. The Access Provider shall advise the Access Seeker's nominated contact point once the Fault is clear and both parties shall record the time of this clearance.

Protection

3.40 If requested by the Access Seeker, the Access Provider shall provide logical protection for the MBS Aggregation Link at a fixed monthly Charge as set out in Schedule 3 – (Pricing) of the Reference Offer.

3.41 The Access Provider shall provide, as a minimum, dual 10Gbps interfaces with board level redundancy for the Aggregation Link.

4. CHARGES

4.1 The Access Seeker shall pay to the Access Provider the relevant Charges determined in accordance with Schedule 3 – (Pricing) of the Reference Offer.

4.2 All Charges and sums due from one party to the other under this Agreement are exclusive of VAT. Any VAT shall be charged in accordance with the relevant regulation in force at the time of making the taxable supply and shall be paid by the paying party following receipt from the billing party of a valid VAT invoice.

5. SERVICE LEVELS

5.1 The Access Provider shall provide the MBS Services in accordance with the Service Levels specified in Schedule 7 – (Service Levels) of the Reference Offer.

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ANNEX 1

CIRCUIT SPEEDS, DEFINED INTERFACES, MEDIA AND TOPOLOGY

Service element	Speed	Interface	Connector	Topology	Access
Connection terminating at Wireless Radio Site / Point of Presence	500 Mbit/s to 10 Gbit/s	gigabit Ethernet 1000BASE-LX gigabit Ethernet 1000BASE-SX	SC/LC	Ethernet service point- to-point	Fibre
Aggregation Link terminating at the Point of Presence of the Access Seeker	up to 100 Gbit/s	gigabit Ethernet 1000BASE-LX gigabit Ethernet 1000BASE-SX	SC/LC	Ethernet service point- to-point	Fibre

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ANNEX 2

TECHNICAL CHARACTERISTICS

Service Type	Service Attribute	
Ethernet service point-to-point or Ethernet service point-to-multipoint (Pseudo wire Ethernet tagged mode with port-based aggregation or virtual aggregation) providing guaranteed symmetrical bandwidth	Interface	Optical Access: 1. FE1000 BASE-LX 2. GE:1000Base-SX , 1000base –LX. 3. 10GE:10G base –SR, 10G Base LR, 10G Base –ZR,10GE LAN, 10GE WAN.
	Connector	Fibre Access: Single mode LC
	Speed	Please refer to ANNEX 1
	Mode	Duplex
	MAC Layer Supported	Yes
	MAC Address Learning	Yes
	Frame Size	Min 1518 ,Max 9600 (Jumbo Frame),default 1700
	Class of Service	100% Real-Time. No Over Utilisation
	Maximum Number of CE-VLANs	4096
	Unicats Traffic Limit	Yes
	Multicast Traffic Limit	Yes
	Broadcast Traffic Limit	Yes
	Protocol Treatment	Spanning Tree Protocol (STP), Rapid Spanning Tree Protocol (RSTP), Multiple Spanning Tree Protocol (MSP)
		Pause 802.3
		Link Aggregation Protocol (LACP)
		(802.1AG),(802.1Q),(802.1D), (802.1P)
	Quality of service	Round Trip Delay (Frame Transfer Delay): 2ms Jitter (Frame Delay Variations): < 1ms Frame Loss Ratio: 0%

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** Frame sizes 64 bytes and 128 bytes are supported by the MBS service but may experience reduced performance.*

Customer Premises Equipment (CPE) type:

1 Gbits/s and below - Huawei S5300 SW + (3X 1G SFP) + 1 x 1G SFP+

Above 1 Gbits/s - Huawei S5300 SW + (4X 1G SFP) + 1 x 10G SFP+

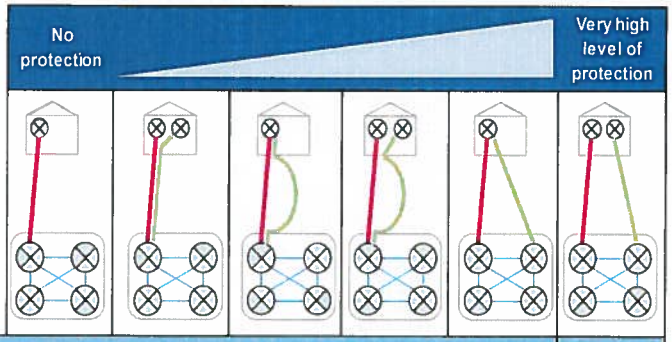
The Access Provider shall include multiple CPE options, to include CPE options that are available from alternative vendors. The Access Provider must apply the same Service Levels, and reserves the right to vary the CPE from time to time.

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Optional Levels of Protection available for the MBS Service:

The Access Provider provides below a summary of the various levels of protection available for the MBS service:

(NOTE – for the purposes of this table, End User refers to the MNO Wireless Radio Site)



Single Connection/Aggregation Link (i.e. no protection)			X					
Primary and secondary Connection/Aggregation Link (i.e. protection)				X	X	X	X	X
Logical protection	CPE	No CPE redundancy (at the End User Premises/Point of Presence)	X					
		Service card redundancy on CPE (at the End User Premises/Point of Presence)			X		X	
		Fully redundant CPE (at the End User Premises/Point of Presence)		X		X		X
	Service Node	No redundancy at Service Node	X	X	X	X		
		Service card redundancy at Service Node						
		Fully redundant Service Node					X	X
Physical protection		No redundancy	X					
		Fibre core redundancy in the same duct path		X				
		Duct path redundancy to the same Service Node (with or without redundant duct lead-in)			X	X		
		Duct path redundancy to a different Service Node (with or without redundant duct lead-in)					X	X

The Access Provider may also consider a request from an Access Seeker for a full end-to-end physical path redundancy that requires delivery of a secondary Connection/Aggregation Link in a different lead-in Duct to the building, where this is reasonable. In such cases, the applicable Charges shall be determined in accordance with the provisions of this Service Description.

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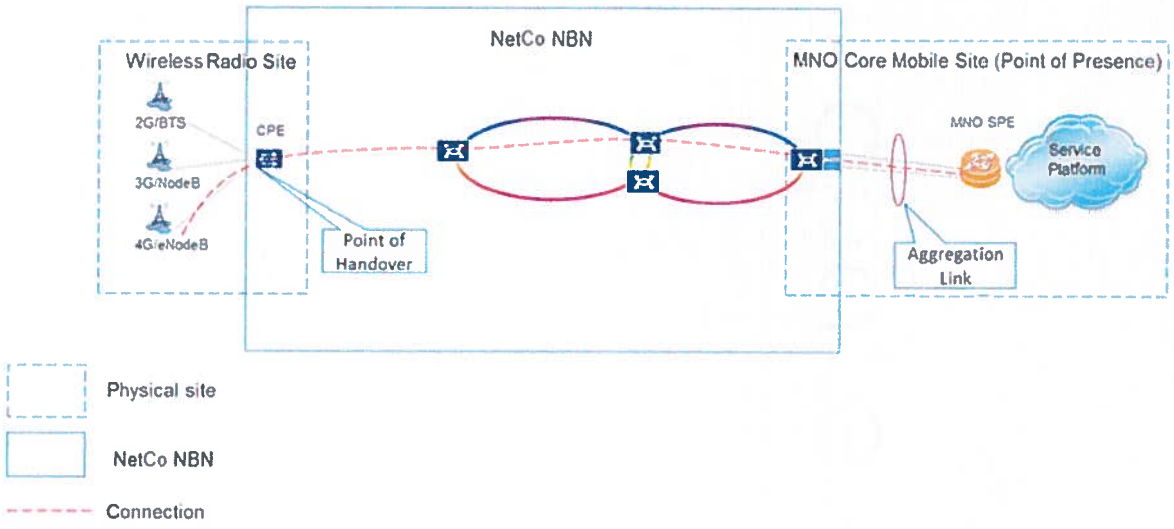
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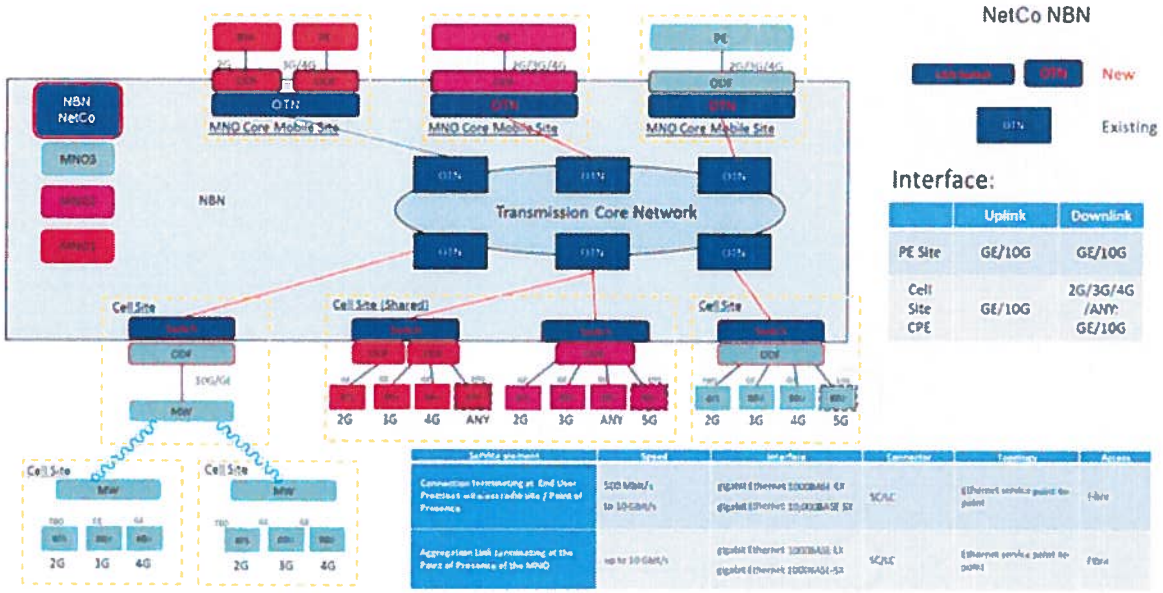
PROVISIONING VALIDATION TEST

Provisioning Validation Test	
Testing Methodology	ITU-T Y.1564
Testing Mode	Layer 1-2 Loopback test. Tester simulates CPE
Parameters tested	Throughput, Frame loss
Tester Speed Setting	MBS Service Speed
Tester Frame Size	64, 128, 256, 512, 1024, 1280, 1518 and 9,600 bytes
Acceptance criteria	Achieved throughput of 95% of MBS Service Speed with zero frame loss. Five test iterations of approximately 10 minutes each conducted.
Test Results	Copy provided to the Access Seeker upon request at time of testing

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ANNEX 4
MBS SERVICE DIAGRAMS





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Schedule 6.4 - Data Service (DS) Service Description

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SCHEDULE 6.4 - SERVICE DESCRIPTION
DATA SERVICE (DS)

1. THE SERVICE

Service Description

1.1. The Data Service ('**DS**') provides uncontended, symmetrical, dedicated point-to-point private leased circuit service within the Kingdom of Bahrain between an Access Seeker's Point of Presence and a Wireless Radio Site.

1.2. The Service is provided with a number of options regarding its technical characteristics. These are specified in Annex 1 of this Service Description.

1.3. The DS Service is available to Access Seekers holding an appropriate Mobile Individual Telecommunications License.

1.4. The DS Service provides the following Quality of Service performance:

(a) Round Trip Delay (Frame Transfer Delay): 5ms

(b) Jitter (Frame Delay Variations): < 5ms

(c) Frame Loss Ratio: 0%

2. DEFINITIONS

Capitalised terms not defined in this Service Description are defined in Schedule 8 - (Dictionary). Terms defined in this Service Description are specific to it.

Access Seeker Core Mobile Site means a location in the Kingdom of Bahrain owned or controlled by the Licensed Mobile Operator which hosts equipment for mobile control functionality on its Mobile Network.

Aggregation Link means the connectivity established between a Point of Presence of the Access Seeker and the Access Provider access node.

Connection means an individual DS Service as described in paragraph 1.

Customer Premises Equipment or CPE means the Equipment forming part of the DS at the Wireless Radio Site more particularly specified under Annex 2 (Technical Characteristics).

DS Amended Service means a DS Service that is amended by a Change Request.

Minimum Service Period means an applicable minimum period of twenty-four (24) calendar months for which the DS Service shall be provided, such period commencing from the Service Commencement Date.

Renewed Minimum Service Period means an applicable minimum period of one (1) month for which the DS Service shall be provided, such period commencing from the expiry of a Service Period.

Service Period means the Minimum Service Period or Renewed Minimum Service Period.

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3. TERMS

Forecasting

3.1 The Access Seeker shall provide the Access Provider with a non-binding forecast of the number of new Connections. These forecasts shall be provided every quarter (three (3) months) commencing from the Service Commencement Date.

3.2 The period of the forecast shall cover the following information for the subsequent five (5) quarters:

(a) The number of new Connections per Access Provider exchange area; and

(b) Capacity required per new Connection.

3.3 The Access Seeker shall use all reasonable endeavours to forecast accurately given that the Access Provider is placing reliance on those forecasts. The forecasting process is defined in Schedule 5 - (Forecasting) of this Reference Offer.

3.4 New Connections can only be guaranteed to be provided up to the numbers forecasted. For actual new Connections in excess of those forecasted, the Access Provider shall use all reasonable endeavours to provide the Connections requested but cannot guarantee that they will be provided within the timescale set out in Schedule 7 - (Service Levels) of the Reference Offer.

3.5 The forecast provided represents a good faith expectation of the Access Seeker of their requirement for new Connections. In the event that the actual number of new Connections is less than forecasted, no penalty will be incurred by the Access Seeker.

Use of Service

3.6 The DS Service shall only be made available to connect an Access Seeker's Point of Presence and Wireless Radio Site, and not any other residential or non-residential entity. The Access Seeker may not resell the DS Service to another Licensed Operator.

3.7 Where the Access Provider reasonably suspects breach of paragraph 3.6 it may refer the matter as a complaint for investigation by the Regulator.

3.8 Where the Regulator establishes after an investigation under paragraph 3.7 that the Access Seeker is not using the Service in accordance with this Service Description, the Access Provider without prejudice to any other rights and remedies under the Supply Terms may by immediate written notice suspend or terminate all or part of the DS Service and the Access Seeker shall be liable to pay the Access Provider liquidated damages, calculated in accordance with paragraph 3.23.

Supply of Service

3.9 The Access Seeker shall submit a Service Request to the Access Provider to request supply of the DS Service in accordance with the Supply Terms and in the manner communicated by the Access Provider.

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3.10 The Access Provider shall within two (2) Working Days notify the Access Seeker if the Service Request is accepted or rejected and where applicable, state the required corrections. The Access Provider does not have the right to reject the Service Request during this stage if the Access Provider's point to point fibre Network does not extend to the requested area within the Kingdom of Bahrain. If a notification is not provided within two (2) Working Days of receipt of the relevant Service Request, the Service Request shall be deemed accepted by the Access Provider.

3.11 In the event a Service Request is rejected then the Access Provider shall provide the Access Seeker with clear reasons for the rejection at the same time of the rejection and identify the changes required to enable the Service Request to be accepted.

3.12 If the Access Seeker submits a Cancellation Request three (3) or more Working Days after the Notification of the Expected RFT and RFS Dates and where this is not related to delay in the Actual RFT and Actual RFS Date by the Access Provider, the Access Seeker shall, subject to receipt of an invoice, be liable to pay a penalty to the value of three (3) MRCs to the Access Provider.

3.13 Within five (5) Working Days from the date of the acceptance of the Service Request, the Access Provider shall notify the Expected RFT and RFS Dates to the Access Seeker in writing as specified in Schedule 7 - (Service Levels) of the Reference Offer.

3.14 The Access Provider shall deliver the DS Service on or before the standard time scales set out in Schedule 7 - (Service Levels) of the Reference Offer. However, the parties acknowledge and accept that exceptional circumstances, such as those set out below, may give rise to delays in any stage of the acceptance, provisioning and delivery of a Service Request. If the occurrence of any of the events below takes place, the Access Provider shall communicate the Exceptional Delivery Date to the Access Seeker and shall not be held liable for the Service Level Penalties. The exceptional circumstances shall only comprise:

(a) a Force Majeure Event or a Regulatory Event;

(b) Emergency Maintenance; or

(c) any material breach of the Access Seeker's obligations.

The Access Provider shall in notifying the Access Seeker of the Exceptional Delivery Date provide sufficient evidence so as to justify the reasons for the delay in delivery.

3.15 If the Access Provider's technician must be present at the Wireless Radio Site to install a DS Service, and if, for any reason, the Access Seeker cannot be available on the Expected RFT Date for such installation, the Access Seeker shall give the Access Provider a minimum written notice of one (1) Working Day. The revised Expected RFT and Expected RFS Dates are then set following the below principles:

(a) The Access Provider shall propose the next earliest dates for which the Access Provider's technician would be available for the installation which shall be a minimum of one (1) Working Day notice unless waived by the Access Seeker. The proposed date(s) should not exceed two (2) Working Days from the previously notified Expected RFT and Expected RFS Dates.

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(b) The previously notified Expected RFS Date is also modified and is set apart from the revised Expected RFT Date by the Maximum Validation Time of three (3) Working Days (see Schedule 7 - (Service Levels) of the Reference Offer). The revised Maximum RFS Date is then set equal to the revised Expected RFS Date.

(c) The Access Provider shall send the Access Seeker a Notification of the revised Expected RFT Date and revised Expected RFS Date.

3.16 In addition, if at least one of the following two conditions is met (i) the Access Seeker does not provide the Access Provider with a minimum written notice of one (1) Working Day to inform of its unavailability; or (ii) the Access Provider sends a technician who is not able to access the Wireless Radio Site to install the service, then except for cases of Force Majeure affecting the Access Seeker, the Access Seeker is liable to pay the installation and configuration charge for the DS Service as specified in Schedule 3 (Pricing) of this Reference Offer. In such case, the modification and Notification of the revised Expected RFT Date, revised Expected RFS Date, and the revised Maximum RFS Date follow the same principles as described in the above paragraph 3.15.

3.17 The Access Provider's technician must attend the Access Seeker's site during Working Hours and at least have called the Access Seeker's representative if it appears that the Access Seeker's technician is not present at the relevant time and, where requested, provide evidence of this. The Access Seeker shall, in this case, be liable to pay only the incurred man-day costs of the Access Provider technician.

3.18 In addition, if the Access Provider does not provide the Access Seeker with a written notice of a minimum two (2) Working Days to rearrange a site visit under paragraph 3.15 above, then the Access Provider is liable to waive an amount equal to one installation and configuration charge for the DS Service.

3.19 Subject to the Access Seeker fulfilling its obligations as set out in paragraphs 3.28 to 3.33 below, the Access Provider shall provide and the Access Seeker shall acquire the DS Service either within the standard time scales or by the Exceptional Delivery Date as appropriate.

3.20 The Service Level Terms shall apply to:

(a) New Connection – provide a new Connection as requested by the Access Seeker;

(b) Upgrade or Downgrade;

(c) Hot and Cold Migration – change the Wireless Radio Site 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;

(d) Reconfiguration – reconfigure technical parameters of an existing Connection; and

(e) Cancellation – the Access Seeker requests the cessation of an existing Connection.

3.21 Further information relating to the applicable Service Levels Terms and Service Level Penalties for the above is detailed in Schedule 7 - (Service Levels) of the Reference Offer.

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3.22 The Access Provider shall provide to the Access Seeker a monitoring tool, which shall enable the Access Seeker to monitor the Service against the following minimum parameters and other monitoring parameters in accordance with the technical parameters defined in the Joint Working Manual. This monitoring tool shall provide monitoring facilities twenty-four (24) hours a day, seven (7) days a week, three-hundred and sixty-five (365) days a year. The minimum parameters shall include:

(a) Link availability;

(b) Bandwidth Utilisation;

(c) Latency per circuit;

(d) Jitter per circuit;

(e) Frame Loss per circuit; and

(f) Round trip delay per circuit.

Termination

3.23 Where the Minimum Service Period has not expired, the Access Seeker shall be entitled to terminate such DS Service on at least one (1) month's written notice to the Access Provider and will be liable to pay liquidated damages as calculated by the following formula.

Formula for calculating liquidated

damages:

LD = MRC x (24-M)

where:

LD = liquidated damages to be paid.

MRC = Monthly Recurring Charge for the DS Service.

M = number of months between the Actual RFS Date and the removal order date rounded-up to the next full month.

The Access Seeker shall not be liable to pay liquidated damages where the Access Seeker terminates the DS Service as a result of and/or arising out of a material breach of the Reference Offer by the Access Provider.

3.24 The Access Seeker expressly acknowledges that liquidated damages as calculated above form a reasonable pre-estimate of the loss which the Access Provider would suffer as a result of early termination by the Access Seeker. Such liquidated damages shall be the Access Provider's sole and exclusive damages or monetary remedy for such early termination.

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3.25 Following the expiry of any Minimum Service Period a DS Service shall be automatically renewed for a successive Renewed Minimum Service Period unless and until terminated by the Access Seeker, provided that the Access Seeker supplies the Access Provider with a termination notification at least one (1) month prior to the expiry of the current Service Period.

Amendment to the DS Service

3.26 The Access Seeker shall be entitled to amend a DS Service by requesting a DS Amended Service where this is an Upgrade the throughput by providing notification to the Access Provider. The Access Seeker shall only be entitled to Downgrade the throughput of a Connection when the Minimum Service Period has expired. Where the Access Seeker requests a DS Amended Service, then the Service Request procedure set out in this Service Description shall apply to that request. Where the Access Seeker requests a DS Amended Service that requires any new network resources and/or facilities then a new Minimum Service Period shall commence and the Access Provider shall provide a DS Amended Service for the new Service Period.

3.27 The Access Seeker shall not be liable for any termination or additional recurring charges in respect of a request for a DS Amended Service which is for a relocation. The Access Provider shall charge a once off charge for the relocation, in accordance with Schedule 3 - (Pricing) of this Reference Offer unless the Access Seeker requires both Connections to be operational in parallel. For the avoidance of doubt, the Access Provider shall not terminate the Connection which is subject to relocation until the Service Commencement Date of the new Connection.

Access Seeker Obligations

3.28 The Access Seeker shall provide the Access Provider with suitable space for, and access during Working Hours to, any Access Provider Equipment required to be located in any building in which the DS Service is located within the control of the Access Seeker. If consent is required from a third party, the Access Seeker shall procure such consent. The Access Provider is not required to pay the Access Seeker for the preparation or use of, or access to, space provided pursuant to this sub-paragraph.

3.29 When provisioning a Service Request requiring new Duct build, the Access Provider is responsible for construction of the Duct on public land up until the demarcation point being the boundary of the plot where the Wireless Radio Site is located. The Access Seeker is responsible for construction of the lead-in Duct or in-building Duct or conduit from the demarcation point to the Wireless Radio Site and/or aggregation Point of Presence.

3.30 If the Access Provider's Equipment requires electricity supply and electricity connection points, they shall be supplied, in the location specified by the Access Provider, by the Access Seeker at the Access Seeker's expense according to the equipment specification. Such electricity shall be available at the same level of supply, protection and continuity as that available to the Access Seeker's Equipment.

3.31 The Access Seeker shall be solely responsible for any loss, theft or destruction of, or damage (reasonable wear and tear excepted) to the Access Provider's Equipment

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required to be located in the building where the DS Service is provided, which is within the control of the Access Seeker, occurring anytime and howsoever caused (unless caused by the Access Provider or its agents).

3.32 The Access Seeker shall provide the Access Provider and any authorised employee, agent, affiliate or contractor of the Access Provider with all information and assistance that person may reasonably require to design, test, commission and maintain the DS Service (which may include, without limitation, participation in testing procedures as and when reasonably requested by the Access Provider).

3.33 The Access Seeker may require their agent to be present during the installation, testing or commissioning done by the Access Provider but not so as to affect the Service Commencement Date.

Planned and Emergency Maintenance

3.34 The Access Provider may suspend any DS Service in order to carry out planned or Emergency Maintenance.

3.35 In the case of Planned Maintenance, this will be carried out as far as possible during the night or at weekends or other quiet periods. The Access Provider shall give ten (10) Working Days' notice of each Planned Maintenance activity affecting a particular DS Service or group of DS Services. This shall include the circuits affected, the date and time of the suspension and the likely duration of the suspension. The Access Provider shall use its reasonable endeavours to take into account the reasonable operational concerns of the Access Seeker before implementing any Planned Maintenance.

3.36 In the case of Emergency Maintenance, the Access Provider shall give the Access Seeker via email five (5) Working Days' advance notice. The notification shall include the affected circuit(s), the date and time of the Emergency Maintenance and the expected duration of the Emergency Maintenance. The Access Provider shall use its best endeavours to seek to carry out maintenance outages as much as possible during the night, at weekends or at a time agreeable with the Access Seeker.

3.37 In cases of Emergency Maintenance, the Access Provider shall advise the Access Seeker within five (5) hours after service is restored with a report of the cause of the Fault.

Maintenance and Support

3.38 The Access Provider shall provide maintenance and support services in respect of the DS Service in accordance with Schedule 7 - (Service Levels) of the Reference Offer.

3.39 The Access Seeker shall report a Fault to the Access Provider's nominated contact point which shall be available twenty-four (24) hours per day every day. The Access Provider shall record the Fault using a unique reference number which it shall pass to the Access Seeker at the same time as acknowledging the Fault (see Schedule 7 - (Service Levels) of the Reference Offer) and both parties shall agree the time of the report. The Access Provider shall commence repair of the Fault within:

(a) One (1) hour during Working Hours; or

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(b) Two (2) hours outside of Working Hours,

from the time of the Access Seeker reporting the Fault and shall restore the Service in accordance with the Service Levels. The Access Provider shall advise the Access Seeker's nominated contact point once the Fault is clear and both parties shall record the time of this clearance.

Protection

3.40 If requested by the Access Seeker, the Access Provider shall provide logical protection for the DS Aggregation Link at a fixed monthly Charge as set out in Schedule 3 - (Pricing) of this Reference Offer.

4. CHARGES

4.1 The Access Seeker shall pay to the Access Provider the relevant Charges determined in accordance with Schedule 3 - (Pricing) of this Reference Offer.

4.2 All Charges and sums due from one party to the other under this Agreement are exclusive of VAT. Any VAT shall be charged in accordance with the relevant regulation in force at the time of making the taxable supply and shall be paid by the paying party following receipt from the billing party of a valid VAT invoice.

5. SERVICE LEVEL

5.1 The Access Provider shall provide the DS Services in accordance with the Service Levels specific in Schedule 7 - (Service Levels) of the Reference Offer.

ANNEX 1

CIRCUIT SPEEDS, DEFINED INTERFACES, MEDIA AND TOPOLOGY

Service element	Speed	Interface	Connector	Topology	Access
Connection terminating at Wireless Radio Site or Point of Presence	500 Mbit/s to 10 Gbit/s	gigabit Ethernet 1000BASE-LX gigabit Ethernet 10,000BASE - SX	SC/LC	Ethernet service point- to-point	Fibre

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Aggregation Link terminating at the Point of Presence of the MNO	up to 100 Gbit/s	gigabit Ethernet 1000BASE-LX gigabit Ethernet 1000BASE-SX	SC/LC	Ethernet service point- to-point	Fibre

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ANNEX 2

TECHNICAL CHARACTERISTICS

Service Type	Service Attribute	
Ethernet service point-to-point or Ethernet service point-to-multipoint (Pseudo wire Ethernet tagged mode with port-based aggregation or virtual aggregation) providing guaranteed symmetrical bandwidth	Interface	Optical Access: 1. FE1000 BASE-LX 2. GE:1000Base-SX, 1000base –LX. 3. 10GE:10G base –SR, 10G Base LR, 10G Base –ZR,10GE LAN, 10GE WAN.
	Connector	Fibre Access: Single mode LC
	Speed	Please refer to ANNEX 1
	Mode	Duplex
	MAC Layer Supported	Yes
	MAC Address Learning	Yes
	Frame Size	Min 1518 ,Max 9600 (Jumbo Frame),default 1700
	Class of Service	100% Real-Time. No Over Utilisation
	Maximum Number of CE-VLANs	4096
	Unicats Traffic Limit	Yes
	Multicast Traffic Limit	Yes
	Broadcast Traffic Limit	Yes
	Protocol Treatment	Spanning Tree Protocol (STP), Rapid Spanning Tree Protocol (RSTP), Multiple Spanning Tree Protocol (MSP)
		Pause 802.3
		Link Aggregation Protocol (LACP)
		(802.1AG),(802.1Q),(802.1D), (802.1P)
		Round Trip Delay (Frame Transfer Delay): 5ms

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	Quality of Service	Jitter (Frame Delay Variations): < 5ms Frame Loss Ratio: 0%

** Frame sizes 64 bytes and 128 bytes are supported by the MBS service but may experience reduced performance.*

Customer Premises Equipment (CPE) type:

1 Gbits/s and below - Huawei S5300 SW + (3X 1G SFP) + 1 x 1G SFP+

Above 1 Gbits/s - Huawei S5300 SW + (4X 1G SFP) + 1 x 10G SFP+

The Access Provider shall include multiple CPE options, to include CPE options which are available from alternative vendors. The Access Provider must apply the same Service Levels, and reserves the right to vary the CPE from time to time.

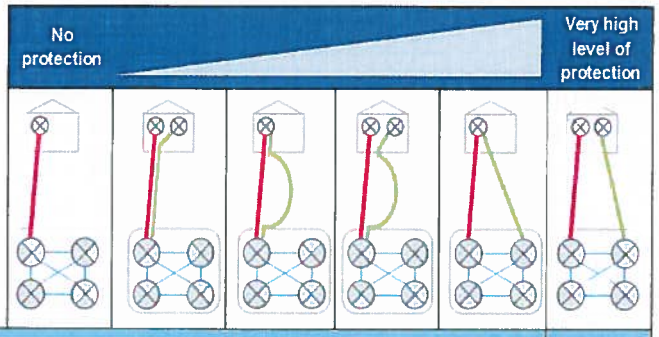
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Optional Levels of Protection available for the DS Service:

The Access Provider provides below a summary of the various levels of protection available for the DS service:

(NOTE – for the purposes of this table, End User refers to the MNO Wireless Radio Site)

FOR End User Premises READ Wireless Radio Site



Single Connection/Aggregation Link (i.e. no protection)			X					
Primary and secondary Connection/Aggregation Link (i.e. protection)				X	X	X	X	X
Logical protection	Access Seeker	No CPE redundancy (at the End User Premises/Point of Presence)	X					
		Service card redundancy on CPE (at the End User Premises/Point of Presence)			X		X	
		Fully redundant CPE (at the End User Premises/Point of Presence)		X		X		X
	Service Node	No redundancy at Service Node	X	X	X	X		
		Service card redundancy at Service Node						
		Fully redundant Service Node					X	X
Physical protection		No redundancy	X					
		Fibre core redundancy in the same duct path		X				
		Duct path redundancy to the same Service Node (with or without redundant duct lead-in)			X	X		
		Duct path redundancy to a different Service Node (with or without redundant duct lead-in)					X	X

The Access Provider may also consider a request from an Access Seeker for a full end-to-end physical path redundancy that requires delivery of a secondary Connection/Aggregation Link in a different lead-in Duct to the building, where this is reasonable. In such cases, the applicable Charges shall be determined in accordance with the provisions of this Service Description.

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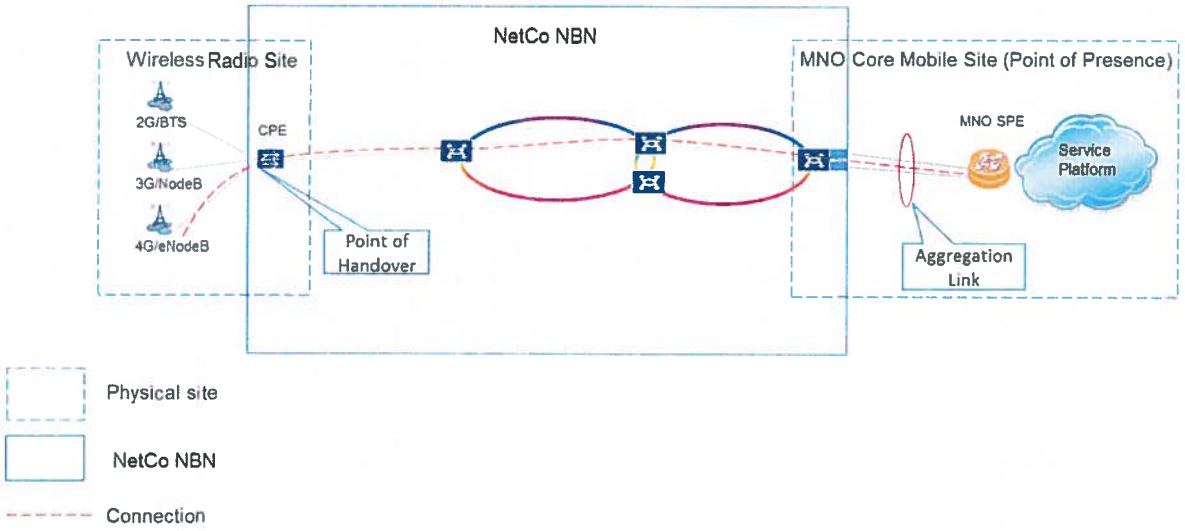
ANNEX 3

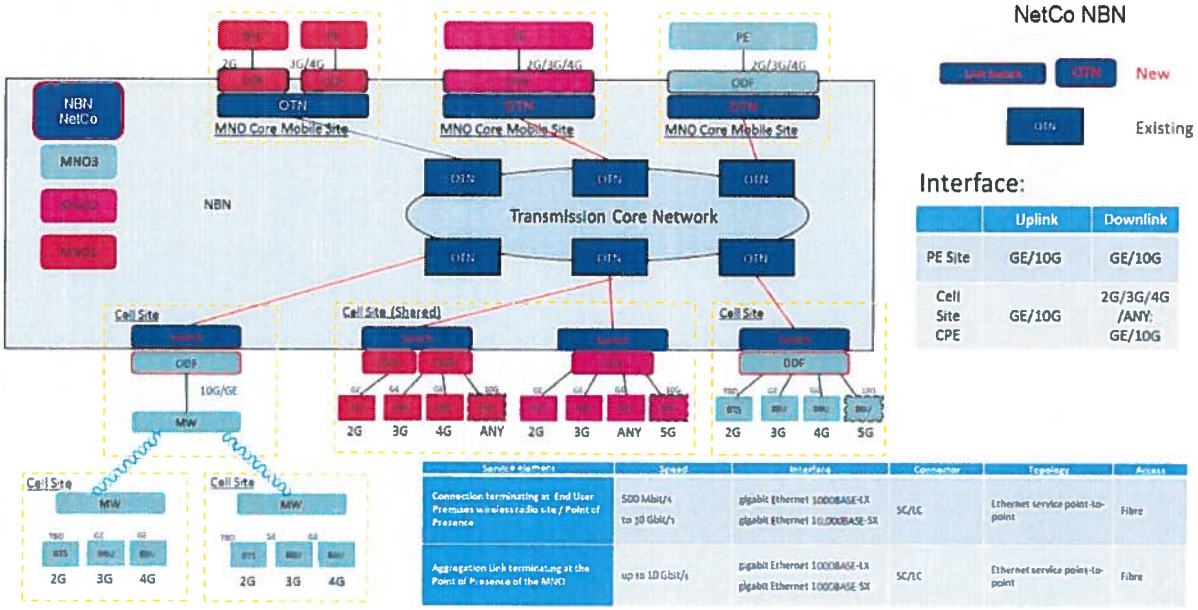
PROVISIONING VALIDATION TEST

Provisioning Validation Test	
Testing Methodology	ITU-T Y.1564
Testing Mode	Layer 1-2 Loopback test. Tester simulates CPE
Parameters tested	Throughput, Frame loss
Tester Speed Setting	DS Service Speed
Tester Frame Size	64, 128, 256, 512, 1024, 1280, 1518 and 9,600 bytes
Acceptance criteria	Achieved throughput of 95% of DS Service Speed with zero frame loss. Five test iterations of approximately 10 minutes each conducted.
Test Results	Copy provided to the Access Seeker upon request at time of testing

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ANNEX 4
DS SERVICE DIAGRAMS





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Schedule 6.5 - Optical Wavelength Service (OWS) Service Description

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SCHEDULE 6.5 - SERVICE DESCRIPTION
OPTICAL WAVELENGTH SERVICE (OWS)

1. THE SERVICE

Service Description

1.1 The Optical Wavelength Service (**OWS**) is a high-speed circuit that uses Dense Wavelength Division Multiplexing (**DWDM**) on the Access Provider's dedicated fibre within the Kingdom of Bahrain between:

(a) two Access Seeker's Points of Presence; or

(b) an Access Seeker's Point of Presence and a Wireless Radio Site.

1.2 The OWS Service is provided with a number of options regarding its technical characteristics. These are specified in Annex 1 of this Service Description.

1.3 The OWS Service is available to Access Seekers holding an Individual Mobile Telecommunications License.

2. DEFINITIONS

Capitalised terms not defined in this Service Description are defined in Schedule 8 - (Dictionary) of the Reference Offer. Terms defined in this Service Description are specific to it.

Access Seeker Core Mobile Site means a location in the Kingdom of Bahrain owned or controlled by the Access Seeker which hosts equipment for mobile control functionality on its Mobile Network.

Connection means an individual OWS Service.

Customer Premises Equipment or CPE means that Equipment forming part of the OWS at the Wireless Radio Site / Point of Presence.

Minimum Service Period means an applicable minimum period of twenty-four (24) calendar months for which the OWS Service shall be provided, such period commencing from the Service Commencement Date.

OWS Amended Service means an OWS Service that is amended by a Change Request.

OWS Service means the service defined at paragraph 1 above.

Renewed Minimum Service Period means an applicable minimum period of one (1) month for which the OWS Service shall be provided, such period commencing from the expiry of a Service Period.

Service Period means the Minimum Service Period or Renewed Minimum Service Period.

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3. TERMS

Forecasting

3.1 The Access Seeker shall provide the Access Provider with a binding forecast of the number of new Connections. These forecasts shall be provided every quarter (three (3) months) commencing from the Service Commencement Date.

3.2 The period of each forecast shall cover the following information for the subsequent five (5) quarters:

(a) Wireless Radio Site address or another identifier in a form that is accepted by the Access Provider acting reasonably, such as GPS coordinates;

(b) Point of Presence address or another identifier in a form that is accepted by the Access Provider activity reasonably; and

(c) Capacity required to connect the Wireless Radio Site to the Point of Presence or to connect a Point of Presence to another Point of Presence.

3.3 The Access Seeker shall use all reasonable endeavours to forecast accurately given that the Access Provider is placing reliance on those forecasts. The forecasting process is set out in Schedule 5 - (Forecasting) of the Reference Offer.

3.4 New Connections can only be guaranteed to be met up to the numbers forecasted. For the actual new Connections in excess of those forecasted, the Access Provider shall use all reasonable endeavours to provide those Connections but cannot guarantee that they will be provided within the Schedule 7 – (Service Levels) of the Reference Offer.

3.5 The forecast provided represents a good faith expectation of the Access Seeker of its requirement for new Connections. In the event that the actual number of new Connections is less than that forecasted, a penalty will be incurred by the Access Seeker, as set out in the Schedule 5 - (Forecasting) of the Reference Offer.

Use of Service

3.6 The OWS Service shall only be made available to connect an Access Seeker's Points of Presence and Wireless Radio Site or another Point of Presence and not any other residential or non-residential entity or End User. The Access Seeker may not resell the OWS Service to another Licensed Operator.

3.7 Where the Access Provider reasonably suspects breach of paragraph 3.6 it may refer the matter as a complaint for investigation by the Authority.

3.8 Where the Authority establishes after an investigation under paragraph 3.7 that an Access Seeker is not using the OWS Service in accordance with this Service Description, the Access Provider without prejudice to any other rights and remedies under the Supply Terms may by immediate written notice suspend or terminate the specific OWS Connection and the Access Seeker shall be liable to pay the Access Provider liquidated damages calculated in accordance with paragraph 3.22.

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Supply of Service

3.9 The Access Seeker shall submit a Service Request to the Access Provider to request supply of the OWS Service in the manner communicated by the Access Provider.

3.10 The Access Provider shall within two (2) Working Days notify the Access Seeker if the Service Request is accepted or rejected and where applicable, state the required corrections. The Access Provider reserves the right to reject the Service Request during this stage if the Access Provider's point to point fibre Network does not extend to the requested area within the Kingdom of Bahrain because the Point of Presence or the Wireless Radio Site is anywhere not on the main island of Bahrain unless connected by a permanent physical connection above sea level and accessible by the Access Provider. If a notification is not provided within two (2) Working Days of receipt of the relevant Service Request, the Service Request shall be deemed accepted by the Access Provider.

3.11 In the event a Service Request is rejected then the Access Provider shall provide the Access Seeker with clear reasons for the rejection at the same time of the rejection and identify the changes required to enable the Service Request to be accepted.

3.12 If the Access Seeker submits a Cancellation Request three (3) or more Working Days after the Notification of the Expected RFT and RFS Dates and where this is not related to delay in the Actual RFT and Actual RFS Date by the Access Provider, the Access Seeker shall (subject to receipt of an appropriate invoice) be liable to pay three (3) MRCs to the Access Provider.

3.13 Within five (5) Working Days from the date of the acceptance of the Service Request, the Access Provider shall notify the Expected RTF and RFS Dates to the Access Seeker in writing, as specified in Schedule 7 – (Service Levels) of the Reference Offer.

3.14 The Access Provider shall deliver the OWS Service on or before the standard time scales set out in Schedule 7 – (Service Levels) of the Reference Offer. The parties acknowledge and accept that exceptional circumstances, such as those set out below, may give rise to delays in any stage of the acceptance, provisioning and delivery of a Service Request. If the occurrence of any of the events below takes place, the Access Provider shall communicate the Exceptional Delivery Date to the Access Seeker and shall not be held liable for the Service Level Penalties. The exceptional circumstances shall only comprise:

(a) a Force Majeure Event or a Regulatory Event;

(b) Emergency Maintenance; or

(c) any material breach of the Access Seeker's obligations.

The Access Provider shall, in notifying the Access Seeker of the Exceptional Delivery Date, provide sufficient evidence so as to justify the reasons for the delay in delivery.

3.15 If the Access Provider's technician must be present at the Wireless Radio Site to install an OWS Service, and if, for any reason, the Access Seeker cannot be available on the Expected RFT Date for such installation, the Access Seeker shall give the Access Provider a minimum written notice of one (1) Working Day. The revised Expected RFT and Expected RFS Dates are then set following the below principles:

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(a) The Access Provider shall propose the next earliest dates for which the Access Provider's technician would be available for the installation which shall be a minimum of one (1) Working Day notice unless waived by the Access Seeker. The proposed date(s) should not exceed two (2) Working Days from the previously notified Expected RFT and Expected RFS Dates.

(b) The previously notified Expected RFS Date is also modified and is set apart from the revised Expected RFT Date by the Maximum Validation Time of three (3) Working Days (see Schedule 7 – (Service Levels) of the Reference Offer). The revised Maximum RFS Date is then set equal to the revised Expected RFS Date.

(c) The Access Provider shall send the Access Seeker a Notification of revised Expected RFT Date and revised Expected RFS Date.

3.16 In addition, if at least one of the following two conditions is met (i) the Access Seeker does not provide the Access Provider a minimum written notice of one (1) Working Day to inform of its unavailability; or (ii) the Access Provider sends a technician who is not able to access the Wireless Radio Site to install the OWS Service, then except for cases of Force Majeure affecting the Access Seeker, the Access Seeker is liable to pay the installation and configuration charge for the requested service as specified in Schedule 3 - (Pricing) of the Reference Offer. In such case, the modification and Notification of revised Expected RFS Date, and the revised Maximum RFS Date follow the same principles as described in the above paragraph 3.15.

3.17 The Access Provider's technician must attend the Access Seeker's site during Working Hours and at least have called the Access Seeker's representative if it appears that the Access Seeker's technician is not present at the relevant time and, where requested, provide evidence of this. The Access Seeker shall, in this case, be liable to pay only the incurred man-day costs of the Access Provider technician.

3.18 Subject to the Access Seeker fulfilling all of its obligations set out in paragraphs 3.27 to 3.32 below, the Access Provider shall provide and the Access Seeker shall acquire the OWS Service either within the standard timescales or by the Exceptional Delivery Date as appropriate.

3.19 The Service Level Terms shall apply to:

(a) New Connection – provide a new OWS Service as requested by the Access Seeker;

(b) Upgrade or Downgrade;

(c) Hot and Cold Migration – changing 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;

(d) Reconfiguration – reconfigure technical parameters of an existing Connection; or

(e) Cancellation – the Access Seeker requests the cessation of an existing Connection.

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3.20 Further information relating to the applicable Service Level Terms and Service Level Penalties for the above is detailed in the Schedule 7 – (Service Levels) of the Reference Offer.

3.21 The Access Provider shall provide to the Access Seeker a monitoring tool, which shall enable the Access Seeker to monitor the OWS Service against the following minimum parameters and other monitoring parameters in accordance with the technical parameters defined in the Joint Working Manual. This monitoring tool shall provide monitoring facilities (24) twenty-four hours a day, (7) seven days a week, (365) three-hundred and sixty-five days a year. The minimum parameters shall include link availability.

Termination

3.22 Where the Minimum Service Period has not expired, the Access Seeker shall be entitled to terminate the OWS Service on at least one (1) month's written notice to the Access Provider and shall be liable to pay liquidated damages as calculated by the following formula.

Formula for calculating liquidated

damages: LD = MRC x (24-M)

where:

LD = liquidated damages to be paid.

MRC = Monthly Recurring Charge for the OWS Service.

M = number of months between the Actual RFS Date and the removal order date rounded-up to the next full month.

The Access Seeker shall not be liable to pay liquidated damages where the Access Seeker terminates the OWS Service as a result of and/or arising out of a material breach of the Reference Offer by the Access Provider.

3.23 The Access Seeker expressly acknowledges that liquidated damages as calculated above form a reasonable pre-estimate of the loss which the Access Provider would suffer as a result of early termination by the Access Seeker. Such liquidated damages shall be the Access Provider's sole and exclusive damages or monetary remedy for such early termination.

3.24 Following the expiry of any Minimum Service Period the OWS Service shall be automatically renewed for successive Renewed Minimum Service Periods unless and until terminated by the Access Seeker, provided that the Access Seeker supplies the Access Provider with a termination notice at least one (1) month prior to the expiry of the current Service Period.

Amendment to the OWS Service

3.25 The Access Seeker shall be entitled to amend an OWS Service by requesting an OWS Amended Service where this is an Upgrade by providing an Upgrade Request to the

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Access Provider. The Access Seeker shall only be entitled to Downgrade the throughput of a Connection when the Minimum Service Period has expired. Where the Access Seeker requests an OWS Amended Service, then the Service Request procedure set out in the Service Description shall apply to that request. Where the Access Seeker requests an OWS Amended Service that requires any new Network resources and/or facilities then a new Minimum Service Period shall commence and the Access Provider shall provide an OWS Amended Service for the new Service Period.

3.26 The Access Seeker shall not be liable for any termination or additional recurring charges in respect of a request for an OWS Amended Service which is for a relocation. The Access Provider shall charge a once off charge for the relocation unless the Access Seeker requires both Connections to be operational in parallel. The Access Provider shall not terminate the Connection which is subject to relocation until the Service Commencement Date of the new Connection.

Access Seeker Obligations

3.27 The Access Seeker shall provide the Access Provider with suitable space for, and access during Working Hours to, any Access Provider Equipment required to be located in any building in which the OWS Service is located within the control of the Access Seeker. If consent is required from a third party, the Access Seeker shall procure such consent. The Access Provider is not required to pay the Access Seeker for the preparation or use of, or access to, space provided pursuant to this sub-paragraph.

3.28 When provisioning a Service Request requiring new Duct build, the Access Provider is responsible for construction of the Duct on public land up until the demarcation point being the boundary of the plot where the Wireless Radio Site is located. The Access Seeker is responsible for construction of the lead-in Duct or in-building Duct or conduit from the demarcation point to the Wireless Radio Site and/or aggregation Point of Presence.

3.29 If the Access Provider's Equipment requires electricity supply and electricity connection points, they shall be supplied, in the location specified by the Access Provider, to the Access Seeker at the Access Seeker's expense according to the equipment specification. Such electricity shall be available at the same level of supply, protection and continuity as that available to the Access Seeker's Equipment, as appropriate.

3.30 The Access Seeker shall be solely responsible for any loss, theft or destruction of, or damage (reasonable wear and tear excepted) to the Access Provider's Equipment required to be located in the building where the OWS Service is provided and which is within the control of the Access Seeker, occurring any time and howsoever caused (unless caused by the Access Provider or its agents).

3.31 The Access Seeker shall provide the Access Provider and any authorised employee, agent, affiliate or contractor of the Access Provider with all information and assistance that person may reasonably require to design, test, commission and maintain the OWS Service (which may include participation in testing procedures as and when reasonably requested by the Access Provider).

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3.32 The Access Seeker may require their agent to be present during the installation, testing or commissioning done by the Access Provider but not so as to affect the Service Commencement Date.

Planned and Emergency Maintenance

3.33 The Access Provider may suspend any OWS Service in order to carry out Planned or Emergency Maintenance.

3.34 In the case of Planned Maintenance, this shall be carried out as far as possible during the night or at weekends or other quiet periods. The Access Provider shall give ten (10) Working Days' notice of each Planned Maintenance activity affecting a particular OWS Service or group of OWS Services. This shall include the circuits affected, the date and time of the suspension and the likely duration of the suspension. The Access Provider shall use its reasonable endeavours to take into account the reasonable operational concerns of the Access Seeker before implementing any Planned Maintenance.

3.35 In the case of Emergency Maintenance, the Access Provider shall give the Access Seeker notice via email five (5) Working Days in advance. This notice shall include the affected circuit(s), the date and time of the Emergency Maintenance and the expected duration of the Emergency Maintenance. The Access Provider shall use its best endeavours to seek to carry out maintenance outages as much as possible during the night, at weekends or at a time agreeable with the Access Seeker.

3.36 In cases of Emergency Maintenance, the Access Provider shall advise the Access Seeker within five (5) hours after service is restored with a report of the cause of the Fault.

Maintenance and Support

3.37 The Access Provider shall provide maintenance and support services in respect of the OWS Service in accordance with the Schedule 7 – (Service Levels) of the Reference Offer.

3.38 The Access Seeker shall report a Fault to the Access Provider's nominated contact point which shall be available twenty-four (24) hours per day every day. The Access Provider shall record the Fault using a unique reference number which it shall pass to the Access Seeker at the same time as acknowledging the Fault in accordance with Schedule 7 – (Service Levels) of the Reference Offer. The Access Provider shall commence repair of the Fault within:

(a) Two (2) hours during Working Hours; or

(b) Four (4) hours outside of Working Hours,

from the time of the Access Seeker reporting the Fault and shall restore the OWS Service in accordance with the Service Levels. The Access Provider shall advise the Access Seeker's nominated contact point once the Fault is clear and both parties shall record the time of this clearance.

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Protection

3.39 If requested by the Access Seeker, the Access Provider shall provide logical protection for the OWS Service at a fixed monthly Charge as set out in Schedule 3 – (Pricing) of the Reference Offer.

4. CHARGES

4.1 The Access Seeker shall pay to the Access Provider the relevant Charges determined in accordance with Schedule 3 – (Pricing) of the Reference Offer.

4.2 All Charges and sums due from one party to the other under this Agreement are exclusive of VAT. Any VAT shall be charged in accordance with the relevant regulation in force at the time of making the taxable supply and shall be paid by the paying party following receipt from the billing party of a valid VAT invoice.

5. SERVICE LEVELS

5.1 The Access Provider shall provide the OWS Service in accordance with the Service Levels specified in Schedule 7 – (Service Levels) of the Reference Offer.

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ANNEX 1

CIRCUIT SPEEDS, DEFINED INTERFACES, MEDIA AND TOPOLOGY

Service element	Interface	Connector	Topology	Access
Connection terminating at Wireless Radio Site or Point of Presence	OTU3/OTU3e/OTU4	SFP/XFP, LC/PC	Point-to-point	Fibre

The OWS Service is provided in accordance with the ITU-T recommendation G.709

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ANNEX 2

PROVISIONING VALIDATION TEST

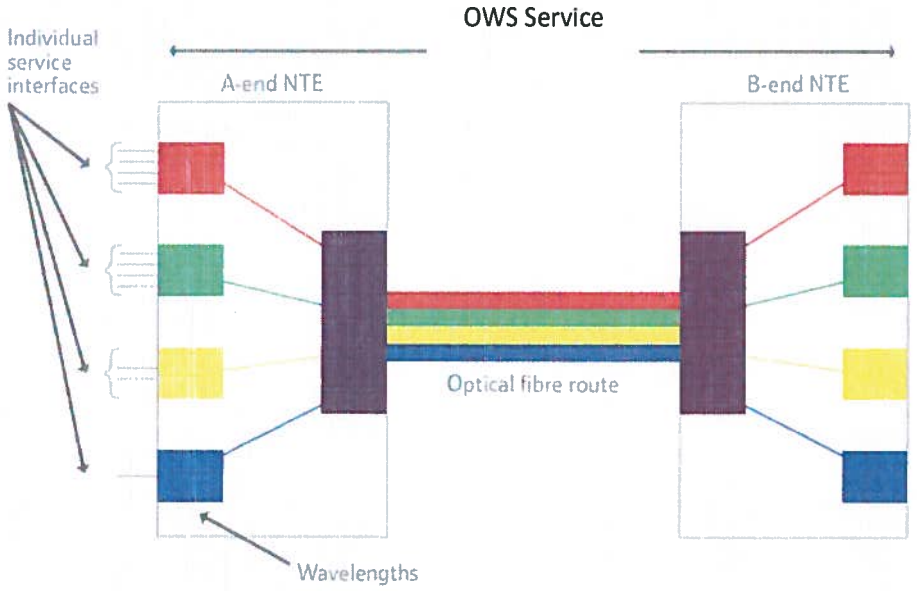
Provisioning Validation Test	
Acceptance criteria	Link verification using Optical Time Domain Reflectometry (OTDR) methodology
Test Results	Copy provided to the Access Seeker upon request at time of testing

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ANNEX 3

OWS SERVICE DIAGRAMS

The diagram is a simple representation of a DWDM system used to deliver the OWS Service. It shows a single and multiple service interfaces per wavelength. The Access Seeker would connect their equipment to a service interface.



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Schedule 6.6 – Fibre Fronthaul Service (FFS) Service Description

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SCHEDULE 6.6 – SERVICE DESCRIPTION
FIBRE FRONTHAUL SERVICE (FFS)

1. THE SERVICE

Service Description

1.1 The Fibre Fronthaul Service (**FFS**) is the point-to-point provision of Fibre Cable between the Baseband Unit (**BBU**) and the Remote Radio Head (**RRH**) of the Network of an Access Seeker.

1.2 The Service will provide point-to-point dedicated connectivity, between the Equipment of the BBU and of the RRH, as required.

1.3 The Service includes provision of Duct to support the Fibre Cable that will be provided using the Facilities Access Service (**FAS**). The FFS can only be requested in conjunction with a Service Request for a FAS.

1.4 The Service is available to Access Seekers holding an Individual Mobile Telecommunications License.

1.5 The Network demarcation of the FFS Service is the point at each end of the Fibre Cable where the fibre ceases to be protected by, or contained within, the sheath of the Fibre Cable.

1.6 To the extent that there is any conflict or inconsistency between this Service Description and the provisions of Schedule 6.7 (FAS Service Description) of the Reference Offer or Schedules 6.7.1 – 6.7.3 of the Reference Offer, the provisions of this Service Description shall take precedence.

2. DEFINITIONS

Capitalised terms not defined in this Service Description are defined in Schedule 8 - (Dictionary) of the Reference Offer. Terms defined in this Service Description are specific to it.

Baseband Unit (BBU) means the unit responsible for processing the baseband signals, where "baseband signal" refers to the signal from a Remote Radio Head that is unmodulated, via an optical interface. The BBU is connected to the RRH through CPRI (Common Public Radio Interface) Fibre Cables.

FAS means the Facilities Access Service as more fully described in Schedule 6.7 – (FAS Service Description) of the Reference Offer.

FFS means the Fibre Fronthaul Service.

FFS Service Commencement Date means the date of successful implementation and notified handover of the FFS Service by the Access Provider to the Access Seeker on the Access Delivery Date, which shall take place immediately following completion of testing as set out in Schedule 6.7.3 – (Duct Access Process) of the Reference Offer.

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Fibre Cable means the physical fibre optic cable, including all individual fibre strands contained within the protection and external sheath of such cable.

Installation means the installation of an individual FFS Service as described in paragraph 1 of this Service Description.

Installation Charges means the Charges referred to as Make Ready and relevant installation Charges set out under the FAS section of Schedule 3 - (Pricing) of the Reference Offer.

Minimum Service Period means a minimum period of twenty-four (24) calendar months for which the FFS Service will be provided, such period commencing from the FFS Service Commencement Date.

Remote Radio Head (RRH) means a remote radio transceiver that connects to the BBU via an optical interface.

Renewed Minimum Service Period means an applicable minimum period of one (1) month for which the FFS Service shall be provided, such period commencing from the expiry of a Service Period.

Service Period means the Minimum Service Period or Renewed Minimum Service Period.

3. TERMS

Forecasting

3.1 The Access Seeker shall provide the Access Provider with a binding forecast of the number of new Installations. These forecasts shall be provided every quarter (three (3) months) commencing from the FFS Service Commencement Date.

3.2 Each forecast shall cover the following information for any new Installations forecasted for the subsequent five (5) quarters:

(a) Wireless Radio Site address (where the RRH is located) or another identifier in a form that is accepted by the Access Provider acting reasonably;

(b) Point of Presence address (where the BBU is located) or another identifier in a form that is accepted by the Access Provider acting reasonably; and

(c) Number of Fibre Cables and physical dimensions of the Fibre Cables.

3.3 The Access Seeker shall use all reasonable endeavours to forecast accurately given that the Access Provider is placing reliance on those forecasts. The forecasting process is set out in Schedule 5 - (Forecasting) of the Reference Offer.

3.4 New Installations can only be guaranteed to be provided up to the numbers forecasted. For actual new Installations in excess of those forecasted, the Access Provider shall use all reasonable endeavours to provide those Installations requested but cannot guarantee that they will be provided within the timescale set out in the Schedule 7 - (Service Levels) of the Reference Offer.

3.5 The forecast provided represents a good faith expectation of the Access Seeker of its requirement for new Installations. In the event that the actual number of new Installations

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is less than those forecasted, a penalty will be incurred by the Access Seeker, as set out in Schedule 5 - (Forecasting) of the Reference Offer.

Use of Service

3.6 The FFS Service shall only be made available to connect the BBU to the RRH. The Access Seeker may not resell the FFS Service to another Licensed Operator.

3.7 Where the Access Provider reasonably suspects a breach of paragraph 3.6, it may refer the matter as a complaint for investigation by the Authority.

Supply of Service

3.8 The Access Seeker shall submit a Service Request to the Access Provider to request supply of the FFS Service, in the manner communicated by the Access Provider. The Service Request shall include a Facilities Access Application for access to the relevant Facilities set out in Schedule 6.7- (FAS Service Description) of the Reference Offer. For the purposes of this Service Description, references to a Service Request for FFS shall include references to any related Facilities Access Application (unless stipulated otherwise).

3.9 The Access Provider and Access Seeker shall follow the process outlined Schedule 6.7.3 – (Duct Access Process) of the Reference Offer.

3.10 Once the Service Request is accepted, the Access Provider and the Access Seeker shall (if appropriate) enter into the Duct Licence set out in Schedule 6.7.1 – (Duct Licence) of the Reference Offer. The Access Seeker shall have the right to use Fibre Cables installed within the relevant Duct.

3.11 Where the Access Provider and the Access Seeker have entered into a Duct Licence, the Access Seeker must comply with the relevant terms of the Duct Licence.

3.12 The Access Seeker's access to Duct must be strictly in accordance with the Access Provider's Duct Access Policy in place from time to time.

3.13 The Access Seeker shall arrange for the supply of the Access Provider's Fibre Cable by an Approved Contractor who shall install such Fibre Cable from the RRH to the BBU (up to a maximum point-to-point distance of one (1) kilometre, measured in a straight line) on the Access Provider's behalf. The Access Provider shall retain ownership of the installed Fibre Cable.

3.14 Following the completion of any Make Ready Work, the Access Provider and/or the Access Provider's Approved Contractor will install the Fibre Cable into any riser, riser room, lead-in Duct, and Duct route which are the subject of the Duct Licence and/or the subject of any necessary permits or consents. The Access Seeker shall meet the costs of such installation works in accordance with the provisions of Schedule 3 - (Pricing) of the Reference Offer.

3.15 If at any time, the Access Provider installs any new or replacement riser, riser room facility, lead-in Duct, Duct bore, Duct route, cable chamber or undertakes any preventative work on such Facilities, then the Access Provider shall be liable for such costs.

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3.16 The Access Seeker acknowledges:

(a) The FFS Service and FAS Service shall be requested and supplied together. It is a pre-condition of supply of the FFS Service that the Access Seeker has submitted to the Access Provider a Service Request for the appropriate FAS Service, in accordance with Schedule 6.7 – (FAS Service Description) of the Reference Offer.

(b) The Point of Handover for the FFS Service is the fibre connection (which may include fibre strands, a fibre splice or a physical port).

(c) The provision of the FFS Service is subject to availability of space, capacity and related Facilities.

3.17 When provisioning a Service Request requiring new Duct build, the Access Provider is responsible for construction of the Duct on public land up until the demarcation point being the boundary of the plots where the BBU or RRH are located.

3.18 The Access Provider shall deliver the FFS Service on or before the standard time scales summarised in the Schedule 7 - (Service Levels) of the Reference Offer. The Parties acknowledge and accept that exceptional circumstances, such as those set out below, may give rise to delays in any stage of the acceptance, provisioning and delivery of a Service Request. The exceptional circumstances shall only comprise:

(a) a Force Majeure Event or a Regulatory Event;

(b) Emergency Maintenance; or

(c) any material breach of the Access Seeker's obligations.

3.19 In addition, if at least one of the following two conditions is met (i) the Access Seeker does not provide the Access Provider a minimum written notice of two (2) Working Days to inform of its unavailability; or (ii) the Access Provider sends a technician who is not able to access the BBU or RRH to install the service, then except for cases of Force Majeure affecting the Access Seeker, the Access Seeker is liable to pay to the Access Provider the costs reasonably incurred by the Access Provider, consistent with the time based work charges set out in Schedule 3 – (Pricing) of the Reference Offer.

3.20 In addition, if the Access Provider does not provide the Access Seeker a minimum written notice of two (2) Working Days to rearrange a site visit under paragraph 3.19 above, then the Access Provider is liable to waive an amount equal to four (4) man hours for time and materials based work (as set out in Schedule 3 - (Pricing) of the Reference Offer from the subsequent Make Ready and Installation Charges).

3.21 Subject to the Access Seeker fulfilling all of its obligations set out in paragraphs 3.29 to 3.33 below, the Access Provider shall provide the FFS Service, along with the right to use the Fibre Cable and relevant Duct, to the Access Seeker throughout the Service Period.

3.22 The Service Level Terms shall apply to new Installations (providing a new FFS Service as requested by the Access Seeker).

3.23 Further information relating to the applicable Service Levels Terms and Service Level Penalties for the above is detailed in Schedule 7 - (Service Levels) of the Reference Offer.

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Termination

3.24 Where the Authority establishes after an investigation under paragraph 3.7 that the Access Seeker is not using the FFS in accordance with this Service Description, the Access Provider may, without prejudice to any other rights and remedies under the Supply Terms, immediately by written notice suspend or terminate the specific FFS and the Access Seeker shall be liable to pay the Access Provider liquidated damages, equal to the difference in Charges for the remaining Service Period between the actual Charges paid for the FFS being used by the Access Seeker in a non-compliant manner and the Charges that would have been paid for compliant use of the FFS Service (if they are higher).

3.25 Where the Minimum Service Period has not expired, the Access Seeker shall be entitled to terminate such FFS Service on at least one (1) month's written notice to the Access Provider and shall be liable to pay liquidated damages as calculated by the following formula.

Formula for calculating liquidated damages:

LD = MRC x (24-M)

where:

LD = liquidated damages to be paid.

MRC = Monthly Recurring Charge for the Duct rental.

M = number of months between the FFS Service Commencement Date and the removal order date rounded-up to the next full month.

The Access Seeker shall not be liable to pay liquidated damages where the Access Seeker terminates the FFS Service as a result of and/or arising out of a material breach of the Reference Offer by the Access Provider.

3.26 Expiry or termination of the FFS Service, for any reason, shall automatically terminate the related FAS Service for that Access Seeker.

3.27 The Access Seeker expressly acknowledges that liquidated damages as calculated above form a reasonable pre-estimate of the loss which the Access Provider would suffer as a result of early termination by the Access Seeker. Such liquidated damages shall be the Access Provider's sole and exclusive damages or monetary remedy for such early termination.

3.28 Following the expiry of any Minimum Service Period the FFS Service shall be automatically renewed for successive Renewed Minimum Service Periods unless and until terminated by the Access Seeker, provided that the Access Seeker supplies the Access Provider with a termination notice at least one (1) month prior to the expiry of the current Service Period.

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Access Seeker Obligations

3.29 The Access Seeker shall provide the Access Provider with suitable space for, and access during Working Hours to any Access Provider Equipment required to be located in any building in which the FFS Service is located within the control of the Access Seeker. If consent is required from a third party, the Access Seeker shall procure such consent. The Access Provider is not required to pay the Access Seeker for the preparation or use of, or access to, space provided pursuant to this sub-paragraph.

3.30 The Access Seeker shall be responsible for any Duct build and for deploying Fibre Cable beyond the demarcation point being the boundary of the plots where the BBU or RRH are located.

3.31 The Access Seeker shall be solely responsible for any loss, theft or destruction of, or damage (reasonable wear and tear excepted) to the Access Provider's Equipment required to be located in the building in which the FFS Service is provided and which is located within the control of the Access Seeker, occurring any time and howsoever caused (unless caused by the Access Provider or its agents).

3.32 The Access Seeker shall provide the Access Provider and any authorised employee, agent, affiliate or contractor (including the Access Provider's Approved Contractor) of the Access Provider with all information and assistance that person may reasonably require to design, commission and maintain the FFS Service.

3.33 The Access Seeker may require their agent to be present during the installation, testing or commissioning done by the Access Provider but not so as to affect the FFS Service Commencement Date.

Maintenance and Support

3.34 The Access Provider shall provide maintenance and support services in respect of the FFS Service in accordance with Schedule 7 - (Service Levels) of the Reference Offer. The Access Provider will not be responsible for deterioration or replacement of the Fibre Cable as a result of normal wear and tear, which will be at the Access Seeker's choice and cost.

3.35 The Access Seeker shall report a Fault to the Access Provider's nominated contact point which shall be available twenty-four (24) hours per day every day. The Access Provider shall record the Fault using a unique reference which it shall pass to the Access Seeker at the same time as acknowledging the Fault (see Schedule 7 - (Service Levels) of the Reference Offer) and both parties shall agree the time of the report. The Access Provider shall commence repair of the Fault within:

(a) Five (5) hours during Working Hours; or

(b) Twelve (12) hours outside of Working Hours

from the time of the Access Seeker reporting the Fault and shall restore the Service in accordance with the Service Levels. The Access Provider shall advise the Access Seeker's nominated contact point once the Fault is clear and both parties shall record the time of this clearance.

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4. CHARGES

4.1 The Access Seeker shall pay to the Access Provider the relevant Charges determined in accordance with Schedule 3 - (Pricing) of the Reference Offer in relation to "Facilities Access Service" and "Fronthaul Fibre Service". This shall include relevant Monthly Recurring Charges for Duct rental and relevant Non-recurring Charges associated with the Application, Field Studies and Installation processes, notwithstanding that the Access Seeker may pay directly the Approved Contractor for materials and installation works.

4.2 All Charges and sums due from one party to the other under this Agreement are exclusive of VAT. Any VAT shall be charged in accordance with the relevant regulation in force at the time of making the taxable supply and shall be paid by the paying party following receipt from the billing party of a valid VAT invoice.

5. SERVICE LEVELS

5.1 The Access Provider shall provide the FFS Services in accordance with the Service Levels specified in Schedule 7 – (Service Levels) of the Reference Offer.

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Schedule 6.7 – Facilities Access Service (FAS) Service Description

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SCHEDULE 6.7 – SERVICE DESCRIPTION

FACILITIES ACCESS SERVICE

1. SCOPE AND STRUCTURE

(a) The Access Seeker requests access, and is provided access by the Access Provider, to Facilities in accordance with

i. this Service Description;

ii. the Supply Terms;

iii. the Facilities Access Technical Manual;

iv. the relevant Facility Lease or Facility Sub-Lease.

(b) The Access Provider has agreed to grant the Access Seeker non-exclusive access to the Facilities to install, operate and maintain Equipment for the lawful provision of public telecommunications networks or services in the Kingdom of Bahrain (the "**Permitted Use**").

(c) Capitalised terms not defined in this Service Description are defined in Schedule 8 - (Dictionary) of the Reference Offer. Terms defined in this Service Description are specific to it.

(d) To the extent that there is any conflict or inconsistency between this Service Description and the provisions of Schedule 6.6 - (FFS Service Description) of the Reference Offer, the provisions of Schedule 6.6 shall take precedence in relation to the FFS Service.

2. GENERAL PRINCIPLES OF ACCESS TO FACILITIES

2.1 **Timeliness of access**

(a) The Access Provider must use all reasonable endeavours to provide access to Facilities to the Access Seeker in the timeframes specified in this Service Description.

(b) Where it is not reasonably practicable to comply with those timeframes for access to a particular Facility, the parties must endeavour to agree to extended timeframes, as reasonably required. Any failure by the parties to agree under this paragraph 2.1 may be referred by either party for dispute resolution under the Dispute Resolution Procedures.

2.2 **Non-discrimination**

(a) Subject to the terms and conditions of this Service Description, the parties must in considering and granting access to Facilities, as far as practicable, treat each other on a non-discriminatory basis.

(b) The non-discrimination principles referred to in paragraph 2.2(a) do not apply to the extent that it is not reasonably practicable for parties to receive equivalent access (for example, positioning on a Tower). In such circumstances, the Access Provider must ensure that access

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is provided in a manner consistent with the queuing policy principles set out in paragraph 4.

(c) The non-discrimination principles are not intended to limit an Access Seeker's ability to obtain, on request, access of a lower quality than that which the Access Provider provides to itself or to other Licensed Operators, subject to technical feasibility.

(d) The non-discrimination principles are not intended to limit an Access Seeker's ability to obtain, on request, access of a superior quality than that which the Access Provider provides to itself, provided always that the Access Provider will not be required to agree to such a request.

2.3 **Limitations on rights of access**

The general principles of rights of access to Facilities set out in paragraphs 2.1 and 2.2 are limited, to the extent relevant, by the following factors:

(a) technical, operational and other aspects of practicability of providing access to Facilities;

(b) the reasonable needs and requirements of the Access Provider in relation to security and safety of the Access Provider's Network and the safety of the Access Provider's People and the public;

(c) any pre-existing collocation arrangements with other parties; and

(d) the collocation and other requirements of police, emergency and national security services.

3. LODGEMENT OF FACILITIES ACCESS APPLICATION

(a) If the Access Seeker wishes to access a Facility of the Access Provider, it must submit to the Access Provider a Facilities Access Application for its review and acceptance.

(b) The Facilities Access Application may include information to be agreed from time to time between the parties, but it must include at least the following information:

(i) the type and location of the Facility to which access is sought;

(ii) time within which access is required and the physical arrangements for access proposed;

(iii) the expected term of access required by the Access Seeker to the Facility;

(iv) the general timeframe within which the Access Seeker wishes to be able to commence installation of the Equipment;

(v) a description of the Equipment which the Access Seeker wishes to install on the Facility, including all technical and design specifications, dimensions, wind and load factors and radiocommunications characteristics, any relevant structural analyses and electromagnetic energy tests and, where relevant, the make number of the Equipment;

(vi) the radio frequency and electromagnetic characteristics of the Equipment;

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(vii) any cabling and waveguides to run between the Equipment on the Tower and the Equipment on the ground; and

(viii) requirements for electricity supplies expressed in terms of voltage and peak load kilowatt hours (kWh) for mains AC, DC Battery ampere hours and standby AC supplies.

(c) The Access Provider must provide technical information which is readily available to it in relation to the Facility, if requested, to enable the Access Seeker to complete its Facilities Access Application. The Access Provider will provide all information in good faith but gives no warranty as to its accuracy. The Access Provider may recover from the Access Seeker its reasonable costs of providing such information.

(d) Where the Facilities Access Application relates to a product that is not included in the SE Reference Offer and the sole End User of the product is a Strategic Partner for the Kingdom of Bahrain ("**Exceptional FAS**"), the Access Seeker must submit its Facilities Access Application to both the Access Provider and the Authority. In addition to the information above, the Access Seeker must provide with its Facilities Access Application substantiated evidence from the End User of the End User's request to the Access Seeker, that forms the basis for the Access Seeker's Facilities Access Application. The Authority will acknowledge receipt of the Access Seeker's Facilities Access Application to both the Access Provider and the Access Seeker within two (2) Working Days. Acknowledgement by the Authority of the Access Seeker's Facilities Access Application shall result in the below timeframes for the Access Provider's processing of the Access Seeker's Facilities Access Application being suspended. Unless the Authority notifies the Access Provider and Access Seeker that the Access Provider should not continue with processing the Access Seeker's Facilities Access Application, the below timeframes shall recommence on the expiry of a period of five (5) Working Days from the date of the Authority's acknowledgment of receipt.

4. QUEUING POLICY

(a) The Access Provider must develop and disclose to the Access Seeker a queuing policy for Facilities Access Applications for the supply of access to a Facility within twenty-one (21) days of the date of the first request for a supply of access to a Facility from the Access Seeker or any other Licensed Operator.

(b) The queuing policy must be consistent with the following principles:

(i) the queuing policy of the Access Provider must be non-discriminatory between Access Seekers;

(ii) the queuing policy also must apply on a non-discriminating basis to the provisioning of accepted Facilities Access Applications and the Access Provider's own internal confirmed Facilities orders and/or those confirmed for other Licensed Operators.

(iii) subject to paragraph (i) above, the Access Provider must seek to maximise the efficiency of its queuing policy.

(c) The Access Provider must, within five (5) Working Days of receipt of a Facilities Access Application notify the Access Seeker of its receipt and its place in the queue.

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(d) The Access Seeker may prescribe the order in which simultaneous applications by it with the Access Provider should be treated in a queue.

5. ASSESSMENT OF FACILITIES ACCESS APPLICATION

(a) The Access Provider must notify the Access Seeker:

(i) within **(5) five Working Days** of receiving the Facilities Access Application, if it requires more information in relation to the Facilities Access Application, in which case the time period under paragraph (c) below can be extended by the number of Working Days it takes for the Access Seeker to provide the information;

(ii) within **(10) ten Working Days** of receiving the Facilities Access Application, if it requires a modification to the Facilities Access Application, in which case the Access Provider must provide at that time its proposed modifications.

(b) If the Access Provider requests modifications to the Facilities Access Application in accordance with paragraph (a)(ii) above, the Access Seeker must, within (5) five Working Days of receipt of that request, give consideration to those modifications and accept the modifications or notify the Access Provider that it does not agree with the proposed modifications. If the Access Seeker does not agree with the proposed modifications, the Access Seeker may withdraw its Facilities Access Application or request a meeting with the Access Provider within (10) ten Working Days of the notification to the Access Provider that it does not agree with the proposed modifications. Following this meeting, if the parties cannot agree on modifications, then the matter will be resolved under the Dispute Resolution Procedures.

In the case where the Facilities Access Application relates to an Exceptional FAS, the Access Provider will provide to the Authority a copy of all documentation collected by the Access Provider from the Access Seeker up to this stage in the process.

(c) Subject to any extension of this timeframe under paragraphs 5(a) or (b), the Access Provider must notify the Access Seeker, within the time period specified in paragraph 5(d) from receipt of the Facilities Access Application, whether:

(i) it accepts the Facilities Access Application and whether it wishes to carry out a Field Study under paragraph 7 prior to granting the Access Seeker the right to issue a Service Request in respect of the Facility under paragraph 8; or

(ii) it will reject the Facilities Access Application, in which case a Service Request cannot be issued in respect of the Facility by the Access Seeker and access to the Facility will not be granted to the Access Seeker.

In the case where the Facilities Access Application relates to an Exceptional FAS, the Access Provider must conduct a Field Study under paragraph 5(c)(i).

(d) The time period specified is thirty (30) Working Days or such other time as is agreed.

(e) Failure to give notice under paragraph (c) will be deemed to be a proposed rejection of the

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Facilities Access Application by the Access Provider. If the Access Seeker continues to require access, the Access Seeker must request the Access Provider to confirm the deemed proposed rejection within five (5) Working Days from the date of the deemed proposed rejection, and, if so requested, the Access Provider must accept or confirm that it proposes to reject the Facilities Access Application within a further (5) five Working Days. The timeframe in paragraph 5(b) will be extended by the period it takes the Access Provider to confirm its proposed rejection in accordance with this paragraph.

Where the Access Provider proposes not to accept an Access Seeker's Facilities Access Application which relates to an Exceptional FAS, the Access Provider shall first communicate this to the Authority. The timeline for issuing a rejection shall be suspended for a period of (5) five Working Days to enable the Authority to provide its comments regarding the proposed rejection.

6. REJECTION OF A FACILITIES ACCESS APPLICATION

(a) A Facilities Access Application may be rejected for the following reasons:

(i) the provision of access to the Facility would prevent the Access Provider from fulfilling its legislative obligations, including national interest, law and order, defence or universal service obligations;

(ii) a purpose for which access to the Facility is sought is not the purpose of installing, operating and maintaining Equipment used or designed for use in connection with the supply of services in accordance with the terms of the Access Seeker's Telecommunications Licence;

(iii) the Access Seeker has not given the Access Provider reasonable notice in respect of when the Access Seeker wishes to obtain access to the Facility;

(iv) access to the Facility is not technically feasible;

(v) the Access Provider is not legally required to provide Access Services;

(vi) the Access Provider determines in its unfettered discretion that the Equipment which the Access Seeker proposes to install at the Facility does not meet the Access Provider's required technical standards and quality;

(vii) Currently Planned Requirements in relation to the Facility prevents the Access Provider from providing access to the Facility; or

(viii) the Facilities Access Application relates to a Facility where an existing user has commenced preparatory conduct (**Preparatory Conduct**), and the provision of access to the Access Seeker would prevent the existing user's intended use of the Facility (**Intended Use**) and for the purposes of this paragraph, the existing user has commenced Preparatory Conduct where it has commenced provisioning or providing capacity in or on the Facility for an Intended Use, including by:

A. entering into a contract with a customer in relation to the Intended Use of the Facility, including for a particular event or purpose;

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B. obtaining landlord, local or state government approval where such approval is necessary for the Intended Use of the Facility;

C. applying to the Authority for a frequency licence in respect of the operation of particular Equipment where such a licence is necessary for the Intended Use of the Facility;

D. entering into a contract for the installation of Equipment, or requesting tenders in respect of such a contract, or commencing ordering and/or installing Equipment for the Intended Use of the Facility; or where the existing user is a Licensed Operator, obtaining the Access Provider's written acceptance of its Facilities Access Application for its Intended Use.

(b) If the Access Provider proposes to reject the Facilities Access Application of the Access Seeker under paragraph 5(c), it must provide the Access Seeker with a written explanation of its reasons and, if requested by the Access Seeker, meet within (10) ten Working Days of receiving the application to discuss those reasons. The parties will use reasonable endeavours to develop a strategy for managing access to the Facility or an alternative Facility which addresses the reasonable concerns of each party but in the absence of agreement, the Access Provider may reject the Facilities Access Application.

(c) Where an application has been rejected by the Access Provider for technical reasons under paragraph 6(a)(iv), the Access Seeker is entitled to resubmit an amended application at any time, and the proposal must be reconsidered in accordance with this Service Description.

7. CONDUCT OF FIELD STUDY

(a) Where the Access Provider reasonably determines that a Field Study is necessary to determine whether the relevant Facility is available for access, the Access Provider must notify the Access Seeker of such determination at the time it notifies the Access Seeker of its acceptance of the Facilities Access Application under paragraph 5(c) and that the granting of access in respect of the accepted Facilities Access Application is subject to the successful completion of that Field Study.

In the case where the Facilities Access Application relates to an Exceptional FAS, the Access Provider must conduct a Field Study under paragraph (b) below.

(b) Where the Access Provider elects to conduct a Field Study under paragraph 6(a), it must complete such Field Study within (30) thirty Working Days of notification of its intentions to the Access Seeker under paragraph 5(c) (**Field Study Timeframe**), and within the Field Study Timeframe, the Access Provider must inform the Access Seeker of the following:

(i) whether the Access Provider is offering the Access Seeker the right to issue a Service Request in respect of that Facility under paragraph 8;

(ii) confirmation of the results of any preliminary assessment of access or details and explanation of any variation to the results of a preliminary assessment of access;

(iii) details of the Make Ready Work required (including who will be responsible for undertaking

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each part) and the time required to perform the Make Ready Work;

(iv) the estimated Access Charges, estimated Make Ready Work costs and other costs of obtaining access;

(v) the time required to deliver access, after a Service Request for access has been made by the Access Seeker;

(vi) the Facility's security classification for physical access purposes; and

(vii) other matters as determined by the Access Provider from time to time.

(c) If the Access Provider considers that it is unable to complete the Field Study within the Field Study Timeframe, the Access Provider must notify the Access Seeker that an extension of the Field Study Timeframe is necessary and the anticipated duration of that extension. Such notice is to be given prior to the expiry of the Field Study Timeframe (or the extension of the Field Study Timeframe, as the case may be).

(d) Where the Access Provider is required by law to provide Access Services, it shall estimate its Make Ready Work costs in accordance with a schedule of costs for time and materials set out in Schedule 3 – (Pricing) of the Reference Offer.

(e) Upon reasonable notice to the Access Provider, the Access Seeker shall have the right either to supply to the Access Provider its own materials of the same, or materially the same, type and quality as the Access Provider's materials detailed in the Field Study for use in any Make Ready Work or, where reasonably practicable, to carry out the whole or any part of the Make Ready Work itself as a sub-contractor to the Access Provider subject to fair and reasonable terms and conditions for the provision of that sub-contracted Make Ready Work.

In the case where the Facilities Access Application relates to an Exceptional FAS, the Access Provider must provide to the Authority a copy of all the materials collected through the processes outlined in paragraph 7(b) to (e) inclusive, for the Authority's review. The Authority will endeavor to provide a decision including any necessary approvals within one (1) month. The timelines for the Access Provider's processing a Service Request for the Access Seeker's Facilities Access Application will be suspended until the Authority advises the parties of its decision. The Authority will endeavor to communicate its decision and/or any necessary approvals within one (1) month from receipt of the materials.

8. SERVICE REQUEST FOR ACCESS TO FACILITY

(a) Where the Access Provider has notified the Access Seeker under paragraph 7(b) that it is offering the Access Seeker the right to issue a Service Request in respect of a Facility and if the Access Seeker wishes to lodge a Service Request for access to a Facility, it must do so within **(30) thirty Working Days** of being so advised by the Access Provider.

(b) A Service Request must be consistent with the Equipment, plant, work, costs and charge details specified in the Field Study. If the Access Provider determines that a Service Request, in whole or part, is inconsistent with the relevant Field Study, the Access Seeker must rectify any deficiencies within **(2) two Working Days** of being notified of such deficiencies by the

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Access Provider.

(c) The Service Request must be in writing and specify:

(i) the term of access requested;

(ii) any reasonable written instructions applicable to the installation of Equipment;

(iii) a description of the Equipment to be installed by the Access Seeker and a description of the Facility; and

(iv) the required delivery date and physical arrangements for access to the Facility and the Equipment to be installed by the Access Seeker.

(d) The Access Provider must give written acknowledgment of the receipt of that Service Request and provide a response within (10) ten Working Days of receipt. The response shall specify:

(i) details of Make Ready Work;

(ii) the applicable Charges;

(iii) the description of the Facility to which access is sought and the Equipment to be installed by the Access Seeker;

(iv) the date upon which access will be provided (**Advised Delivery Date**); and

(v) any instructions applicable to the Equipment to be installed by the Access Seeker.

(e) If the Access Seeker cancels or varies a Service Request between the date of acceptance and the Advised Delivery Date, the Access Seeker must pay the amount of any loss suffered by the Access Provider. In this paragraph, "loss" means:

(i) the costs which have been reasonably incurred by the Access Provider on the basis of the Service Request and which will not be otherwise reimbursed following the cancellation of the Service Request; and

(ii) the costs of capital relating to the holding of Equipment or space on the Facility until use, disposal or reuse, and any costs reasonably incurred in arranging for such use, disposal or reuse.

9. GRANTING OF ACCESS

(a) If the Access Provider accepts a Service Request in respect of a Facility, the Access Provider must:

(i) continue, where relevant, to hold the Facility Lease for the Facility and will be the sole lessee under the Facility Lease and the Access Seeker must not object to the continuation of any existing Facility Sub-Leases already granted in respect of the Facility; and

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(ii) grant to the Access Seeker a Facility Sub-Lease of an agreed part of the Facility to enable the Access Seeker to install, use and maintain its Equipment on the Facility;

(b) Unless the Access Seeker agrees otherwise, the term of the Facility Sub-Lease will be as specified in the Facility Sub-Lease.

(c) Where the Access Provider owns the existing Facility, the term of the Facility Lease will be as specified in the Facility Lease.

(d) In relation to the Access Provider accepting a Service Request in respect of a Radio-communications Site only, the Access Provider must continue to own any Towers on a Radiocommunications Site which is to be a Shared Facility.

(e) The parties will endeavour to ensure that a Facility Lease or Facility Sub-Lease is executed before any Make Ready Work commences. The Access Provider must prepare the draft Lease or Sub-Lease as the case may be. Where at the time of access to the Facility a formal Facility Lease or Facility Sub-Lease has not been executed, the Access Seeker will be deemed to be bound by the terms and obligations of the proposed Facility Lease or Facility Sub-Lease at the material time.

10. RULES FOR SYNCHRONISATION OF THE FACILITY SUB-LEASE TERMS WITH THE HEAD LEASE TERM

The following rules will apply in synchronising the Facility Sub-Lease terms with the term of the head lease:

(a) each Facility Sub-Lease must expire one day before the head lease out of which it is granted;

(b) each Facility Sub-Lease must only be supported by one head lease term;

(c) the commencement date of the first Facility Sub-Lease term (which will be the earlier of the date of execution of the Facility Sub-Lease or the date of delivery of possession) will be the same date of the month as the date of the month that the supporting head lease commenced, irrespective of the day in the month that delivery of possession occurs under the Facility Sub-Lease;

(d) the initial Ongoing Access Fee of the Facility Sub-Lease commences from the commencement date stated in the Facility Sub-Lease and not the subsequent date of the delivery of possession; and

(e) if the Access Provider has entered into sequential head leases in respect of a site, or one head lease with sequential terms, the Access Seeker shall have the right to enter into sequential subleases or one sublease with sequential terms, each sublease to comply with paragraphs (a) to (d) above in respect of the relevant head lease. Nothing in this paragraph shall constrain the Access Provider's ability to terminate any head lease, or give notice to the Lessor that any head lease will not commence, or give notice to the Lessor that any further term of a head lease will not commence.

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11. POWER

(a) Unless otherwise agreed, and to the extent permitted by the relevant authority, the Access Seeker must make its own arrangements for electric power (**Power**) at its own cost, including, but not limited to, its own Power main, Power feed, Power meter or meters and associated Power infrastructure (**Power Supply**).

(b) In the event that the relevant authority under paragraph (a) is not prepared to provide the Access Seeker with a separate Power feed in respect of the Facility, the Access Provider will, where practicable, permit the Access Seeker to share the Power Supply in return for a reasonable increase in the Charges payable, calculated reasonably by the Access Provider at the time that the request to share the Power Supply is made, by reference to the cost at which the Access Provider is supplied the Power. The Access Seeker will pay all costs, expenses and charges incurred by reason of establishing the Power Supply as a shared Power Supply.

12. STANDARD TERM OF ACCESS

Unless otherwise agreed between the parties, a standard term of access to a particular Facility is the least of:

(a) (8) eight years;

(b) The term of the Access Provider's rights of tenure in respect of that Facility; and

(c) The period equal to the remaining economic life of the Facility, as estimated by the Access Provider (and as notified to the Access Seeker at the time of application) if that estimation is less than 8 years.

13. PERMITS AND APPROVALS

13.1 **Access Seeker's responsibility**

If it is necessary to obtain permits, approvals or licences required from any governmental, regulatory or public authority, agency or body (**Third Party Regulatory Approvals**) in relation to any Make Ready Work or the installation, repair, testing, operation, maintenance or removal of Equipment, the Access Seeker must use its reasonable endeavours to obtain the Third Party Regulatory Approvals, and will bear the cost of obtaining those Third Party Regulatory Approvals, unless the relevant law or government regulation requires that the Access Provider obtains it, in which case the Access Provider must use its reasonable endeavours to do so, but at the Access Seeker's expense.

13.2 **Co-operation**

Each party will provide all co-operation that the other party reasonably requires to obtain any approvals under paragraph 13.1 and must do so in a timely fashion and in a manner consistent with its own operations. If any approvals cannot be obtained, the parties must not carry out the activity for which approval has been refused.

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14. PERFORMANCE OF MAKE READY WORK

(a) The Access Provider will:

(i) take all reasonable steps to ensure that all Make Ready Work is carried out so far as practicable, within the construction timetable and cost estimates forming part of the Field Study; and

(ii) notify the Access Seeker of any delays which it anticipates as soon as practicable after becoming aware that such delays may occur.

(b) If, after the commencement of Make Ready Work, the Access Provider determines that the actual cost of carrying out the Make Ready Work is likely to exceed, by more than 15%, the Make Ready Work costs specified in the response to the Service Request:

(i) the Access Provider may immediately suspend all Make Ready Work and advise the Access Seeker accordingly;

(ii) as soon as practicable, the Access Provider must provide a "**Work Variation Report**" to the Access Seeker setting out the nature and extent of additional Make Ready Work, revised Make Ready Work costs and any revised Advised Delivery Date; and

(iii) upon receipt of a Work Variation Report, the Access Seeker must either request the Access Provider to carry out the Make Ready Work at the revised Make Ready Work costs (and/or by the revised Advised Delivery Date) or inform the Access Provider that it does not wish to proceed with the Make Ready Work. In regard to the latter, the Access Seeker must pay Make Ready Work costs to the extent then incurred by the Access Provider.

(c) The Access Provider will not incur any penalty or liability to the Access Seeker by reason of any suspension of Make Ready Work pursuant to this paragraph and the Advised Delivery Date will, to the extent required, be adjusted to take into account the additions to, or variations in, Make Ready Work.

(d) The parties agree that in addition to the Make Ready Work costs specified in the response to the Service Request, the Access Seeker will bear any additional Make Ready Work costs which do not exceed 15% of the estimated Make Ready Work costs.

15. DELIVERY OF ACCESS

(a) Prior to the delivery of access to the Facility, the Access Provider must perform all Make Ready Work which it has agreed to perform, and perform that work as soon as reasonably practicable.

(b) After it completes the Make Ready Work, the Access Provider must notify the Access Seeker of the Advised Delivery Date, which may be different to that specified in the response to the Service Request.

(c) The Access Provider is not obliged to deliver access on the Advised Delivery Date if Make Ready Work cannot be reasonably completed, due to unforseen circumstances or

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circumstances beyond the Access Provider's control before that date, and notice has been given to the Access Seeker, in which case access will be delivered as soon as reasonably practicable after the Advised Delivery Date.

(d) The Access Provider may depart from the Field Study provided that the variation does not have a material impact on the Access Seeker's use of Equipment or cost. Where any such variations are likely to have a material impact on the Access Seeker's use of Equipment, the Access Provider must give prior notice to the Access Seeker in respect of such material impact.

(e) The Access Seeker must deliver to the Access Provider all plant and Equipment of the Access Seeker to be installed by the Access Provider in a timely manner which allows the Access Provider to comply with all timeframes in the Field Study.

(f) Subject to paragraph (g), the Access Seeker must install and test its Equipment in accordance with the work plan included in its Facilities Access Application and within three (3) months of the completion of Make Ready Work. The Access Seeker will be responsible for the testing of its Equipment. The Access Provider, at the Access Seeker's cost, may provide any reasonable assistance required for such testing.

(g) The Access Seeker must contract with the Access Provider for the installation of equipment on any Facility which is a Tower on a time and materials basis.

16. COMPLETION INSPECTION

(a) Unless the parties otherwise agree, upon completion of installation work by the Access Seeker, there must be a joint on-site inspection between the Access Provider and Access Seeker to ensure that Make Ready Work and installation work have been satisfactorily completed and to agree whether access and installed Equipment have been provided in accordance with the details of the approved Facilities Access Application.

(b) The scope of the completion inspection is to be agreed by the parties.

(c) If the Make Ready Work and Equipment installation have not been satisfactorily completed, the parties must agree what remedial work is required and carry out that remedial work. Following completion of any remedial work, the parties must hold a further meeting to confirm the satisfactory completion of the Make Ready Work and Equipment installation. The remedial Make Ready Work (but not the Equipment installation) will only be performed by and/or at any cost to the Access Provider if such work is required because the Access Provider has not performed Make Ready Work specified in the Field Study.

17. MAINTENANCE, EQUIPMENT REPLACEMENT AND INTERFERENCE

17.1 General principles

(a) Each party is responsible for the maintenance and safe operation of its Equipment, provided that the Access Seeker must contract with the Access Provider for the Access Provider to perform all maintenance of any Equipment which is located on a Facility which is a Tower.

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(b) The Access Provider is responsible for maintaining each Shared Facility in a safe and operable condition and must, within a reasonable time of a request by the Access Seeker that it do so, provide satisfactory evidence of certification of all reasonable or necessary maintenance and safety checks and inspections.

17.2 **Facility and equipment protection**

Each party must take all reasonable and necessary steps to ensure that its Equipment does not:

(a) endanger the safety or health of the officers, employees, contractors or agents or customers of the other party; or

(b) damage, interfere with or cause any deterioration in the operation of the other party's Facility or Equipment.

17.3 **Co-ordination of maintenance**

The parties recognise that maintenance of one party's Equipment in a Shared Facility may unavoidably require Outages to another party's Equipment. The parties intend that any maintenance work in such Shared Facility should be planned to cause minimum disruption to each party's services. To this end, the parties will comply with the procedures for coordinated scheduling of maintenance of their respective Equipment as set out in this paragraph.

17.4 **Access windows**

The Access Provider will, following consultation with the Access Seeker, schedule Access Windows within which the parties will undertake their regularly scheduled work on the Equipment and, in the case of the Access Provider, the Shared Facility. Access Windows must be scheduled in accordance with the principle that they are to occur at a time when each party's Equipment is carrying the least traffic but also at a time when it is reasonably practical to perform maintenance work and provide the required access. Any installation work required, or switch offs should be performed within the Access Windows. Unless otherwise agreed, the Access Seeker must negotiate any switch offs of any Equipment of a third party necessary as a result of the installation or maintenance of the Access Seeker's Equipment, with that third party.

17.5 **Unscheduled maintenance**

The parties will comply with the procedures in paragraph 17.6(a) in respect of the performance of any unscheduled maintenance by a party outside an Access Window. As a general principle, if the parties agree that maintenance work can be reasonably delayed until the next Access Window, then it should be delayed.

17.6 **Emergency procedures**

(a) For the purposes of the Access Provider undertaking Emergency Work in relation to a Shared Facility, if the Equipment of the Access Seeker has to be turned off or turned down or the Access Provider requires assistance in relation to the Access Seeker's Equipment, the

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Access Provider will notify the Access Seeker and the Access Seeker will dispatch personnel on an emergency basis to the Shared Facility in accordance with the same procedures and timeframes as the Access Seeker would respond to an emergency relating to its own Equipment at that Shared Facility.

(b) If the Access Provider becomes aware of a fault, defect or problem with the Access Seeker's Equipment or other facilities located in a Shared Facility which causes, or there is a reasonable risk that it might cause, damage to the Shared Facility or to either party's Equipment, the Access Provider:

(i) must notify the other party as soon as practicable; and

(ii) where there is an immediate risk of personal injury or significant property damage (including to the other party's or third party's Equipment), may take interim measures reasonably necessary in relation to the other party's Equipment to prevent such injury or damage, pending the attendance by the other party's personnel to perform the required corrective work.

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17.7 **Relocation**

(a) Once the location of the Access Seeker's Equipment on a Shared Facility has been determined, and any part of it is installed, the Access Provider may only with the consent of the Access Seeker (such consent not to be unreasonably withheld), require that it be relocated elsewhere upon that Facility.

(b) The Access Seeker is not required to consent to the relocation of its Equipment unless:

(i) the Access Provider pays the reasonable cost of such relocation; and

(ii) the proposed new location of the Access Seeker's Equipment does not result in a material reduction of amenity (including technical, operational and maintenance capability) in the use of that Equipment.

17.8 **Replacement of equipment**

(a) On giving ***ten (10) Working Days'*** prior written notice to the Access Provider, the Access Seeker may replace Equipment currently located in a Shared Facility with similar or new design Equipment or other facilities if all of the conditions in paragraph 17.8 (b)(i) to (v) are satisfied, unless the parties have agreed otherwise in a Facilities Access Application.

(b) The Access Provider agrees (such agreement not to be unreasonably withheld) that any replacement Equipment will not result in or cause:

(i) significant difficulties of a technical or engineering nature;

(ii) significant interference with the delivery of telecommunications services supplied by the parties or other Licensed Operators;

(iii) significant additional space requirements;

(iv) significant interference with any Equipment of the parties or third parties located at or in the Shared Facility such that the performance level of the Equipment or Facility falls below the Access Provider's standards in the case of the Access Provider's Equipment or below accepted industry standards in the case of all other Equipment; or

(v) a significant threat to the health or safety of persons who operate, or work on, or are near, the Shared Facility.

(c) The replacement work must take place within an Access Window or some other time agreed to by the parties and all third parties which share that Facility.

(d) The Access Seeker must contract with the Access Provider for the replacement of Equipment at any Facility which is a Tower.

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17.9 **Additional equipment**

The Access Seeker may only install Additional Equipment in a Shared Facility by submitting and gaining approval of a Facilities Access Application in accordance with this Service Description.

17.10 **Interference**

(a) Neither party must do anything, or knowingly permit any third party to do anything, in a Shared Facility which causes interference which materially obstructs, interrupts or impedes the continuous use or operation of the Equipment of the parties installed in the Facility, or a third party's Equipment.

(b) In the event of one party advising the other of any interference allegedly caused by a breach by that party of paragraph (a), subject to paragraphs (d) and (e), that party must expeditiously remedy such a breach.

(c) In addition to the obligations under paragraph (b), if the advice of any interference is given within one week of:

(i) the other party installing new or additional Equipment; or

(ii) the other party commissioning new or additional Equipment, then that other party must remedy that breach as soon as possible and, in any event, within (24) twenty-four hours.

(d) If, within forty-eight (48) hours after receiving notification of the interference, a party is not able to reasonably demonstrate that the interference is not being caused by that party's use of the Shared Facility, the parties will appoint an independent expert (and, in the absence of such agreement, an expert appointed by the president of the Bahrain branch of the Institute of Electrical Engineers or if that is not possible, another independent engineering association in the Gulf region nominated by the Access Provider) to determine the cause of the interference and, if caused by either party, how the interference is to be eliminated. The independent expert must make that determination within seventy-two (72) hours of being appointed unless otherwise agreed. The parties agree to provide the independent expert with all information within their control and relevant to the interference.

(e) Subject to paragraph (g), if the determination of the independent expert is that the Access Seeker is causing the interference and that to eliminate such interference requires removing, relocating or modifying the Access Seeker's Equipment, the Access Seeker must do so within 48 hours of the independent expert notifying the parties of its determination and the Access Seeker must bear all costs of this work.

(f) Subject to paragraph (g), if the determination of the independent expert is that the Access Provider's Equipment is causing the interference, the Access Provider will use all reasonable endeavours to eliminate such interference and where the Access Provider is unable to eliminate such interference, the Access Provider may require the Access Seeker to remove, relocate or modify the Access Seeker's Equipment and the Access Provider will bear all reasonable costs of the Access Seeker in complying with any such requirement.

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(g) The Access Provider will, at the expense of the Access Seeker, accept a surrender or a variation of the Facility Lease or Facility Sub-Lease if such surrender or variation is reasonably required as a result of the determination of the independent expert and the Access Provider will pay the Access Seeker a pro rata refund to cover unused amounts paid in advance to the Access Provider less any amount in respect of any loss suffered by the Access Provider from such surrender or variation of the Facility Lease or Facility Sub-Lease. In this paragraph, "loss" means:

(i) the costs which have been reasonably incurred by the Access Provider which will not be otherwise reimbursed following the surrender or a variation of the Facility Lease or Facility Sub-Lease; and

(ii) the costs of capital relating to the holding of Equipment or space on the Facility until use, disposal or reuse, and any costs reasonably incurred in arranging for such use, disposal or reuse.

The parties agree that any charges imposed by the Access Provider under this paragraph represent a genuine pre-estimate of the loss the Access Provider will suffer and are not a penalty.

17.11 **Third party equipment**

(a) Subject to paragraph (b), the Access Provider may agree to a third party installing Equipment in a Shared Facility, provided that the third party's Equipment does not interfere in a material way with any of the Access Seeker's Equipment. The Access Provider must otherwise consult with the Access Seeker.

(b) The Access Provider may without notice to the Access Provider agree to any governmental, regulatory or public authority, agency or body installing any equipment of any kind in a Shared Facility for the provision of emergency services, national defence or any other public service and the Access Provider shall not in any way be liable to the Access Seeker for any interference which such equipment may cause to the Access Seeker's Equipment and the Access Seeker must do all things necessary to ensure that the Access Seeker's Equipment do not in any way interfere with such equipment.

(c) The Access Seeker will not be responsible for the costs of installing third party Equipment, or installation and maintenance of the third party Equipment.

(d) The Access Provider will use all reasonable endeavours to make it a condition of giving permission to a third party to install its Equipment in the Shared Facility, that the third party agrees to comply with terms consistent with paragraph 17.10 in relation to the third party's use of the Shared Facility and further to include suitable indemnities by the third party against damage to persons or property affording protection for liability or loss to all persons who share the Facility. The Access Provider will notify the Access Seeker if unable to obtain the third party's agreement to such terms.

(e) If the Equipment of a third party needs to be moved, powered down or turned off in order for the Access Seeker to install or maintain its Equipment, the Access Seeker will be responsible for liaising with that third party and the Access Provider will provide the Access

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Seeker with the details of the third party. The Access Seeker must reimburse or pay all costs paid or payable by the Access Provider in relation to the movement, power down or turn off of the third party's Equipment in these circumstances.

18. INSURANCE

(a) The Access Provider may in writing require the Access Seeker to maintain higher insurance coverage than that required under Clause 16.15 of the Supply Terms where the Access Provider reasonably believes that such higher insurance coverage is necessary given the level and nature of the Access Seeker's access to the Access Provider's Facilities. Where the Access Provider requires the Access Seeker to maintain higher insurance coverage under this paragraph, the Access Seeker must comply with any such requirements within thirty (30) Working Days of being so notified by the Access Provider.

(b) On request by the Access Provider, the Access Seeker must immediately produce evidence that it has complied and is continuing to comply with its obligations under paragraph 18(a).

19. SUSPENSION AND TERMINATION

19.1 **Suspension**

The parties agree that the rights of suspension and termination under Clauses 12 and 13 (respectively) of the Supply Terms in respect of a Service under this Service Description shall apply.

19.2 **Completion of suspension**

The Access Provider must provide the Access Seeker with access to the relevant Facility as soon as practicable after there no longer exists a reason for suspension and must do so at a reasonable cost to the Access Seeker.

19.3 **Related agreements and Schedules**

(a) If the term of any Facility Lease or Facility Sub-Lease continues after the expiry or termination of the FAS Service, then to the extent relevant to those agreements the provisions of this Service Description shall continue to apply.

(b) Expiry or termination of:

(i) the Fibre Fronthaul Service as more fully described in Schedule 6.6 – (FFS Service Description) of the Reference Offer; or

(ii) an Exceptional FAS,

for any reason, shall automatically terminate any related FAS Service.

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20. TERMINATION BY THE ACCESS PROVIDER

(a) If the Access Provider:

(i) intends to decommission the Facility and terminate the provision of access to that Facility; and

(ii) the Access Seeker wishes to continue to use the Facility, then the Access Provider must:

A. release the Access Seeker from the Facility Sub-Lease and upon vacation of the Facility by the Access Provider, any obligations under this Service Description in respect of that Facility;

B. where there is more than one Access Seeker sharing the Facility, permit the Access Seeker that was the first Licensed Operator to share the Facility (and if shared initially by more than one Access Seeker, by agreement between the Access Seekers) to take an assignment of or novate the Facility Lease from the Access Provider;

C. indemnify the Access Seeker against any claims by the Lessor or any other person in respect of the Access Provider's use of the Facility; and

D. make reasonable endeavours to incorporate this paragraph 20 into any negotiations with the Lessor regarding the execution or the renegotiation of the Facility Lease.

(b) The Access Seeker, where it takes an assignment or novation of the Facility Lease, indemnifies the Access Provider against any claims, damages, expenses or liabilities in respect of the Facility arising after the date of the assignment or novation.

21. TERMINATION BY ACCESS SEEKER

If the Access Seeker decides to cease using a Shared Facility and the Access Provider wishes to continue using the Facility, the Access Seeker indemnifies the Access Provider against any claims by the Lessor or any other person in respect of the Access Seeker's use of the Facility, or the termination of the Facility Lease or Facility Sub-Lease.

22. CONSEQUENCES OF EXPIRY OR TERMINATION

(a) Where a Facility Lease or Facility Sub-Lease has expired or terminated early including as a result of termination of the FAS Service, the Access Seeker must:

(i) immediately remove the Access Seeker's Equipment from the relevant Facility, except where the Facility is a Tower in which case the Access Seeker must contract with the Access Provider to remove the Access Seeker's Equipment;

(ii) reinstate the Facility to the same standard, style and condition as existed prior to the installation of the Access Seeker's Equipment; and

(iii) do such other acts, matters and things as the parties may agree, and the Access Provider must allow the Access Seeker to enter onto the land on which the Facility is located in order to

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do so.

(b) If the Access Seeker fails to comply with paragraph 22(a) within twenty (20) Working Days of such termination, the Access Provider may enter the Facility on reasonable notice for the purposes of carrying out any necessary disconnection works.

(c) All reasonable costs of the disconnection described in paragraph 22(b) must be paid by:

(i) in the case of expiry of the relevant Facility Lease or Facility Sub-Lease, the Access Seeker;

(ii) in the case of disconnection due to termination of the FAS Service, the party other than the party who terminates the FAS Service; and

(iii) in the case of disconnection due to a Force Majeure Event under Clause 15 of the Supply Terms, the party affected by the Force Majeure Event.

23. LIABILITY AND INDEMNITY

(a) This paragraph 23 applies in relation to access to Facilities under this Service Description and applies notwithstanding any inconsistency with Clause 16 of the Supply Terms.

(b) The Access Provider shall not be liable to the Access Seeker (whether in contract, in tort, under statute or in any other way and whether due to negligence, willful or deliberate breach or any other cause) under, or for matters arising in relation to, this Service Description, a Facility Lease or Facility Sub-Lease for or in respect of:

(i) any consequential, special or indirect liability, loss, damage, cost, charge or expense;

(ii) any act or omission or matter relating to any third party, other than a properly authorised contractor (Approved Contractor) of the Access Provider acting within the scope of its authority involved in the operation or maintenance of a Shared Facility; or

(iii) any delay in the initial provision or failure to provide access or for anything not under the direct control of the Access Provider.

(c) The Access Seeker shall indemnify the Access Provider against any claim or cause of action (whether in contract, in tort, under statute or in any other way and whether due to negligence, wilful or deliberate breach or any other cause) of a third party against the Access Provider for or in respect of all direct, consequential, indirect or special liability, loss, damage, cost, charge or expense incurred or suffered as a result of or in relation to the Access Seeker's access to Facilities under this Service Description, a Facility Lease or Facility Sub-Lease.

(d) Subject to paragraphs (b) and (c), each party (**Indemnifying Party**) unconditionally and irrevocably indemnifies the other (**Innocent Party**) against all claims, actions, damages, losses, liabilities, costs, charges, expenses, outgoings or payment which the Innocent Party pays, suffers or incurs, or is liable for in connection with:

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(i) any breach of this Service Description, a Facility Lease or a Facility Sub-Lease by the Indemnifying Party; or

(ii) damage to or loss of any Equipment, Facility or other property of the Innocent Party or a third party or injury to a person caused by an act or omission (negligent or otherwise) of the Indemnifying Party.

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ATTACHMENT 1 TO SCHEDULE 6.7 FACILITY LEASE

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ATTACHMENT 2 TO SCHEDULE 6.7 FACILITY SUB-LEASE

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6.7.1 – Duct Licence

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SCHEDULE 6.7.1 – FAS: DUCT LICENCE

1. The Access Provider will grant to the Access Seeker, for the period set out in the agreed Service Request, a licence to use a portion of space in the Access Provider's Duct Network allocated in a sub-duct in an Access Provider's Duct route between locations identified in a Service Request for access in writing which is signed by the Access Provider in accordance with the terms of this licence and Schedule 9 – (Supply Terms) of the Reference Offer.

2. The licence does not commence unless and until:

   a. a Service Request for Duct access has been submitted by the Access Seeker and is accepted and signed by the Access Provider;

   b. all Make Ready Work has been completed to the Access Provider's satisfaction;

   c. all Charges for the stages of the process occurring up to and including the completion of Make Ready Work have been paid; and

   d. the terms of this licence have been signed by the Access Seeker.

3. The licence is a personal and non-transferable right. The licence does not confer on the Access Seeker a lease, sub-lease or any right of ownership or possession in respect of any specific sub-duct. The Access Seeker may not share or sub-licence any right granted by this licence.

4. The Access Seeker does not have any general rights of access to Duct and this licence allows the Access Seeker to access the Duct route only in strict compliance with the Access Provider's access policies and procedures which apply from time to time relating to security, protection and safety, physical access procedures, marking of equipment. Such access must be supervised by the Access Provider at all times.

5. The Access Seeker indemnifies and holds the Access Provider harmless from Municipality charges or other taxes or charges that may be levied from time to time in connection with the provision or use of Ducts and if such charges are levied only on the Access Provider, the Access Seeker must promptly reimburse the Access Provider a portion of charges allocated to the Access Seeker by the Access Provider, in proportion to the share of usage of live fibres in the relevant route or chargeable element.

6. It is a condition of the licence that the Access Seeker must:

   a. comply with the policies and directions of the Access Provider, including in relation to access, movement or relocation of a Duct route and relocation of the cable from, in, or between, sub-ducts;

   b. behave in a manner consistent with the action of a prudent Duct owner;

   c. so far as access is given, keep all cabling Equipment and all accessed Duct areas free of debris and in a safe and tidy condition;

   d. ensure no toxic or flammable materials are left anywhere near the Duct or Equipment;

   e. promptly notify, for correction or removal, any fault or defect in Equipment used in or near the Duct;

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f. immediately notify the Access Provider of any damage to Duct or Equipment observed or occurring during or as a result of access by the Access Seeker.

7. The Access Seeker agrees to reimburse the Access Provider all costs associated with the removal and replacement of fibre which does not comply with the Access Provider's policy and specifications and any Municipal, Ministry or Authority requirements or restrictions.

8. Maintenance shall be carried out by the Access Provider, and a Charge for time and materials shall be made by the Access Provider for corrective maintenance.

9. If the Access Provider, by reasonable notice to the Access Seeker, requires the movement of the Fibre Cable for the Access Provider's own convenience, then the Access Provider will cover the cost of moving the Fibre Cable and the Access Seeker may attend to observe at its own expense.

10. If part or all of the Duct route needs to be moved for reasons outside the control of the Access Provider and the move is made with the consent of the Access Provider or by order of a competent court, Municipality, authority, Ministry or the Authority, the Access Seeker must promptly reimburse the Access Provider a proportion of charges or costs allocated to it by the Access Provider using a reasonable methodology.

11. The Access Provider shall not be liable to the Access Seeker in breach of contract, statutory duty, tort (including but not limited to negligence) for any loss of profit, loss of use, loss of data, loss of revenue, loss of contracts or for any financial or economic loss, or for any indirect or consequential damage howsoever caused and in any event the Access Provider's liability shall be limited to the Charges which would apply for one year's rental of the relevant Duct space in accordance with the Reference Offer or if no rate is set out in the Reference offer, then a maximum amount of ten thousand Bahraini Dinar (BHD10,000).

12. The Access Provider may suspend provision of the FAS Service until further notice if the Access Seeker causes, or the Access Provider has clear and reasonable grounds to believe that the Access Seeker will cause, physical or technical harm to any telecommunications network (whether of the Access Provider or another operator).

13. The Access Provider may terminate the licence granted to the Access Seeker on thirty (30) days' notice if:

    a. fibre is not lit along the full route of the Duct access for any consecutive period of twelve (12) months during the term of the licence;

    b. the Access Seeker ceases to be a Licensed Operator;

    c. the Access Seeker installs unauthorised Equipment in or near any Duct;

    d. the Duct becomes unsafe or unsuitable for its purpose;

    e. the Access Provider's right to use the Duct or right of way is revoked, terminates or expires.

14. Either party may terminate the licence immediately if the other party is in breach of the licence or of the Supply Terms as they relate to the Duct and the breach remains unremedied for a period of ten (10) Working Days.

15. The Access Seeker may terminate the licence by giving the Access Provider three (3) months' written notice.

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16. If the licence is terminated then the Access Seeker must pay on a time and materials basis for the Access Provider to remove all the Access Seeker's Equipment from in and around the Duct within ninety (90) days of the notice of termination. If the Access Seeker fails to comply with this clause then the Access Provider is entitled to remove the Access Seeker's Equipment and the Access Seeker hereby irrevocably authorises the Access Provider to sell such Equipment by way of resale, scrap or salvage to defray the costs of removal.

17. The Access Seeker will be deemed to have abandoned the Access Seeker's Equipment if it does not access the Equipment for any period of twenty-four (24) consecutive months. If the Access Seeker's Equipment is abandoned then the Access Provider may exercise the same rights as for the removal of Access Seeker Equipment identified above.

18. The terms of this licence take precedence over any other terms which might apply to the Access Seeker's access to an Access Provider Duct.

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6.7.2 – Duct Access Policy

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SCHEDULE 6.7.2- FAS: DUCT ACCESS POLICY

1. The availability of Duct space for sharing is assessed for each segment of a primary Network route only between identified physical locations nominated by the Access Seeker.

2. Duct sharing requires a protective sleeve dedicated to the use of the Access Seeker.

3. An existing protective sleeve is considered available for use if it is: (i) not being used; (ii) not reserved for the use of the Access Provider; (iii) not subject to a current enquiry for use by another Access Seeker.

4. If there is no existing protective sleeve in the Duct then, where possible, a protective sleeve will be installed at the expense of the Access Seeker. A protective sleeve will only be installed where laid fibres and cables occupy less than forty per cent (40%) of the usable space in the Duct. For clarification, the usable space is represented by eighty per cent (80%) of the cross-sectional area of the Duct.

5. If it is not possible to install a protective sleeve in an existing Duct then the Access Seeker will not have a right to have a Duct installed by the Access Provider under the Reference Offer, although the Access Provider may be prepared to enter into commercial negotiations outside of the Reference Offer for these purposes.

6. The box/manhole should of a size suitable to house two joints minimum. If the use required by a protective sleeve will mean that no further jointing space will be available then the box/manhole must be upgraded. If the box/manhole cannot be upgraded then the Access Provider will reject the Access Seeker's order.

7. Shared Ducts can only be used for single mode step fibre compliant with the specifications stipulated by the Access Provider, and all processes must be compliant with the procedures stipulated by Access Provider.

8. Unless otherwise agreed, the Access Provider alone can supply the relevant materials except for the Fibre Cable which either (i) will be supplied by the Access Provider; or (ii) the Access Seeker must arrange for it to be supplied by an Approved Contractor. The Fibre Cable must comply with the Access Provider's specifications notified to the Access Seeker and any Municipal, Ministry or Authority requirements or restrictions.

9. The Access Seeker is responsible for obtaining all relevant permissions and making all payments required for lead-in access, even if lead-in access can physically be provided by the Access Provider. Even if the Access Provider agrees to provide lead-in (if available), the Access Provider's responsibility ends at the manhole nearest the building or one (1) metre from the physical outer perimeter of a building, as stipulated by the Access Provider.

10. All works are at the risk and cost of the Access Seeker, even though they must be performed by the Access Provider's qualified staff or by an Approved Contractor under terms and conditions which are acceptable to the Access Provider and give the Access Provider the ability to directly supervise and recover damages from the contractor.

6.7.3 – Duct Access Process

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SCHEDULE 6.7.3 - FAS: DUCT ACCESS PROCESS

1. Enquiries about sharing Ducts or an application for Duct access should follow the process and policies set out in this document.

2. Duct sharing requires supplementary steps to the standard process for Facilities sharing set out in Schedule 6.7 – (FAS Service Description) of the Reference Offer.

3. A Field Study is automatically required for each enquiry about sharing a Duct (unless the Access Seeker withdraws the enquiry first).

4. The Field Study for Duct sharing is performed in three stages of increasing complexity, which are identified in the process below.

5. Before each stage of the Field Study, if the Access Seeker wants to proceed then it must confirm. Confirmation is an agreement to pay the Charges for the next stage of the Field Study on a time and materials basis. An estimate of the Charges will ordinarily be supplied at each stage. The Access Provider will waive site survey Charges (each box or manhole visited as part of any stage of a Field Study counts as a site for the purposes of site survey Charges) to the extent that those Charges exceed the total of time and materials Charges for each step of the Field Study process.

6. When the Access Provider notifies the Access Seeker of the result of a stage of the Field Study, the time frame for completion of the Field Study is automatically extended by the expected timeframe for the next stage.

Step/Stage	Entity Responsible	Action/Information	Expected Timeframe	Charges
Request	Access Seeker	Provide information regarding request	Up to Access Seeker	No
Assess Request	Access Provider	Return to Access Seeker if incomplete	Up to five (5) Working Days unless extended as per schedule	Included in application processing fee

Desk Study	Access Provider	Whether information available in Desk Study shows that (a) sharing not available; (b) cost and time for next step to confirm if sharing available	Up to two (2) weeks to assess (a). Up to one (1) week to assess time and cost for (b).	Included in general processing fee

Confirm Proceed	Access Seeker	If application is to proceed then the Access Seeker must confirm or withdraw	Access Seeker must respond within five (5) Working Days	No
Field Study Stage 1	Access Provider	Field study of route: result is either (a) not available; or (b) proceed to Duct Space Test and Verification survey with time and cost estimate	Up to two (2) weeks for field study first stage. Up to further two (2) weeks to assess time and cost for (b)	Yes
Confirm Proceed	Access Seeker	If application is to proceed then Access Seeker must confirm or withdraw	Access Seeker must respond within five (5) Working Days	No
Field Study Stage 2 Duct Space Test & Verification	Access Provider (Approved Contractor)	Full route survey: result is either (a) not available; or (b) available	Up to four (4) weeks	Yes. Time and materials
Confirm proceed	Access Seeker	If application is to proceed then Access Seeker must confirm or withdraw	Access Seeker must respond within five (5) Working Days	No
Field Study Stage 3 Design Work	Access Provider	Design cable plan and Make Ready Work including assessment of cost of Make Ready Work	Up to four (4) weeks	Yes. Time and materials
Confirm proceed	Access Seeker	If application is to proceed then Access Seeker must confirm or withdraw	Up to thirty (30) Working Days	No

Material Supply	Access Provider for all Duct & protection work supplies. Access Seeker to arrange supply of Access Provider's Fibre Cable.	Supply of materials	As needed. Access Provider supplies can take twelve (12) weeks if not available. Access Seeker must confirm receipt of fibre within ninety (90) days, failing which Field Study Stage 3 must be performed again	Only those materials supplied by Access Provider
Work ordering	Access Provider	Finalise contractor for installation work	Up to one (1) week	Yes. Time and materials.
Installation	Access Provider (Approved Contractor)	Obtain necessary permissions Withdraw material from stores or receive from the Access Seeker Execute work under mandatory supervision Supply as built drawing	As needed for installation work	Yes. Time and materials.
Splicing	Access Provider	Splicing works	As needed for splicing work	Yes. Time and materials.
Testing	Access Provider and Access Seeker	Testing	As needed for testing work	Yes. Time and materials.
Recording	Access Provider	As built record inserted into the Access Provider's systems	Internal only	Yes. Time and materials.

Schedule 6.8 - Unbundled Metallic Path

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SCHEDULE 6.8 – SERVICE DESCRIPTION

UNBUNDLED METALLIC PATH SERVICE

1. THE SERVICE

The UMP Service is an access service which provides the Access Seeker the full useable spectrum of a dedicated metallic path to an End User. Whilst the Access Provider does not deploy pair gain systems on its Network the removal of pair gain Equipment does not form part of the UMP Service.

A technical description of the metallic path is available in Annex 4 of this Service Description, for illustrative purposes only. Where there are discrepancies, the text in this Service Description will prevail.

Available To: Holders of an Individual National Fixed Services License (NFL) or an Internet Service Provider Class License (ISP) granted by the Authority.

Traffic: Traffic permitted by the licenses held by the Access Seeker.

2. DEFINITIONS

Capitalised terms not defined in this Service Description are defined in Schedule 8– (Dictionary) of the Reference Offer. Terms defined in this Service Description are specific to it.

Access Provider Service Node (NAPSN) means an Access Provider exchange building specified in the list issued by the Access Provider pursuant to paragraph 3.2 Annex A ("**Implementation**") of Access Order No.1 of 2009.

ANFP means the Access Provider's Access Network Frequency Plan which is a spectrum management plan for controlling interference, caused by cross talk, within a metallic access network as reviewed and amended from time to time.

Blocks means those blocks in 100 pair units installed either on the MDF or HDF forming part of the UMP Service.

Blocks and Tie Cables Delivery Rebate Cap means 200% of the monthly HDF Block Rental Charge or monthly Tie Cable Rental Charge where applicable.

Blocks and Tie Cables Validation Rebate Cap means 200% of the monthly HDF Block Rental Charge or monthly Tie Cable Rental Charge where applicable.

CLTQS means the Access Provider's centralized line testing and pre-qualification solution.

Covered Failure means an actual or suspected failure in the UMPL. DP means a Distribution Point.

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End User Consent means the written consent of an End User duly completed and signed to receive a service by means of amongst other components a UMP Service supplied to the Access Seeker in accordance with a **UMP Request**, which consent is provided to the Access Provider by or on behalf of the End User. The End User Consent can be in the form of the terms and conditions signed by the customer when requesting a service from the Access Seeker.

End User Management means all aspects of interface with the customer product support and billing of the End User by the Access Seeker in relation to each End User contracting with the Access Seeker for using the UMP Service and all customer support by the Access Seeker in relation to maintenance issues related to the End User.

Fault means faults related to the provision of the Local Loop Unbundling Service.

Fault Management means Faults described in Schedule 7 – (Service Levels) of the Reference Offer.

Gaining Operator means an Access Seeker who presents the Access Provider a UMP Request.

HDF means Access Provider provided handover distribution frame for the connection of a Tie Cable.

HDF Block Service Credit means, in relation to a single Service Credit, that amount represented by five per cent (5%) of the monthly rental charges for the HDF Block.

Infrastructure Availability means in accordance with paragraph 4.1 (b) for non-active UMPLs the Access Provider carries out a physical survey of the availability of the UMPL between the DP and the MDF.

Implementation Date means the target date by which the Access Provider shall complete an UMP Request.

Line Continuity means a tone test carried out by the Access Provider from time to time in relation to the UMPL:

- For active lines: between the HDF and the line side of the MDF; and
- For non-active lines: between the HDF and the relevant Network Boundary (passing though the relevant street cabinet) except in case of Distant collocation where the test is completed from the MDF.

Losing Operator means an Access Seeker whose End User is subject to a UMP Request given to the Access Provider by a Gaining Operator.

LPQM means the Access Provider's line plant query manager giving the theoretical distance and broadband performance on the basis of the address of the End-user.

Response Time means the Access Provider's Response Times in respect of each Covered Failure.

Restoration Time means the Access Provider's Restoration Times in respect of each Covered Failure.

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MDF means the Access Provider owned main distribution frame in a APSN enabling provision of a UMP.

MP means metallic path.

Network Boundary means the Access Provider's distribution point at customer premises contemplated by the Access Provider's fixed services license.

NTP means Network Termination Point.

Response Rebate Cap means 40% of the monthly rental Charges for the UMPL (8 UMP Service Credits).

Restoration Rebate Cap means 800% of the monthly rental Charges for the UMPL (160 UMP Service Credits).

Service Request means a written request by the Access Seeker for Blocks and Tie Cables in a form issued or approved by the Access Provider from time to time.

SNFM Service means the Service Node Facilities Management Service used in conjunction with this service description as specified in service description 2-15.2 of the Reference Offer.

Service Qualification means the analysis carried out by the Access Provider to confirm whether a UMP service can be provided on the Access Provider Network by checking:

(a) Line Continuity; and/or

(b) Infrastructure Availability; and/or

(c) CLTQS (active UMPLs) or LPQM (non-active UMPL) on an information only basis.

Threshold Response Time means, in relation to a Covered Failure, the threshold response times set out in paragraph 7.2.

Threshold Restoration Time means, in relation to a Covered Failure, the threshold restoration times set out in paragraph 7.2.

Tie Cable means a cable connecting the UMP from the MDF to the HDF provided by the Access Provider.

UMP means an existing two wire metallic path connection between the HDF and the Network Boundary comprising a UMPL, jumper cable connecting the UMPL and the Tie Cable, and Tie Cable connecting the MDF with the HDF together with Blocks for the HDF and MDF.

UMP Cease Request means a request by an End User to the Access Provider or the Access Seeker on the request of the End User to reverse a UMP Request as described in the UMP Request process set out in Annex 1 to this Service Description.

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UMP Invalid Transfer means a UMP Transfer:

(a) where the End User (or its/her/his agent) did not request the services that the Access Seeker has made a UMP Service Request in order to supply to the End User;

(b) where a written End User Consent cannot be produced by the Gaining Operator on request by the Access Provider to support the UMP Request; or

(c) which resulted from a processing error.

UMP Request means a UMP Service Request, a UMP Swap Request or UMP Cease Request, as the case may be.

UMP Service Credit means, in relation to a single Service Credit, that amount represented by five per cent (5%) of the monthly rental charges for the UMPL.

UMP Service Request means the request by the Access Seeker for a UMP Service relating to a proposed UMPL under paragraph 4.1(b) (non-active lines).

UMP Swap means on the request of the End User to the Access Provider or a Gaining Operator to the Access Provider or End User to the Gaining Operator for a change of an active UMP from the Access Provider to the Access Seeker or from the Access Seeker to the Access Provider or from a Access Seeker to another Access Seeker for the provision of services to an End User.

UMP Swap Request means a request from an Access Seeker to make a UMP Swap. UMP Transfer means a UMP Request by an Access Seeker.

UMPL means an existing two wire metallic path connection between the Access Provider's MDF and the Network Boundary.

UMPL Delivery Rebate Cap means 200% of the monthly rental Charges for the UMPL.

UMPL Validation Rebate Cap means 200% of the monthly rental Charges for the UMPL.

Useable Pair means the copper wire connection to the End User as specified in paragraph 4.1.

Wrongful Repair Charge means charges for repairs as a result of a fault report lodged to the Access Provider by an Access Seeker and such faults do not relate to the UMP Service.

3. SERVICE TERMS

3.1 Each party acknowledges this Service is conditional upon necessary space being prepared, accepted by the Access Seeker and made ready in accordance with the SNFM Service.

3.2 Ownership of the UMP shall remain with the Access Provider. Without prejudicing the ability to resell licensed telecommunications services using the UMP, the Access Seeker shall not assign, transfer or share their interest in or rights to the UMP.

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3.3 The Access Provider will implement UMP Requests from the Access Seeker and requests for configuration and provision of connections from other Access Seekers and from itself with respect to any UMPL in accordance with the Access Provider's non-discriminatory provisioning schedule by area.

3.4 Each UMP Service or UMP Swap Request shall be for a minimum period of 1 month from the activation date of the UMP Service. If the Access Provider receives a UMP Cease Request for that UMP on or before the end of the first month from the activation date then the Access Seeker shall pay the Access Provider the UMP pro rata aggregate rental cancellation charges for the unexpired 1 month period.

3.5 If the Access Provider terminates this service in whole or in part subject to the termination condition included in this SD, then each relevant UMP Service and SNFM Service will terminate.

3.6 If a regulatory obligation to support or supply any specific UMP Service no longer applies, the Access Provider may cease to supply the UMP Service to an Access Seeker on 12 months prior written notice. The Access Seeker will not request the UMP Service for any further End Users 6 months prior to end of the notice period unless commercially agreed between the parties. The Access Seeker will also inform each existing End User that the UMP Service will terminate at the end of the 12 month period.

3.7 Where the Access Provider has reasonable objective grounds to consider that the Access Seeker is in breach of an obligation consequent to the UMP Service, the Access Provider may, after notifying the Authority and obtaining the Authority's written approval:

(a) suspend implementation by the Access Seeker of the UMP Service and/or

(b) take any other step contemplated by the Supply Terms to protect the Access Provider's network or other interests.

4. END USER ACCESS Useable Pairs

4.1 The Access Seeker acknowledges that the Access Provider only supplies the UMP Service, subject to successful Service Qualification, where:

(a) the Access Provider supplies operational telephone PSTN and ISDN or broadband services to the same End User over the same Useable Pair as may be used with the UMP Service by the Access Seeker to provide services to the End User; or

(b) spare copper pairs exist between the MDF and the Access Provider's distribution point; and where there are no objective and justifiable technical, legal or operational grounds to prevent delivery by jumpering at the MDF, jumpering at the street cabinet and/or provision of a drop wire. The Access Provider will provide objective reasons justified in writing to Access Seeker s at the time of the Access Provider's refusal. To the extent it applies similar treatment and processes to its retail End Users, the Access Provider shall provision an alternative UMPL if existing suitable spare pairs

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are available.

4.2 For each UMP Request the Access Seeker warrants that it has informed the End User that the installation and operation of the UMP Service may require changes to the placement of existing telecommunications devices or changes of equipment.

4.3 The Access Seeker acknowledges that the UMP Service will allow the provisioning of services to End Users but the quality of such services will be subject to the variable conditions and characteristics of the Useable Pairs. Where the quality of service degradation or interruption of service arises in connection with the operational life span of the UMPL, the Access Provider is under no obligation to replace that UMPL except in cases where failure to do so would result in undue discrimination by the Access Provider between its retail business and the Access Seeker.

Maintenance and Non Discrimination

4.4 The Access Provider will provide network maintenance and support services to ensure that the UMP Service is provided to the Access Seeker at the same level of quality of service and availability as is provided to other Access Seekers.

5. EQUIPMENT

The provision of a UMP Service or the implementation or transfer of the Service does not include the provision of any internal cabling or any customer premises equipment and only comprises the elements specified in this service description.

6. BLOCKS AND TIE CABLES

6.1 The Access Seeker shall submit a correctly completed Service Request to the Access Provider to request supply of Blocks and Tie Cables in accordance with this Service Description. The Service Request shall be submitted in the form specified by the Access Provider from time to time.

6.2 To be valid, the Service Request shall be accompanied by reference information identifying the APSN to enable the Access Provider to implement the Blocks and Tie Cables Service Request.

6.3 Subject to the Access Provider obtaining all necessary consents and the Access Seeker fulfilling all of its obligations under Schedule 9 – (Supply Terms) of the Reference Offer in particular provisioning and installation of the relevant SNFM Service, the Access Provider will provide the Access Seeker with the Blocks and Tie Cables as specified in the Service Request accepted by the Access Provider.

6.4 The Access Seeker shall pay the relevant Charges for the Blocks and Tie Cables as specified in Schedule 3 – (Pricing) of the Reference Offer.

6.5 At any time and subject to any obligations arising as a result of paragraph 3.4 above,

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following the successful completion of a Blocks and Tie Cables Request, the Access Seeker may make a request to the Access Provider to cease the Blocks and Tie Cables service. In this case, the Access Seeker shall pay the Tie Cable cease charge as specified in Schedule 3 – (Pricing) of the Reference Offer.

7 CONNECTION

7.1 The Access Provider will use its reasonable endeavours to connect the UMP Service on or before the relevant Implementation Date which shall be dependent on the following timescales:

(a) The maximum validation time and delivery lead time for the installation for a Service Request or a UMP Request placed by the Access Seeker and accepted by the Access Provider shall be as follows:

UMP Service component	Validation time between receipt of Service Request or UMP Service Request and (for UMP Service Requests) verification or (for Service Requests) acceptance or rejection	Delivery time from acceptance of UMP Request or Blocks and Tie Cables Service Request to implementation
UMPL	5 Working Days	10 Working Days
Blocks and Tie Cables	5 Working Days	20 Working Days

(b) The Service Rebates for a failure to meet the maximum validation time and delivery lead time in the preceding paragraph are as follows:

Target	Rebate for each Working Day or part of a Working Day late
UMPL validation time	10 UMP Service Credits subject to the UMPL Validation Rebate Cap (Equivalent to 50% of the UMPL Rental charge)
UMPL delivery time	10 UMP Service Credits subject to the UMPL Delivery Rebate Cap (Equivalent to 50% of the UMPL Rental charge)

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Blocks and Tie Cables validation time	10 HDF Block Service Credits subject to the Blocks and Tie Cables Validation Rebate Cap (Equivalent to 50% of the HDF Block Rental charge)
Blocks and Tie Cables delivery time	10 HDF Block Service Credits subject to the Blocks and Tie Cables Delivery Rebate Cap (Equivalent to 50% of the HDF Block Rental charge)

The Access Provider will notify the Access Seeker when the connection has been effected in accordance with the UMP Request procedures set out in Annex 1 to this Service Description.

7.2 **Fault response and repair**

(a) Subject to (b) below, the Access Seeker will, as soon as practicable and after becoming aware of a Fault with the UMP (between the HDF and the network boundary) or any other Covered Failure, notify the Access Provider of that Fault in accordance with the Access Provider's procedures for the reporting of faults, Fault investigation and identification of the Fault Owner and Other Affected Party as notified to the Access Seeker from time to time. In particular, the Fault should be raised at the level of Fault Control Centre which operates 24-hours a day, 7 days a week and all days in each year in accordance with Schedule 7 – (Service Levels) of the Reference Offer.

(b) The Access Seeker shall in particular use the UMPL Fault Management form.

(c) The Access Provider shall adhere to the following Response Times and Restoration Times:

Fault type	**Response Time between receipt of the Fault Management form and acceptance or rejection**	**Restoration Time from acceptance of the Fault Management form to notification of restoration**	**Threshold Response Time between receipt of the Fault Management form and acceptance or rejection**	**Threshold Restoration Time from acceptance of the Fault Management form to notification of restoration**

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Covered Failure standard	60 minutes	3 Working Days	90 minutes	5 Working Days
Covered Failure premium	60 minutes	NA	90 minutes	8 hours

(d) Where the Access Provider's Response Time or Restoration Time exceeds the Threshold Response Time or Threshold Restoration Time respectively for Covered Failures then the following Service Rebates, assessed on a quarterly basis per event, will apply:

Fault type	**Time by which Response Time exceeds Threshold Response Time**	**Response Service Rebate**	**Time by which Restoration Time exceeds Threshold Restoration Time**	**Restoration Service Rebate**
Covered Failure	15 minutes	1 UMP Service Credit	One Working Day or part of a Working Day	40 UMP Service Credits subject to the Restoration Rebate Cap
	1 hour	2 UMP Service Credits		
	More than 1 hour	1 UMP Service Credits per every additional hour subject to the Response Rebate Cap		

8. FORECASTING

8.1 At the beginning of each calendar month, the Access Seeker shall supply a non-binding

forecast of the expected requests for the UMP Service in each month of the twelve month period following the date of the forecast, in the form required by the Access Provider from time to time. The Access Seeker shall use all reasonable endeavours to forecast accurately given the Access Provider is placing reliance on those forecasts.

9 UMP TRANSFER UMP

Transfer Process

9.1 The Access Provider and the Access Seeker shall comply with clause 9 and Annex 1 of this Service Description when carrying out any UMP Request.

9.2 The Access Seeker shall establish robust procedures to ensure an appropriate End User Consent duly completed and signed is received and properly recorded by the Access Seeker before any UMP Service Request is notified to the Access Provider.

9.3 The Access Seeker shall provide the Access Provider, upon request, a copy of the End User Consent (Access Seeker's document signed by the End User explaining rights and obligations of the End User and the consequences of Unbundling).

Charges

9.4 The Access Seeker shall pay to the Access Provider the relevant Charges determined in accordance with Schedule 3 – (Pricing) of the Reference Offer.

Responsibilities

9.5 From the time of the completion of the UMP Request, the relevant End User will no longer be a customer of the Access Provider for those services supplied by the Access Seeker using the UMP Service, but instead the customer of the Access Seeker for those services.

9.6 From the time of completion of the UMP Request, the Access Seeker shall provide End User Management to support the UMP Services.

9.7 When a fault is reported by an End User, it is the responsibility of the Access Seeker to perform initial tests, prior to raising a fault to the Access Provider, in order to validate that the fault is not within the Access Seeker's network and equipment. In order to assist in the resolution and for efficient use of resources, the Access Seeker shall promptly provide reasonable and complete details of the test performed when reporting the fault to the Access Provider. If after further investigation the Access Provider demonstrates the fault does not relate to the UMP Service, then the Access Seeker shall pay the Wrongful Repair Charge (on a time basis as set in Schedule 3 – (Pricing) of the Reference Offer).

9.8 In relation to any Access Provider service:

(a) the Access Provider will continue to bill the End User for any outstanding the Access Provider charges and other Access Provider services; and

(b) The Access Seeker acknowledges that the End User remains liable to pay any outstanding charges to the Access Provider and remains subject to standard Access Provider debt enforcement policies notwithstanding that the End User is at the same time an Access Seeker Customer.

9.9 In respect of each UMP Request submitted by the Access Seeker to the Access Provider, the Access Seeker shall ensure that:

(a) it has an End User Consent for the transfer or implementation (which consent is not more than 30 days old from the date the UMP Request submission is made to the Access Provider);

(b) it retains records of the End User Consent and the retention is in accordance with the reasonable requirements notified to the Access Seeker by the Access Provider from time to time;

(c) it has used its reasonable endeavours to ensure that the information in the UMP Request is complete and correct;

(d) the processing of each UMP Request, at the time it is lodged, does not breach any party's contractual or other rights (but a signed End User Consent shall be deemed to be a valid notice to the Access Provider to terminate the relevant Access Provider services);

9.10 Where there is any allegation of a failure to comply with this Service Description then the parties will apply the dispute resolution process outlined in Clause 22 of Schedule 9 – (Supply Terms) of the Reference Offer.

Indemnity

9.11 Each party indemnifies the other, subject to using all reasonable endeavours to mitigate against the effect of the occurrence of any loss, liability or cost incurred by a party (including third party claims or claims by any End User) caused by a breach of this Service Description.

10 Billing Period

10.1 The Billing Period in respect of the Service shall be 30 days. The Billing Period shall commence on the date of the first billing date of the Access Provider billing cycle after installation and may include billing on a pro rata time basis for the period between the UMP Request to the next billing cycle to ensure compatibility with the Access Provider billing cycle.

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ANNEX 1 – UMP REQUEST PROCESS

1. UMP Service Request and UMP Swap Request

1.1 The Access Seeker shall make a UMP Service Request for the provision of a UMP Service by the Access Provider to allow the Access Seeker to supply a new or existing service to an End User.

1.2 A UMP Service Request shall be in the format notified by Access Provider from time to time and be submitted by the means notified by the Access Provider from time to time.

1.3 The Access Provider will, within 5 Working Days of receipt of any UMP Service Request or UMP Swap Request, notify the Access Seeker whether the UMP Service Request is:

(a) accepted; or

(b) rejected.

1.4 The Access Provider may reject a UMP Service Request or UMP Swap Request if it:

(a) is incomplete or incorrect or illegible or cannot reasonably be understood;

(b) does not properly identify the End User, or provide information which does not enable the Access Provider to identify the Useable Pair;

(c) is not submitted in accordance with paragraph 2 of this Annex 1;

(d) in the case of a UMP Swap Request, is an UMP Invalid Transfer;

(e) has any other material defect which will hinder the completion of the request, notified by the Access Provider to the Access Seeker at the time of rejection; or

(f) was made at a APSN where the Access Seeker has no SNFM service.

In such a case, the Access Seeker will be charged the Rejection, reversal and withdrawal charge per UMP order charge (as set out in Schedule 3 – (Pricing) of the Reference Offer).

1.5 The Access Provider may in its sole discretion elect to accept any UMP Service Request notwithstanding that there is any defect in that UMP Service Request if the Access Provider considers that such defect does not have a material effect on the Access Provider's ability to process the UMP Service Request and provide the UMP Service.

2. Batches

2.1 The Access Seeker shall submit UMP Requests to the Access Provider in batches of no

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more than ten requests. Batches shall be:

(a) submitted by the means notified by the Access Provider from time to time;

(b) submitted by authorised personnel of the Access Seeker;

(c) made up of only UMP Requests that comply with the requirements of this Service Description and the Supply Terms; and

(d) identified by a unique batch number generated by the Access Seeker.

2.2 The Access Provider will only accept batches of UMP Requests that:

(a) are delivered to the Access Provider during business hours (submission received after business hours will be deemed to have been received on the next working day);

(b) comply with the requirements set out in paragraph 1 of this Annex;

(c) do not exceed the maximum number of two batches per day.

2.3 When a batch of UMP Requests contains one or more Requests that contain one or more defects, the Access Provider will:

(a) reject the defective UMP Requests by returning them to the Access Seeker; and

(b) continue to process the valid UMP Requests within the same batch.

3. Completion of Request

3.1 When Access Provider notifies the Access Seeker that the UMP Request is accepted, then the Access Provider shall use its reasonable efforts to complete the UMP Request on or before the Implementation Date.

3.2 The Access Provider shall put on hold a UMP Request if:

(a) The relevant UMP Service cannot meet Service Qualification;

(b) An authorised person from the End User or the Access Seeker is not available to provide further information when requested and has been contacted at least twice.

3.3 The Access Provider shall notify the Access Seeker in writing once a UMP Request is on hold and shall resume the process as soon as the reason for putting on hold the request as per 3.2 above is satisfied accordingly and brought to the Access Provider's notice in writing by the Access Seeker.

3.4 Any Service Levels and Service Credits shall not be considered during the period which

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the UMP Request is put on hold as a result of paragraph 3.2 above.

3.5 Once a request is successfully completed, the Access Seeker will be charged the connection charge (as set out in Schedule 3 – (Pricing) of the Reference Offer).

4. Notification of Completion of Request

4.1 The Access Provider shall, within 2 Working Days of completion of a UMP Service Request, notify the Access Seeker of completion.

4.2 The Access Provider is entitled to rely on a UMP Request as evidence that the relevant End User has given an End User Consent in relation to the requested UMP Request and understands and is aware of the End User's continuing liability to pay any charges to the Access Provider when due.

5. UMP Cease Request

5.1 At any time following the successful completion of a UMP Request, either:

(a) the relevant End User; or

(b) the Access Seeker;

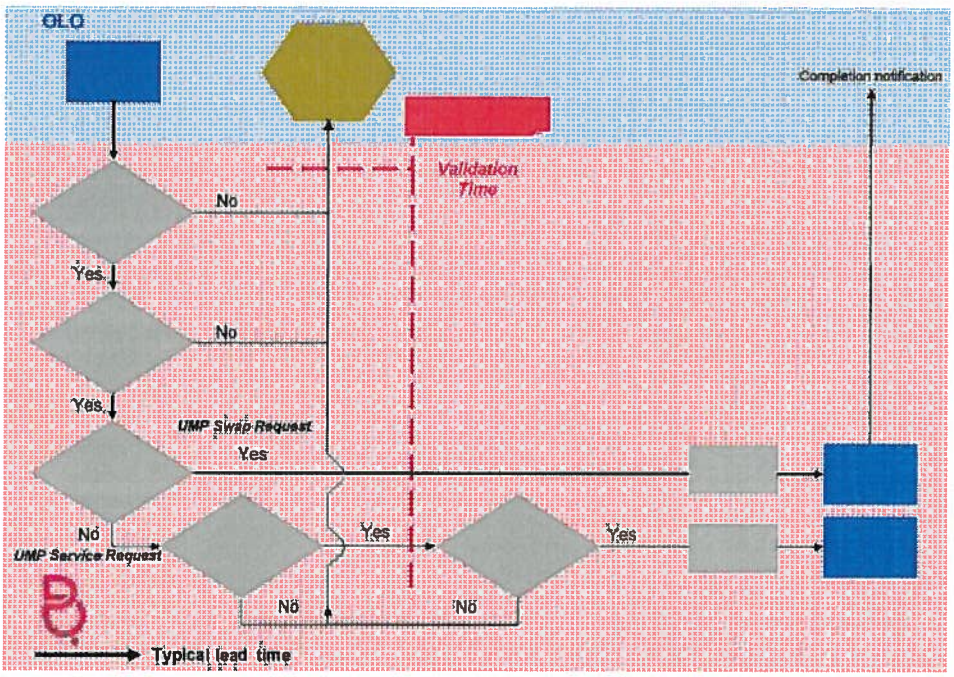
may make a request to the Access Provider to cease the UMP Request.

5.2 The Access Provider will, within 2 Working Days of completion of a UMP Cease Request notify the Gaining and Losing Access Seeker s that the UMP Cease Request has been processed.

5.3 The Access Seeker will be charged the Cessation charge (as set out in Schedule 3 – (Pricing) of the Reference Offer).

The following diagram(s) are for illustrative purposes only. Where there are discrepancies, the text in this Service Description will prevail.

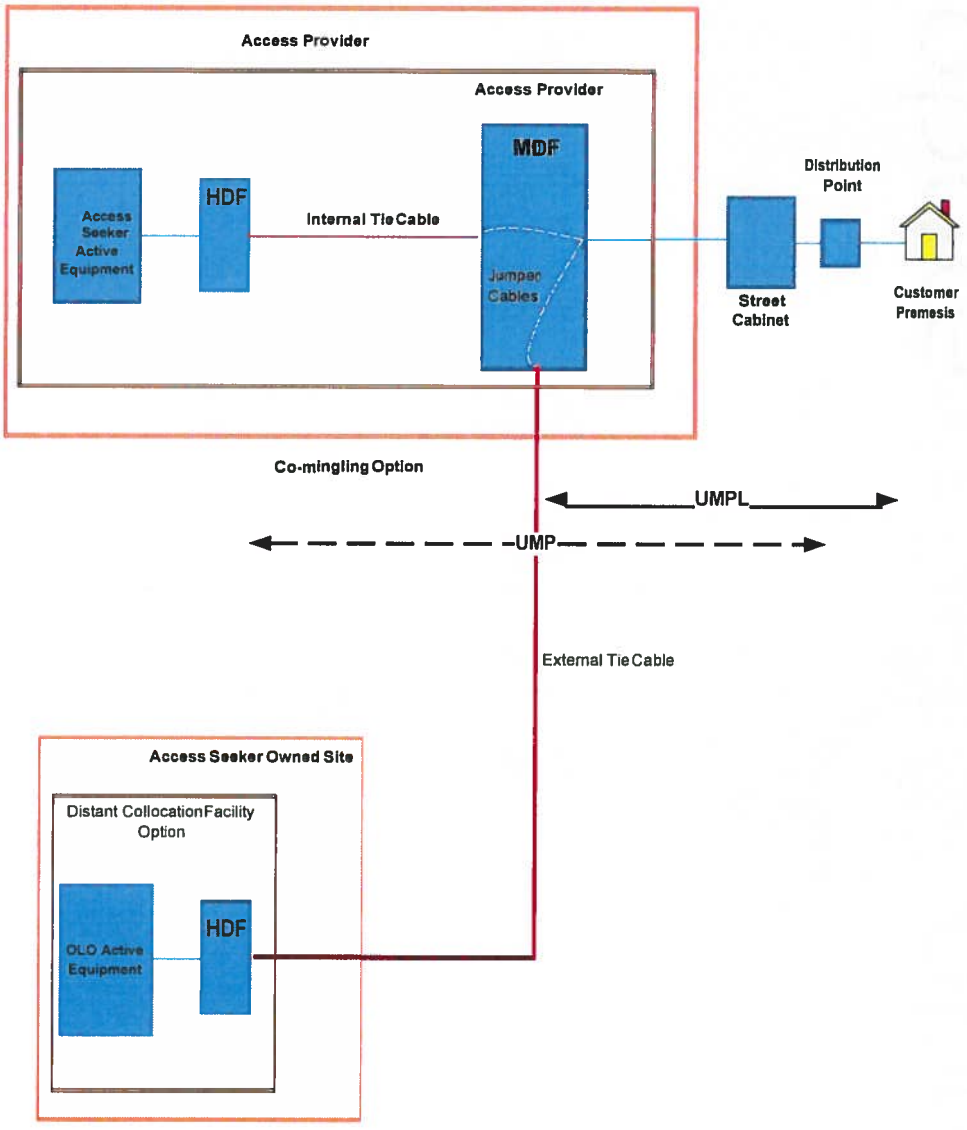
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OLO
Completion notification
Validation Time
No
Yes
No
Yes
UMP Swap Request
Yes
No
UMP Service Request
Yes
Yes
No
No
Typical lead time

ANNEX 2 Technical UMP diagram (to be read with the SNFM service description)

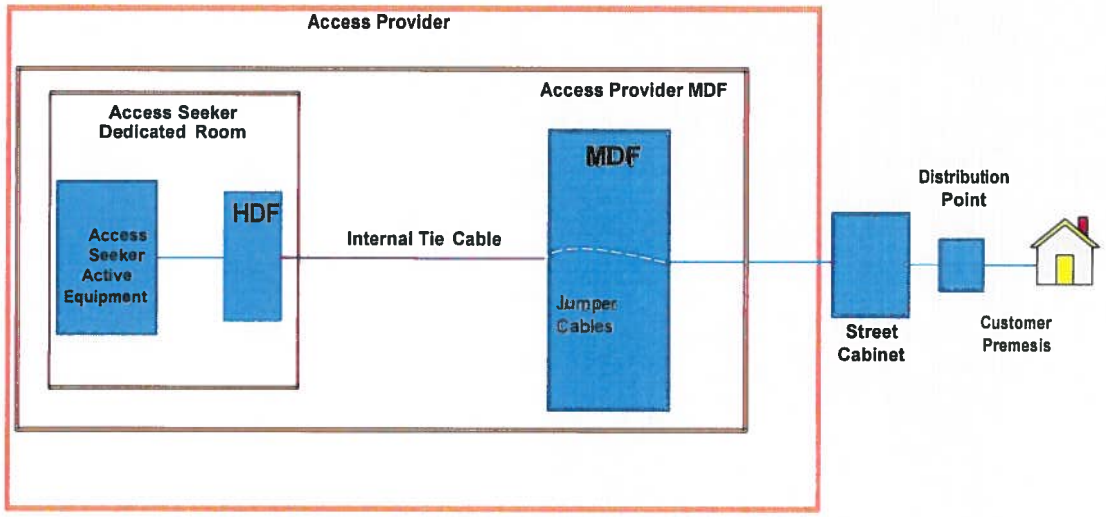
Commingling and Distant Access Seeker Space

The following diagram(s) are for illustrative purposes only. Where there are discrepancies, the text in this Service Description will prevail.



Distant Co-location Option

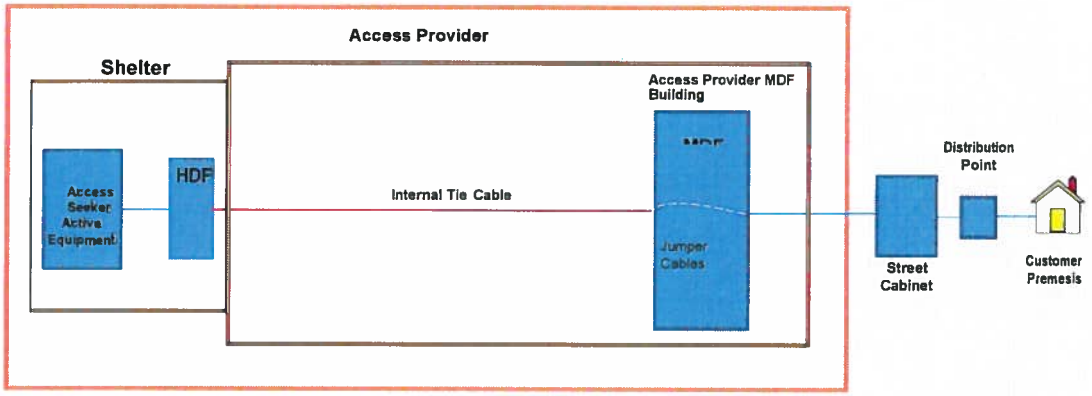
Dedicated Access Seeker Space



◄--------UMPL------- ►

◄----------UMP---------- ►

Licensed Shelter Space



◄_____UMPL____►

Shelter Option

◄_____UMP_____►

ANNEX 3 UMP CHARGES

The Access Seeker shall pay to the Access Provider the relevant Charges determined in accordancewith Schedule 3 – (Pricing) of the Reference Offer.

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ANNEX 4 METALLIC PATH SPECIFICATION

This specification has been produced by the Access Provider Network in order to provide Access Seekers with the parameters of the Access Provider MP. This document is provided for technical guidance only and highlights the general characteristics of the Access Provider MP for information only rather than detailing specific characteristics of the particular UMP as supplied by the Access Provider as part of the UMP Service. The document does not form part of the legally binding service description and the Reference Offer, but is produced for information only.

The specification contained in this Annex 4 may be varied by the Access Provider in accordance with Schedule 9 – (Supply Terms) of the Reference Offer.

1. Scope

This specification defines the electrical parameters of the Access Provider MP from the Service Node to the Customer premises. It applies to the MP when the internal wiring and equipment are in isolation.

2. Metallic Path Parameters

The parameters of the Access Provider MP are defined for the copper pair from the MDF in the Service Node to the NTP in the Customer premises. The Access Provider MP must be tested in isolation of the internal wiring and CPEs. The parameters are listed in table 1 below.

Parameter	Value	Notes
Electrical Continuity	The MP is a continuous connection between the MDF in the Access Provider Service Node to the NTP in the Customer premises.	
Insertion Loss	Max is 10 dB at 1600 Hz	
Loop Resistance	Less than 1200 Ohms	
Insulation Resistance A-B or B-A	Greater than 50 KOhm	Measured using voltage of 100 V DC.
Insulation Resistance Wire - Earth	Greater than 50 KOhm	Measured using voltage of 100 V DC.

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Insulation Resistance Wire - Battery	Greater than 50 KOhm	Measured using voltage of 100 V DC.

Table 1: Access Provider Metallic Path Parameters

2.1 Cables Types

The Access Provider mainly uses two types of cables as follows:

2.1.1. Primary Cable

Designed primarily for installation in ducts in the Primary Side of the Access Provider Access Network (from MDF at the Service Node to the Cabinets). The conductors in the cable consist of a solid wire of standard annealed copper, smoothly drawn, circular in section, uniform in quality. Each conductor covered with a solid polyethylene compound Type 03 complying with BS 6234. Two appropriately coloured insulated conductors twisted together to form a pair (Each unit contains 25 pairs). The cable is sheathed with black polyethylene and sheath thickness includes the moisture barrier. The cable sheath is pneumatically tested to a pressure of 800 millibars, and sustains a constant pressure of 630±50 millibars.

2.1.2. Secondary Cable

Designed primarily for installation in ducts in the Secondary Side of the Access Provider Access Networks (from Cabinets to Distribution Points). Each conductor in the cable consist of a solid wire of standard annealed copper, smoothly drawn, circular in section, uniform in quality. Each conductor covered with a solid polyethylene compound Type 03 complying with BS 6234. Two appropriately coloured insulated conductors twisted together to form a pair. The cable is sheathed with black polyethylene and sheath thickness includes the moisture barrier. The interstices of the cable core are completely filled with a compound. The compound is capable, in conjunction with the insulation, of giving a cable lifetime in excess of 25 years, in the environment of Bahrain.

2.2. Cables Gauges

The Access Provider uses different gauges of cables such as 0.4, 0.5 and 0.63 mm. The cable gauge chosen should be of the smallest which meets the Loop Resistance limit. Cables of lower gauge should be used close to the Service Node and the gauge increased with distance from the Service Node. Figure 1 below shows the typical application of the different gauges in the Access Provider Access Network and Table 2 below shows the different Cable gauges parameters.

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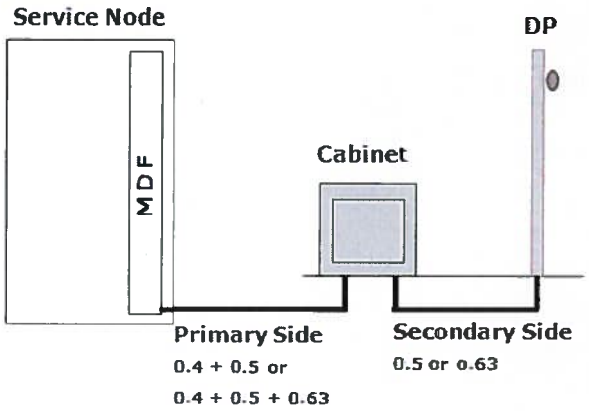


Figure 1: Typical Application of Different Gauges

Cable Gauge (mm)	Loop Resistance (Ω / Km) @ 20 °C	Mutual Capacitance (nF / Km)	Attenuation (dB / Km) @ 1600 Hz
0.4	150	60	2.37
0.5	96	64	1.84
0.63	60	64	1.47

Table 2: Different Cable Gauges Parameters

3. Metallic Path Electrical Termination

The MP consists of two copper wires designated as "A" and "B" wires.

3.1. Network Termination Point Termination

The connection to the MP at the Customer premises is an Access Provider Master Socket representing the NTP.

3.1.1. Access Provider Master Socket Connections

The connection to the MP is provided by the Access Provider's Master Socket on the face plate. The connections for the socket with Voice and Broadband service are shown in Table 2 below.

Contact No	Connectivity
1	Not Used
2	"A" or "B" Wire
3	Shunt Connection
4	Not Used
5	"B" or "A" Wire
6	Not Used

Table 3: Access Provider Master Socket Connections

The Shunt Connection is derived from the centre point between a 470 KOhm resistor and a 1.8 µF capacitor connected is series across the "A" and "B" wires. Additionally there is an overvoltage protection device connected across "A" and "B" wires. Figure 2 below shows the circuit diagram.

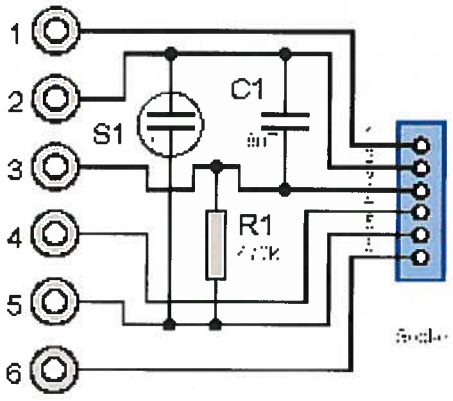


Figure 2: Access Provider Master Socket Circuit Diagram

3.2. Main Distribution Frame Termination

In UMP service, no direct access to the MP end is provided at the MDF. Indirect connection is only provided via an Internal or External Tie Cable. The interface to the network end of the MP will be the

HDF within the LLU Access Seeker space.

4. Metallic Path Operation

In order to ensure network integrity, eliminate interference and for safety reasons, the equipment connected to the Access Provider MP must conform to the ANFP and meet the following technical requirements:

4.1. Power Feeding

The voltage applied to the Access Provider MP must not at any time exceed 120V of either polarity with respect to earth to either leg of the MP. Voltage measurement should be made using a high internal impedance (10 MOhm) voltmeter.

The current caused to flow should not exceed 60mA between either legs of the MP.

The voltages and currents limits above are absolute including AC signals at any frequency together with any DC power supplied to the CPEs.

4.2. Input Signals

Any signals applied to the Access Provider MP must conform to the Access Provider ANFP.

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Schedule 6.9 - Service Node Facilities Management

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SCHEDULE 6.9 – SERVICE DESCRIPTION

SERVICE NODE FACILITIES MANAGEMENT SERVICE

1. THE SERVICE

The SNFM Service is an access service more particularly defined below which together with the UMP Service enables the Access Seeker to provide the full useable spectrum of a dedicated metallic path to an End User.

Available To: Holders of an appropriate Individual Telecommunications or Class License granted by the Authority.

Traffic: N/A

2. DEFINITIONS

Capitalised terms not defined in this Service Description are defined in Schedule 8 – (Dictionary) of the Reference Offer. Terms defined in this Service Description are specific to it.

ANFP means the Access Network Frequency Plan which is a spectrum management plan for controlling interference, caused by cross talk, within a metallic access network as reviewed and amended from time to time

Access Provider Service Node (APSN) means a Batelco exchange building specified in the list issued by the Access Provider.

Co-mingling means co-location space where the Access Seeker Equipment is installed in an APSN in an area which may also house the Access Provider's Equipment or other Licensed Operator Equipment unpartitioned from the Access Seeker Equipment and from each other.

Contact Person means the Access Provider's personnel who can be contacted any time by staff and contractors of the Access Seeker who need to enter the SNFM space. The Access Provider guarantees that in case the Contact Person cannot be reached, another official from the Access Provider can be reached 24 hours a day, seven days a week.

Dedicated Access Seeker Space means a room or caged area within an APSN where an Access Seeker has a Licensed Floor Area.

Distant Access Seeker Space means an area owned leased or controlled by the Access Seeker near to an APSN containing Access Seeker Equipment which is intended to be connected to an Access Provider UMP by means of an External Tie Cable.

Implementation Date means the date set out in a Service Request for a SNFM Service

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which shall be determined in accordance with the timescales set out in clause 11.11 of the Supply Terms.

Licensed Shelter Space means a ground area or areas within the perimeters of but not inside an APSN occupied by an Access Seeker under a license where the Access Seeker's Equipment is installed as more particularly shown in the plan attached to that license or any other such ground area which may be licensed if relocation takes place.

MDF means the Access Provider owned main distribution frame in an APSN enabling provision of a UMP.

Network Boundary means the Access Provider distribution point at customer premises contemplated by the Access Provider's fixed services license.

Access Seeker Equipment means all Equipment compliant with the ANFP or other equivalent specification, provided by the Access Seeker necessary to support the End User's ability to use a UMP Service.

Point of Presence (POP) means an aggregation or network connection point in the Access Seeker's Network located at premises owned or shown to be leased by the Access Seeker or at an Access Provider collocation facility, but for the avoidance of doubt cannot be at an End User Premises, cable station, earth station, manhole, power room, lead-in pipe, duct, outdoor cabinet, MDF, riser room or anywhere not on the main island of Bahrain unless connected by a permanent physical connection above sea level and accessible by the Access Provider.

SNFM Delivery Rebate Cap means 20% of the monthly License Fee for the SNFM Space.

SNFM Space means where applicable, Licensed Floor Space, Licensed Shelter Space, Dedicated Access Seeker Space or Distant Access Seeker Space.

SNFM Delivery Rebate Cap means 20% of the monthly License Fee for the SNFM Space.

SNFM Service means the Service Node Facilities Management Service.

SNFM Service Credit means, in relation to a single Service Credit, that amount represented by 5% of monthly charge of the License Fee.

SNFM Validation Rebate Cap means 20% of the monthly License Fee for the SNFM Space.

UMPB Link means a dedicated transmission service between an Access Seeker's active equipment used to provide End Users with a service based on the UMP Service and the Access Seeker's Point of Presence provided in accordance with this Service Description and the Supply Terms.

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UMPB Service Initial Point means an optical (or Electrical) distribution frame which is the handover frame for the connection between the backhaul and the Access Seeker's transmission equipment established for the purposes of supporting UMP backhaul capacity in Bahrain.

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UMPL means an existing two wire metallic path connection between the Access Provider's MDF and the Network Boundary.

3. SERVICE TERMS

3.1 The SNFM Service in each APSN comprises:

(a) SNFM Space being Co-mingling, Dedicated Access Seeker Space and Licensed Shelter Space.

(b) Licensed Shelter Space – provided by the Access Seeker – maximum 10 sq meters (subject to availability).

(c) Riser room access.

(d) Raised Flooring.

(e) Power – DC power only from an electrical distribution board and handed over at the relevant rack with a lug connector or depending upon the Access Seeker's Equipment, direct cable connection(s). DC and AC power supply/backup to the SNFM Space of 3 kW/h which can be increased in increments of 1kW/h up to a maximum of 7kW/h, subject to additional charges and which apply the same interruption and back up protection to this power supply as applies to other Access Seekers in the APSN.

(f) Light to a reasonable standard.

(g) Air conditioning – reasonable temperature and humidity control provided to Access Seekers Equipment complying with the Access Provider's specifications.

(h) Access arrangements for Access Seeker staff and outside contractors.

(i) Building maintenance and repair of the SNFM Space to such standards as is adequate given the age and nature of the facility.

(j) Cleaning to a reasonable standard.

(k) Security and caging for Dedicated Access Seeker Space.

(l) Earthing – standard point to multipoint.

(m) Fire detection and suppression provided the Access Seeker insures its own Equipment against fire risk.

(n) Maximum loading being 300kg per square meter for a wooden raised floor and 500kg per square meter for a steel raised floor.

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(o) Lead in trays for Tie Cables and/or for UMP Backhaul.

(p) Cage fixing (on request of Access Seeker) in relation to Dedicated Access Seeker Space only. ***Please note: rack fixing is not provided or used in the SNFM Space.***

3.2 Provision of the SNFM shall be conditional on the Access Seeker:

(a) entering into a SNFM License substantially in the form of Annex 1 in respect of each APSN.

(b) providing a statement of conformity with the ANFP.

(c) providing a copy of type approval certificates as described in paragraph 3.3(c) below.

(d) providing of relevant and valid insurance documentation as specified under paragraph 9 of this Service Description and clause 17 of the Supply Terms.

(e) Completion of the relevant security requirements for Access Seeker staff and contractors as specified and referred to under paragraph 4.4 and Annex 3 of this Service Description.

3.3 The Access Seeker shall ensure that any Equipment connected to the UMPL:

(a) meets the specifications and requirements defined by relevant international telecommunications and engineering standards;

(b) the ANFP; and

(c) is type approved equipment under article 38 of the Telecommunications Law and/or any type approval regulation issued by the Authority.

3.3 If the Access Provider terminates this Service in whole, then each SNFM License will terminate after expiry of the relevant notice period.

3.4 If a regulatory obligation to support or supply any specific SNFM Service no longer applies, the Access Provider may cease to supply the SNFM Service to an Access Seeker on 12 months prior written notice. Following the giving of a notice under this clause, the Access Seeker will not request any new SNFM Services from the Access Provider unless commercially agreed otherwise between the Access Provider and the Access Seeker. The Access Seeker will also inform each existing End User that the SNFM Service will terminate at the end of the 12 month period.

3.4 The Access Provider may continue to provide and the Access Seeker may continue to request this service from the Access Provider on commercial terms agreed mutually

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between the Access Provider and the Access Seeker.

3.5 Where the Access Provider has reasonable objective grounds to consider that the Access Seeker is in breach of an obligation under this Service, the Access Provider may, subject to Authority's approval: suspend implementation by the Access Seeker of the SNFM Service; and/or take any other step contemplated by the Supply Terms to protect the Access Provider's Network or other interests.

3.6 The Access Provider will make available to Access Seekers though the General Information request, the list of the APSNs available for unbundling as approved by TRA and updated from time-to-time. For the avoidance of doubt, Access Seekers may request the Access Provider to seek TRA's approval to unbundle an APSN not marked as available for unbundling provided that it submits with its request a valid reason. In all cases, it shall be TRA's sole decision to make available an APSN for unbundling subject to security and technical feasibility assessment.

4. SNFM SPACE

4.1 The Access Provider shall provide the SNFM Space using the order procedure specified in Schedule 6.7 (FAS Service Description) of the Reference Offer. In relation to Co-mingling, Dedicated Access Seeker Space and Licensed Shelter Space, the parties shall enter into a SNFM License in the form set out in Annex 1 of this Service Description.

4.2 Unless the Access Seeker specifically requests otherwise or there is no space available, the SNFM Space shall be commingled inside the secure space of the facility and the Access Seeker acknowledges that other Access Provider customers and the Access Provider will have co-mingled access to the SNFM and Access Seeker Equipment.

4.3 Subject to paragraph 4.4 below, the Access Provider shall provide the Access Seeker with access to the SNFM Space to allow the Access Seeker's People to access the SNFM Space in order to enable the Access Seeker to perform their obligations under this Service.

4.4 The Access Seeker's People shall observe all of the Access Provider's instructions and procedures relating to this Service, including the Access Provider's security and site regulations. Nothing in any guidance, instruction or policy can be taken to mean that the Access Provider assumes any risk or responsibility in relation to the Access Seeker's service, Equipment or People. An indicative summary of the current security procedures and policies is set out in Annex 3 of this Service Description. Upon completion and acceptance of the Service Request form for this SNFM Service, the Access Seeker shall request and the Access Provider shall provide a copy of the Access Provider's summary security procedures which shall be amended from time to time in the Access Provider's absolute discretion. Enquiries about the details of any policy or procedure should be directed to the Access Seeker's account

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manager at the Access Provider.

4.5 The Access Provider will provide a safe working environment for any Access Seeker People at the SNFM Space. The Access Seeker shall indemnify the Access Provider against all claims, charges, costs or expenses in any way relating to injury to or death of any Access Seeker People at or in the environs of the SNFM Space that is not caused by the Access Provider, and against all loss of or damage to the Access Seeker Equipment or any other the Access Provider customer's Equipment at the SNFM Space in any way connected with the Access Seeker's use of the SNFM Space that is not caused by the Access Provider.

4.6 The Access Seeker understands and agrees that third parties such as the emergency services and law enforcement agencies may have a legal right of entry to SNFM Space and the surrounding area at any time.

4.7 Access Seeker may enter the SNFM Space solely for the purposes of installing, inspecting, maintaining, adjusting, repairing, altering, replacing or removing Access Seeker Equipment within the SNFM Space in accordance with the SNFM License. The Access Seeker is not permitted to enter any other part of the APSN.

4.8 All Access Seeker access shall be escorted access, which comprises the provision of Access Provider staff to escort the Access Seeker's People to and from the SNFM Space. Where the Access Provider's policies require supervision at the SNFM Space, this will be at the Access Seeker's cost.

5. GENERAL SERVICE TERMS

5.1 The Access Seeker acknowledges:

(a) The components of this Service are provided together and with the UMP Service for the relevant APSN and are not severable. If either party terminates any of the components of the SNFM Service then all elements of the SNFM and UMP Services will terminate.

(b) The SNFM Service comprises the SNFM Space and additional support services set out in this service description;

(c) This SNFM Services does not allow personnel of the Access Seeker physical access to any relevant Facility unless expressly stated in this service description.

5.2 Ordering

(a) The Access Seeker shall submit a correctly completed Service Request to the Access Provider to request supply of the SNFM Service in accordance with this service description and the Supply Agreement. The Service Request shall be submitted in the form specified by the Access Provider

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from time to time.

(b) To be valid, the Service Request shall be accompanied by a matching UMP and/or UMPB Link order for the relevant APSN to enable the Access Provider to implement the relevant SNFM Space. This applies only when the Access Seeker requires the backhaul to be provided by the Access Provider.

(c) Subject to the Access Provider accepting the Service Request, and the Access Seeker fulfilling all of its obligations under the Supply Terms, the Access Provider will provide and the Access Seeker will acquire the SNFM Service as specified in the Service Request accepted by the Access Provider.

(d) The provision of the SNFM Service is available as set out below, subject to availability of space, capacity and related equipment.

5.3 Variation

The Access Provider may at any time on reasonable notice, which shall be in all cases not less than 3 months, to the Access Seeker change the technical specification of the Service provided that any such change does not materially affect the substance of the performance of the Service.

5.4 Validation and Delivery Times

(a) The maximum validation time and delivery lead time for the installation for a Service Request placed by the Access Seeker and accepted by the Access Provider shall be as follows:

SNFM Service component	**Validation time between receipt of Service Request and acceptance or rejection of that Service Request**	**Delivery time from the Access Provider acceptance and receipt of Charges in advance**
Co-mingling excluding the following APSN (MAN, RIF, CEN, MHQ, JUF and ITN)	5 Working Days	65 Working Days

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Co-mingling for the following six APSN (MAN, RIF, CEN, MHQ, JUF and ITN)	5 Working Days	30 Working Days
Dedicated Access Seeker Space	5 Working Days	65 Working Days
Shelter Access Seeker Space	5 Working Days	45 Working Days

(b) The Service Rebates for a failure to meet the maximum validation time and delivery lead time in the preceding paragraph are as follows:

Target	**Rebate for each Working Day or part of a Working Day late**
SNFM validation time	One (1) SNFM Service Credit subject to the SNFM Validation Rebate Cap
SNFM delivery time	One (1) SNFM Service Credit subject to the SNFM Delivery Rebate Cap

6. CHARGES

6.1 The Access Seeker shall pay to the Access Provider the relevant Charges determined in accordance with Schedule 3 – (Pricing) of the Reference Offer.

6.2 The Billing Period in respect of the Service shall be 30 days. The Billing Period shall commence on the date of the first billing date of the Access Provider billing cycle after installation and may include billing on a pro rata time basis for the period between the date the Access Seeker was informed of the space being ready for it to install its equipment until the next billing cycle to ensure compatibility with the Access Provider billing cycle.

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7. FORECASTING

7.1 At the beginning of each calendar month, the Access Seeker shall supply a reasonable non- binding forecast of the expected requests for the SNFM Service in each month of the twelve month period following the date of the forecast, in the form required by the Access Provider from time to time. The Access Seeker shall use all reasonable endeavours to forecast accurately given the Access Provider is placing reliance on those forecasts to determine the number of requests expected for each month.

7.2 The Access Seeker acknowledges that the Access Provider is not liable for not delivering any additional Service Requests for the SNFM Service which has not been forecasted in accordance with paragraph 7.1 above.

8. PRIORITY POLICY

8.1 The allocation of area within the APSN or within the perimeter of a APSN between Access Seekers shall follow:

(a) For the initial co-location process:

(i) the Access Provider informs TRA at the end of the Initial Collocation Period whether or not the Initial Collocation process is required;

(ii) the Access Seekers will specify their orders for the Server Node they intend to place an immediate order;

(iii) the Access Provider will determine for each Service Node the best collocation option that will fulfil the demand within one month, based on orders received, and will send Access Seekers the corresponding collocation prices;

(iv) Access Seekers will have two weeks to confirm their order based on the prices provided by the Access Provider. Confirmation will be accompanied by a non- refundable advance payment.

(b) For the standard co-location process. After the Initial Collocation Period has ended the following collocation rules must be followed:

(i) First Come First Served: this rule ensures that Access Seekers that ask for collocation space earlier are served first. As is the case in duct and civil works, the first Access Seeker shall bear all the associated costs and shall be reimbursed by other Access Seekers coming afterwards on a pro rata basis;

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(ii) Use It or Lose It: if an Access Seeker has been granted space but has not used this space after 3 months, the space will be released and re-allocated. This will prevent the inefficiencies created by hoarding space;

(iii) One single space allocated per Access Seeker per Service Node. Where space is scarce Access Seekers will be initially restricted to a single space per Access Seeker. This restriction will be reviewed on an exchange-by-exchange basis to ensure proportionality. The definition and dimensions of a "space" is an equivalent of a single rack.

9. INSURANCE

9.1 Until such time as the parties agree otherwise and after obtaining approval of the Authority for such amendment, the Access Provider and the Access Seeker shall each procure and maintain for the duration of this service third party liability insurance policies with the other being named as a named beneficiary to cover personal injury and property damage claims up to BD300,000 for each APSN. The terms of such policies shall include provisions whereby, in the event of any claim or proceedings under the policy being brought or made against the other party, the insurers shall indemnify the other party against any costs, charges and expenses thereof. At all times the parties shall hold appropriate workman's insurance (General Organisation for Social Insurance (**"GOSI"**)).

9.2 The Access Provider or the Access Seeker shall provide evidence of the insurance cover referred to in paragraph 9.1 on or before the date this service commences and thereafter at any time during the period of this service as the requesting party shall reasonably require. If the requested party is unable to demonstrate to the requesting party's reasonable satisfaction that it has insurance to the required level, with a reputable insurer, the requesting party shall be entitled to effect insurance against all claims, proceedings, losses, liabilities, costs, damages and expenses caused by the other party's negligence, other default or deliberate act arising out of or in connection with this service and to recover the reasonable cost of such insurance from the other party.

10. Disputes

10.1 Where there is any allegation of a failure to comply with the warranties of this Service Description then the parties will apply the dispute resolution process outlined in Clause 22 of Schedule 9 – (Supply Terms) of the Reference Offer.

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ANNEX 1 –SNFM License

1. The Access Provider will grant to the Access Seeker, for the period set out in the agreed Service Request,, a License to use a portion of space in the Access Provider Floor/Ground APSN specified in the General Information list identified in a Service Request for SNFM Service access in writing which is signed by the Access Provider in accordance with the terms of this license, the SNFM Service Description and the Supply Terms.

2. The license does not commence unless and until:

   (a) A Service Request for Floor/Ground access is accepted and signed by the Access Provider;

   (b) all Make Ready Work has been completed to the Access Provider's and Access Seeker's satisfaction;

   (c) all charges for the stages of the process occurring up to and including the completion of Make Ready Work have been paid; and

   (d) the terms of this license have been signed by the Access Seeker.

3. The license is a personal and non-transferable right. The license does not confer any rights on the Access Seeker to lease, sub-lease or any right of ownership or possession in respect of any specific Floor/Ground. The Access Seeker may not sub-license any right granted by this license.

4. Unless specified in the SNFM Service Description, the Access Seeker does not have any general right to access to Floor/Ground and this license allows the Access Seeker to access the Floor/Ground route only in strict compliance with the Access Provider's access policies and procedures which apply from time to time relating to security, protection and safety, physical access procedures, marking of equipment. Such access shall be supervised by the Access Provider at all times.

5. It is a condition of the license that the Access Seeker shall:

   (a) comply with the policies and directions of the Access Provider, including in relation to access, movement or relocation of a Floor/Ground route and relocation of the cable from, in, or between, sub-Floor/Grounds

   (b) behave in a manner consistent with the action of a prudent Floor/Ground owner;

   (c) so far as access is given, keep all cabling Equipment and all accessed Floor/Ground areas free of debris and in a safe and tidy condition;

   (d) ensure no toxic or flammable materials are left anywhere near the Floor/Ground

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or Equipment;

(e) promptly notify, for correction or removal, any fault or defect in Equipment used in or near the Floor/Ground; and

(f) immediately notify the Access Provider of any damage to Floor/Ground or Equipment observed or occurring during or as a result of access by the Access Seeker.

6. The Access Provider may require from the Access Seeker to remove and replace any Equipment which does not comply with any municipal, Ministry or Authority requirements or restrictions.

7. For the sake of clarification, maintenance of the Access Seeker Space shall be carried out by the Access Provider and the corresponding charge is included in the License fee (as set out in Schedule 3 – (Pricing) of the Reference Offer).

8. If the Access Provider by reasonable notice to the Access Seeker requires the movement of the Access Seeker's Floor space for The Access Provider's own convenience then the Access Provider will cover the cost of moving the Co-minging/Dedicated Access Seeker Space/Licensed Shelter Space and the Access Seeker may attend to observe at its own expense.

9. If part or all of the Co-mingling/Dedicated Access Seeker Space/Licensed Shelter Space needs to be moved for reasons outside the control of the Access Provider and by order of a competent court, municipality, authority, Ministry or Authority, the Access Seeker must share a proportion of charges or costs related to the move of its Equipment, upon justified and reasonable methodology approved by the Authority.

10. After obtaining written approval from the Authority, the Access Provider may immediately suspend provision of the service until further notice if the Access Seeker causes, or the Access Provider can justify that the Access Seeker will cause, physical or technical harm to any telecommunications network (whether of the Access Provider or another operator).

11. The Access Provider may terminate the license granted to the Access Seeker on 30 days written notice to the Access Seeker, copied to the Authority, if:

    (a) The Access Seeker is in breach of the UMP Service or SNFM Service description which is left unremedied for a period of 21 days after written notification by the Access Provider to the Access Seeker;

    (b) fibre is not lit along the full route of the Floor/Ground access for any consecutive period of 12 months during the term of the license;

    (c) the Access Seeker ceases to be a Licensed Operator; or

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(d) the Access Seeker installs Equipment in or near any Floor/Ground which is not reasonably related to services supplied with the UMP and/or does not meet the requirements specified in 3.3 (c) above.

12. The Access Provider may terminate the license granted to the Access Seeker on 6 months written notice to the Access Seeker, copied to TRA, if the Access Provider's right to use the Floor/Ground or right of way is revoked, terminates or expires.

13. Either party may terminate the license immediately if the other party is in breach of the license or of the Supply Terms as they relate to the Floor/Ground and the breach remains unremedied for a period of 10 Working Days.

14. The Access Seeker may in any case terminate the license by giving the Access Provider three months written notice.

15. If the license is terminated then the Access Seeker shall remove all Equipment from, in and around the Floor/Ground within 90 days of the notice of termination. If the Access Seeker fails to comply with this clause then the Access Provider is entitled to remove the Access Seeker's Equipment at the latter's costs.

16. The Access Seeker will be deemed to have abandoned the Access Seeker's Equipment if it does not access the Equipment for any period of 24 consecutive months. If the Access Seeker's Equipment is abandoned then the Access Provider may exercise the same rights as for the removal of Access Seeker Equipment as indicated in paragraph 15 above.

17. The terms of this license take precedence over any other terms which might apply to the Access Seeker's access to the Access Provider's Co-mingling/Dedicated Access Seeker Space/Licensed Shelter Space.

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SCHEDULE 1 – SNFM License

Licensed Floor/Shelter Area

APSN

Leased/Owned outright by NBNETCo BSC (c)

Designated Floor Area (sq. meter or percentage)

License fee (annual) Plan number

Note: the details listed above will be provided and attached to each SNFM License granted to the Access Seeker

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ANNEX 2 SNFM CHARGES

The Access Seeker shall pay to the Access Provider the relevant Charges as set out in Schedule 3 – (Pricing) of the Reference Offer.

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ANNEX 3 SUMMARY OF SECURITY REQUIREMENTS

1. General Access

1.1 All Access Seeker People requiring access to SNFM should have the Access Provider issued contractor ID Cards. ID holders should report to Security when requiring access.

1.2 As an exceptional alternative, Access Seeker People requiring access to SNFM can be registered by The Access Provider. Registered technicians requiring access to the relevant APSN or site area shall report to Security. Security will check their central population register ("**CPR**") or national identity card or other means of photographic ID against the list of Access Seeker authorised People. If everything is correct, Security will issue an appropriate ID Card in exchange for the persons ID; details will be recorded by the security staff.

1.3 ID holders or registered technicians will be escorted to and from the SNFM.

1.4 Supervision of work whilst the person is inside the relevant APSN or site area is at the discretion of the Access Provider.

2. Emergency Event Access

2.1 No unregistered emergency access will be allowed unless access has been agreed by the Senior Manager Security through liaison with the Access Seeker account manager following notification. The notification should provide relevant personal details, the Access Seeker whose equipment is to be worked on and the date/times(s) of the access required and the circumstances of the emergency.

2.2 The persons requiring access shall report to security. Security will check their CPR or other means of photographic ID against the personal details provided to the Senior Manager Security.

2.3 If everything is verified, Security will issue an appropriate ID Card in exchange for the persons ID; details will be recorded by the security staff.

2.4 The person will be escorted to and from the SNFM.

3. Refusal of Access

3.1 The Access Provider reserves the right to refuse access to any non-registered visitor of the Access Seeker for the reasons below:-

(a) Visitors without photographic ID.
(b) Visitor who cannot provide a valid contact name and number.
(c) Visitors whose contact person cannot be contacted or reached.

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(d) Visitors who have disregarded rules in the past.
(e) During times of emergency.

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ANNEX 4 - PROCEDURE FOR REMOTE SITE ACCESS BY OTHER COMPANIES' STAFF

1. Other companies' staff will be given co-location access rights, they will go through normal procedure of completing a contractor's work notification (CWN) whereby all applications will undergo a thorough screening process (Ministry of Interior vetting procedures which may take up to 2 working days). Once clearance is received, passes will be issued to the other companies' staff.

2. Working Hours (from 7 a.m. to 2:45 p.m. daily except Fridays, Saturdays, and public holidays):

(a) Other companies' staff will only be given permission to access the remote site(s) pedestrian gate during working hours.

(b) Other companies' staff will be escorted by the Access Provider staff at all times.

(c) The Access Provider's escorting staff member will be given remote access to the site's main entrance door.

(d) Once both other companies staff and the Access Provider's staff member arrive in the lobby of the building, access will be given once the Access Provider's staff member has called the control room via hotline phone to remotely unset the alarm.

(e) If work is completed the Access Provider's staff member will have to call the control room to reset the alarm.

3. After working hours – call out:

(a) The Access Provider's staff will call the control room of the relevant site three hours in advance when it becomes necessary to attend to a fault or maintenance work.

(b) Other companies' staff will be escorted by the Access Provider staff at all times.

(c) Once both Other Companies Staff and the Access Provider's staff member are in the lobby of building, access will be given once the Access Provider staff member has called the control room via hotline phone to remotely unset the alarm.

(d) If work is completed the Access Provider staff member will have to call control room to reset the alarm.

If no prior arrangement made by the Access Provider's staff or other company's staff to do installation work after working hours, no access will be given by the Access Provider's security staff. If the Access Provider's security staff did receive prior notice that installation work will be done after working hours, the other companies' staff will still

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need to be escorted by the Access Provider staff.

Maintenance work, (call-outs for fault attending) will be treated as a separate case.

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Schedule 6.10 - UMP Backhaul Service

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SCHEDULE 6.10 – SERVICE DESCRIPTION

UMP BACKHAUL SERVICE

1. THE SERVICE

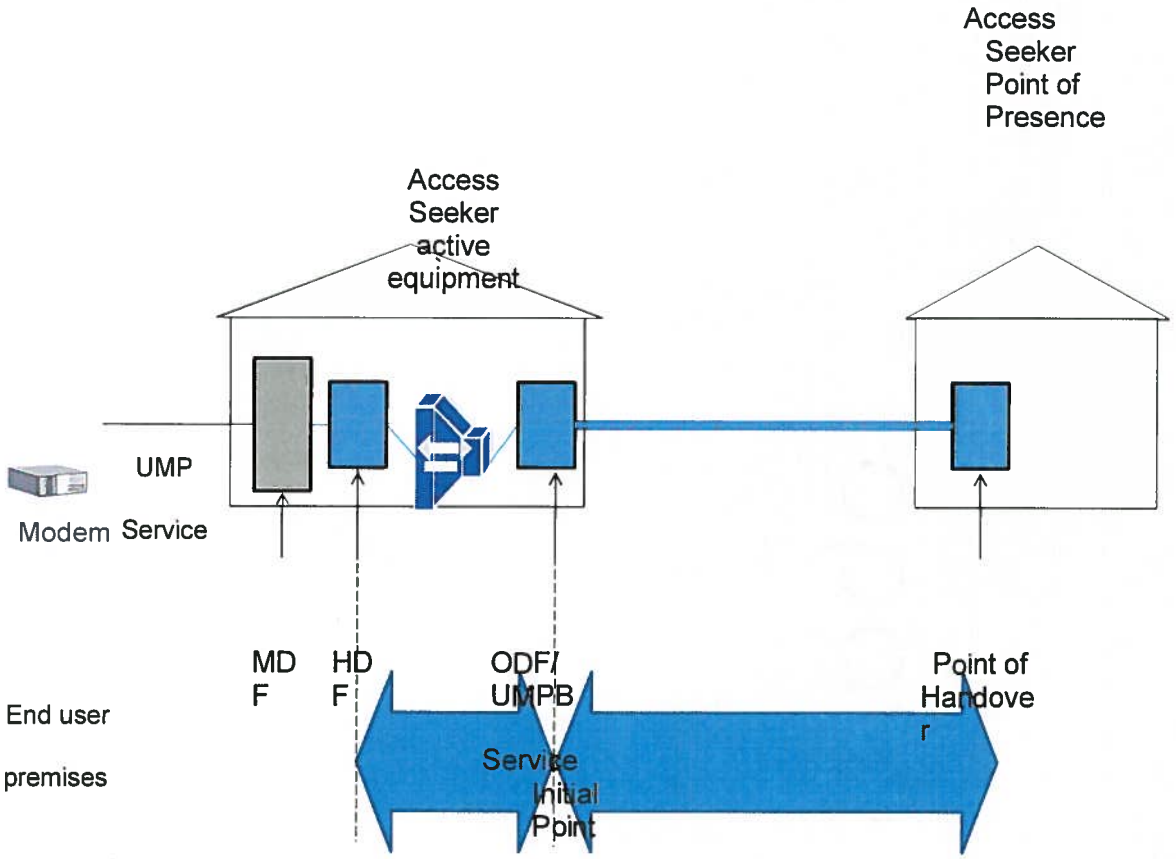
The UMP Backhaul Service is a wholesale service for carrying the Access Seeker's traffic within Bahrain in relation to the UMP between an Access Seeker's active equipment used to provide End Users with a service based on the UMP Service and the Access Seeker's Point of Presence.

Available To: Holders of an appropriate Individual Telecommunications or Class License granted by the Authority.

Permitted Traffic: Traffic covered by the Access Seeker's license.

Technical backhaul diagram

The following diagram is for illustrative purposes only. Where there are discrepancies, the text in this Service Description will prevail.



2. DEFINITIONS

Capitalised terms not defined in this Service Description are defined in Schedule 8 – (Dictionary) to the Reference Offer. Terms defined in this Service Description are specific to it.

Connector Link means a connection provided by the Access Seeker between the HDF used for the UMP Service and the UMPB Service Initial Point

Covered Failure means an actual or suspected fault or failure in the UMPB Link

Delivery Lead Time means the delivery lead time described in paragraph 3.3.

End User Premises means a permanent physical location in Bahrain owned or controlled by a person or organisation who is neither a licensee, nor affiliated to or controlled by a licensee, and from which location that person conducts business and receives telecommunication services.

UMPB Availability Rebate Cap means 20% of the monthly rental Charges for the UMPB Link.

UMPB Link means a dedicated transmission service between the UMPB Service Initial Point and the Point of Handover at an Access Seeker's Point of Presence provided in accordance with this Service Description and the Supply Terms.

UMPB Service Initial Point means an optical distribution frame which is the handover frame for the connection between the backhaul and the Access Seeker's- transmission equipment established for the purposes of supporting UMP backhaul capacity in Bahrain.

Response Time means the Access Provider's Response Times in respect of each Covered Failure measured over a period of one (1) month.

Restoration Time means the Access Provider's Restoration Times in respect of each Covered Failure measured over a period of one (1) month.

Order means a written request by the Access Seeker for the UMPB Service in a form issued or approved by the Access Provider from time to time.

Point of Handover has the meaning defined in paragraph 3.1 (c).

Point of Presence means an aggregation or network connection point in the Access Seeker's Network located at premises owned or shown to be leased by the Access Seeker, but cannot be at an End User Premises, cable station, earth station, manhole, power room, lead-in pipe, duct, outdoor cabinet, MDF, riser room or anywhere not on the main island of Bahrain unless connected by a permanent physical connection above or under sea level and accessible by the Access Provider.

Service Commencement Date for each Order for the UMPB Service shall be the date identified in accordance with paragraph 3.3.

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Service Period means the term of a UMPB Service which shall be a minimum of twelve months from the Service Commencement Date and which continues automatically until terminated.

Service Credit means, in relation to a single Service Credit, that amount represented by two percent (2%) of the monthly Charges for the UMPB Service.

Target Availability means the amount of time over a month during which the UMPB Service does not suffer a certain type of failure (expressed on a percentage basis).

Threshold Response Time means, in relation to a Covered Failure, the threshold response times set out in paragraph 3.6(b).

Threshold Restoration Time means, in relation to a Covered Failure, the threshold restoration times set out in paragraph 3.6(b).

Total Service Credit Cap means, in relation to any month, 160% of the monthly Charges for the UMPB Service.

3. TERMS

3.1 Nature of Service

(a) The Service comprises the UMPB Link set out in this service description which the Access Provider offers to provide.

(b) The UMPB Link is a component which an Access Seeker may require to connect to the UMP Service. Other Network components or services will be necessary to complete the connection including the SNFM Service and are available from the Access Provider.

(c) The Point of Handover for the UMPB Service at the Access Seeker's Point of Presence is an optical distribution frame located at the Access Seeker's Point of Presence.

(d) The UMPB Service presentation interface to the Access Seeker will be optical or electrical.

3.2 Ordering

(a) The Access Seeker shall submit a correctly completed Order to the Access Provider to request supply of the UMPB Service in accordance with the Supply Terms. The Order shall be submitted in the form specified by the Access Provider from time to time.

(b) To be valid, the Order shall be accompanied by reference information identifying the UMP Service order to enable the Access Provider to implement the UMPB.

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(c) Subject to the Access Provider obtaining all necessary consents and the Access Seeker fulfilling all of its obligations under the Supply Terms in particular provisioning and installation of the Connector Link, the Access Provider will provide and the Access Seeker will acquire the UMPB Service as specified in the Order accepted by the Access Provider.

(d) The provision of the UMPB Service is available at the bandwidths greater than 2Mbps and Charges as per the CAT/LLCO services and any potential Carrier Ethernet based services that the Access Provider may introduce, subject to availability of capacity and related equipment.

3.3 Delivery and Installation Lead Times for UMPB

(a) The maximum Delivery Lead Time for the installation of a UMPB Service for an Order placed by the Access Seeker and accepted by the Access Provider will be 30 Working Days.

(b) The Service Rebates for a failure to meet the Delivery Lead Time in the preceding paragraph are as follows:

Actual provisioning time **(Number of weeks after expiration of the applicable Delivery Lead Time)**	**Total applicable service Rebate**
0-1 week	10 Service Credits
1> - 2 weeks	25 Service Credits
> 2 weeks	45 Service Credits (and an addition of 30 Service Credits for each further period or part period of 2 weeks delay

This is subject to a UMP Service and an SNFM Service being implemented and provisioning of the Connector Link and Equipment related to the UMPB Service by the Access Seeker.

3.4 Testing

(a) The Access Provider will test the UMPB Link by conducting an industry standard stability test for up to 24 hours, the final results of which will be observable by the Access Seeker if they are in attendance. The complete final results of the test shall be handed over in writing to the Access Seeker (including latency tests). The Access Provider will notify the Access Seeker when the test has been successfully

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completed and the Access Seeker will accept the UMPB Service on that date by acceptance signature. If the Access Seeker does not sign for acceptance it will be deemed to have accepted the UMPB Service with effect from the date of the notification of test completion unless the Access Seeker notifies the Access Provider within two days from the notification of test completion that the Access Seeker does not accept the UMPB Service indicating the reason for not accepting the UMPB Service.

(b) The Service Commencement Date is the date of actual or deemed acceptance under paragraph 3.4(a).

(c) The Access Provider is available (if requested by the Access Seeker) to support testing of the connection between the Access Seeker's Point of Presence and the relevant MDF in the BSN as arranged by the Access Seeker, in each case by attending the Access Seeker's Point of Presence to conduct such testing at the Access Provider's standard rates.

3.5 Performance and uptime

(a) The Target Availability for the UMPB Service is set out below, including the Service Rebate regime that will apply if the relevant Target Availability falls below the stated threshold:

Calculation	Target Availability	Service Rebate
Target Availability for periods free of Covered Failure	99.9%	2 Service Credits per 0.01% or part thereof below the Target but not exceeding the UMPB Availability Rebate Cap

For the protection line provided by the Access Provider as part of the backhaul (45Mbits and higher speeds), specifications of the protection line shall be provided by the Access Provider to the Access Seeker upon request.

3.6 Fault response and repair

(a) The Access Seeker will as soon as practicable after becoming aware of a Fault with the UMPB Link or any other Covered Failure, notify the Access Provider of that Fault in accordance with the Access Provider's procedures for the reporting of faults, Fault investigation and identification of the Fault Owner and Other Affected Party.

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(b) The Access Provider agrees to observe the following Response Times and Restoration Times:

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Fault type	Response Time	Restoration Time	Threshold Response Time	Threshold Restoration Time
Covered Failure	10 minutes	3 hours	15 minutes	5 hours

(c) Where the Access Provider's Response Time or Restoration Time exceeds the Threshold Response Time or Threshold Restoration Time respectively for Covered Failures then the following Service Rebates, assessed on a quarterly basis, will apply:

Fault type	Time by which Mean Response Time exceeds Threshold Response Time	Service Rebate	Time by which Mean Restoration Time exceeds Threshold Restoration Time	Service Rebate
Covered Failure	15 minutes	4 Service Credits	1 hour	4 Service Credits
	1 hour	5 Service Credits	2 hours	5 Service Credits
	> 1 hour	6 Service Credits	> 2hours	6 Service Credits + 1 Service Credit for every additional hour

3.7 Alternative Transmission Facilities

The Access Provider shall in respect of the provision of the UMP Service only facilitate the provision of a dedicated transmission service by the Access Seeker or a third party Licensed Operator using relevant Facilities and following the procedure under Schedule 6.7 (FAS Service Description) of the Reference Offer in relation to a BSN being:

(a) duct licensed by the Access Provider under a Duct license;

(b) non-exclusive access to the Duct chamber; and

(c) where necessary the provision of alternative dedicated transmission service- riser room and cable tray access granted to the Access Seeker or to the third party Licensed Operator substantially in the form of the Access Provider's standard duct and riser licenses as amended from time to time subject to the Charges specified under Schedule 3 – (Pricing) of the Reference Offer. The Access Provider shall not be liable to the Access Seeker in any way whatsoever in respect of termination of these arrangements with the third party Licensed Operator.

3.8 Termination

(a) At any time after the minimum Service Period of (6) six months, the Access Seeker shall be entitled to terminate an UMPB Service agreement on three month's written notice to the Access Provider.

(b) Where termination occurs before the end of the minimum service period or within the notice period then the Access Seeker shall pay to the Access Provider by way of liquidated damages the charges for the UMPB Service until the end of the notification period or the minimum service period whichever is greater.

3.9 Access Seeker Obligations

(a) The Access Seeker shall provide the Access Provider with suitable space for, and access at reasonable times to, any Access Provider equipment required to be located in any building under the Access Seeker's control in which the UMPB Service is located. If consent is required from a third party, the Access Seeker shall procure such consent. The Access Provider is not required to pay the Access Seeker or any third party for the preparation or use of, or access to, space provided for the purpose of the UMPB Service.

(b) If the Access Provider equipment requires a continuous electricity supply (of the nature specified by the Access Provider), air conditioning and electricity connection points, they shall be supplied, in the location specified by the Access Provider, by the Access Seeker at its expense. Such electricity shall be available at the same level of supply, protection and continuity as that available to the Access Seeker's own equipment.

(c) The Access Seeker shall provide the Access Provider and any employee, agent, affiliate or contractor of the Access Provider with all information and assistance that person may reasonably require to test, commission and maintain the UMPB Service and to assess, respond to and restore Covered Failures.

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(d) Where there is any allegation of a failure to comply with the warranties of this Service Description then the parties will apply the dispute resolution process outlined in clause 24 of the Supply Terms.

3.10 Variation

The Access Provider may at any time on reasonable notice, in all cases being not less than 3 months, to the Access Seeker change the technical specification of the Service provided that any such change does not materially affect the substance of the performance of the Service.

4. CHARGES

The Access Seeker shall pay to the Access Provider the relevant Charges determined in accordance with Schedule 3 – (Pricing) of the Reference Offer.

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Schedule 6.11 - UMP Specific Information

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SCHEDULE 6.11 – SERVICE DESCRIPTION
UMP SPECIFIC INFORMATION SERVICE

1. THE SERVICE

1.1 The UMP Specific Information Service is a wholesale service for providing information solely for use in relation to the UMP Service set out in Schedule 6.8 – (Unbundled Metallic Path) of the Reference Offer.

1.2 **Available To:** Access Seekers who are holders of an appropriate Individual Telecommunications License granted by the Authority.

2. DEFINITIONS

Capitalised terms not defined in this Service Description are defined in the Schedule 8 – (Dictionary) of the reference offer. Terms defined in this Service Description are specific to it.

Access Provider Service Node (APSN) means a The Access Provider exchange building specified in the list issued by the Access Provider.

CLTQS means the Access Provider's centralized line testing and pre-qualification solution.

HDF means the handover frame for the connection of a Tie Cable, provided by the Access Provider.

MDF means the main distribution frame in an APSN, owned by the Access Provider, enabling provision of a UMP.

Network Boundary means the Access Provider distribution point at customer premises contemplated by the Access Provider's fixed services license.

SNFM Service means the Service Node Facilities Management Service used in conjunction with this service description as specified in Schedule 6.9 – (Service Node Facilities Management Service) of the Reference Offer.

Specific Information means the information to be provided by the Access Provider to the Access Seeker as specified in paragraph 3.1 (b) below.

Specific Information Delivery Rebate Cap means 20% of the Specific Information Charge.

Specific Information Service Credit means, in relation to a single Service Credit, that amount represented by 5% of the Specific Information Charge.

Specific Information Validation Rebate Cap means 20% of the Specific Information Charge.

Tie Cable means a cable connecting the UMP from the MDF to the HDF provided by the Access Provider.

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UMP means an existing two wire metallic path connection between the HDF and the Network Boundary comprising a UMPL, jumper cable connecting the UMPL and the Tie Cable, and Tie Cable connecting the MDF with the HDF.

UMPL means an existing two wire metallic path connection between the Access Provider's MDF and the Network Boundary.

3. TERMS

3.1 Nature of Service

(a) The Service comprises the provision by the Access Provider to the Access Seeker of information detailed under (b) below:

i. where that information is reasonably available;

ii. on a Service Request basis; and

(b) Subject to 3.1 (a), the Specific Information comprises at the APSN level:

i. The number of active lines;

ii. The number of non-active lines;

iii. The geographical location, a boundary map and list of contiguous address blocks and a free helpdesk line to answer questions regarding contiguous addresses;

iv. The average length of the UMPLs (in meters);

v. Power availability at each APSN for the SNFM Service;

vi. APSN space availability for the SNFM Service;

vii. UMPL entry points (being the first joint box nearest to the APSN) and Duct capacity availability;

viii. UMPL characteristics (being diameter, results from any quality tests solely on the UMPL itself, technical interference, control and, where not comprised in the ANFP, spectral management plan information); and

ix. Results of any xDSL tests performed by the Access Provider not comprising the Access Provider's centralised line testing qualification system or CLTQS information.

(c) The parties acknowledge and agree that the Specific Information shall be treated as Confidential Information under the Supply Terms.

(d) Each party acknowledges and agrees that the helpdesk service under b (iii) above is intended as a supporting service only to the provision of boundary maps and contiguous address lists. The Access Seeker should consult this information first before calling the helpdesk.

3.2 Ordering

The Access Seeker shall submit a correctly completed Service Request to the Access Provider to request supply of the UMP Specific Information Service in accordance with this Service Description and the Supply Terms. The Service

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Request shall be submitted in the form specified by the Access Provider from time to time.

3.3 Validation and Delivery Times

(a) The maximum validation time and delivery lead time for the validation or provision of a Service Request placed by the Access Seeker and accepted by the Access Provider shall be as follows:

Specific Information Service component	**Validation time between receipt of Service Request and acceptance or rejection of that Service Request**	**Delivery time from the Access Provider acceptance per APSN**
Specific information - all categories	5 Working Days	N/A
Specific information - categories 3.1 (b) (i)-(viii)	See "all categories" above	15 Working Days
Specific information category 3.1 (b) (ix)	See "all categories" above	5 Working Days

(b) The Service Rebates for a failure to meet the maximum validation time and delivery lead time in the preceding paragraph are as follows:

Target	**Rebate for each Working Day or part of a Working Day late**
Specific Information validation time	1 Specific Information Service Credit subject to the Specific Information Validation Rebate Cap
Specific Information delivery time	1 Specific Information Service Credit subject to the Specific Information Delivery Rebate Cap

3.4 Access Seeker Obligations

a) The Access Seeker acknowledges that clauses 17 ("**Intellectual Property**") and 20 ("**Confidentiality**") of Schedule 9 - the (Supply Terms) of the Reference Offer

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shall apply.

b) On termination of the UMP Service, the Access Seeker shall return the Specific Information in accordance with Clause 20.19 of Schedule 9 – (Supply Terms) of the Reference Offer.

c) Where there is any allegation of a failure to comply with the warranties of this Service Description then the parties will apply the dispute resolution process outlined in Clause 22 of Schedule 9 (Supply Terms) to the Reference Offer.

4. CHARGES

4.1 The Access Seeker shall pay to the Access Provider the relevant Charges determined in accordance with Schedule 3 – (Pricing) of the Reference Offer.

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Schedule 7 – Service Levels

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SCHEDULE 7

SERVICE LEVELS

PURPOSE
This Schedule 7 sets out the Service Levels and Service Level Penalties for the Services included in the Reference Offer.

DEFINITIONS
Terms used but not otherwise defined in this Schedule shall have the meanings ascribed to them in Schedule 8 – (Dictionary) of the Reference Offer.

SERVICE LEVEL PENALTIES

Where a Service Level Penalty has not been indicated in this Schedule 7, this should be understood to mean that the Authority, at this time, does not believe that such penalties are necessary for incentivising the Access Provider to deliver an appropriate service to Licensed Operators. The Authority will, however, continue to review the performance of the Access Provider and may amend this Schedule 7 as necessary (and independently from a full review of the Reference Offer).

	Deliverable	Actual measure of performance	Service Level Terms	Service Level Penalties
Service Request Acknowledgment	The Access Seeker (**AS**) receives a Notification from the Access Provider (**AP**) acknowledging receipt of the AS's Service Request.	**Actual Time for Service Request Acknowledgement** means the time period between the following events: 1. The AS sends a Service Request to the AP, and 2. The AS receives a Notification from the AP acknowledging that the Service Request has been received.	**Maximum Time for Service Request Acknowledgment** means the maximum Actual Time for Service Request Acknowledgement that the AP should meet at all times.	**Penalties for Service Request Acknowledgement** There are currently no penalties for failure to meet the Maximum Time for Service Request Acknowledgement. When the AS does not get an acknowledgment Notification from the AP within the Maximum Time for Service Request Acknowledgement, the AS should follow up/escalate its request directly with its AP wholesale account manager.
Service Request Confirmation	The AS receives a Notification from the AP informing that the AP either accepts a Service Request or rejects it because insufficient or incorrect information is provided by the AS in the Service Request Form. If the AP does not issue	**Actual Time for Service Request Confirmation** means the time period between the following events: 1. the AS receives a Notification from the AP acknowledging that the Service Request has been	**Maximum Time for Service Request Confirmation** means the maximum Actual Time for Service Request Confirmation after which the AP is subject to Penalties for Service Request Confirmation.	**Penalties for Service Request Confirmation** means the penalties due by the AP for not meeting the Maximum Time for Service Request Confirmation.

	a Notification of acceptance or rejection, the Service Request is deemed to be accepted on the relevant date stipulated in the Service Description, and all Service Levels will be calculated as applying from the deemed date of acceptance.	received, or the Service Request has been deemed acceptance; and 2. one of the following events, whichever happens the soonest: a. the AS receives a Notification from the AP indicating that the information provided by the AS in the Service Request is incorrect and/or insufficient to progress the Service Request to the service delivery process; or b. **Accepted Service Request** (explicit acceptance from the AP) which happens when the AS receives a Notification from the AP confirming that the information provided by the AS in the **Service Request Form** is correct and sufficient to progress the **Service Request** to the service delivery process.		
Notification of Expected RFT and RFS Dates (and includes references to revised Expected RFT and RFS Dates)	The AS receives a Notification from the AP of the dates that the AP expects the connection to be Ready for Test ('RFT') and then Ready for Service ('RFS'). In such Notification, the AP also indicates the Maximum RFS date, the Maximum Delivery Time and the Maximum Delivery Date. The Maximum	**Actual Time for Notification of Expected RFT and RFS Dates** means the time period between the following events: 1. Accepted a Service Request or date on which the Service Request is deemed accepted, and 2. The AS receives a Notification for the AP	**Maximum Time for Notification of Expected RFT and RFS Dates** means the maximum Actual Time for Notification of Expected RFT and RFS Dates after which the AP is subject to Penalties for Notification of Expected RFT and RFS Dates.	**Penalties for Notification of Expected RFT and RFS Dates** means the penalties due by the AP for not meeting the Maximum Time for Notification of Expected RFT and RFS Dates.

	RFS Date must be set no later than the Maximum Delivery Date.	indicating the Expected RFS Date; the Maximum Delivery Time and the Maximum Delivery Date.		
Service Level for RFS Date	The AS receives a RFS Certificate from the AP confirming that: 1. The connection has been provisioned and tested by the AP; 2. The connections is properly registered in all of the AP's systems (e.g. OSS/BSS, service level monitoring platform, fault reporting system, etc.); 3. The connection has been validated by the AS (or deemed to have been validated by the AS if the Maximum Validation Time has lapsed), and 4. The connection is Ready for Service and the AS will be invoiced accordingly.	**Actual Delivery Time** means the time period between the following: 1. Accepted Service Request or date on which the Service Request is deemed accepted, and 2. Actual RFS Date which happens when the AS receives the RFS Certificate from the AP. The AP may only issue the RFS Certificate to the AS after one of the following events, whichever happens the soonest: 1. The AS sends a Notification to the AP confirming that the connection has been correctly provisioned and can be considered RFS, or 2. The end of the Maximum Validation Time i.e., the AS has not explicitly raised an issue and the Maximum Validation Time lapsed. **Maximum Validation Time** means the maximum Actual Validation Time after which, absent formal Notification from the AS, the AP may issue the RFS Certificate. **Actual Validation Time** means the time period(s) between the following events:	**Maximum RFS Date** means the last day on which the AS should receive the RFS Certificate for the AP not to be subject to Penalties for the RFS Date. Actual RFS Date <= Maximum RFS Date. The Maximum RFS Date corresponds to the Expected RFS Date if the latter has never been modified after the Notification of Expected RFT and RFS Dates. If the Actual RFS Date happens after the Expected RFS Date, the AP shall be subject to Penalties for RFS Date.	**Penalties for RFS Date** means the penalties due by the AP for not meeting the Maximum RFS Date.

		1. Actual RFT Date which happens when the AS receives a Notification from the AP confirming that the connection has been provisioned the same day and is ready for test, and 2. One of the following two events, whichever happens the soonest: a. The AS sends a Notification to the AP confirming that the connection is performing in accordance with the Acceptance Criteria, or b. The end of the Maximum Validation Time The Actual Validation Time is suspended between the following events, if such events occur: 1. The AS sends a Notification to the AP indicating that the connection is not performing in accordance with the Acceptance Criteria, and 2. The AS receives a Notification from the AP indicating that the connection has been re-provisioned.		
Fault Acknowledgement Time	The AS receives a trouble ticket after having reported a Fault to the AP.	**Actual Fault Acknowledgment Time** means the time period between the following events:	**Maximum Fault Acknowledgement Time** means the maximum Actual Fault Acknowledgement Time	**Penalties for Fault Acknowledgement Time.** There are currently no penalties for failure to meet the Maximum Fault Acknowledgment Time.

		1. The AS reports a Fault to the AP, and 2. The AS receives a trouble ticket from the AP for the reported Fault.	that the AP should meet at all times.	
Response Time	The AS receives a Notification confirming that the AP has started troubleshooting the Fault (either remotely or on site).	**Actual Response Time** means the time period between the following events: 1. The AS reports a Fault to the AP, and 2. The AS receives a Notification from the AP confirming that the troubleshooting of the Fault has started (either remotely or on site). Once an AP technician has started troubleshooting the Fault, the AP is required to regularly update the AS of the progress made to restore the connection, and to provide an indication of the anticipated restoration time.	**Maximum Response Time** means the maximum Actual Response Time that the AP should meet at all times.	**Penalties for Response Time** There are currently no penalties for failure to meet the Maximum Response Time.
Restoration Time	The AS receives a Notification from the AP indicating that the connection has been restored and the trouble ticket is closed.	**Actual Restoration Time** means the time period between the following events: 1. The AS reports a Fault to the AP, and 2. The AS receives a Notification from the AP indicating that the connection has been restored and the trouble ticket is closed. The AP is allowed to close a trouble ticket only if one of the following conditions is met: 1. The AP provides a proof (i.e.., test results) that the	**Maximum Restoration Time** means the maximum Actual Restoration Time after which the AP is subject to Penalties for Restoration Time.	**Penalties for Restoration Time** means the penalties due by the AP for not meeting the Maximum Restoration Time.

		connection is performing in accordance with the QoS Parameters, or 2. The AP has received confirmation from the AS that the service is performing in accordance with the QoS Parameters.		

MOBILE BACKHAUL SERVICE (MBS)

Service Level		Service Level Terms		Service Level Penalties
Service Request Acknowledgement	Maximum Time for Service Request Acknowledgment	During Working Hours	15 minutes	
		Outside Working Hours	15 minutes after the start of the first Working Hour following the receipt of the Service Request	
Service Request Confirmation	Maximum Time for Service Request Confirmation		2 Working Days	
Notification of Expected RFT and RFS Dates	Maximum Time for Notification of Expected RFT and RFS Date	Transfer Request, Upgrade/Downgrade Request and Cancellation Request	5 Working Days	25 SC for each Working Day after the Maximum Time for Notification of Expected RFT and RFS Dates until such time as the MNO receives the Notification.
		For a Cancellation Request the Access Provider shall only provide the Maximum RFS Date, which shall be the expected date of cancellation, taking into account the required Notification period for cancellation		
		New Connection Request and Migration Request	5 Working Days	
RFS Date	Maximum Delivery Time	Transfer Request, Upgrade/Downgrade Request and Cancellation Request	10 Working Days	50 SC for failure to meet the Maximum RFS Date and 25 SC for each additional Working Day thereafter until the Access Seeker receives the RFS Certificate. (There is no Maximum Penalty Cap per Connection).
		New Connection Request and Migration Request		
		• When a fibre is available for a new connection	10 Working Days	
		• When a fibre is not available for a new connection but there is sufficient duct space to pull in an additional fibre access cable	20 Working Days	
		• When new ducts must first be installed before deploying a new fibre access cable	60 Calendar Days or Exceptional Delivery	
		Cancellation Requests do not have a Maximum Delivery Time: the Maximum RFS Date (i.e., expected cancellation date) must be defined to take account of the one-month notification period required for cancellation.		
		In case of Transfer Requests and Migration Requests, the Access Provider shall coordinate the deactivation and activation of the connection on the same day to ensure minimum service disruption		

	Maximum Validation Time	The Maximum Validation Time does not apply to Cancellation Requests.	3 Working Days	
Fault Acknowledgement Time	Maximum Fault Acknowledgement Time		15 minutes	
Response Time	Maximum Response Time	During Working Hours	1 Working Hour	
		Outside Working Hours	2 hours	
Restoration Time	Maximum Restoration Time		4 hours	20 SC for failure to meet the Maximum Restoration Time and 10 SC for each hour exceeding the Maximum Restoration Time. (There is no Maximum Penalty Cap per Connection)

DATA SERVICE (DS)

Service Level		Service Level Terms		Service Level Penalties
Service Request Acknowledgement	Maximum Time for Service Request Acknowledgment	During Working Hours	15 minutes	
		Outside Working Hours	15 minutes after the start of the first Working Hour following the receipt of the Service Request	
Service Request Confirmation	Maximum Time for Service Request Confirmation		2 Working Days	
Notification of Expected RFT and RFS Dates	Maximum Time for Notification of Expected RFT and RFS Date	Transfer Request, Upgrade/Downgrade Request and Cancellation Request	5 Working Days	25 SC for each Working Day after the Maximum Time for Notification of Expected RFT and RFS Dates until such time as the MNO receives the Notification.
		For a Cancellation Request the Access Provider shall only provide the Maximum RFS Date, which shall be the expected date of cancellation, taking into account the required Notification period for cancellation		
		New Connection Request and Migration Request	5 Working Days	
RFS Date	Maximum Delivery Time	Transfer Request, Upgrade/Downgrade Request and Cancellation Request	10 Working Days	50 SC for failure to meet the Maximum RFS Date and 25 SC for each additional working day thereafter until the Access Seeker receives the RFS Certificate. (There is no Maximum Penalty Cap per Connection).
		New Connection Request and Migration Request		
		• When a fibre is available for a new connection	10 Working Days	
		• When a fibre is not available for a new connection but there is sufficient duct space to pull in an additional fibre access cable	20 Working Days	
		• When new ducts must first be installed before deploying a new fibre access cable	60 Calendar Days or Exceptional Delivery	
		Cancellation Requests do not have a Maximum Delivery Time: the Maximum RFS Date (ie., expected cancellation date) must be defined to take account of the one month Notification period required for cancellation.		
		In case of Transfer Requests and Migration Requests, the Access Provider shall coordinate the deactivation and activation of the Connection on the same day to ensure minimum service disruption		

	Maximum Validation Time	The Maximum Validation Time does not apply to Cancellation Requests.	3 Working Days	
Fault Acknowledgement Time	Maximum Fault Acknowledgement Time		15 minutes	
Response Time	Maximum Response Time	During Working Hours	1 Working Hour	
		Outside Working Hours	2 hours	
Restoration Time	Maximum Restoration Time		4 hours	20 SC for failure to meet the Maximum Restoration Time and 10 SC for each hour exceeding the Maximum Restoration Time. (There is no Maximum Penalty Cap per Connection).

WHOLESALE DATA CONNECTION (WDC)

Service Level		Service Level Terms		Service Level Penalties
Service Request Acknowledgement	Maximum Time for Service Request Acknowledgment	During Working Hours	15 minutes	
		Outside Working Hours	15 minutes after the start of the first Working Hour following the receipt of the Service Request	
Service Request Confirmation	Maximum Time for Service Request Confirmation		2 Working Days	
Notification of Expected RFT and RFS Dates	Maximum Time for Notification of Expected RFT and RFS Date	Upgrade/Downgrade Request and Cancellation Request	5 Working Days	25 SC for each Working Day after the Maximum Time for Notification of Expected RFT and RFS Dates until such time as the MNO receives the Notification.
		For a Cancellation Request the Access Provider shall only provide the Maximum RFS Date, which shall be the expected date of cancellation, taking into account the required Notification period for cancellation		
		New Connection Request and Migration Request	5 Working Days	
RFS Date	Maximum Delivery Time	Upgrade/Downgrade Request and Cancellation Request	10 Working Days	50 SC for failure to meet the Maximum RFS Date and 25 SC for each additional working day thereafter until the Access Seeker receives the RFS Certificate. (There is no Maximum Penalty Cap per Connection).
		New Connection Request and Migration Request		
		• When a fibre is available for a new connection	10 Working Days	
		• When a fibre is not available for a new connection but there is sufficient duct space to pull in an additional fibre access cable	20 Working Days	
		• When new ducts must first be installed before deploying a new fibre access cable	60 Calendar Days or Exceptional Delivery	
		Cancellation Requests do not have a Maximum Delivery Time: the Maximum RFS Date (i.e., expected cancellation date) must be defined to take account of the one month Notification period required for cancellation.		
		In case of Migration Requests, the Access Provider shall coordinate the deactivation and activation of the Connection on the same day to ensure minimum service disruption		

	Maximum Validation Time	The Maximum Validation Time does not apply to Cancellation Requests.	3 Working Days	
Fault Acknowledgement Time	Maximum Fault Acknowledgement Time		15 minutes	
Response Time	Maximum Response Time	During Working Hours	1 Working Hours	
		Outside Working Hours	2 hours	
Restoration Time	Maximum Restoration Time		4 hours for Standard Support 2 hours for Premium Support	For Standard Support: 20 SC for failure to meet the Maximum Restoration Time and 10 SC for each hour exceeding the Maximum Restoration Time. (There is no Maximum Penalty Cap per Connection). For Premium Support: 50 SC for failure to meet the Maximum Restoration Time and 25 SC for each hour exceeding the Maximum Restoration Time. (There is no Maximum Penalty Cap per Connection).

WHOLESALE BITSTREAM SERVICE (WBS)

Service Level		Service Level Terms		Service Level Penalties
Service Request Acknowledgement	Maximum Time for Service Request Acknowledgment	During Working Hours	15 minutes	
		Outside Working Hours	15 minutes after the start of the first Working Hour following the receipt of the Service Request	
Service Request Confirmation	Maximum Time for Service Request Confirmation		1 Working Day	10 SC for each Working Day after the Maximum Time for Notification of Expected RFT and RFS Dates until such time as the MNO receives the Notification.
Notification of Expected RFT and RFS Dates	Maximum Time for Notification of Expected RFT and RFS Date	New connection request	1 Working Day	10 SC for each Working Day after the Maximum Time for Notification of Expected RFT and RFS Dates until such time as the MNO receives the Notification.
		For a Cancellation Request the Access Provider shall only provide the Maximum RFS Date, which shall be the expected date of cancellation, taking into account the required Notification period for cancellation		
RFS Date	Maximum Delivery Time	In case of Transfer Requests and Migration Requests, the Access Provider shall coordinate the deactivation and activation of the Connection on the same day to ensure minimum service disruption	10 Working Days	50 SC for failure to meet the Maximum RFS Date and 25 SC for each additional working day thereafter until the Access Seeker receives the RFS Certificate. (There is no Maximum Penalty Cap per Connection).
	Maximum Validation Time	The Maximum Validation Time does not apply to Cancellation Requests.	2 Working Days	
Fault Acknowledgement Time	Maximum Fault Acknowledgement Time		1 hour	
Response Time	Maximum Response Time	During Working Hours	5 Working Hours	
		Outside Working Hours	12 hours	
Restoration Time	Maximum Restoration Time		48 hours	20 SC for failure to meet the Maximum Restoration Time and 10 SC for each hour exceeding the Maximum Restoration Time. (There is no Maximum Penalty Cap per Connection).

FIBRE FRONTHAUL SERVICE (FFS)

Service Level		Service Level Terms		Service Level Penalties
Service Request Acknowledgement	Maximum Time for Service Request Acknowledgment	During Working Hours	15 minutes	
		Outside Working Hours	15 minutes after the start of the first Working Hour following the receipt of the Service Request	
Service Request Confirmation	Maximum Time for Service Request Confirmation		2 Working Days	
Service Levels relating to further process stages		These follow the process and timeline in the Duct Access Process (Schedule 6.7.3 – FAS: Duct Access Process)		
Access Delivery Date		Maximum Delivery Time	5 Working Days after physical installation	50 SC for failure to meet the Maximum Delivery Time and 25 SC for each additional Working Day thereafter. (There is no Maximum Penalty Cap per Connection).
Fault Acknowledgement Time	Maximum Fault Acknowledgement Time		1 hour	
Response Time	Maximum Response Time	During Working Hours	5 Working Hours	
		Outside Working Hours	12 hours	
Restoration Time	Maximum Restoration Time		48 hours	20 SC for failure to meet the Maximum Restoration Time and 10 SC for each hour exceeding the Maximum Restoration Time. (There is no Maximum Penalty Cap per Connection).

OPTICAL WAVELENGTH SERVICE (OWS)

Service Level		Service Level Terms		Service Level Penalties
Service Request Acknowledgement	Maximum Time for Service Request Acknowledgment	During Working Hours	15 minutes	
		Outside Working Hours	15 minutes after the start of the first Working Hour following the receipt of the Service Request	
Service Request Confirmation	Maximum Time for Service Request Confirmation		2 Working Days	
Notification of Expected RFT and RFS Dates	Maximum Time for Notification of Expected RFT and RFS Date		5 Working Days	20 SC for each Working Day after the Maximum Time for Notification of Expected RFT and RFS Dates until such time as the MNO receives the Notification.
		For a Cancellation Request the Access Provider shall only provide the Maximum RFS Date, which shall be the expected date of cancellation, taking into account the required Notification period for cancellation		
RFS Date	Maximum Delivery Time	In case of Transfer Requests and Migration Requests, the Access Provider shall coordinate the deactivation and activation of the Connection on the same day to ensure minimum service disruption	10 Working Days	50 SC for failure to meet the Maximum RFS Date and 25 SC for each additional working day thereafter until the Access Seeker receives the RFS Certificate. (There is no Maximum Penalty Cap per Connection).
	Maximum Validation Time	The Maximum Validation Time does not apply to Cancellation Requests.	2 Working Days	
Fault Acknowledgement Time	Maximum Fault Acknowledgement Time		1 hour	
Response Time	Maximum Response Time	During Working Hours	2 Working Hours	
		Outside Working Hours	4 hours	
Restoration Time	Maximum Restoration Time		48 hours	20 SC for failure to meet the Maximum Restoration Time and 10 SC for each hour exceeding the Maximum Restoration Time. (There is no Maximum Penalty Cap per Connection).

KEY PERFORMANCE INDICATORS (KPI)

Service	KPI	Target
Data Service (DS)	Maximum Time for Notification of Expected RFT and RFS Date	95% within 5 Working Days
	Maximum Delivery Time (when fibre is available)	95% within 10 Working Days
	Maximum Restoration Time	95% within 4 hours
Mobile Backhaul Service (MBS)	Maximum Time for Notification of Expected RFT and RFS Date	95% within 5 Working Days
	Maximum Delivery Time (when fibre is available)	95% within 10 Working Days
	Maximum Restoration Time	95% within 4hours
Wholesale Data Connection (WDC)	Maximum Time for Notification of Expected RFT and RFS Date	95% within 5 Working Days
	Maximum Delivery Time (when fibre is available)	95% within 10 Working Days
	Maximum Restoration Time	95% within 4 hours (Standard support) 95% within 2 hours (Premium support)
Wholesale Bitstream Service (WBS)	Maximum Time for Notification of Expected RFT and RFS Date	99% within 1 Working Day
	Maximum Delivery Time	95% within 10 Working Days
	Maximum Restoration Time	95% within 48 hours
Fibre Fronthaul Service (FFS)	Maximum Delivery Time (Access Delivery Date)	90% within 5 Working Days after physical installation
Optical Wavelength Access Service (OWS)	Maximum Time for Notification of Expected RFT and RFS Date	95% Within 5 Working Days
	Maximum Delivery Time (when fibre is available)	95% Within 10 Working Days
	Maximum Restoration Time	95% Within 48 Hours
Access Provider Wholesale Portal	Portal availability (365 days per year, at all times)	98% availability
Quality of Service Parameters	As defined in Service Descriptions	95% of each QoS parameters per circuit met in a calendar month (e.g., Jitter, RTD, Latency – in line with the parameters of the relevant Service Descriptions)
Early Life Faults	Faults reported within 10 Working Days of the Service Request (order) being completed	<5%

Service	KPI	Target
Faults on Service Provisions	Faults within 48 hours of the Service Request (order) being completed (Dead on Arrival)	<3%
Repeat and persistent Faults	Faults within 5 Calendar Days of Fault Restoration on the same Connection or Installation (as appropriate)	<5%

The Access Provider will provide performance figures to the Authority on a quarterly basis within 20 Working Days of the end of the quarter for which the reporting is being delivered. The Access Provider will supply its performance on a by Access Seeker basis, including BRE, as well as an overall performance basis.

Schedule 8 – Dictionary

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SCHEDULE 8 – DICTIONARY AND RULES OF INTERPRETATION AND CONSTRUCTION

PART 1 – DICTIONARY

Unless the context otherwise requires:

Acceptable Long Term Credit Rating means a credit rating (which shall not be more than 6 months old) from Moody's Investor Services, of "BA" or higher; or from Standard & Poors, of "BB" or higher.

Acceptance Criteria means the set of technical parameters including the Quality of Service Parameters, and test procedures, which the Service has to meet before a Service Request can be considered as completed.

Access Delivery Date means the date (5) five Working Days after the physical installation of the Fibre Cable in accordance with Schedule 6.6 – (FFS Service Description) of the Reference Offer.

Access Provider means NBNETCo BSC (c), the entity separated from Bahrain Telecommunications Company B.S.C (Batelco), which is licensed by the Regulator to offer wholesale services to Licensed Operators, in its capacity as the provider of the Services.

Access Provider Equipment means equipment provided by, or utilised by, the Access Provider to enable it to provide the relevant Service to the Access Seeker.

Access Seeker means, in relation to a Service, the Licensed Operator that has requested the Access Provider to supply that Service.

Access Seeker Customer means an End User directly connected to the Access Seeker's Network to whom the Access Seeker supplies end to end services utilizing the Service provided by the Access Provider.

Actual RFS Date means the date on which the Access Seeker receives the RFS Certificate from the Access Provider.

Actual RFT Date means the date on which the Access Seeker receives a notice from the Access Provider confirming that the Service has been provisioned that day and is ready for testing, taking into account the following:

(i) To progress the Service Request to the service delivery process; or
(ii) Accepted Service Request (explicit acceptance from the Access Provider)

which happens when the Access Seeker receives a notice from the Access Provider confirming that the information provided by the Access Seeker 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 the Access Provider) which happens at the end of the Maximum Time for Service Request Confirmation, where absent formal notice from the Access Provider, the Service Request is deemed to have been accepted by the Access Provider and thus progressed to the service delivery process.

Affiliate means, as used with respect to any person, any other person directly or indirectly Controlling, Controlled by, or under common Control with, that person and "**Affiliated**" shall be construed accordingly.

Approved Contractor means a Person who meets the relevant standards, codes of practice and/or certifications of the Access Provider for the purposes of relevant work or activity required to supply a Service, and is recognised and/or notified by the Access Provider to the Access Seeker as such.

Authorized Person has the meaning set out in the Supply Terms.

Autonomous System or **AS** means the collection of routers and associated Network elements under a single administration using a common BGR for routing packets.

Billing and Collection Process means the billing and payment process in Schedule 4 (Billing) of the Reference Offer.

Billing Dispute has the meaning set out in the Supply Terms.

Billing Dispute Notice means a notice in writing in the form setting out the information required under clause 5.1 of Schedule 4 (Billing) of the Reference Offer.

Billing Representative means the individual or department nominated by a Licensed Operator or the Access Provider (as applicable) to receive and/or process and/or issue the Access Provider's invoices.

Calendar Year means each year commencing on 1 January and ending on 31 December.

Cancellation Request means a Service Request for cancelling an existing Service/Connection.

Carrier System Fault means a Fault resulting in the total loss of ability by either party to

transmit calls between the two Networks due to transmission faults on the 2.048 Mbit/s Interconnect Links or an entire Network.

Change of Control means a material change in the equity structure of a company giving rise to a change in the ability of a stakeholder to appoint the board of the company.

Change Request means a Service Request for amending an existing Service. This includes a request to Upgrade/Downgrade the speed of an existing Service.

Charges mean the charges set out in a Service Description for a Service and/or in Schedule 3 (Pricing) of the Reference Offer, as the case may be.

Complex Case means a project which for the implementation of a New Service involves significant changes to the Access Seeker's existing Network features and services and/or significant systems development and/or work with external suppliers and/or has a major impact on and/or requires major interaction or negotiation with one or more Licensed Operators.

Confidential Information means all information or business secrets reasonably considered to be commercially confidential (regardless of whether it has been formally designated as such) and shall include without limitation information pertaining to network coverage and/or capabilities,data, trade secrets, ideas, concepts, know-how, knowledge, and information whether in writing or otherwise, relating to a party's People, Services, Network, affairs, business, Subscribers and End Users exchanged between the parties before, on or after the Effective Date but excludes information:

(a) which is in or becomes part of the public domain other than through breach of this agreement or an obligation of confidence owed to the disclosing party;
(b) which a party can prove by contemporaneous written documentation was already known to it at the time of disclosure by the disclosing party (other than if such knowledge arose from disclosure of confidential information in breach of an obligation of confidentiality);
(c) which the recipient acquires from a third party entitled to disclose it; or
(d) which was independently developed by a party without breach of any obligation of confidentiality owed to the other party.

Confidentiality Agreement means the terms and conditions of the mutual confidentiality obligations between an Access Seeker and the Access Provider as provided for in the Supply Terms.

Consequential Loss means:

(a) direct loss of business revenue or profits; and
(b) indirect, incidental, consequential, punitive or special damages, including economic

loss such as loss of profits or expectations, business revenue, goodwill, wasted expenditure or anticipated savings, cost of replacement services, whether such costs or damages are based in contract, tort (including negligence), statute or otherwise, even if the other party is warned or has been warned of the possibility of that loss or damage.

Construction and Work Plan means, in relation to a Facility, a plan to be produced by the Access Seeker when carrying out Make Ready Work and incorporating the following information:

(a) plans for all Make Ready Work;
(b) a construction timetable for all Make Ready Work and a work program;
(c) the Equipment which the parties seek to place in or on the Facility including the nature, dimension and, where relevant, the model number of the Equipment;
(d) the location of the Equipment;
(e) the method and procedures that the Access Seeker will use in installing its Equipment in or on the Facility and whether it will be necessary to modify or strengthen the Facility;
(f) a timetable and program for the installation of all Equipment; and
(g) any other matters which may be reasonably necessary or appropriate having regard to the circumstances.

Control means, as applied to any person, the possession, directly or indirectly, of the power to influence the direction of the management of that person, whether through ownership, voting or other means and "Controlling" and "Controlled" shall be construed accordingly.

CR means commercial registration in the Kingdom of Bahrain.

Disclosing Party has the meaning set out in the Supply Terms.

Dispute has the meaning set out in the Supply Terms.

Dispute Officer means a senior executive of a party nominated to negotiate and resolve disputes with the other party.

Dispute Resolution Procedures means the procedures set out in the Supply Terms.

Downgrade means a decrease in the speed or throughput of the relevant Service or Connection.

Duct means an underground facility that is used, installed ready to be used, or intended to be used to hold lines or cables and owned, maintained or operated by the Access Provider.

Due Date means the date on which an invoice is payable in accordance with Schedule 4 (Billing) of the Reference Offer, or as may be agreed by the parties and if there has been no agreement or if there is any inconsistency between specified dates or the manner in which a date is to be calculated, shall be a date which is thirty (30) days from the date of receipt of the relevant invoice.

Effective Date has the meaning set out in the Supply Terms.

Emergency Event means an event (which may be a Force Majeure Event) which poses an urgent threat, or has caused actual damage, to any persons or property at the Facility or to any of the Equipment at the Facility, or the operating capability of the Access Provider's Equipment, the Access Seeker's Equipment or third party Equipment in a material way. Such events include, but are not limited to, fire, electrical malfunction, and structural damage. It also includes an unscheduled Outage which has or is likely to have a significant impact on a party's Network.

Emergency Maintenance means work required in response to an Emergency Event in order to protect or restore any Equipment, the Facility, or the operating capability of Equipment.

End User means the ultimate recipient of a Service provided to an Access Seeker, where the recipient is a legal or natural person.

End User Consent means the written consent obtained by an Access Seeker on behalf of an End User to receive a Service/Connection by means of the relevant Service supplied to the Access Seeker in accordance with a Service Request, and shall include where the context of the relevant Service Description so requires, confirmation that the End User has obtained necessary consents, approvals, rights of way and and rights of access, to the extent that such are within the control of the End User to obtain and are reasonably required to enable the Access Provider to provide the relevant Service.

End User Management means all aspects of interface with the End User by the Access Seeker in relation to each End User contracting with the Access Seeker for using the Service and first line support by the Access Seeker in relation to maintenance issues related to the End User.

End User Premises means the End User's permanent physical location in Bahrain.

Equipment means equipment that is owned or used by a person and used or designed for use for the supply of a telecommunications service by means of radiocommunications or any other means and includes:

(a) antennae, microwave dishes or satellite dishes of less than 2.5 meters in diameter;

(b) associated transmission equipment, power plant (including standby power), and air conditioning plant;
(c) associated feeders, waveguides and waveguide pressuring equipment;
(d) cabling and cabling works;
(e) prefabricated modules, risers or other structures housing any of the above;
(f) cable gantries;
(g) lines, joints/splices and such other ancillary equipment as necessary to support the use of a line which may be housed in pits or manholes where suitable space is available or as agreed between the parties;
(h) towers, masts, poles, antennae mountings and other similar structures which bear or are capable of bearing items noted in paragraph (a) – (g);
(i) Underground Plant; and
(j) such other ancillary equipment as may be agreed by the parties from time to time.

Equipment Shelter means a building or other structure constructed or installed by a party to house Equipment.

Equivalence Compliance and Technical Committee means the committee established by the Regulator that will enable, among other items, Licensed Operators to discuss their needs and requirements, including technical requirements, with the Access Provider at regular intervals.

Estimated Implementation Date has the meaning given to it in Schedule 5 (Forecasting) of the Reference Offer.

Exceptional Delivery Date means the alternative Delivery Date, notified by the Access Provider to the Access Seeker when the Expected RFS Date cannot be met due to exceptional circumstances as specified in the relevant Service Description.

Expected RFS Date means the date on which the Access Provider expects the Service to be ready for Service as indicated in the notice of Expected RFT and RFS Dates. The Expected RFS Date shall be set no later than the Maximum Delivery Date.

Expected RFT Date means the date at which the Access Provider expects the Service to be ready for testing as indicated in the notice of Expected RFT and RFS Dates. The Expected RFT Date shall precede the Expected RFS Date by a period of time equal to the Maximum Validation Time.

Facility means a:

(a) Duct;
(b) fibre cable (whether partially or fully in service or not);
(c) copper cable (whether partially or fully in service or not);

(d) main distribution frame;
(e) equipment room;
(f) local exchange;
(g) Duct chamber;
(h) Underground plant;
(i) power room;
(j) street cabinet;
(k) riser room;
(l) fibre patch panel

as the context requires, which unless agreed otherwise by the Access Provider and Access Seeker, is or shall be owned by the Access Provider at the time a Service Request is made.

Facilities Access Application means an application for access to a Facility made in accordance with Schedule 6.7 (FAS Service Description) of the Reference Offer.

Fault means a fault arising in segments of a Network (classified as either a Carrier System Fault or a Network Fault).

Fault Acknowledgement means acknowledgement of a Fault in accordance with the provisions in Schedule 7 (Service Levels).

Field Study means the study to be undertaken by the Access Provider, which includes but is not limited to:

(a) details of the Make Ready Work required (including who will be responsible for undertaking each part) and the time required to perform the Make Ready Work;
(b) the estimated Charges for Make Ready Work; and
(c) the time required to access the relevant Service, after being ordered.

First Service Request means a Service Request from a new Access Seeker in accordance with the provisions of Schedule 2.1 (Notification and Acceptance of Service Request) of the Reference Offer.

Forecasting Procedures means the procedures set out in Schedule 5 (Forecasting) of the Reference Offer.

Force Majeure Event means any cause affecting the performance by a party of any obligation hereunder arising from acts, events, omissions, happenings or non-happenings beyond its reasonable control including (but without limiting the generality thereof) governmental or States' acts or regulations, fire, flood, inclement weather, terrorism or any disaster or an industrial dispute (other than relating to the that party's own workforce)

affecting the provision of the Services. Any act, event, omission, happening or non-happening only will be considered a Force Majeure Event if it is not attributable to the wilful act, neglect or failure to take reasonable precautions of that party, its officers, contractors, sub-contractors, agents, servants or employees.

Indemnifying Party means the party giving an indemnity under the Supply Terms.

Insolvent means where a party is (i) unable to pay its debts on the maturity dates or fails to pay such debts within 30 days of their maturity or from date of the creditors' notice to pay; or (ii) the value of the debtor's financial obligations exceeds the value of its assets.

Intellectual Property Rights means all rights conferred under statute, common law and equity in and in respect of intellectual property rights, including trade marks, trade names, logos and get up, inventions, patents, designs, copyright, circuit layouts, Confidential Information, know-how and trade secrets, whether registered or not, and all rights and interests in them whether vested or contingent or licenses to use any of them.

Intermediate Case means a project for which the implementation of a New Service requires some additions to or modifications of the Access Seeker's existing network features and services and/or may involve some moderate systems development and work with external suppliers and/or has a minor impact and/or requires minor interaction or negotiation with another Licensed Operator.

Interest Rate means unless stipulated otherwise in a relevant Schedule to the Reference Offer, LIBOR plus 3%.

Joint Working Manual means the operations and procedures manual to be developed within the ECTC (as amended or updated from time to time).

Law means the Legislative Decree No. 48 of 2002 with respect to Telecommunications in the Kingdom of Bahrain.

License means an individual license issued pursuant to the Law and "Licensed" shall be construed accordingly.

Licensed Operator means a party who has been issued with a Telecommunications License pursuant to the Law to provide telecommunications services.

Main Body Terms means Schedule 1 of the Reference Offer.

Make Ready Work means the work that is reasonably necessary to make a Facility ready for Equipment installation by the Access Seeker which may include (but is not limited to):

(a) structural analysis;
(b) strengthening, modifying or augmenting a Tower necessarily and proportionally required to condition the Tower to bear the wind and weight loading directly added by the Access Seeker's Equipment;
(c) constructing, installing or modifying head frames, cable risers, cable trays and other Tower fittings required to house the Equipment of the parties on the Tower;
(d) where the Tower is a replacement Tower, removing the Tower if required;
(e) constructing a New Facility or replacement Tower, including all design, approval and construction work and the doing of relevant things lawfully required by the Regulator;
(f) rearranging Equipment;
(g) the provision of temporary facilities to accommodate Equipment;
(h) making alterations to ducts;
(i) providing ducts, installing subducts and manhole breakouts, clearing roots or silt and repair work;
(j) installing or extending cable trays or other works to house the Access Seeker's lines, cables and/or any Equipment; and
(k) any other matters specified by the parties from time to time.

Maximum Delivery Date means the last working day after which the Maximum Delivery Time lapses.

Maximum Delivery Time means the maximum time within which the Access Provider shall 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 lines or access ducts. The Maximum Delivery Time starts at Accepted Service Request.

Maximum Fault Acknowledgment Time means the maximum Actual Fault Acknowledgment Time that the Access Provider should meet as required under Schedule 7 (Service Levels) of the Reference Offer.

Maximum Monthly Penalty Cap means the maximum Penalties for Restoration Time the Access Seeker is entitled to for a specific Service, on a monthly basis, as a result of the Access Provider not meeting the Maximum Restoration Time.

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.

Minimum Service Period has a meaning given to it in each applicable Service Description.

Mobile Network means:

(a) a GSM Network; or

(b) a mobile telephone network used and accessible by the public provider of switching and transmission facilities using digital technologies as defined in a globally accepted standard which the Licensed Operator is permitted to use by its License.

Monthly Recurring Charge (MRC) means the maximum monthly Service Charge chargeable by the Access Provider and payable by Access Seeker.

Network means a public telecommunications network or system of a party, which is used or intended to be used for telecommunications services supplied under the party's License.

Network Fault means a Fault located within the Access Provider's Network or within the Licensed Operators Network. Network Faults include Faults within the signalling networks.

New Connection Request means a Service Request for establishing a new Connection for the provision of Services to an End User Premises.

New Service means a Service relating to access to the Access Provider's Network or services by the Access Seeker (including any commercial services required to facilitate that access) that is not currently provided or able to be provided under the Reference Offer.

New Service Request means a request for a New Service submitted by a party in accordance with the provisions of Schedule 2.2 (New Service Request) of the Reference Offer.

Non-recurring Charge (NRC) means those charges incurred where additional infrastructure is required to provide new or extended service at a customer's site, or at another requested location where the Access Provider would otherwise not choose to extend its network based on normal commercial criteria.

Non-residential means an End User with a CR.

Notification means a written communication sent by any means.

Notification of Expected RFT and RFS Dates means the Service Level for the timely notification of the Expected RFT Date and the Expected RFS Date as provided for under Schedule 7 (Service Levels) of the Reference Offer.

Outages mean that period during which the Access Provider's Equipment is temporarily decommissioned or not operating.

Penalties for Service Request Acknowledgment means the penalties due by the Access Provider for not meeting the Maximum Service Request Acknowledgement Time.

Penalties for Fault Acknowledgment Time means the penalties due by the Access Provider for not meeting the Maximum Fault Acknowledgement Time.

Penalties for Response Time means the penalties due by the Access Provider for not meeting the Maximum Response Time.

People means directors, officers, employees, agents, contractors, advisors and representatives other than that party's customers who act as end users of services provided by means of the Services.

Planned Maintenance means planned work to protect or restore any Equipment, the Facility, or the operating capability of Equipment, which is not in response to an Emergency Event.

Point of Presence (POP) means a permanent physical location where an aggregation link or connection of a relevant Service is terminated at premises owned or leased by the Access Seeker or at the Access Provider's colocation facility, but for the avoidance of doubt cannot be at an End User Premises, earth station, manhole, power room, lead-in pipe, duct, outdoor cabinet, MDF, riser room or anywhere not on the main island of Bahrain unless connected by a permanent physical connection above sea level and accessible the Access Provider.

Preliminary Information means the Information the Access Provider reasonably requires to process a Service Request as set out in the Joint Working Manual.

Public Internet Protocols means the following:

(a) Hyper Text Transfer Protocol (HTTP);
(b) File Transfer Protocol (FTP);
(c) Simple Message Transfer Protocol (SMTP);
(d) Secure HTTP; and
(e) such other Internet protocols as the parties may agree from time to time.

Public Radio Communications Station shall have the meaning as defined in the Regulation on Permitting, Installation, Upgrading and Maintenance of Public Radio Communications Stations issued by the Regulator's Board of Directors Decision No. 10 of 2018 but excluding Temporary Public Radio Communications Stations as also defined therein.

Quality of Service (QoS) Parameters means the set of technical parameters for a Service set out in the relevant Service Description.

Ready for Service (RFS) Date means the date the Access Seeker and the Access Provider have agreed that all elements of the Service have been successfully installed and ready for use by the Access Seeker in accordance with Schedule 7 (Service Levels) of the Reference Offer.

Ready for Test (RFT) Date means the date when all elements of the relevant Service have been successfully installed and are ready for end–to-end testing by the Access Provider and the Access Seeker, such testing to be carried out in accordance with the relevant Service Description.

Reconfiguration Request means a Service Request for reconfiguring the technical parameters of an existing Connection.

Reference Offer means the reference offer published by the Access Provider incorporating the wholesale products and Services (including the price and non-price terms) to be offered by the Access Provider to Licensed Operators, as may be amended from time to time, as approved by the Regulator.

Regulator means the Telecommunications Regulatory Authority of the Kingdom of Bahrain.

Regulatory Event means:

(a) an amendment of or change in any applicable law;

(b) the grant of an injunction against a party in respect of a breach or alleged contravention of an applicable law; or

(c) the making of a determination or direction by, or an omission of, a competent authority.

Response Time means the Service Level for the timely start of troubleshooting of a Fault following the Fault Acknowledgement.

Restoration Time means the Service Level for the timely restoration of a Service affected by a Fault following the Fault Acknowledgement.

Reversal Request means a Service Request by an Access Seeker to the Access Provider, to return a Service to its set up or configuration prior to the most recent Service Request.

RFS Certificate means the certificate issued by the Access Provider to the Access Seeker to confirm that:

(a) the Service has been provisioned and tested by the Access Provider;

(b) the Service is properly registered in all of Access Provider's systems (e.g. OSS/BSS, service level monitoring platform, fault reporting system etc.);

(c) the Service has been validated by the Access Seeker (or deemed to have been validated by the Access Seeker if the Maximum Validation Time has lapsed); and
(d) the Service is ready for service and the Access Seeker will be invoiced accordingly.

SE means NBNETCo BSC(c), the holder of a Fixed Telecommunications Infrastruture Network License.

SE License means the Fixed Telecommunications Infrastructure Network License granted to the SE on 2 June 2019 by the Regulator, pursuant to the requirements of Article 40(bis)(a) of the Law.

Security means any security reasonably required by the Access Provider in accordance with the Supply Terms. The form of security may include a bank guarantee, a letter of credit, security over a bank deposit or a parent company guarantee, provided that the form of security selected is acceptable to the Access Provider, such acceptance not to be unreasonably withheld or delayed.

Service means a Service the Access Provider is required to supply to Licensed Operators under the SE License issued pursuant to the requirements of Article 29 and Article 40(bis)(a) of the Law, and as further described in the relevant Service Description in Schedule 6 (Service Descriptions) of the Reference Offer.

Service Commencement Date means, for each Service Request for a Service, the date of successful implementation and notified handover of the Service by the Access Provider to the Access Seeker.

Service Credit (SC) means an amount payable by the Access Provider to the Access Seeker for a failure to meet a Service Level. In relation to a single Service Credit, it means that amount represented by 1% of the MRC.

Service Description means the description, terms and procedures and other matters relevant to a particular Service and which are set out in Schedule 6 (Service Descriptions) of the Reference Offer.

Service Level(s) means the set of parameters defining the minimum performance expected from the Access Provider in the delivery and maintenance of the relevant Service.

Service Level Penalties means the set of defined penalties expressed in Service Credits which are payable by the Access Provider for not having met the relevant Service Level Terms.

Service Level Terms means the set of defined performance targets that must be met by

the Access Provider in relation to the request, delivery, quality management and fault management, of the relevant Service, as set out in Schedule 7 (Service Levels) of the Reference Offer.

Service Qualification means the analysis carried out by the Access Provider via the Internet or manually to confirm whether the Service can be provided on the Access Provider Network by checking, where appropriate, the following:

i. line loss;
ii. infrastructure availability;
iii. interference.

Service Request means a formal request for a Service made by an Access Seeker. Service Requests include New Connection Requests, Transfer Requests, Upgrade/Downgrade Requests, Migration Request, Reconfiguration Requests, and Cancellation Requests.

Service Request Acknowledgment means the Service Level for the timely acknowledgment of a Service Request sent by an Access Seeker as required under Schedule 7 (Service Levels) of the Reference Offer.

Service Request Confirmation means the Service Level for the timely acceptance or rejection of a Service Request sent by an Access Seeker as required under Schedule 7 (Service Levels) of the Reference Offer.

Service Request Form means the standard format (including digital format) used by an Access Seeker to request a Service as required under Schedule 7 (Service Levels) of the Reference Offer.

Service Request means a written request by the Access Seeker in the format specified by the Access Provider (subject to change from time to time) for a Service.

Service Request Acceptance has a meaning set out in Schedule 2 (Notification and Acceptance of Service Request) of the Reference Offer.

Shared Facility means a Facility that is shared between Access Seeker(s) and/or the Access Provider.

Simple Case means a project for the implementation of a New Service which uses the Access Seeker's existing network features and services, can be activated using the Access Seeker's existing operational systems and procedures and does not require any consultation with any external supplier and does not require any interaction or negotiation with, and has no impact on, any other Licensed Operator.

Statement Error means an error in the calculation of a Charge, such as an error in the addition of Charges, the duplication of Charges or charging for Services which were not provided.

Statement of Requirements means a formal description of a New Service, addressing in detail the technical and functional characteristics and commercial terms relating to its supply as agreed by the parties pursuant to the Main Body Terms of the Reference Offer.

Supply Terms means the terms set out in Schedule 9 (Supply Terms) of the Reference Offer.

Suspension Event means:

(a) the Access Seeker has failed to pay undisputed monies owing under the Supply Terms; or

(b) the Access Seeker breaches any other material obligation under the Supply Terms.

TCP/IP means transmission control Protocol/Internet Protocol in general use in accordance with good practice.

Telecommunications License has the meaning given to it in the Law.

Tower means the towers, poles, masts or similar structures and facilities used in the supply of a telecommunications service by means of radiocommunications or any other means and owned, maintained or operated by the Access Provider or the Access Seeker as appropriate.

TR69 means means the TR69 protocol understood as CPE WAN Management Protocol, issued by the Broadband Forum in force from time to time, and/or its equivalent successor.

Transfer Request means a Service Request for transferring an existing Service from one Licensed Operator to another Licensed Operator.

Underground Plant means:

(a) duct systems containing one or more ducts or subducts and includes associated building entry tunnels, manholes, exchange cable chambers and joining pits; and

(b) tunnel systems.

Upgrade means an increase in the speed or throughput of the relevant Service or Connection.

Upgrade/Downgrade Request means a Service Request for upgrading/downgrading the speed or throughput of an existing Service or Connection.

Wireless Radio Site means a mast, tower, pole or roof top radio station or any other type of Public Radio Communications Station, excluding temporary cell sites (cell on wheels) owned, leased or licensed by Access Seekers that hold an Individual Mobile Telecommunications License.

Working Day means any day other than a Friday, Saturday or public holiday in the Kingdom of Bahrain.

Working Hours means between the hours of 08:00 to 17:00 AST on a Working Day.

PART 2 – RULES OF INTERPRETATION AND CONSTRUCTION

Interpretation

Unless otherwise specified:

(a) singular includes the plural and vice versa;

(b) different grammatical forms of the same word have the corresponding meaning;

(c) words of inclusion are not words of limitation;

(d) the expression "person" includes a reference to a person, firm, corporation or other legal entity;

(e) references to either party shall include its legitimate successors or assigns;

(f) a reference to a Part, Schedule, Clause, Annexure or Attachment is a reference to a part, schedule, clause, annexure or attachment forming part of the Reference Offer or the Supply Terms between the Access Provider and an Access Seeker, as the case may be;

(g) headings are used for convenience only and do not affect interpretation.

Schedule 9 – Supply Terms

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SCHEDULE 9 - SUPPLY TERMS

1 DEFINITIONS, INTERPRETATION AND STRUCTURE

1.1 Unless otherwise specified:

(a) capitalised words used in these Supply Terms have the meaning given to them in the dictionary in Part 1 of Schedule 8 – (Dictionary) of the Reference Offer; and

(b) the rules of construction and interpretation of these Supply Terms are in Part 2 of Schedule 8 – (Dictionary) of the Reference Offer.

1.2 If there is any inconsistency between this Schedule and the other sections of the Reference Offer, then the inconsistency shall be resolved in accordance with the following descending order of precedence:

(a) Schedule 6 (Service Descriptions);

(b) Schedule 3 (Pricing);

(c) Schedule 1 (Main Body Terms);

(d) these Supply Terms;

(e) the other Schedules; and

(f) the Joint Working Manual.

1.3 A Joint Working Manual is to be developed by the Access Provider under the framework of the ECTC, in accordance with the terms and timelines approved by the Authority. Once developed and approved by the Authority the Joint Working Manual shall be incorporated into these Supply Terms.

2 COMMENCEMENT AND REVIEW

2.1 These Supply Terms apply to any Services ordered by an Access Seeker, in accordance with the provisions of the Reference Offer.

2.2 These Supply Terms become effective on the date of an approval or an order of the Authority (as appropriate) (**Effective Date**).

2.3 Subject to clauses 2.4 and 2.6, if the Authority approves or mandates any change to the Reference Offer, then these Supply Terms are automatically amended to incorporate the same change in respect of the Services covered by the changes.

2.4 If the rights and obligations of either of the parties under these Supply Terms are or may be likely to be affected by:

(a) amendments to or repeals of the Law or of a condition of a party's License; or

(b) a ruling, determination, approval, order or directive of the Authority (other than any adverse

effect on Access Provider as a result of a mandated or approved change to the Reference Offer),

the parties shall meet as soon as practicable and negotiate in good faith any amendment to these Supply Terms necessary or appropriate to ensure that they remain consistent with the Law, ruling, determination, approval, order or directive of the Authority or such other regulatory requirement. If the parties cannot agree any amendment, clause 22 applies.

2.5 If the Access Provider reasonably believes, based on some action of the Authority, that a part of the Supply Terms contravenes or may contravene any provision of the Law, the SE License or other statutory requirements, the Access Provider shall consult with the Authority before negotiating any amendment to these Supply Terms.

2.6 The Access Provider shall not amend the Charges unless it has obtained prior written approval from the Authority. The approval may be subject to imposition of such conditions which the Authority considers appropriate, including conditions relating to the effective date of the changes to the Charges and process and timeline for communication of the changes to Licensed Operators.

3 DUTY TO PROVIDE SERVICES AND PROVISIONING

3.1 Subject to clause 3.2, the Access Provider shall supply the Services requested by the Access Seeker in accordance with and subject to the requirements specified in these Supply Terms.

3.2 The Access Seeker shall comply with Forecasting Procedures as set out in Schedule 5 – (Forecasting) of the Reference Offer.

3.3 The terms in a Service Description may override, vary or supplement those procedures.

3.4 Each party shall comply with the Service Description and Joint Working Manual in so far as they apply to the provision of the Services.

4 CHARGES

4.1 The Access Seeker shall pay the Access Provider the relevant Charges determined in accordance with Schedule 3 – (Pricing) of the Reference Offer.

4.2 The Charges exclude all applicable Government taxes and surcharges, including value added tax, sales taxes, duties, fees and levies, all of which shall be the sole responsibility of the Access Seeker and paid promptly when due.

5 BILLING AND PAYMENT

5.1 Each party agrees to comply with the terms and procedures set out in Schedule 4 – (Billing) of the Reference Offer in relation to billing and collection.

5.2 The Access Seeker is solely responsible for billing and collecting its charges for services supplied to Access Seeker Customers using the Services.

6 NETWORK PROTECTION AND SAFETY

6.1 Each party is responsible for the safe operation of its Network, and shall, so far as is reasonably practicable, take all necessary steps to ensure that its Network, its Network operations and implementation of these Supply Terms:

(a) do not endanger the safety or health of any person, including the People of the other party; and

(b) do not cause physical or technical harm to the other party's Network, including but not limited to causing damage, interfering with or causing deterioration in the operation of that party's Network.

6.2 Each party will manage its Network to minimize disruption to Services and in the event of interruption or failure of any Services, will restore those Services as soon as is reasonably practicable.

6.3 A party shall:

(a) not use or knowingly permit the use of any Service, or install, connect, link or use (or permit the installation, connection, linking or use of) any telecommunications equipment in contravention of any law; and

(b) be responsible to the Access Provider for anyone else who uses any Service or any part of any Service provided to the Access Seeker, or does anything unauthorized relating to a Service or any part of any Service.

6.4 Each party shall ensure that its Network and operating procedures comply in all respects with the safety requirements established by, or under the Joint Working Manual and the Law.

7 NETWORK ALTERATIONS AND CHANGES

7.1 The Access Provider shall give notice in writing to the Authority and shall notify all parties affected of any material changes it intends to implement in the specification or performance of its Network which would require material changes to any equipment or systems connected to its Network or which would have the effect of making such connections inoperable. The period of notice given shall be appropriate to the likely impact on the parties affected and on the connected equipment or systems, but shall be at least thirty (30) days' advance notice.

7.2 Where the Authority considers that a change in the Access Provider's Network referred to in clause 7.1 would cause any other Licensed Operator to be compelled to make major changes to its own systems in order to access and/or connect and/or utilise the Access Provider's Network, the Access Provider shall be required to obtain the prior written approval of the Authority before implementing such a change.

7.3 The notice required by clause 7.1 shall set out the technical details of the proposed change, the timetable of the proposed change and any known impact to the inter-working of the parties'

Networks relevant to Services provided under these Supply Terms.

7.4 The Access Provider shall update any affected party from time to time of any changes to the proposed change in the Access Provider's Network referred to in clause 7.1, including the timetable for implementation.

7.5 Subject to any requirements of these Supply Terms and/or the SE License to obtain approval of the Authority, the Access Provider has the right to modify, change or substitute underlying technology or the specifications of the Services to improve the functioning or performing of the Services or its Network provided that such modifications do not materially adversely alter the functioning or performance of the Services supplied to the Access Seeker. Such modifications may include replacement of elements of existing Network infrastructure or systems with alternate technology. The Access Provider shall not make any changes regarding replacement of elements of existing Network infrastructure or systems with alternate technology that would restrict Licensed Operators' ability to choose Customer Premises Equipment (CPE) from a range of multiple alternative approved vendors (i.e. a multi-vendor solution).

7.6 Nothing in these Supply Terms may be construed to preclude a party from using, modifying or substituting such of its equipment for other of its equipment as reasonably required to provide any of the Services within the scope of these Supply Terms, provided that the Access Provider shall not restrict Licensed Operators' ability to choose Customer Premises Equipment from a range of multiple alternative approved vendors (i.e. a multi-vendor solution).

8 EQUIPMENT RESPONSIBILITIES

8.1 Where the Access Provider provides the Access Seeker with any equipment or manages any equipment as part of any Service, or locates equipment at the Access Seeker's premises, the Access Provider shall:

(a) provide or manage that equipment in accordance with the provisions of the relevant Service Description; and

(b) ensure that the equipment is approved in accordance with Article 38 of the Law.

8.2 Where the Access Provider provides the Access Seeker with any equipment or manages any equipment as part of any Service, or locates equipment at the Access Seeker's premises, the Access Seeker shall:

(a) arrange for the equipment to be installed in an accessible and suitable place, free of charge to the Access Provider, leave it installed there and not interfere with it;

(b) pay for repairing or replacing the equipment if it is lost, stolen or damaged. If the equipment is lost, stolen or damaged the Access Seeker will notify the Access Provider promptly;

(c) make sure any software forming part of or loaded on the equipment (other than software

provided by the Access Provider) is not affected by any virus at the time the Access Provider begins to manage the equipment;

(d) follow the Access Provider's reasonable directions, and any directions from the equipment manufacturer, when using the equipment and never use the equipment for purposes for which it is not designed;

(e) only use the Access Provider's Equipment at the agreed site location, where one has been specified;

(f) ensure that the Access Provider's Equipment shall at all times remain a chattel; and

(g) not encumber the Access Provider's Equipment or expose such title to third party claims and will notify the Access Provider if it becomes aware of any third party claim.

8.3 When any of the Access Provider's Equipment is no longer required, the Access Seeker:

(a) shall notify the Access Provider in writing and request that the Access Provider removes its equipment within three (3) months of the notification that the equipment is no longer required;

(b) shall allow the Access Provider access to the Access Seeker's premises at all reasonable times to enable the Access Provider to remove its equipment; and

(c) shall not have any responsibility to the Access Provider for Access Provider Equipment that has not been removed by the Access Provider within the timeframe stipulated in clause 8.3(a) above.

8.4 If the Access Provider fails to remove its equipment under clause 8.3 within the timeframe stipulated in clause 8.3(a), then the Access Seeker may remove it.

8.5 For the Access Seeker's own safety, and so that provision of the Services to the Access Seeker and other Licensed Operators are not disrupted, the Access Seeker shall help safeguard the Access Provider's Network and the Access Provider's Equipment. The Access Seeker will:

(a) let the Access Provider have reasonable and safe access to the Access Seeker's premises:

(i) to maintain or develop the Access Provider's Network or the Access Provider's Equipment;

(ii) to fix any Fault or replace any equipment; or

(iii) for any other reasonable purpose,

provided that the People whom the Access Provider sends carry proof of their identity and follow the Access Seeker's reasonable access management procedures. The Access Seeker shall ensure its access management procedures are communicated to the Access Provider;

(b) follow the Access Provider's reasonable directions when connecting anything to the Access

Provider's Network or the Access Provider's Equipment and make sure it is installed to the Access Provider's specifications and is approved;

(c) never interfere with the Access Provider's Network or the Access Provider's Equipment and ensure only People the Access Provider authorizes may work on it;

(d) pay the Access Provider's costs for repairing or replacing any part of the Access Provider's Network or the Access Provider's Equipment which is lost or damaged by the Access Seeker, or by anyone the Access Seeker is responsible for. There is no charge where damage occurs through normal wear and tear; and

(e) make sure everyone the Access Seeker is responsible for also meets these responsibilities.

9 QUALITY OF SERVICE

9.1 To the extent permitted by law, the Access Provider has no obligation to the Access Seeker in respect of the quality of any Service, except as set out in this clause 9.

9.2 The Access Provider shall:

(a) ensure that each Service that it provides to an Acccess Seeker is of an equivalent quality, including in relation to the availability of any enhanced features, to that which it supplies to all other Licensed Operators that receive the same Service; and

(b) maintain and repair Faults in Services in an equivalent manner to the manner in which it maintains and repairs Faults in Services for all other Licensed Operators.

9.3 Subject to clauses 9.4 and 9.5, the Access Provider shall:

(a) provide, but does not guarantee, the provision of continuous or Fault-free Services to the Access Seeker; and

(b) comply with any Quality of Service requirements set out in the relevant Service Description in Schedule 6 – (Service Descriptions) of the Reference Offer and the relevant Service Levels set out in Schedule 7 – (Service Levels Schedule) of the Reference Offer.

9.4 Save to the extent required under applicable law, or as expressly set out in Schedule 7 – (Service Levels Schedule), the Access Provider does not give or make any warranty, representation, undertaking or commitment in respect of the quality of service applicable to any Service, and any implied warranty to this effect is excluded, including any warranty, representation, undertaking or commitment (whether made to the Access Seeker before the Effective Date or otherwise) in respect of any difficulty or Fault resulting in a failure to establish any Service, in-service interruption, or loss, or distortion, of communication.

9.5 If any applicable law implies warranties or conditions or imposes obligations on the Access Provider in respect of the quality of service of any Service, which cannot be or can only to a limited extent be, excluded, restricted or modified, then to the extent to which the Access Provider is entitled to do so,

the liability of the Access Provider under the applicable law is limited:

(a) to the supply of relevant Services again or the payment of the cost of having the relevant Service supplied again, at the Access Provider's option;

(b) to the repair or replacement of property or paying the cost of repair or replacement, at the Access Provider's option; or

(c) to any other remedy prescribed by applicable law.

9.6 If an Access Provider breaches any Service Level or Quality of Service requirement in the relevant Service Description in Schedule 6 – (Service Descriptions) and/or the Service Levels in Schedule 7 – (Service Levels Schedule) of the Reference Offer, then without prejudice to its rights to recover damages from the Access Provider, the Access Seeker may seek and the Access Provider will make available or offer to the Access Seeker, the Service Credit or other specific remedy applicable to that Service Level or Quality of Service requirement, as set out in the relevant Service Description in Schedule 6 – (Service Descriptions) and/or the Service Levels in Schedule 7 – (Service Levels Schedule) of the Reference Offer.

9.7 The Access Provider shall have no liability (including liability to credit any Service Credit) for any failure to meet a Service Level where that failure has been caused or materially contributed to by:

(a) any acts or omissions of the Access Seeker, including a breach by the Access Seeker of the Supply Terms in relation to any Service;

(b) a Force Majeure Event;

(c) any third party Equipment not operated or managed by or on behalf of the Access Provider; or

(d) a Regulatory Event.

9.8 The Access Provider shall have no obligation to meet any Service Level during any period for which the relevant Service(s) are suspended pursuant to clause 12.

9.9 If the Access Provider is not reporting Service Credits to the Access Seeker and the Access Seeker becomes entitled to a Service Credit, the Access Seeker may request that Service Credit in writing from the Access Provider together with reasonable supporting documentation. If the Access Seeker records quality of service information in respect of an applicable Service Level and processes the information so as to produce information according to the applicable period and Quality of Service measure to show the actual performance of the Access Provider against the relevant Service Level, then the Access Seeker may claim an additional Service Credit (subject to any Total Service Credit Cap specified in the relevant Service Description) for the provision of the information to the Access Provider in connection with the request for a Service Credit, which additional credit will be credited in the same way as the aggregate of any Service Credit under this clause 9.

9.10 The Access Provider shall, after verifying the Access Seeker's entitlement to a Service Credit, and subject to any Total Service Credit Cap in respect of any Service, apply the amount of that Service Credit as a credit towards the Charges or Access Charges payable by the Access Seeker for that Service, for the billing period following such verification and for each subsequent period until the total amount of the applicable Service Credit (subject to a Total Service Credit Cap) has been applied in full.

10 NEW SERVICES AND SERVICE REQUESTS

10.1 A request from a Licensed Operator for a New Service shall be processed in accordance with the relevant provisions of clause 6 of the Main Body Terms of the Reference Offer.

10.2 Subject to any written agreement between the parties, the Access Provider shall implement a First Service Request in accordance with Schedule 2 – (Notification and Acceptance of Service Request, and New Service Request as appropriate) and within the timescales set out in Schedule 7 – (Service Levels Schedule) of the Reference Offer, subject to the Access Seeker:

(a) delivering required information and replying to correspondence promptly; and

(b) procuring prompt attendance at meetings by responsible personnel.

11 RESUPPLY

11.1 The Access Provider acknowledges that the Access Seeker may use the Services provided by the Access Provider as part of services or products that the Access Seeker sells to the Access Seeker Customers. The Access Seeker agrees that where it provides services or products to the Access Seeker's Customers using any Service, or part of any Service:

(a) the Access Seeker will indemnify the Access Provider for any damage, loss or cost (including legal costs) and protect the Access Provider from any claim or proceeding:

(i) arising from the failure by the Access Seeker to obtain, or a claim by an End User that the Access Seeker failed to obtain, that End User's consent to the supply of Services relating to that End User;

(ii) to the extent caused, contributed to or brought by any Access Seeker Customer directly or indirectly in connection with the Services;

(b) the Access Provider will not be responsible to the Access Seeker or any Access Seeker's Customer for any failure or delay in provision of a Service where such failure or delay is caused by or contributed to by any action or inaction of the Access Seeker or of any Access Seeker's Customer; and

(c) the Access Seeker will be solely responsible for any misuse of a Service or part of a Service by the Access Seeker's Customers and the Access Seeker will be liable accordingly.

12 SUSPENSION

12.1 The Access Provider may only suspend a Service to the extent necessary to address (i) an emergency requiring suspension as further detailed in clauses 12.2 to 12.4; or (ii) a request from the Authority to suspend a Service. The parties acknowledge that suspension may be potentially disruptive for users of telecommunications networks in Bahrain and that an assessment of whether or not to suspend a Service in particular circumstances should consider the interests of potentially affected users as a whole.

12.2 Subject to clause 12.1, the Access Provider may suspend the supply or use of a Service provided to the Access Seeker, by giving the Access Seeker forty-eight (48) hours' written notice if in the reasonable opinion of the Access Provider the Access Seeker's Network has a material adverse effect on the efficient or safe operation of the Access Provider's Network and the Access Seeker has failed to rectify the material adverse effect before the end of a notice period of not less than thirty (30) days in usual circumstances, and not less than seven (7) days in urgent cases provided that:

(a) before suspending the supply or the use of a Service, the Access Provider has notified the Authority at least forty-eight (48) hours ahead of its intended suspension; and

(b) the Access Provider will not suspend the supply or use of a Service where the Authority having received the notice referred to earlier in this clause, objects in writing to that suspension.

12.3 The Access Provider may suspend the supply or use of a Service, where the Authority grants approval to the Access Provider to do so and/or has issued a determination which finds that:

(a) the Access Seeker is in Material Breach of an obligation under the Supply Terms (other than any obligation to pay) and has failed to rectify the Material Breach within twenty-one (21) calendar days after the Access Provider notified it in writing of the Material Breach; or

(b) the Access Seeker knowingly or recklessly used, attempted to use, or has communicated or demonstrated an intention to use, any Service supplied under these Supply Terms in contravention of any law, whether with or without the authorization or permission of the Access Provider; or

(c) any material information provided, or material representation made, by the Access Seeker to the Access Provider is untrue, false, misleading or inaccurate and the difference between the effect of the Access Provider's reliance on the information and what would otherwise be the case if the information or representation had been accurate is reasonably considered material by the Access Provider (with respect to the provision of the relevant Services).

12.4 Subject to clause 12.1 the Access Provider may suspend a Service provided to the Access Seeker, on not less than seven (7) days' notice if in the reasonably justified opinion of the Access Provider:

(a) the Access Seeker's Network or the supply of any Service to the Access Seeker poses:

(i) a threat to the life or safety of any person (which shall not include a threat to the life or safety of any person via the supply of any Service to the Access Seeker);

(ii) a material hazard to equipment or the property of any person, including the Access Provider; or

(iii) an imminent threat to the normal operation, access, integrity or security of the Access Provider's or any Access Seeker's Network;

(b) the Access Seeker becomes Insolvent, provided that this right will not be exercised:

(i) for so long as the Access Seeker fulfils all its obligations, including paying all amounts, as and when they fall due in the course of any Insolvency; and

(ii) for so long as the Security provided by the Access Seeker remains effective and is sufficient to meet the sum of debts actually payable and reasonably foreseeable in the course of the Insolvency;

(c) there is an emergency situation that in the Access Provider's opinion may lead to a state of national safety or martial law being announced and the requisition by a competent authority of the Access Provider's telecommunications networks or services used to provide one or more of the Services;

(d) the continued operation of these Supply Terms or the supply of any Service would be unlawful, or compliance with legal or regulatory obligations requires immediate action which requires the suspension of the Supply Terms or one or more of the Services; or

(e) the Authority or a relevant governmental authority directs the Access Provider to do so.

12.5 If a Service has been suspended in accordance with these Supply Terms, the Access Seeker shall continue to pay the relevant Charges for that Service during the period of suspension, and shall pay the Access Provider any Charge payable for the reconnection or reinstatement of that Service, except that where the cause of suspension was outside the control of the Access Seeker. The Access Seeker may request and Access Provider shall provide a waiver of reconnection or reinstatement Charges and a fair and proportionate rebate in respect of such Charges as were paid as they fell due during the period of suspension.

12.6 If any Service is, suspended under clause 12.2 or 12.3 for more than thirty (30) calendar days, then the Access Seeker may terminate the relevant Service with immediate effect by giving the Access Provider written notice.

12.7 The Access Provider's exercise of its right to suspend a Service does not prejudice any other right

or remedy available to it, including any subsequent right to suspend that Service or a different Service.

12.8 If the circumstances giving rise to a right of suspension are cured during any period of notice or suspension and such cure is objectively explained and evidenced in writing to the Access Provider:

(a) before the right is exercised, then the right to suspend may not be exercised; or

(b) after the right is exercised, then the Access Provider shall lift the suspension as soon as reasonably practicable and in any event within forty-eight (48) hours of the notice of cure, except with respect to a right of suspension exercised pursuant to clauses 12.2 in relation to which the Access Seeker shall give an undertaking that as far as it is reasonably aware the circumstances giving rise to the right of suspension are unlikely to recur, or that the Access Provider is otherwise protected against the consequences of the circumstances.

13 TERMINATION

13.1 The Access Provider may terminate the supply of any Service, by giving the Access Seeker and the Authority thirty (30) calendar days' written notice if any of the circumstances exist which would give the Access Provider the right to exercise a right of suspension under clause 12.2 in respect of that Service.

13.2 The Access Provider may terminate the supply of any Service by giving the Access Seeker and the Authority thirty (30) calendar days' written notice if:

(a) the Access Seeker is in Material Breach and has failed to rectify the Material Breach within twenty-one (21) calendar days after the Access Provider notified the Access Seeker in writing of the Material Breach;

(b) the Access Seeker becomes Insolvent, provided that this right will not be exercised for so long as the Access Seeker fulfils all its obligations, including paying all amounts as and when they fall due in the course of any Insolvency;

(c) subject to clause 15, a notified Force Majeure Event or Regulatory Event substantially adversely affects the ability of the Access Provider to perform its obligations under Supply Terms for a continuous period of forty-five (45) calendar days,

provided that the Access Seeker may require during the notice period that the parties, on reasonable notice, engage in discussions with each other, the Equivalence Compliance and Technical Committee ("**ECTC**"), and the Authority, to establish whether alternative terms of supply can apply. Any amendment shall be made only in accordance with the provisions of these Supply Terms.

13.3 The Access Provider may terminate any Service by giving the Access Seeker and the Authority ninety (90) calendar days' written notice if:

(a) the Access Seeker is no longer entitled to that Service, and the Access Provider has evidence to prove it; or

(b) the Law or the Authority no longer imposes an obligation on the Access Provider to provide that Service and the Authority has approved the removal of the relevant Service from the Reference Offer,

provided that the Access Seeker may require during the notice period that the parties, on reasonable notice, engage in discussions with each other, the ECTC, and the Authority to establish whether a replacement service or alternative terms of supply can apply to the provision of such Services. Any amendment shall be made only in accordance with the provisions of these Supply Terms.

13.4 Either party may terminate the supply of any Service by giving the other party and the Authority seven (7) days' written notice if:

(a) the continued operation of the Supply Terms would be unlawful, contravene legal or regulatory obligations; or

(b) the Access Seeker ceases to be a Licensed Operator; or

(c) the SE's License is revoked by the Authority.

13.5 If the Authority revokes the Reference Offer, then these Supply Terms automatically and immediately terminate on the date of revocation.

13.6 If the circumstances giving rise to a right of termination are cured during any notice period or period of remedy and such remedy is objectively evidenced in writing to the terminating party before the expiry of that notice period or period of remedy then (except in cases where the terminating party is terminating for a persistent curable breach or the breach is of its nature past and incurable) the Supply Terms shall not terminate.

14 CONSEQUENCES OF TERMINATION

14.1 On termination of a Service:

(a) all sums payable to the Access Provider under these Supply Terms and/or the Reference Offer up to the date of termination, including any Charges in respect of termination, are immediately due and payable;

(b) the Access Provider shall refund any amount or proportionate amount paid by the Access Seeker in respect of any period after the date of termination;

(c) all Services, leases, licenses and other rights conferred on the Access Provider or the Access Seeker under the Supply Terms and/or the Reference Offer immediately terminate;

(d) each party shall at its own expense immediately return all of the other party's Property in good working condition, other than fair wear and tear;

(e) each party shall at its own expense and for a period of two (2) years after termination of the Supply Terms and/or the Reference Offer in accordance with this clause 14, immediately comply with any written notice from the other party to deliver, destroy, or erase any Confidential Information belonging to that other party.

14.2 On termination of any Service:

(a) all sums payable to Access Provider up to the date of termination, including any termination Charges, are immediately due and payable;

(b) the Access Provider shall refund any amount or proportionate amount paid by the Access Seeker for that Service in respect of any period after the date of termination;

(c) all leases, licenses and other rights conferred on the Access Provider or the Access Seeker under these Supply Terms in respect of that Service immediately terminate; and

(d) each party shall at its own expense immediately return all of the other party's Property provided in respect of that Service, in good working condition, other than fair wear and tear.

14.3 Each party shall reimburse the other party for any cost incurred by that other party in repossessing or replacing any Property (other than any Access Provider Equipment, which shall be dealt with in accordance with Clause 8.3 and 8.4) that was not returned within thirty (30) calendar days after the date of termination, or was returned in a damaged or defective condition.

14.4 Termination or expiry of these Supply Terms or any Service:

(a) is deemed not to be a waiver or breach of any term or condition of any element of these Supply Terms; and

(b) does not prejudice any right, liability or obligation that accrued to either party before the date of termination or expiry.

14.5 All rights that each party accrued before termination or expiry of these Supply Terms or any Service, and clauses 5 (Billing and Payment), 16 (Liability and Indemnity), 17 (Intellectual Property), 20 (Confidentiality) and 22 (Dispute Resolution) and 23 (General), survive termination or expiry of these Supply Terms or that Service (as the case may be), and continue in full force and effect.

15 FORCE MAJEURE AND REGULATORY EVENTS

15.1 Subject to clause 15.2, neither party is liable for any failure to comply with or observe any term of these Supply Terms to the extent that a Force Majeure Event or a Regulatory Event caused that failure.

15.2 Each party remains liable for the performance of each obligation, and to comply with and observe each term, of these Supply Terms, which is not affected by the Force Majeure Event or Regulatory Event.

15.3 The Access Seeker remains liable for all sums payable in respect of each Service provided by the Access Provider during the Force Majeure Event or Regulatory Event which is not affected by the Force Majeure Event or Regulatory Event.

15.4 If a party fails to comply with or observe any term of these Supply Terms because of a Force Majeure Event or a Regulatory Event, then that party shall notify the other party:

(a) as soon as practicable, giving details of the Force Majeure Event or Regulatory Event, and its estimated extent and duration; and

(b) immediately after the end of the delay or failure caused by the Force Majeure Event or Regulatory Event.

16 LIABILITY AND INDEMNITY

16.1 To the extent permitted by law, neither party is liable to the other party except as provided in:

(a) this clause 16; or

(b) in relation to a particular Service, in the relevant Service Description in Schedule 6 – (Service Descriptions) of the Reference Offer.

16.2 If any applicable law implies warranties or conditions or imposes obligations on the Access Provider that cannot be or can only to a limited extent be, excluded, restricted or modified, then to the extent to which the Access Provider is entitled to do so, the liability of the Access Provider under the applicable law is limited:

(a) to the supply of Services again or the payment of the cost of having the Services supplied again, at the Access Provider's option;

(b) to the repair or replacement of property or paying the cost of repair or replacement, at the Access Provider's option; or

(c) to any other remedy prescribed by the applicable law.

16.3 Neither party is liable to the other party for or in relation to any Consequential Loss.

16.4 Subject to clauses 16.1, 16.2, 16.3, 16.5, 16.6, 16.7, 16.8 and 16.9, each party's maximum liability under the Supply Terms is limited to BHD300,000 for any one event or series of connected events, and BHD1,000,000 in the aggregate for all events (connected or unconnected) occurring in a Calendar Year.

16.5 Clause 16.4 does not apply to any obligation arising under the Supply Terms to pay monies in the ordinary course of business, including without limitation, the Charges and any other payments in respect of liabilities under clauses 16.6, 16.7 and 16.8.

16.6 Each party indemnifies the other party against all awards, judgments, costs, charges and expenses directly and reasonably incurred by that other party as a result of or in connection with any claim

against it arising out of a death of or personal injury to the People of the other party, to the extent that the damage or loss is caused by a negligent act or omission or an act or omission intended to cause death or personal injury, by the Indemnifying Party or any of the People of the Indemnifying Party.

16.7 Each party indemnifies the other party against all costs, charges and expenses directly and reasonably incurred by the other party as a result of or in connection with any damage to equipment, Network or other tangible property of the other party or any third party to the extent that the direct or indirect loss is caused by a negligent act or omission by the Indemnifying Party or any of the People of the Indemnifying Party.

16.8 Subject to clause 16.9, each party indemnifies the other party against all costs, charges and expenses directly and reasonably incurred by the other party as a result of or in connection with any claim by a third party against the other party to the extent that the claim relates to any breach of the Supply Terms and/or the Reference Offer by the Indemnifying Party or any of the People of the Indemnifying Party.

16.9 Except where the action, claim or demand brought or made by a third party arises as a result of or is directly connected with the wrongful termination or suspension by the Indemnifying Party of the Supply Terms or any Service, the Indemnifying Party is not liable to the other party to the extent that liability is incurred in connection with an action, claim or demand brought or made against the other party by a third party to whom that other party provides a telecommunications service under a contract, where that liability could legally have been excluded or where that liability could legally have been reduced in that contract by that other party.

16.10 Each provision of this clause 16 is a separate limitation applying and surviving even if one or more limitations is inapplicable or held unreasonable in any circumstance.

16.11 Subject to clause 9.6, if a Schedule of the Reference Offer contains a remedy for the failure of the Access Provider to perform its obligations under that Schedule, then that remedy is the sole and exclusive liability of the Access Provider, its Related Corporations, and its People, in connection with the performance of that obligation, and is the sole remedy of the Access Seeker against the Access Provider, its Related Corporations and its People in connection with the performance of that obligation.

16.12 The Indemnifying Party is not obliged to indemnify the other party under these Supply Terms to the extent that the liability the subject of the indemnity claim is the direct result of a breach of the Supply Terms and/or the Reference Offer, or a negligent act or omission, by the other party.

16.13 The party seeking the benefit of an indemnity claim from the Indemnifying Party shall take all reasonable steps to minimize the loss it has suffered or is likely to suffer as a result of the event giving rise to an indemnity under these Supply Terms, and if that party does not take reasonable steps to minimize loss, then the damages payable by the Indemnifying Party shall be reduced as is

appropriate in each case.

16.14 A party's liability to the other party for any loss or liability of any kind arising out of the Supply Terms and/or the Reference Offer or in connection with the relationship established by it is reduced to the extent (if any) that the other party causes or contributes to that loss or liability. This reduction applies whether the first party's liability is in contract, tort (including negligence), under any statute or otherwise.

16.15 Without limiting either party's obligations under these Supply Terms, each party shall have in force and maintain for the term of these Supply Terms, with an insurance company licensed in Bahrain and on terms and for coverage with only industry standard exclusions or exceptions:

(a) a broad form public liability policy of insurance to the value of at least **BHD1,750,000** in respect of each claim; and

(b) property insurance for those assets used by it under or in relation to these Supply Terms to the value of at least **BHD900,000** in respect of each claim.

16.16 On request by a party, the other party shall immediately produce evidence that it has complied and is continuing to comply with its obligations under clause 16.15.

17 INTELLECTUAL PROPERTY

17.1 Except as otherwise expressly provided in the Supply Terms and/or the Reference Offer, all Intellectual Property Rights remain in the ownership of the party creating or owning them.

17.2 Nothing in these Supply Terms may be construed, and the provision of any Service by a party shall not be construed, as:

(a) an assignment of any Intellectual Property Rights of that party to the other party; or

(b) the grant of any license of any Intellectual Property Rights of that party to the other party.

17.3 Without prejudice to or limiting clause 17.1, neither party is entitled to use any trademarks or service marks (whether registered or not) of the other party in any document or other medium, without the prior written consent of that other party.

17.4 Each party indemnifies the other party and the other party's People, against any action, claim, loss, liability, cost or expense that may be brought against or suffered or incurred by any of them arising directly or indirectly from a claim by a third party that use of the Indemnifying Party's Intellectual Property Rights as permitted under these Supply Terms infringes the rights of that third party.

17.5 The indemnity in clause 17.4 is the only remedy and form of compensation available to a party in respect of Intellectual Property Rights arising under these Supply Terms.

17.6 The Access Seeker is responsible and liable for obtaining and maintaining in its own name and at its own expense, all licenses, permits, consents, waivers, authorizations and Intellectual Property Rights

required for it to:

(a) use any Service provided under these Supply Terms; or

(b) install or use any equipment in connection with the use of any Service provided under these Supply Terms.

17.7 Each party shall reasonably co-operate with the other party at that other party's cost, to obtain all licenses, permits, consents, waivers, authorizations and Intellectual Property Rights required under clause 17.6.

18 FORECASTING PROCEDURES

18.1 The Access Seeker shall provide forecasts to the Access Provider during the term of the Supply Terms and/or the Reference Offer in accordance with Schedule 5 – (Forecasting) of the Reference Offer.

18.2 The Access Seeker shall provide all forecasts in good faith and use all reasonable endeavors to ensure that forecasts are accurate.

19 CREDIT MANAGEMENT AND SECURITY

19.1 The Access Provider may require the Access Seeker to provide Security in relation to the provision of the Services under the Supply Terms and/or the Reference Offer. This may be in response to the First Service Request ("**Initial Security**") or as varied from time to time under this clause 19.

19.2 If Security is required by the Access Provider, the Access Seeker shall provide, at its sole cost and expense, and maintain for the term of the Supply Terms and/or the Reference Offer, Security of the type and value required by the Access Provider in accordance with this clause 19.

19.3 The Access Provider may at any time review the creditworthiness of the Access Seeker and take action under clause 19.7 if any of the following circumstances exist:

(a) where the Access Seeker is rated by Moody's Investor Services or Standard & Poors, it ceases to have an Acceptable Long Term Credit Rating;

(b) the Access Seeker becomes Insolvent;

(c) a Change of Control occurs in respect of the Access Seeker;

(d) the Access Seeker has failed to pay undisputed Charges when due at any time during the term of these Supply Terms;

(e) the Access Seeker breaches the terms of any Security provided under this clause 19;

(f) in Access Provider's reasonable opinion, there has been a material adverse change in the Access Seeker's financial position;

(g) the total Charges disputed by the Access Seeker in a three (3) month period exceeds the

total Initial Security (as varied from time to time);

(h) the Access Seeker wishes to obtain new or additional Services and the obtaining of such Services would result in the amount of Security required from the Access Seeker (as calculated in accordance with the general principle set out in Clause 19.10 below) increasing by twenty-five percent (25%) or more from the Initial Security (as varied from time to time) provided by the Access Seeker; or

(i) a period of nine (9) months has elapsed since the last review of the Access Seeker's creditworthiness.

19.4 Where the Access Provider conducts a creditworthiness review pursuant to clause 19.3, the Access Seeker shall provide the Access Provider with all information reasonably requested by the Access Provider in respect of the Access Seeker's creditworthiness within five (5) Working Days after the Access Provider's request.

19.5 If having conducted a creditworthiness assessment of the Access Seeker in good faith in accordance with clause 19.4, the Access Provider considers that the Security coverage of the Access Seeker does not meet the Access Provider's reasonable requirements, or if the Access Seeker fails to comply with any provision of this clause 19, then the Access Provider may require the Access Seeker to provide a new Security or to vary the amount or type of an existing Security.

19.6 If the Access Provider requests new or varied Security under clause 19.5, then the Access Seeker shall provide the new or varied Security, in the form and on terms acceptable to the Access Provider acting reasonably, within five (5) Working Days of the request being made.

19.7 Where the request for new or varied Security under clause 19.5 is the result of a creditworthiness assessment carried out by the Access Seeker pursuant to clause 19.3(g), the Access Provider shall indemnify the Access Seeker against all costs, charges and expenses directly and reasonably incurred by the Access Seeker in providing the new or varied Security where the aggregate amount of the relevant Statement Errors with respect to the disputed Charges is agreed by the parties or ruled by an Accounting Expert pursuant to Schedule 4 – (Billing) of the Reference Offer to be more than five (5) per cent of the aggregate of the disputed Charges.

19.8 The Access Seeker shall, unless otherwise agreed to by the Access Seeker:

(a) maintain any Security provided to the Access Provider under this clause 19 until the expiry of a six (6) month period after the last to occur of:

(i) termination or expiry of these Supply Terms and/or the Reference Offer; and

(ii) payment to the Access Provider of all outstanding Charges and other amounts payable by the Access Seeker under these Supply Terms and/or the Reference Offer.

(b) the Access Provider may exercise its rights under any Security in respect of any amounts payable by the Access Seeker to the Access Provider under these Supply Terms and/or the Reference Offer, other than any Charges which are the subject of a Billing Dispute.

19.9 The Access Seeker warrants to the Access Provider that by providing information to the Access Provider under clause 19.5, except to the extent otherwise disclosed in writing to the Access Seeker at the time of the provision of such information that:

(a) such information constituted true and fair statements of the financial or other positions of the Access Seeker as at the date to which they were prepared; and

(b) there has been no material adverse change in the Access Seeker's financial or other position between the date on which any such information was prepared and the date on which the information was provided.

19.10 The amount of any Security under this clause 19 will be calculated:

(a) as a statement of general principle, by reference to the aggregate value of the Charges likely to be payable by the Access Seeker to the Access Provider under these Supply Terms and/or the Reference Offer over a three (3) month period;

(b) together with the combined value of the equipment and other assets that the Access Provider has reasonably procured specifically for the provision of a Service to the Access Seeker by the Access Provider which are:

(i) sited on premises owned or controlled by the Access Seeker; or

(ii) directly accessible to authorised People of the Access Seeker; and

(c) will be recalculated at the request of either party if the period since the last review of the amount of Security is greater than nine (9) months.

19.11 Each party may use any current estimates, forecasts or any other statements made or provided by the other party in making any calculations pursuant to clause 19.10.

19.12 In addition to the Access Provider's other rights and remedies and Schedule 4 – (Billing) of the Reference Offer, if the Access Seeker has at any time failed to pay undisputed Charges by the Due Date, the Access Provider may require the Access Seeker to pay all Charges in respect of Services on presentment of invoice or monthly in advance, in which case the assessment of future Charges will be based on either:

(a) the highest level of actual monthly Charges; or

(b) where the relevant Services have not been provided for three (3) calendar months, the greater of the higher level of actual monthly Charges or the higher level of forecast monthly Charges;

in respect of such Services in the three (3) calendar months prior to that in respect of which the

Charges are to be paid for such Services.

20 CONFIDENTIALITY

20.1 The parties shall ensure the privacy and confidentiality of information and business secrets of the other party obtained in relation to these Supply Terms and/or the Reference Offer, by establishing and implementing reasonable procedures for maintaining privacy and confidentiality of such information subject to any requirement under applicable law. References in these Supply Terms to Confidential Information or business secrets shall be understood to include all information that is reasonably considered to be commercially confidential (regardless of whether it has been formally designated as such) and shall include information pertaining to network coverage and/or capabilities.

20.2 The Access Provider shall not in any circumstances disclose to BRE and/or any of its Affiliates directly or indirectly, any Confidential Information or business secrets relating to any Licensed Operator. The Access Provider shall establish and maintain, at all times, organisational measures including in particular appropriate information barriers, processes and systems to prevent the disclosure of Confidential Information by the Access Provider to BRE and/or any Affiliate and vice versa.

20.3 A party may not disclose the provisions of these Supply Terms and/or the Reference Offer to any person except:

(a) after obtaining the written consent of the other party, and only to the extent of that consent;

(b) subject to clause 20.2, to its officers, employees and professional advisers;

(c) to Emergency Services;

(d) to any arbitrator or expert appointed under the Dispute Resolution Procedures; or

(e) as otherwise specified in these Supply Terms,

and shall use its best endeavors to ensure all permitted disclosures are kept confidential, other than a disclosure required to be made to a recognized stock exchange.

20.4 A party may disclose the provisions of these Supply Terms:

(a) to the Authority or for the purpose of a review or determination by the Authority;

(b) as required by applicable law, the Authority, the Law, a license, a court order, or any other governmental authority.

20.5 Despite any provision in these Supply Terms, the parties shall not reveal, make known or divulge to any third party in any manner howsoever the Charges and contents of those aspects of these Supply Terms (in whole or in part) that the Authority has withheld from publication.

20.6 Except as otherwise provided in these Supply Terms, a party that receives Confidential Information ("**Receiving Party**") shall keep confidential all Confidential Information of the other party

("**Disclosing Party**"):

(a) disclosed, communicated or delivered to the Receiving Party under these Supply Terms; or

(b) that comes into the Receiving Party's knowledge or possession in connection with these Supply Terms.

20.7 The Receiving Party shall not use or copy the Confidential Information of the Disclosing Party except in connection with and for the purposes of these Supply Terms, or in connection with the provision of Services under the Supply Terms and/or the Reference Offer.

20.8 If the Receiving Party visits any of the facilities of the Disclosing Party, the Receiving Party undertakes to keep strictly confidential any Confidential Information that comes to its knowledge as a result of the visit, and any Confidential Information relating to plant and equipment seen at the facilities, their methods of operation and their various applications, and not to divulge the Confidential Information to any third party, other than for the purpose of and only to the extent necessary to perform its obligations under these Supply Terms (subject to clause 20.2).

20.9 Except as otherwise provided in these Supply Terms, the Receiving Party shall not disclose or communicate, cause to be disclosed or communicated or otherwise make available Confidential Information to any third party other than (subject to clause 20.2):

(a) the Receiving Party's directors, officers, employees, agents, contractors, representatives or Related Corporations to whom disclosure is necessary in connection with and for the purposes of these Supply Terms, or for such other purposes related to the provision of Services under these Supply Terms;

(b) the Receiving Party's professional advisers, but only to the extent necessary for those advisers to provide advice or protect the rights of the Receiving Party under these Supply Terms; and

(c) the Receiving Party's appointed financial advisers or appointed bankers only to the extent necessary for those financial advisers or appointed bankers to provide financial advice or services to the Receiving Party,

(each an "**Authorized Person**", and collectively "**Authorized Persons**").

20.10 The Receiving Party shall advise each Authorized Person of the obligation to protect the Disclosing Party's Confidential Information in a manner consistent with these Supply Terms.

20.11 The Receiving Party may disclose some or all of the Confidential Information to the Authorized Persons, provided that:

(a) prior to disclosure, in the case of Authorized Persons referred to in clauses 20.9(a) or (b), the Receiving Party shall ensure that Authorized Persons to whom all or any Confidential Information is disclosed hold it strictly confidential and do not disclose it to any other

person;

(b) prior to disclosure, in the case of Authorized Persons referred to in clause 20.9(c), the Receiving Party must obtain and provide to the Disclosing Party a written undertaking in favor of the Disclosing Party from the Authorized Persons, agreeing to comply with the provisions of this clause 20 of these Supply Terms as if the Authorized Person were a party to these Supply Terms;

(c) the Access Provider in its capacity as the Receiving Party is expressly prohibited from disclosing the Confidential Information to BRE and/or any Affiliate of the Access Provider or to any Authorized Person who is reasonably likely to directly or indirectly disclose that Confidential Information to BRE and/or any Affiliate of the Access Provider.

20.12 For the purposes of this clause, "Confidential Customer Information" means Confidential Information relating to an Access Seeker's Customer or any person who is the subject of an Access Seeker process in order to become an Access Seeker Customer that an Access Seeker Customer intends to subscribe or has subscribed for an End User service and Confidential Customer Information shall be understood to include all information that is reasonably considered to be commercially confidential (regardless of whether it has been formally designated as such). The parties acknowledge that:

(a) the provisions of clause 20.2 shall also apply to the Access Provider in respect of any Confidential Customer Information;

(b) in relation to the Access Seeker only, the Authorized Persons referred to in clause 20.9(a) may engage in multiple roles or functions and the Access Seeker will not be in breach of this clause 20 merely because Confidential Customer Information is provided to an Authorized Person referred to in clause 20.9(a) who has a role or function, including any sales or marketing role or function, other than in connection with or for the purpose of these Supply Terms, or for any other purpose related to the provision of Services by the Access Provider under the Supply Terms; and

(c) Confidential Customer Information does not include information which was generated from a party's own billing records relating to its customers.

20.13 In any event, the Receiving Party is liable for any disclosure by the Authorized Persons to any other person.

20.14 The Receiving Party may only issue news releases, public announcements or any other form of publicity concerning the Supply Terms if it has first obtained the Disclosing Party's written consent.

20.15 The Receiving Party's obligations do not apply to Confidential Information:

(a) if the same information is in or enters the public domain, other than by breach by the Receiving Party or any of its Authorized Persons of these Supply Terms;

(b) known to the Receiving Party on a non-confidential basis before disclosure under these Supply Terms, at the time of first receipt, or becomes known to the Receiving Party or any of its Authorized Persons after disclosure under these Supply Terms without similar restrictions from a source other than the Disclosing Party, as evidenced by written records; or

(c) is or has been developed independently by the Receiving Party without reference to or reliance on the Disclosing Party's Confidential Information.

20.16 A Receiving Party shall exercise no lesser security or degree of care than that party applies to its own Confidential Information of an equivalent nature, but in any event not less than the degree of care that a reasonable person with knowledge of the confidential nature of the information would exercise.

20.17 Confidential Information provided by one party to the other party is provided for the benefit of that party only and may only be used for the purposes for which it is disclosed.

20.18 Each party acknowledges that a breach of this clause 20 by one party may cause the other party irreparable damage for which monetary damages would not be an adequate remedy. Accordingly, in addition to other remedies that may be available, a party may seek injunctive relief against that breach or threatened breach.

20.19 All and any part of written Confidential Information (including information incorporated in computer software or held in electronic storage media) together with any analyses, compilations, studies, reports or other documents or materials prepared by the Receiving Party or on its behalf, which reflect or are prepared from any of the Confidential Information provided by the Disclosing Party, must be returned to the Disclosing Party or destroyed by the Receiving Party, as directed and when requested by the Disclosing Party at any time, or when the Receiving Party's need for that information has ended or when these Supply Terms expire or terminate, whichever is earlier. In the event of destruction, the Receiving Party shall certify in writing to the Disclosing Party within thirty (30) calendar days that destruction has been accomplished. The Receiving Party shall make no further use of that Confidential Information nor retain that Confidential Information in any form whatsoever.

20.20 The Parties acknowledge that the provisions of this clause 20 continue in full force and effect regardless of variations, assignments or termination of other provisions of these Supply Terms. The obligation to maintain the confidentiality of the Confidential Information and the undertakings and obligations in this clause 20 continue until the later of two (2) years after the expiry or termination of these Supply Terms, or when the information ceases to be confidential.

20.21 Notwithstanding anything in this clause 20, the Access Provider may collect information about the Access Seeker and about the Access Seeker Customers. The information may be obtained from the Access Seeker and others or generated with the Access Provider's Network when the Access Seeker or anyone else uses the Access Provider's Services. The Access Provider may (subject to

clause 20.2):

(a) hold the information and share it with its employees, contractors and other agents, but only where this is necessary to enable the Access Provider to provide the Access Seeker with Services, send the Access Seeker invoices, check that the Access Seeker's responsibilities are being met, or otherwise to administer and enforce the Supply Terms;

(b) share with Access Seekers any information needed to enable the Access Seeker to send or receive messages of any kind through those networks;

(c) use any information about the Access Seeker in order to ensure compliance with non-discrimination or similar clauses in contracts between the Access Provider and other Access Provider customers (including other Licensed Operators); and

(d) use any information about the Access Seeker for statistical purposes, so long as the Access Seeker is not identified.

21 RELATIONSHIP BETWEEN THE PARTIES

21.1 The relationship between the parties is one of independent contractor only and nothing in these Supply Terms may be construed to constitute a relationship of agency or partnership between the parties. Each party remains fully responsible for its own acts and defaults (including those of its employees or agents). Neither party is authorized to bind the other party to any obligation. The parties and their employees, agents and representatives shall not engage in any conduct that may lead any person to believe that it is an employee, agent or representative of the other party.

21.2 The Access Seeker shall not represent that the Access Provider:

(a) participates (other than as a wholesale supplier) in the provision of the Access Seekers' services, or is a supplier, to the Access Seeker's customers, or that the Access Seeker is approved by, or an agent or dealer of, or affiliated with, the Access Provider; or

(b) has a preferred relationship with the Access Seeker, including in respect of special prices or services.

21.3 The Access Seeker shall not falsely attribute to the Access Provider:

(a) any blame for a fault or other circumstance;

(b) any need for maintenance or upgrade of a network; or

(c) any interruption or suspension, or partial interruption or suspension of a service.

21.4 In making any representation contemplated by clause 21.3 an Access Seeker shall not engage in unethical, misleading or deceptive conduct.

21.5 The Access Provider shall not be involved in or seek to involve itself in a direct relationship with the Access Seeker's End Users or Access Seeker Customers.

22 DISPUTE RESOLUTION

22.1 The parties shall resolve any dispute, controversy or claim arising between them in respect of these Supply Terms ("**Dispute**") in accordance with the procedures below. Any Billing Dispute about whether an invoice issued by a Billing Party contains any Statement Errors or other errors shall be dealt with in accordance with the provisions of Schedule 4 – (Billing) of the Reference Offer.

22.2 The parties shall continue to comply with their respective obligations during a Dispute.

22.3 A party shall not use information obtained in the course of any Dispute Resolution Procedure for any purpose other than to resolve the relevant Dispute.

22.4 A party's compliance with the Dispute Resolution Procedures does not prejudice any right or remedy available to that party in respect of any breach of these Supply Terms. Nothing in these Supply Terms prevents a party from seeking urgent interlocutory, injunctive or other immediate relief.

Dispute Officer and CEO

22.5 If a Dispute arises between the parties, then either party may by written notice to the other party refer the Dispute to the Dispute Officer of each party, or a nominee of the Dispute Officer, to resolve the Dispute.

22.6 The parties shall first refer any Dispute to the Dispute Officers before pursuing any other dispute resolution procedure.

22.7 The Dispute Officers shall confer and endeavor in good faith on a "without prejudice" basis to resolve the Dispute by negotiating a commercial settlement.

22.8 If the Dispute remains unresolved ten (10) Working Days after referral to the Dispute Officers under clause 22.6, then either party may by written notice to the other party, refer the dispute to the Chief Executive Officer of each party, or a nominee of the Chief Executive Officer, who shall confer and endeavor in good faith and on a "without prejudice" basis to resolve the Dispute by negotiating a commercial settlement.

22.9 The parties shall refer the Dispute to the Chief Executive Officers before pursuing any further dispute resolution procedures.

Mediation or Determination

22.10 If the Dispute remains unresolved ten (10) Working Days after referral to the Chief Executive Officers of the parties under clause 22.9, then either party may:

(a) with the consent of the other party, refer the Dispute for mediation. The preferred option for mediation in respect of a Dispute is to request the Authority in writing to act as the mediator in accordance with such rules as the Authority thinks fit if the Authority agrees to act as mediator and in any other case, the mediation will take place in accordance with the mediation procedures of the International Chamber of Commerce; or

(b) only in respect of a Dispute, refer the dispute to the Authority for determination in accordance with the Law.

22.11 Referral of a Dispute to the Authority for mediation under clause (a) does not preclude the referral of the same Dispute to the Authority. The time periods set out in respect of mediation or determination are intended to coincide with the period of negotiation under the Law, such that a party shall comply with the escalation procedure identified in this clause 22 before referring a Dispute to the Authority for determination.

Arbitration

22.12 If:

(a) a Dispute remains unresolved sixty (60) Working Days after the appointment of a mediator under clause (a) and neither party has referred the matter to the Authority for determination; or

(b) in any case in which the Authority has chosen not to make a determination then either party may (except in any case covered by clause (b)), where the Authority's choice not to determine is expressly or by clear implication dispositive of a question in which specific terms or charges are sought by determination and declined), by written notice to the other party, refer the dispute for final resolution by compulsory arbitration conducted by three arbitrators in accordance with the Bahrain Arbitration Law (No. 9/2015) provided that the parties agree that in addition to any other provision or requirement:

(c) the Chair of the arbitration panel must have at least five (5) years' experience as a legal, economic, accounting or competition regulatory practitioner (a top level regulatory policy decision maker; a lawyer; an economist, or a specialist accountant) in telecommunications regulation in a liberalizing or liberalized telecommunications market or markets; and

(d) the arbitration and all its proceedings (except the most minimal of formalities if required by law) will be conducted in the English language.

22.13 The decision of the arbitrators in any arbitration arising under clause 22.12 is final and binding.

Communications

22.14 All discussions and information relating to a Dispute must be communicated or exchanged through each party's Dispute Officer. A party is not entitled to rely on an invoice made, or information provided, in respect of a Dispute by a representative of the other party who is not that other party's Dispute Officer.

23 GENERAL

23.1 Variation

(a) The Access Provider may only vary the price and non-price terms for the Services, these Supply Terms and/or the Service Descriptions in Schedule 6 of the Reference Offer with the prior written approval of the Authority.

23.2 **Assignment**

(a) Subject to clause 23.2(b), a party may only assign or transfer its rights, obligations or interests under these Supply Terms if it has first obtained the other party's written consent, which shall not be unreasonably delayed or withheld. The Access Provider shall not assign, transfer, subcontract, sublet or otherwise dispose of its rights, duties, liabilities, obligations and privileges under the Supply Terms and/or the Reference Offer to any Affiliate, Person or Persons except with the prior written approval of the Authority. Any such approval shall be given subject to terms and conditions, which the Authority at its discretion may impose. The Authority may revoke its approval pursuant to this clause 23.2 at any time by providing reasonable advance notice to the Access Provider in writing.

(b) The Access Seeker may only transfer its rights, obligations or interests under the Supply Terms and/or the Reference Offer if:

(i) the assignee or transferee is a Licensed Operator and provides the Security required by the Access Provider; and

(ii) the Access Seeker remains fully responsible for the performance of all obligations under the Supply Terms and/or the Reference Offer.

23.3 **Non-impairment**

Neither party may engage in any conduct that impairs or might impair the other party's ability to provide Services.

23.4 **Non-exclusivity**

Nothing in these Supply Terms restricts the rights of either party to enter into similar agreements with other parties.

23.5 **Entire agreement**

(a) Except with respect to any prior agreement which the parties agree in writing to remain in full force and effect after the date of these Supply Terms supersede all previous understandings, commitments, representations and agreements between the parties in respect of the Services, and contain the entire agreement of the parties about their subject matter.

(b) A party may not rely on any representation or warranty about the subject matter of these Supply Terms except as expressly provided in these Supply Terms.

23.6 **Severance**

(a) Subject to clause 23.6(b), if the whole or any part of a provision of these Supply Terms is unenforceable, partly unenforceable, void or illegal in a jurisdiction, then it is severed to the extent necessary to make these Supply Terms enforceable in that jurisdiction.

(b) This clause 23.6 does not apply if the severance materially changes the intended effect of these Supply Terms, alters its basic nature, or is contrary to public policy.

23.7 **Language**

These Supply Terms may be translated into other languages, but the English version prevails.

23.8 **Waiver**

(a) A right may only be waived in writing and signed by an authorized officer of the party granting the waiver.

(b) No conduct of a party, including a failure to exercise, or any delay in exercising, a right, operates as a waiver of the right or otherwise prevents the exercise of that right.

(c) A waiver of a right on one or more occasions does not operate as a waiver of that right if it arises again.

23.9 **Exercise of rights**

A party may exercise a right, power or remedy at its discretion, and separately or concurrently with another right, power or remedy. A single or partial exercise of a right, power or remedy by a party does not prevent a further exercise of that or of any other right, power or remedy.

23.10 **Counterparts**

These Supply Terms may be executed in any number of counterparts and all those counterparts together make one instrument.

23.11 **Governing law and jurisdiction**

(a) These Supply Terms are governed by the laws of the Kingdom of Bahrain.

(b) The parties irrevocably submit to the exclusive jurisdiction of the courts of the Kingdom of Bahrain, and each party waives any right that it has to object to an action being brought in the courts of the Kingdom of Bahrain, including any objection that the action has been brought in an inconvenient forum, or that the courts of the Kingdom of Bahrain do not have jurisdiction.

23.12 **Notices**

A notice or other communication given under these Supply Terms including, but not limited to, a request, demand, consent or approval, to or by a party to these Supply Terms shall be:

(a) in legible writing and in English;

(b) addressed to the addressee at the address or facsimile number set out below or to any other

address or facsimile number a party notifies to the others under this clause:

(iii) **if to the Access Provider:**

Address: Building No. 1095
Road 1425
Block 1014
Al Hamalah
Kingdom of Bahrain

Attention: Head of Wholesale

CC: Head of Regulatory

Facsimile: +973 [insert]

CC: +973 [insert]

(iv) **if to the Access Seeker:**

Address:

Attention: [ ]

Facsimile: [ ]

(c) must be signed by an authorized officer of the sender; and

(d) is deemed to be received by the addressee in accordance with clause 23.12(g).

(e) Without limiting any other means by which a party may be able to prove that a notice has been received, a notice is deemed to be received:

(f) if sent by hand, when delivered to the addressee;

(g) if by post, three (3) Working Days after and including the date of postage; and

(h) if by facsimile transmission, on receipt by the sender of an acknowledgment or transmission report generated by the machine from which the facsimile was sent,

(i) but if the delivery or receipt is not on a Working Day or is after 2:45 pm (addressee's time), it is deemed to be received at 7.00 am on the following Working Day.

(j) A facsimile transmission is regarded as legible unless the addressee telephones or facsimiles the sender within 2 hours after the transmission is received or regarded as received under clause 23.12(b)(iii), and informs the sender that it is not legible.

(k) In this clause 23.12, a reference to an addressee includes a reference to an addressee's officers, agents or authorized representatives.

23.13 **Legal advice and allocation of risk**

Each party acknowledges that it has received legal advice or had the opportunity to receive legal advice about these Supply Terms.

23.14 **Cumulative rights**

The rights, powers and remedies of a party under these Supply Terms are cumulative with and do not exclude or limit any other right, power or remedy provided by law or equity independently of these Supply Terms.

23.15 **Non-merger**

The conditions and provisions in these Supply Terms do not merge on execution.

23.16 **Third party rights**

Only the parties have or are intended to have a right or remedy under these Supply Terms or obtain a benefit under it.

SIGNED on [insert date]

SIGNED by **#INSERT NAME OF SIGNATORY#** as authorised signatory for NBNetCo BSC in the presence of:

Signature of witness

_____

Name of witness (print)

Signature of **#insert name of signatory**

SIGNED by **#INSERT NAME OF SIGNATORY#** as authorised signatory for **#INSERT NAME OF COMPANY#** in the

presence of:

Signature of witness

Name of witness (print)

Signature of **#insert name of signatory**

هيئة تنظيم الاتصالات
TELECOMMUNICATIONS REGULATORY AUTHORITY
Kingdom of Bahrain - مملكة البحرين

Draft Order on the Reference Offer of the Separated Entity and Related Draft Amended Reference Offer

Consultation Report – Reference Offer Order

03 June 2019

Ref: LAD 0619 183

1 INTRODUCTION

1.1 On 28 March 2019, the Telecommunications Regulatory Authority (the "**Authority**") launched a Public Consultation (the "**Consultation Document**") on a draft Order on the Reference Offer of the Separated Entity (the "**Draft RO Order**") and related draft amended Reference Offer (the "**Draft Amended Reference Offer**").

1.2 The purpose of the Public Consultation was to invite comments from interested parties on the SE's Draft RO Order and the Draft Amended Reference Offer. The deadline for responses was 16:00 on 25 April 2019. On 25 April 2019 the Authority published a notice on its website granting stakeholders an additional week to provide responses to the Consultation Document.

1.3 On 25 April 2019 the Authority received responses from Viacloud W.L.L,Etisalcom Bahrain W.L.L, Infonas W.L.L., Nuetel S.P.C. and Huawei Technologies Bahrain S.P.C..

1.4 On 2 May 2019 the Authority received responses from Bahrain Telecommunications Company B.S.C. Retail, NBNetco BSC(c),Zain B.S.C., Kalaam W.L.L. and Viva BSC (c).

1.5 The comments received from the respondents are summarised in Annex 1 to this Consultation Report, as are the Authority's responses to each comment. Any changes to the SE's Draft RO Order and the Draft Amended Reference Offer that the Authority has made in response to the comments received from the stakeholders are also set out and explained under Annex 1.

1.6 The latest Draft RO Order and the Draft Amended Reference Offer is appended as Annex 2 to this Consultation Report.

1.7 This Consultation Report reflects the views of the Authority on comments received in response to the Consultation Document. The Authority's views as expressed in this Consultation Report are intended to provide an explanation of the Authority's position on the comments received from the respondents.

List of acronyms and definitions

Authority	Telecommunications Regulatory Authority of the Kingdom of Bahrain and any successors thereof
Batelco	Bahrain Telecommunications Company B.S.C.
BRE (Batelco)	Bahrain Telecommunications Company B.S.C. – Retail
Consultation Document	The document published on 28 March 2019 which included the SE's Draft RO Order and the Draft Amended Reference Offer and which solicited responses to a number of questions set out in the Consultation Document (Annex 2)
Draft Amended RO	The amended version of the RO appended to the Draft RO Order at Annex 1 to the ROO Consultation
Draft RO Order	The draft Reference Offer Order at Annex 1 to the ROO Consultation
EOI	Equivalence of Inputs
Etisalcom	Etisalcom Bahrain W.L.L
Huawei	Huawei Technologies Bahrain S.P.C.
Infonas	Infonas W.L.L
First Consultation Report	Consultation Report on the SE's Reference Offer dated 28 March 2019
License	Has the same meaning as given to this term under Article 1 of the Telecommunications Law
NBNetco	NBNetco B.S.C(c) - the new legal entity that will be formed through the legal separation of Batelco
Nuetel	Nuetel S.P.C.
Para.	Paragraph
ROO	Reference Offer Order
Telecommunications Law / Law	The Telecommunications Law of the Kingdom of Bahrain, which was promulgated by Legislative Decree No. 48 in October 2002
SD	Service Description
SE	the new legal entity that will be formed through the legal separation of Batelco
Viacloud	Viacloud W.L.L
Viva	Viva Bahrain B.S.C.
Zain	Zain Bahrain B.S.C.

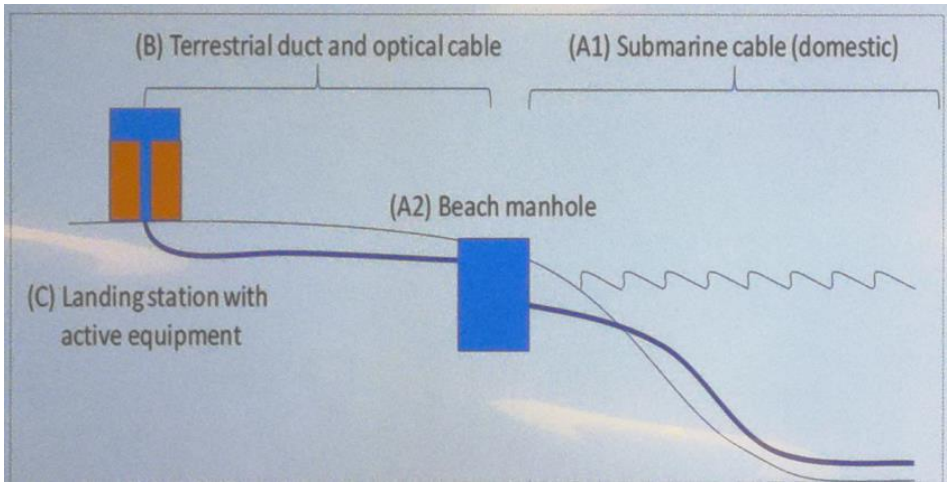
Annex 1: Summary of responses received on the Consultation Document questions and the Authority's conclusions

	Summary of comment received	The Authority's view and conclusion
SCOPE OF THE PRODUCT SET		
Question 1: Do you support the Authority's proposed changes to the product schedules included in the Draft Amended Reference Offer? If not, please set out which product schedules you consider should be changed, and why.		
Viacloud		
	Yes	-
Etisalcom		
	Yes, with the exception of the following comments: 1. DS is still limited to the mobile operators, and Etisalcom is of the view that it should be extended to OLOs as well as it will help OLOs to connect to their own POPs within Bahrain. 2. WLA service has now been excluded and it is not clear as to what will happen to all the existing WLA circuits that OLOs have with Batelco currently. Will invoicing for these existing WLA links continue to be done by Batelco Retail or will all those WLA circuits be migrated to WDC service (mentioned in the Draft Amended Reference Offer) and invoiced by SE? Etisalcom strongly suggests that all these existing WLA circuits be migrated to WDC service and invoiced	1. The Authority notes Etisalcom's comments, however, given insufficient evidence of demand by non-MNOs for the DS at this time, the Authority considers that the availability of DS should not be extended to non-MNOs. However, the Authority could consider extending the availability of DS to non-MNOs as part of subsequent reviews of the RO. 2. In the ROO Consultation the Authority considered whether WLA services should be merged with WDC services into a single WDC service description. The Authority has reviewed industry feedback, and consider that these services should be merged. The Authority understands that as from the effective date of the SE Order, the existing Batelco MPLS network should be operated

	accordingly and a proper migration plan and timeline should be set in place in the Final Reference Offer.	by Batelco Retail. With this in mind, and having reviewed industry feedback to the ROO Consultation, the Authority considers that WLA connections for existing customers which were supplied by Batelco as at the effective date of this SE Order should continue to be maintained by Batelco Retail and not by the SE. Batelco Retail will be required separately under its residual Reference Offer to put in place measures to enable existing WLA customers to exit their contracts penalty free by no later than 31 December 2019. These customers would be able instead to purchase WDC services from the SE.
	3. Product set does not account for Bitstream service less than 16 MB speed which require 17XXXXXX numbers to be assigned by Batelco. What will happen to all these existing Bitstream over 17XXXXXX lines? They should also come under SE.	3. The WBS is technology agnostic and therefore can be made available over copper where the SE may not yet have rolled out fibre. The full set of speeds includes those which will be provided by existing copper networks (including existing services provisioned on "17" numbers) as well as some that will be provided on the SE's fibre GPON network. Under section 5.8 of the SE License, the SE is required within sixty (60) days of a request from the Authority, to produce to the Authority a roadmap for migration of any relevant Licensed Services (i.e., RO Services) that are being provided by the SE over the SE's existing copper and/or copper based assets away from provision over such copper and/or copper based assets to the provision of such services over the SE's fibre based assets.
	4. Product set still distinguishes between Residential and Non Residential Bitstream users which Etisalcom strongly disagrees with as passive infrastructure, main DBs and the active components are all the same. There is no need to define them separately, and both Residential and Non-Residential Bitstream should come under the SE and under the same package.	4. The Authority disagrees with Etisalcom's comment. Both residential and non-residential bitstream services will be offered by the SE and form part of the same service description for WBS. Whilst the price terms for residential and non-residential bitstream services differ, the Authority believes that such differences are, at this time, reasonable and reflect the different willingness to pay for residential and non-residential customers.
Infonas		

	Infonas notes some improvements in the Authority's proposed changes to the product set and Service Descriptions included in the Draft Amended Reference Offer. However, Infonas still believes that additional changes are required.	The Authority notes Infonas' comments but believes that the proposed product set and Service Descriptions strike the appropriate balance between the needs of Licensed Operators and the SE. The Authority could consider extending the scope of the product set and/or Service Descriptions as part of subsequent reviews of the RO.
BRE (Batelco)		
	Generally, BRE agrees with the amendments and has proposed amendments to the Service Descriptions in Annex 1 of its response. With regards to WBS, BRE proposes that SE should have a separate product to offer voice only services.	The Authority has not received an Annex 1 with BRE's response and therefore cannot comment on this. That said, the Authority has considered BRE's proposal and has inserted a requirement for a voice only service within the WBS Service Description. The voice only service should have transmission characteristics capable of supporting minimum 14.4kbps voice transmission.
Viva		
	Generally, yes - subject to: **1) The absence of a dark fibre product** • Viva believe that the TRA has to include a dark fibre product in the reference offer that is not constrained for use in a mobile context. • Viva have explained its position, that Article 57(e) requires that SE must provide dark fibre access ("*access to physical infrastructure including … cables*") as a form of Access on fair and reasonable terms. On that basis, Viva disagreed with the TRA's decision not to require a dark fibre product from SE. • Viva agree that Article 57(e) only applies to a Public Telecommunications Operator that is "in a Dominant Position". However, Article 57(e) does not say "determined to have a Dominant Position", which is the wording adopted in Article 57(b) relating to Reference Interconnection Offers.	1. **Dark fibre:** The Authority has previously addressed Viva's position on Article 57 of the Law and reiterates its view that the imposition of obligations concerning Interconnection/Access set out therein rely on a finding of Dominance. The Authority considers that the existing product set will meet the requirements of Licensed Operators in the near future. However, the Authority could consider any representations in respect of new products, including dark fibre, in subsequent reviews of the RO. 2. **Access to Cable Landing Stations:** As stated in the Authority's response in the First Consultation Report, the Authority does not consider it is appropriate, at this time, to include landing station

	• Therefore, Viva take issue with the TRA in that a declaration by the TRA is not required for Article 57(e) to apply. An operator must simply be in a Dominant Position, a factual issue, which is defined in the Law as: *"… the Licensee's position of economic power that enables it to prevent the existence and continuation of effective competition in the relevant market through the ability of the Licensee to act independently – to a material extent – of competitors, Subscribers and Users".* • It is clear that the Licensee will be, on its establishment, in a Dominant Position and so it will, from that date, be required to provide Access under Article 57(e). Therefore, Viva do not agree that "… until the Separated Entity is formally determined Dominant, it would not be mandatory to provide Access to its Telecommunications Network under Article 57 of the Law". • Practically, what this means is that, if a licensed operator seeks Access at any time from the Separated Entity, and it is refused, and the dispute goes to the TRA, the immediate issue to be resolved by the TRA in applying Article 57(e) is whether the Separated Entity is in a Dominant Position. If the TRA finds that it was in a Dominant Position at the time of request, then Access on fair and reasonable terms must be provided (and must have been provided from the time of request under Article 57(e)). • It is clear that SE will, from day one, be in a Dominant Position and consequently the TRA should not delay requiring a dark fibre product, not restricted in the manner proposed by the TRA. **2) Access to Cable Landing Stations (GBI-Falcon)** • As confirmed in the NTP4, Licensees other than the Incumbent are experiencing bottlenecks in accessing the CLS in Bahrain except for Batelco. • Viva requests the TRA, in line with the NTP4 directives, to take the appropriate measures "to minimise the anti-competitive impacts of any bottlenecks" "for the efficient functioning of the relevant markets". Viva believe that the implementation of this policy directive should ensure that the end-to-end access (including the cross connection) to GBI and Falcon CLS (as bottlenecks confirmed in the Government policy) is provided by the SE under its licence and hence that the relevant service should be part of the final SE RO.	services (i.e., those highlighted by Viva in its response) in the SE RO. Such services are instead covered by the BRE RO. As licensees will be aware, the Authority has now commenced a review of the markets for international connectivity services. Should this review result in the Authority finding that any licensee has a position of dominance in a relevant (wholesale) market, it could impose appropriate remedies on the dominant player, with such remedies being designed to minimise the risks of anti-competitive behaviour and ensure the provision of access to the dominant party's infrastructure on fair and reasonable and non-discriminatory terms.

	• The future review of the supply chain of international capacity should not be a constraint for including access to CLS in this SE RO for the reasons detailed in Annex 3 of Viva's response. The end-to-end access should include: ○ Domestic submarine cable up to the landing station; ○ the seamless cross-connection with the submarine cable; and ○ the colocation at the landing station and reflected in this diagram:  • In the context of cable landing stations, where dark fibre is required for backhaul, major business customers require standalone services and diverse routes for contingency purposes. Carriers also require resilient routes and mega capacities to access international networks and services. This must be addressed through a fit-for-purpose dark fibre service under the reference offer. **3) OWS as a true optical service** • OWS should be defined as an optical wavelength service with optical interfaces at each end so that the end-to-end service is purely optical. • It is currently defined with electrical interfaces. This needs to change.	3. The Authority understands from technology vendors that optical interfaces will not be interoperable between multiple service providers and accordingly does not consider that Viva's proposed change to the OWS SD is warranted. The Authority may further consult on such a proposal in the next review of the RO (in 18 months).

NBNetco		
	1. Wholesale Bitstream Service • The current TRA WBS service description is not aligned with the objectives of NTP4. With the TRA proposing speeds as low as 256Kbps for Bitstream, and with these low speeds being provisioned over copper infrastructure, does not align with the policy set out in NTP4 of delivering a High-Speed Fiber-base infrastructure to Bahraini households. With the current NBNetco Fiber Rollout progressing to 95% coverage of May 2016 Addresses, a strict Fiber policy for Bitstream needs to be adopted. NBNetco is committed to retiring Copper infrastructure over the coming years, and this commitment further negates the proposition of delivering any further services over Copper. • NBNetco will start the proposed TBS/WBS service at 20Mbps, this being the minimum entry point to facilitate growth of strictly fiber-based access to broadband as envisaged by the NTP4 in the Kingdom of Bahrain. NBNetco believes that the current wholesale price point for 20Mbps is extremely competitive and creates a compelling value proposition to move to higher speeds; this while working with OLO's towards migrating/upgrading current active circuits on lower speeds to Fiber. However, NBNetco envisages to further review these price points going forward. • NBNetco also proposed to rename WBS to Light-stream General for residential and Light-stream Premium for business customers to reflect that this is an optical only service offering fast to ultra-fast speeds. Wholesale Data Connection (WDC) • NBNetco notes that the Authority has combined two different sets of products delivered over different network infrastructure, having different cost structures, under 1 product set. Effectively, the TRA has taken the WLA and WDC service and placed them under a single Product called WDC. NBNetco's position remains that WDC and WLA should be included as different set of products delivered over different network infrastructure (MPLS and DWDM), having different cost structures, and	1. The Authority agrees that a key aspect of NTP4 and the creation of the SE is the delivery of a ubiquitous fibre network for the delivery of high speed connectivity services to residential and business customers. However, the Authority notes that NBNetco's suggestion that the extent of fibre deployment is based on May 2016 address figures raises the prospect that there may be certain areas yet to be covered by fibre. The Authority notes that a significant number of broadband customers are still served by relatively low speeds (i.e., below 20Mbps) and it is important that the SE provides services that OLOs can use to serve these customers. Furthermore, the SE business plan assumes that copper assets will be transferred to the SE and that the SE will be best placed to continue to provide services that meet the current needs of the retail market. For the avoidance of doubt, however, the SE Order does not require the SE to provide broadband services over copper if fibre has been deployed in a given area, That is, the service description for WBS is technologically neutral and it is for the SE to determine whether to provide a given service speed over copper or fibre, so long as it meets the requirements of the RO service description and that any migration of customers from copper to fibre based services is planned and coordinated with the OLOs. For the above reasons, the Authority considers that the WBS SD is fit for purpose and it is unnecessary to rename the SD as proposed at this time. 2. WDC: • In the ROO Consultation the Authority considered whether WLA services should be merged with WDC services into a single WDC service description. Notwithstanding NBNetco's comments, the Authority understands that as from the effective date of the SE Order, the existing Batelco MPLS network should be operated by

	a completely different set of speeds. Subject to the outcome of the asset audit and allocation plan, NBNetco plans to build its own separate MPLS core network on which it intends to migrate all existing MPLS wholesale services such as WLA and Bitstream services to this new NBNetco network while aligning it with the EOI strategic plan. • NBNetco will continue to maintain 2 separate Service Descriptions for WLA and WDC, to allow a smoother transition to a single product over the Transition Period. NBNetco will no longer deliver any speed over copper infrastructure. However, NBNetco commits to maintain all current speeds for the transition period. • During this transition period until the next review of the Reference Offer, both WLA and WDC will provide OLOs with the same value proposition and the level of service for access to end-user enterprise customers subject to any change reasonably requested by the Authority. NBNNBNetco proposes to further review offerings in WLA – e.g. 2MB and lower, as these speeds are delivered over Copper infrastructure currently, and this does not align with the Fiber-only future envisaged for the Kingdom of Bahrain by NTP4. • At the moment WLA is deployed on an IP-based infrastructure which is effectively a shared resource with Batelco retail. This WLA service or an appropriate equivalent will be deployed on an NBNetco-owned network in future – this to ensure that any inefficiencies which currently exist on the Batelco retail owned infrastructure is not transferred to NBNetco network. <u>Mobile Backhaul Service (MBS) and Data Service (DS)</u> • NBNetco generally agrees with the Authority's approach in having two distinct products for backhauling. However, NBNetco considers that the core difference between the two products should be maintained where MBS is only available to backhaul mobile traffic and DS is available to backhaul all traffic from mobile base stations. NBNetco proposes changes to the architecture for both the MBS and DS. Going forward, the MBS and DS access element will be detached from the aggregation service granting MNOs the flexibility to decide where to deploy aggregation environments and optimize their network designs. As such, MBS and DS will include a point to point access service i.e. from MNO	Batelco Retail. With this in mind, and having reviewed industry feedback to the ROO Consultation, the Authority considers that WLA connections for existing customers which were supplied by Batelco as at the effective date of this SE Order should continue to be maintained by Batelco Retail and not by the SE. Batelco Retail will be required separately under its residual Reference Offer to put in place measures to enable existing WLA customers to exit their contracts penalty free by no later than 31 December 2019. These customers would be able instead to purchase WDC services from the SE. Under section 5.8 of the SE License, the SE is required within sixty (60) days of a request from the Authority, to produce to the Authority a roadmap for migration of any relevant Licensed Services (i.e., RO Services) that are being provided by the SE over the SE's existing copper and/or copper based assets away from provision over such copper and/or copper based assets to the provision of such services over the SE's fibre based assets. 3. <u>MBS/DS</u>: • The Authority agrees with NBNetco's comments concerning the need for two separate products and considers that it is appropriate to continue to offer MBS and DS in accordance with the proposal set out in the draft SE RO. However, NBNBNetco's comments are noted and the Authority will consider any comments from other operators, including the potential merger of the DS and MBS services as part of any future reviews of the Reference Offer,

	mobile base stations to any chosen Point of Presence specified by the MNO and this without aggregation. • The MNO will then be given an option to specify the aggregation location where it chooses to have multiple access links aggregate. Given that NBNetco currently only has the capability to deliver an aggregation link at 10 Gbit/s, NBNetco proposes to offer bundled prices for multiple aggregation links. However and upon review of market requirements and needs during the transition period, NBNetco is open to the development and deployment of a 100 Gbps aggregation service if the demand in the market warrants such an investment. Furthermore, NBNetco envisages to develop a single product during the transition period.	
Zain		
	In general, Zain supports the Authority's proposed changes to the product set and Service Descriptions included in the Draft Amended Reference Offer. However, Zain is of the view that the following should be noted: 1. The product set does not include a product that addresses the connectivity to the international landing stations in the Kingdom of Bahrain. In the 2013 Dominance Determination in the wholesale market for the supply of international capacity from locations within Bahrain, the determination outcome was conditional upon access being available to Batelco ducts (and associated facilities required to utilize ducts for the purposes of proving international capacity), domestic wholesale leased lines, and the IFC service on fair, reasonable, and non-discriminatory terms. However, the Authority in 2015 has halted all access to ducts rental service and accordingly Batelco's non-dominance in the identified market is no longer valid. Furthermore, the Authority's position in the Draft Order is proposing to conduct a market review of the entire supply chain for international connectivity later this year. Paragraph 7.2.3 of the Consultation Paper states: *"… The Authority therefore considers it prudent not to take any action at this stage with regard to the Draft Amended Reference Offer that might pre-judge the outcome of such review."*	1. Zain's comments are noted. The Authority reiterates that it does not consider it is appropriate, at this time, to include landing station services, including the existing IFC service (i.e., as highlighted by Zain in its response) in the SE RO. Such services are instead to be covered by the BRE RO. As licensees will be aware, the Authority has now commenced a review of the markets for international connectivity services. Should this review result in the Authority finding that any licensee has a position of dominance in a relevant (wholesale) market, it could impose appropriate remedies on the dominant player, with such remedies being designed to minimise the risks of anti-competitive behaviour and ensure the provision of access to the dominant party's infrastructure on fair and reasonable and non-discriminatory terms. However, in the meantime, the BRE ROO requires it to continue to provide its IFC service. The Authority also expects BRE to continue to provide Batelco's IGC service on similar terms.

This position is against the clear government policy set in the NTP-4 on international connectivity which specifically requires the Authority to adopt effective interim measures to minimize the anti-competitive impacts of any bottlenecks in the international connectivity while conducting a market study. In the past three years the Authority has not conducted such study nor put in place an interim solution. Zain urges the Authority to immediately apply an interim solution while conducting the study at a later time.

Based on the fact that the bottlenecks are only related to the international submarine cables namely GBI and Falcon (as multiple operators have access to GCCIA and KFCA routes), Zain advocates the following interim solution:

- SE to be granted an IFL only
- Falcon & GBI Landing Party Agreements ("LPA") to be under SE
- BRE to be granted an IFL & ISL
- GCCIA, KFCA & FOG to be fully managed and operated by BRE
- Capacity Purchase Agreement ("CPA") on GBI & Falcon to be with BRE
- SE to be mandated to provide international cross-connect service ("ICCS") which reflects the actual cost of a cross connect which is an intra building cable and not capacity based.

2. The Consultation suggested that MBS and DS are still addressed separately because each has different qualities and performance specifications. The service descriptions of MBS and DS specified latency and jitter as the only differences, which is set out below table:

	MBS	**DS**	**WDC**
Round Trip Delay	2ms	5ms	2ms
Jitter	1ms	5ms	0ms

2. Zain's responses are noted. However the Authority considers that it is appropriate to continue to offer MBS and DS as distinct services given the Authority's understanding that there remains demand for different quality of service for mobile backhaul (MBS). The Authority refers Zain to the Authority's responses on this matter as set out in the Consultation Report on the first Reference Offer. The Authority will consider any comments from operators regarding potential merger of these services as part of future reviews of the Reference Offer,

The Authority considers that Zain's specific comments on technical matters are addressed in the relevant SDs and elsewhere in this Consultation report.

		Frame Loss Ration	0%	0%	0%

There is no evidence nor clarification of how each connectivity product will perform differently, and how MBS has superior quality over the DS. Technically, they are both using the same network architecture, resources, equipment and technology. Zain is already a customer of Batelco with many backhaul leased line circuits, using the recently enhanced WDC and TDS, and both have the same performance and utilise the same equipment. The current backhaul leased lines in service are achieving lower than 2ms for Round Trip Delay for Jitter. Furthermore, Jitter is the variance in time delay in milliseconds (ms) between data packets over a network. This delay occurs due to propagation delay, transmission delay, queuing delay or node processing delay. Amongst these, only propagation delay is a constant whilst the rest are variable in a transmission network, hence Jitter cannot be totally removed.

With the proposed technical and pricing points, Zain does not see MBS being an option unless the quality of DS is intentionally degraded to make inferior levels of the Quality of Service ("QoS"). Therefore, Zain submits that the MBS product should be omitted, and the DS & WDC quality of service parameters should reflect the technology and the capability of the product and to be set to 2ms for Round Trip Delay, 1ms for Jitter.

Kalaam		
	<u>WDC Service Description:</u> • The draft RO describes that the Access Provider can provide alternative CPEs than the default Huawei CPE for the delivery of the service. However, it is not clear if they are obligated to do so if the End User insists on a none Huawei CPE. Furthermore, for the sake of clarity, (CONFIDENTIAL) *Kalaam believes that since we have had the experience of delivering Cisco CPE from Batelco instead of Huawei, then Cisco should be explicitly mentioned in the RO as an alternative*	1. The Authority notes Kalaam's concerns regarding the Access Seeker's right to require the Access Provider (the SE) to provide alternative CPEs to Huawei. The Authority considers that the wording in the relevant Service Description is clear that the Access Seeker can request an alternative CPE to Huawei, which may include Cisco or other branded CPE.

	CPE for the delivery of the service – this will save time and will ensure delivery of the service will meet the set SLAs as it won't require extensive testing. Moreover, Kalaam request that the RO explicitly states that if the Access Seeker requests an alternative CPE then the same SLAs would apply. • The CPE provided is also of a single point – Kalaam has had issues with this previously in which it was deemed the CPE not redundant. Kalaam request that the RO includes an option of two points of utilization. • The technical attributes in Annex 2 for the WDC service mentions the interface that will be used for all except those that would support 100 Gbits of which we would need OTU4 and OTU4e – this is also applicable for the aggregation links. • Dark fiber should also be an option for the Access Seeker should the Access Provider not be able to deliver the service accordingly.	The Authority agrees with Kalaam's comments concerning Service Levels and has amended Annex 2 of the WDC Service Description to provide that the same service levels would apply, regardless of CPE vendor. The Authority notes that the Optional Levels of Protection available for the WDC Service in Annex 2 ensure the requested redundancy option. In regards to dark fibre, the Authority reiterates that it may consider the introduction of new products / services, including dark fibre, as part of subsequent reviews of RO.
	<u>WBS Service Description:</u> • Historically, Kalaam have received rejections for its WBS orders based on lack of internal wiring at End User's premises, no lead in duct, fiber termination box at full capacity – without a proposed solution or an effective timeline for the delivery of services in these cases. As a result, Kalaam has lost many customers on monthly basis – Kalaam request that the RO addresses how the Access Provider will mitigate these situations and that the same SLAs will apply in these situations. • If the Access Provider is not able to meet the SLAs, then an intermediate solution should be provided, such as, 4G router by the Access Provider – as the Access Seeker also has SLAs to meet with the End User.	2. WBS The Authority notes that the Service Levels have been drafted in order to promote timely and efficient delivery of services. The SLs serve as a baseline of performance against which performance targets and penalties can be adjusted. The NBNetco will be required to comply with the Service Levels in Schedule 7 from day one. The SL KPIs will help provide transparency and assist with assessing the suitability of the SLs going forward. In regards to Kalaam's proposal for an interim 4G router solution, the Authority considers that Kalaam, as the retail service provider, is best placed to manage the End-User relationship.
Question 2: Do you support the Authority's proposed approach to merging product sets/services? If not, please explain why.		

Viacloud		
	Yes	-
Etisalcom		
	Yes, but a mechanism to migrate all existing WLA circuits to WDC should also be established.	The Authority considers that WLA connections for existing customers which were supplied by Batelco as at the effective date of this SE Order should continue to be delivered by Batelco Retail and not by NBNetco. Under section 5.8 of the SE License, the SE is required within sixty (60) days of a request from the Authority, to produce to the Authority a roadmap for migration of any relevant Licensed Services (i.e., RO Services) that are being provided by the SE over the SE's existing copper and/or copper based assets away from provision over such copper and/or copper based assets to the provision of such services over the SE's fibre based assets
Infonas		
	Yes	-
BRE (Batelco)		
	No. The Authority has merged the existing Batelco WLA and WDC products into one product called WDC. BRE underlines that WLA and WDC are offered over two different underlying network technology namely MPLS and DWDM and have different set ups and cost structures. Furthermore, WLA is offered on the Batelco MPLS network which is currently shared between BRE and the SE and will be subject to the asset allocation plan between the two entities.	In the ROO Consultation the Authority considered whether WLA services should be merged with WDC services into a single WDC service description. The Authority understands that as from the effective date of the SE Order, the existing Batelco MPLS network should be operated by Batelco Retail. With this in mind, and having reviewed industry feedback to the ROO Consultation, the Authority considers that WLA connections for existing customers which were supplied by Batelco as at the effective

	Depending on the outcome of this plan, BRE recommends to keep this service distinct from WDC until further clarity is obtained.	date of this SE Order should continue to be maintained by Batelco Retail and not by NBNetco.
Viva		
	Generally, yes. However, Viva still believe that the MBS and DS services should be merged in one product. Technical differentiation between the two products in terms of the QoS parameters as proposed in the service descriptions is not possible, given that the SE is using exactly the same technology to deliver both products.	Viva's comments are noted and will be considered by the Authority as part of any future reviews of the Reference Offer.
NBNetco		
	See comments on merging products above.	The Authority refers NBNetco to the Authority's response to Question 1**.**
Zain		
	Zain supports the Authority's proposed approach to merging product sets/Services. Moreover, as stated in response to Question 1, Zain is of the view that MBS and DS are duplicate products, and therefore the MBS product should be omitted and the DS quality of service parameters should be set to 2ms for Round Trip Delay and 1ms for Jitter as these are the current achievable values.	The Authority refers Zain to the Authority's response to Question 1**.**
Kalaam		
	Yes, but the Authority has not addressed (in the draft RO) the issues that Kalaam has raised with the Authority (in writing and at meetings) re: access to landing stations.	Please see the Authority's more general responses in respect of international connectivity (including market review) in response to Viva and Zain's comments (at Question 1) above.

Question 3: Do you agree with the proposed inclusion of the two (2) additional services identified: OWS and FAS? What level of demand do you consider there would be for these services? If you do not agree with their proposed inclusion, please set out specific technical reasons as to why these services are not required at this stage?		
Viacloud		
	N/A – Mobile operator	-
Etisalcom		
	N/A – Mobile operator	-
Infonas		
	-	-
BRE (Batelco)		
	1. BRE generally disagrees with the inclusion of FAS. BRE believes that FAS as currently envisaged by the Authority in this Consultation is complex, costly and will be difficult to manage. However, BRE would welcome an efficient and cost-effective solution as alternative to FAS. 2. For OWS specifically, BRE requests additional information on the technical description of the OWS service to be in a position to provide a more informed view. As a Bahrain Telecommunications Company (BSC) fronthauling solution, BRE is in principle agreeable to the deployment of the OWS solution instead of FAS. While BRE notes	1. In relation to Fronthaul Access Service, the Authority considers that there is clear demand for a mobile fronthaul solution, and disagrees with BRE that such a product should not be made available. Accordingly, the SE RO now includes the Fibre Fronthaul Service (FFS), which is based on the Fronthaul Access Service proposed in the ROO Consultation. The FFS is based on stakeholder responses to the SE ROO Consultation and BRE ROO Consultation, which included responses on the existing Facilities Access Service (FAS) included in Batelco's Reference

	clause 3.6 of the OWS Service Description limiting the OWS to connectivity between the Access Seeker's POP and wireless radio site, BRE wishes to stress that any proposal to remove this limitation would first require that all OLOs surrender their fiber to SE. Demand will be reflected in submitted forecasts (although the forecasting should not be binding).	Offer. Having regard to the fact that stakeholders consider network facilities should be transferred to the SE, the Authority considers that the FFS will be most effectively delivered using the relevant aspects of the existing facilities access processes. The supply of FFS will therefore be based on the following: • Schedule 6.6 of the RO, which contains the Service Description for the FFS. This Schedule describes the process and terms and conditions by which fibre cables for fronthaul will be deployed in NBNetco duct; and • Schedule 6.7 of the RO, which contains the Service Description for the Facilities Access Service. This Schedule describes the process and terms and conditions by which MNOs will rent duct space from NBNetco, through which the FFS will be supplied. 2. In relation to OWS, BRE's comments are noted; however, OWS is an optical wavelength based active service (Lambda service) designed to address the current and foreseeable backhaul needs of mobile network operators (MNOs). The Authority considers that, as the service is wavelength based, it has a greater available capacity than other active services and therefore is likely to be suitable there is no proposed amendment to the SD in this regard. That said, the Authority considers it reasonable to provide NBNetco with a grace period in which to finalise preparations for the supply of OWS. Accordingly, the Authority notes that while NBNetco will be expected to acknowledge Service Requests for new OWS Connections from the effective date, it will not be expected to complete these new Connections until 3 (three) months after the effective date. To be clear, NBNetco will be expected to meet the Service Levels (Schedule 7 – Service Levels) for all OWS Service Requests from this date onwards.
Viva		

	• Viva believe the proposed inclusion of the OWS and FAS services are a step in the right direction and that these services are potentially important in the development of 5G in Bahrain. However, Viva consider them to be too restrictive (and too expensive in the case of OWS). • The OWS and the FAS services are forms of Access that should be offered more generically, for both MNO applications and wider business and corporate applications. There is no reason to restrict these services to the applications identified. It would be a simple matter to extend the current Service Definitions so that they are more generic and hence can be used for a wider array of applications. • A dark fibre service is required to meet the needs of corporate and enterprise customers and for backhaul to cable landing stations.	• OWS is designed to meet mobile backhaul needs. The Authority considers that the other products and services included in the SE RO are sufficient to meet OLOs' other business requirements while balancing any risks to the SE business case. As noted above, the Authority considers it reasonable to provide NBNetco with a grace period in which to finalise preparations for the supply of OWS. Accordingly, the Authority notes that while NBNetco will be expected to acknowledge Service Requests for new OWS Connections from the effective date, it will not be expected to complete these new Connections until 3 (three) months after the effective date. To be clear, NBNetco will be expected to meet the Service Levels (Schedule 7 – Service Levels) for all OWS Service Requests from this date onwards The Authority may consider the need for further changes to the product set, including the possibility of introducing a dark fibre service, in its future reviews of the RO (in 18 months).
NBNetco		
	<u>OWS</u> • NBNetco is fully committed to its key role in further supporting OLO's aims of enhancing their mobile offering to end users in the Kingdom of Bahrain. However, NBNetco believes that a thorough assessment of OLO use cases for OWS requirements should be undertaken, to facilitate a comprehensive and well informed decision as to the viability of developing such a Product offering and including it into any future ROs. • With this in mind, NBNetco has done a review of the limited requirements outlined in the RO Consultation and reviewed all aspects of technical readiness for the OWS service. After review with its technology partners around an OWS service, NBNetco will require hardware additions to its network. This encompasses the deployment of infrastructure to deliver individual OWS circuits, with initial cost estimates far exceeding the proposed OTU3 and OTU4 prices	1. As set out in Annex 4 of the SE Order, the price terms for OWS in the draft SE Order were derived to be consistent with the price terms for DS and MBS. This was done to avoid inefficient substitution between OWS and other backhaul products (thus minimising the risk to the SE business case) and to ensure that MNOs were able to select the most effective backhaul service to meet their network requirements. That is, the Authority derived price terms for OWS by extrapolating the tariff gradient implied within the price terms for the MBS product (as a closer substitute to OWS than DS) in order to derive "MBS equivalent" prices for an OWS OTU 3 (40Gbps) and OTU4 (100Gbps) product. The functional form used by the Authority for this extrapolation is set out in Figure 15 of Annex 4 of the SE Order.

	recommended by the TRA. NBNetco requests further details as to how the TRA formulated the OTU3 and OTU4 prices. Furthermore, the current Network deployment of NBNetco does not align with the provision of OTU3 in its future roadmap and evolution. • For this Reference Offer, NBNetco will not propose the inclusion of an optical wavelength product. However, NBNetco is open to immediate engagement with OLO's and MNO's as to specific requirements, proposed use cases and definite demand. This will properly inform a comprehensive design and costing exercise, and ultimately deliver an efficient and fit-for-purpose Product to the market that will truly further the Digital advancement in the Kingdom of Bahrain. <u>FAS</u> • NBNetco has undertaken a detailed investigation of fronthaul models and fronthaul requirements with multiple technology vendors. The immediate findings are that the scale of fronthaul dark fiber is at a level where it becomes impractical to deliver and manage. NBNetco provides below a diagram on the increased complexity in network topology of using the FAS compared to active solutions. In addition, NBNetco will not have visibility on what is being provisioned on the dark fiber which may lead to security concerns. • In this regard, vendors have developed active fronthaul solutions to ensure efficiency and manageability of 5G fronthaul deployments. NBNetco networks are currently studying a number of active fronthaul alternatives and based on future demand, NBNetco products and services will ascertain the viability of developing a suitable product set working closely with customers to determine the best option. • NBNetco does not believe that inclusion of the FAS is a necessity at this point in time. However, NBNetco will formally engage directly with MNO's to understand their ultimate vision and scale for Fronthauling and ensure that based on the confirmed demand, develop suitable solutions to address each operators' requirements.	The Authority has noted NBNetco's concerns and considers it reasonable to provide NBNetco with a grace period in which to finalise preparations for the supply of OWS. Accordingly, the Authority notes that while NBNetco will be expected to acknowledge Service Requests for new OWS Connections from the effective date, it will not be expected to complete these new Connections until 3 (three) months after the effective date. To be clear, NBNetco will be expected to meet the Service Levels (Schedule 7 – Service Levels) for all OWS Service Requests from this date onwards. 2. The Authority notes NBNetco's comments. However, the Authority remains of the view that there is clear demand from MNOs for a mobile fronthaul product and so the Authority disagrees with NBNBNetco's comments that FAS is not a necessity at this time. Accordingly, the SE RO now includes the Fibre Fronthaul Service (FFS), which is based on the Fronthaul Access Service proposed in the ROO Consultation. The Authority points NBNetco to its response to BRE on the FFS above.
Zain		

	Zain welcomes the proposed inclusion of OWS and FAS due to the exclusion of dark fibre and/or duct rental access which are the superior products. Such products are in addition of being a pre-requisite in order to enable 5G technology roll-outs, however they have been required in 4G to address high dense areas using elastic RAN or centralised RAN deployment. Due to the lack of such product the only solution has been to deploy telecom towers. The demand for these services is inevitable and immediate. Zain has many concerns in relation to these products – the comments and requirements are stated in Zain's answers to the specific service descriptions.	Zain's comments are noted. The Authority notes that the RO Order requires that Fibre Fronthaul Service (FFS) and OWS are to be provided by the NBNetco from the effective date. The Authority points Zain to its responses concerning FFS and OWS elsewhere in this report for further detail.
Kalaam		
	N/A	-
	Question 4: Do you support the Authority's proposed approach regarding FAS, including the type of license holders to which this Service Description applies? Please state your views on whether the license holders (i.e., MNOs) should be (a) able to self-provide (i.e., deploy) dark fibre forfronthaul purposes; (b) required to transfer ownership of the relevant dark fibre to the SE at no cost to the SE; (c) required to transfer ducts to the SE?	
Viacloud		
	The current reasoning for the FAS service limits the provisioning to a certain use-case which is only pertaining to the MNOs. There may be a requirement for dark fiber connectivity for connecting certain customer sites (from any operator) and the Authority should consider FAS as a dark fiber service which should be offered to all licensed operators. Alternatively, the FAS service should be specifically restricted against any other direct / indirect use-cases except Fronthaul links only.	The Authority received comments to both the RO Consultation and ROO Consultation from MNO stakeholders that they required a dark fibre service to meet their requirements for fronthaul. The Authority considers that this service is necessary in order to allow MNOs to develop the architecture of their networks and to provide advanced mobile services. For reasons set out elsewhere in the report, the Authority has renamed the Fronthaul Access Service that was consulted on in the ROO Consultation to Fibre Fronthaul Service or FFS, so as to distinguish this from the Facilities Access Service, over which the FFS will now be delivered. The FFS Service Description in Schedule 6.6 of the RO indicates that the ownership of the one (1) kilometre fibre cable will

		remain with the SE. The MNO will be required, for the purposes of requesting this service under the processes outlined in Schedule 6.6 (Fibre Fronthaul Service) and related Schedule 6.7 (Facilities Access Service), to use a contractor that is approved by the SE for the installation works carried out in accordance with the existing duct access process under Schedule 6.7.3 (Duct Access Process).
Etisalcom		
	Etisalcom would like TRA to not limit the service to the MNOs only to provide a level playing field for all.	The FFS has been designed to respond to the current demand for a fibre fronthaul solution for mobile services. Accordingly, the Authority considers that FFS should be limited to MNOs at this time, though it may consider extending the scope of the product set and/or Service Descriptions as part of subsequent reviews of the RO.
Infonas		
	No comment.	-
BRE (Batelco)		
	BRE does not consider FAS to be a suitable solution to be included in the SE RO and therefore offers no comments.	The Authority refers BRE to the Authority's response to Question 3.
Viva		
	• Viva agree the type of licence holders that the FAS service applies to. Viva agree that it would be reasonable for MNOs to self-provide the dark fibre for front-haul purposes and that this should be through the approved contractors of the SE. If MNOs self-provide dark fibre, then	The Authority notes Viva's comments and generally agrees with many of the points Viva's has made. The Authority refers Viva to its responses above concerning the process by which the Fibre Fronthaul Service (FFS) will be deployed.

	there should be very low maintenance costs payable to the SE since these assets would be transferred in the future to the SE on conditions to be agreed. • Viva do not accept that MNOs should, by default, be required to transfer ownership of the dark fibre to the SE at no cost to the SE. The issue of consideration payable will be agreed between the TRA and OLOs in due course. MNOs also should have the right to use the SE's existing ducts to reach desired locations at duct rental fees to be reviewed by TRA. • Viva has demonstrated to the Authority that the monthly rental fee should be at 47 fils/m/month.	The Authority considers that maintenance costs will reflect the level of protection acquired by the MNO. Maintenance by the SE will be limited to where the FFS cable is damaged. If cable is no longer useable due to natural wear and tear then the MNO will be obliged to pay for cable replacement. The Authority agrees that MNO's have the right to use the SE's existing ducts for the purposes of deploying the FFS. However, the Authority does not consider that Viva has provided sufficient information in support of its proposed rental fee of 47 files/m/month
NBNetco		
	Refer to response to question 3 above. Without prejudice to NBNetco's position on FAS and with reference to question 4(c), NBNetco's position is that the relevant dark fiber should be transferred to the SE at no cost.	The FFS SD provide that the ownership of the one (1) kilometre fibre cable will remain with the SE. The MNO will be required, for the purposes of requesting this service under the processes outlined in Schedule 6.6 (Fibre Fronthaul Service) and related Schedule 6.7 (Facilities Access Service), to use a contractor that is approved by the SE for the installation works carried out in accordance with the existing duct access process under Schedule 6.7.3 (Duct Access Process).
Zain		
	In the absence of a dark fibre product in general, Zain agrees that there has to be a product that fulfils the fronthaul requirements of mobile technology. a) Zain agrees with the approach that the MNOs should be able to self-provide the FAS and recommends that the following controls are in place: - FAS deployment is conducted under the supervision of SE (if required by SE); and - FAS deployment is conducted only through the approved contractors of SE; - FAS deployment follows the standards set by SE.	The Authority generally agrees with Zain, particularly in relation to the proposed deployment processes for the fibre fronthaul, and has revised the FFS SD accordingly. However, the Authority notes that the FFS SD provides that the SE will own the fibre without the need for any transfer of ownership. In regards to duct owned and operated by NBNetco (i.e which will generally be on public land as suggested by Zain), the MNOs are to pay existing duct rental charges (189 fils/m/month) which will cover the maintenance costs of NBNetco.

	b) Zain does not see the requirement to transfer the fibre to the SE. In the cases where Batelco duct is being utilised then a rate per meter should be defined. c) In cases where underground ducts are required to be built in public land then Zain proposes that the request is sent to SE and SE shall provide the new duct and charge the MNO. As for lead-in duct to the buildings they shall be handled by the MNO.	
Kalaam		
	N/A	-
Question 5: As regards FAS, how do you consider any transfer mechanism and timeframe for transfer should be addressed? Do you consider that the SE should be responsible for maintaining and repairing any dark fibre access links transferred to the SE? If so, should MNOs be required to pay on-going maintenance costs and/or repair costs, and how should these be set?		
Viacloud		
	N/A	-
Etisalcom		
	N/A	-
Infonas		
	No comment	-

BRE (Batelco)		
	BRE disagrees with the inclusion of FAS. Notwithstanding, BRE agrees in principle that any transfer mechanism and timeframe for transfer should be subject to consultation with the industry.	In regards to the need for a fibre fronthaul solution, the Authority refers BRE to the its response to Question 3. The Authority notes that the FFS SD provides that the SE will own the fibre without the need for any transfer of ownership.
Viva		
	• No, Viva do not believe any transfer mechanism and timeframe needs to be addressed. These issues will be agreed between the TRA and OLOs in due course. • Yes, if any dark fibre is transferred to the SE, then the SE must be fully responsible for that dark fibre from the time of transfer, including being responsible for all maintenance and repairs. • If the SE pays fair value for those assets, then the ongoing maintenance and repair costs would presumably be as for any other assets acquired by the SE. If there is some discount to fair value, which Viva oppose, then Viva do not believe the SE should be entitled to pass on its full maintenance and repair costs.	Having regard to the single network objective, the FFS SD provides that the SE will own the fibre without the need for any transfer of ownership. In regards to duct owned and operated by NBNetco (i.e which will generally be on public land as suggested by Zain), the MNOs are to pay existing duct rental charges (189 fils/m/month) which will cover the maintenance costs of NBNetco. If cable is no longer useable due to natural wear and tear then the MNO will be obliged to pay for cable replacement.
NBNetco		
	Refer to response to question 3 above.	The Authority refers NBNetco to its response to Question 3.
Zain		
	Zain do not consider that the transfer is required, and the asset shall be maintained with the MNO. SE shall be responsible for the maintenance and	In regards to ownership of the fibre, the Authority refers Zain to its responses above. In regards to the processes for deploying FFS, the

<table>
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<td>repair of the FAS service. The MNO shall be charged for the use of ducts, if any, which shall include ongoing maintenance and repair at the current rate.

<table>
<tr><th>Step</th><th>MNO</th><th>Approved Contractor</th><th>SE</th></tr>
<tr><td>Order (request)</td><td>MNO sends request to the Approved Contractor</td><td>Approved Contractor to validate the request and prepare the needed work plan, including quotation for the cost of job</td><td>To advise if supervision required</td></tr>
<tr><td>Installation (start of work)</td><td>MNO accepts the quotation and work proceeds</td><td>Approved Contractor starts the agreed upon work, and communicates the</td><td>SE to receive the details of the contracted FAS order from the</td></tr>
</table>

b) In case of any repair requirement, Zain propose that the MNO engages the approved contractor directly to fix the fault and notify the SE accordingly. Under such approach, there are no applicable pay on-going maintenance costs and/or repair costs to be charged by the SE to the MNO other than supervision if required.</td>
<td>Authority generally agrees with Zain, and has revised the FFS SD accordingly.</td>
</tr>
<tr><td colspan="3">Kalaam</td></tr>
<tr><td></td><td>N/A</td><td>-</td></tr>
<tr><td colspan="3">Question 6: Please provide comments on any other areas of concern you have regarding any of the Service Descriptions included in the Draft Amended Reference Offer.</td></tr>
<tr><td colspan="3">Viacloud</td></tr>
<tr><td></td><td></td><td></td></tr>
</table>

	Schedule 7 – service levels. No penalty has been provided for Service Request Acknowledgement (WBS/WDC) or Service Request Confirmation (WDC). Unless it is clarified that the service levels for the next stage for each service (where Service Level Penalties are applicable) will be counted from the date of the original Request, if SE delays acknowledgement then access seeker has no remedy. Hence, there must be penalties mechanism at all stages.	The Authority has considered ViaCloud's comments and has amended the Service Request Confirmation service level in Schedule 7 of the RO to now provide that "*if the Access Provider (AP) does not issue a Notification of acceptance or rejection, the Service Request is deemed to be accepted on the relevant date stipulated in the Service Description, and all Service Levels will be calculated as applying from the deemed date of acceptance*." The Authority considers that this amendment addresses ViaCloud's concerns.
Etisalcom		
	The current services not listed in SE RO, should remain as they are till full migration of the existing customers to the new RO (For example, BS to WBS, WLA to WDC … etc.)	In finalising the RO, the Authority has considered what assets the SE should have sole legal and/or beneficial ownership of in order to supply wholesale products and services in accordance with its Licence. All existing services that the SE is not best placed to provide, such as existing WLA services, will continue to be supplied by BRE under the BRE RO.
Infonas		
	-	-
BRE (Batelco)		
	BRE suggests that either the address or coordinates are used for forecasts and services requests for radio sites. BRE has made further comments in Annex 1 of its response **[NOTE: BRE have not supplied an Annex 1 with its response].**	The Authority has not received an Annex 1 with BRE's response and therefore cannot comment on this. The Authority notes that Access Seekers will be responsible for submitting forecasts, which, in the case of OWS and FAS, will be binding.
Viva		

	Generally, yes – although Viva have a number of detailed comments on the Service Descriptions, which are: **Schedule 6.1 WBS Service Description** • **Clause 2**: Viva query whether, in the definition of Aggregation Link, the New Connection Request should be a reference to the first such request. • **Clause 3.2**: The first sentence of clause 3.2 places an obligation on the Access Seeker to "… ensure the WBS Service is not subdivided or split between multiple End User Premises". The Access Seeker is unable to control whether an End User attempts to subdivide or split the service and the Access Seeker cannot be in breach because of any such attempts by the End User. Viva propose revising the first sentence so that the obligation is on the Access Seeker for its own actions: "the Access Seeker shall not subdivide or split the WBS Service between multiple End User Premises". The Access Seeker may also be required to include terms and conditions in its contracts with End Users requiring them not to subdivide or split, but Viva do not consider it is reasonable for the Access Seeker to ensure that the Access Provider can access the End User premises, which is an onerous right which will be unacceptable to End Users. Where an End User is found to have subdivided or split the service, then the Access Seeker may be required to terminate the service to that End User, but the WBS service generally available to the Access Seeker should not be terminated. • **Clause 3.5**: The Access Provider should not be entitled to terminate a Service without the TRA's prior consent. • **Clause 4.1**: Viva propose that this provision requires further consideration by the TRA. The TRA should set out more detailed requirements for when an area has GPON fibre available. Consideration must be given to GPON being available at the same or lesser price than copper, allowing enough time to connect up a premises, to consumer protection issues where for whatever reason an end user does not cooperate with the process and so on. Further, until such time as GPON is available, on terms approved by the TRA, the WBS will be provided over copper. • **Clause 4.5**: Please note that the contention ratio criteria to be implemented by the Access Provider is not clear and not defined by	In respect of Viva's specific comments on the SDs, the Authority provides the following responses (where the comment is not directly addressed below, the Authority considers that its position is set out sufficiently clearly in other parts of this report and/or in the SD itself): **1. WBS** *Clause 3* • The Authority agrees with Viva's proposal to clarify the Access Seekers responsibility concerning sub-division or splitting should be limited to matters reasonably within its control. The Authority considers that the changes to clause 3 of the WBS Service Description adequately address most of Viva's concerns. • The Authority does not consider any formal approval to terminate is required and ultimately should be left to commercial negotiation between the parties. The Authority has amended the Supply Terms to include a notice requirement on NBNetco regarding termination. *Clause 4* • The Authority has included wording to clarify that where GPON fibre is not available, the Access Provider is obliged to supply a copper based WBS Service upon request from the Access Seeker. The Authority has also added wording to ensure that, in circumstances where only copper is available, the SE is obliged to provide the Access Seeker with its roadmap of when it intends to deploy fibre to the area. • The Authority has carefully reviewed the submissions of all stakeholders in regard to the proposed contention ratios for the WBS service and considers, on balance, there is no objective justification to retain them. Further the Authority notes that contention will generally be applied by the Internet Service Provider (ISP) at the Internet Gateways rather than at the access transport layer and accordingly has removed the contention ratios from the WBS Service Description.

	how it would be implemented (discussed further below). Viva believe this issue needs to be addressed in the final Order. • **Clause 4.7**: SE has to define the SLA to deliver the requested ports in case of none availability. • **Clause 6.1**: The reference to "any cabling" should presumably be to cabling within the end user's premises, beyond the ONT or other termination device. Viva requests to have the ONT (as per the draft RO to be provided by SE) and CPE (as per draft RO to be provided by access seeker) to be provided by the Access Seekers, reflecting the Access Seekers' brands, whereby the SE will use the Access Seeker's ONT and CPE to deliver the service using the Access Seekers' credentials to provision the service and to integrate them with the SE Network Management System for operations and maintenance purposes. Viva requests to have the process defined in the RO to ensure detailing the demarcation/responsibility of each party. Viva suggests to have the ONT and CPE stored at the SE's site to ease the delivery process. • **Clause 7.2**: Viva do not believe that service credits should be an exclusive remedy for service level breach by the Access Provider. Viva propose that this provision be deleted. • **Clause 8.3**: Viva propose that the End User Consent should not be disclosed to the Access Provider, as of right, as there should not be any justification for providing it. If this provision is to be retained, then Viva suggest that the Access Provider notifies the TRA, who would then assess whether that request is required and, if so, notifies the Access Seeker requiring such disclosure. • **Clause 8.5**: From the launch of the WBS service, there should be an API integration with the Access Provider's system in order to automate the process of placing the orders. Viva understand that API integration is available to BRE and so equivalence should require this for other Access Seekers as well. • **Clause 8.9**: Viva propose that the acceptance of a Service Request be required (not in the Access Provider's discretion) where there are immaterial defects. The same comment applies to Change Requests under clause 8.14. This comment also applies to the other Services in Schedule 6. • **Clause 8.16:** As mentioned above in Annex 1 in relation to daily batch numbers, Viva believe there should be no maximum daily limit.	• The Authority has considered Viva's concerns and amended Article 4.7 of the WBS Service Description to include a reference to new Service Levels included in the Service Level (SL) Schedule. *Clause 6* • The Authority agrees that competition may be promoted where operators are able to deploy their own ONT through the installation process. However, at this time, and without further information in support of the benefits of this proposal, the Authority considers that it may impose a disproportionate operational burden on the SE to deliver. Accordingly, the Authority encourages the industry to consider whether the relevant processes may be efficiently developed through the proposed Equivalence Compliance and Technical Committee (ECTC). *Clause 7* • The Authority agrees with Viva's proposal and accordingly has deleted the relevant text from the WBS SD. The Authority notes that it has revised the Supply Terms (clause 16) to clarify that service credits are not the sole and exclusive remedy. *Clause 8* • The Authority considers that the current wording includes an appropriate safeguard in that the Access Providers request for a copy of the End-User consent must be reasonable and justified. • In regards to the proposed need for an API, the Authority considers that the current drafting is sufficient and notes that SE Licence includes a requirement on the NBNetco to ensure that an online digital portal is available for placing and tracking orders within 1 month of the effective date of the SE Licence. • In regards to material breach, the Authority considers that the circumstances in which the Access Provider may rely on

	• **Clause 8.19**: Viva propose that a material breach by the Access Seeker should only be an exceptional circumstance where that breach prevents the Access Provider from meeting the relevant date. While Viva accept that all material breaches are important, the Access Provider's key obligation to meet the delivery date should only be excused where they are prevented from meeting that date by that breach. This comment also applies to the other Services in Schedule 6. • **Clause 10.1**: Placing a request for any new connection with the Access Provider should be not deemed as a service termination for any existing link with the other OLOs. Termination of the existing service should be the responsibility of the End-Users. • **Clause 10.2**: Viva submit there should be no charges related to troubleshooting by the Access Provider. This should be part and parcel of the service that the Access Seeker is already paying for. • **Clause 10.4**: Viva don't see the question of timing of billing of End Users as being relevant in the reference offer. This is a matter between the Access Seeker and the End User customer. Ordinarily, the billing starts only after the Access Seeker has completed the installation of the End-User's equipment. • **Clause 10.7**: Viva do not believe the Access Seeker should provide an indemnity to the Access Provider in these circumstances. Indemnities should only apply in very limited circumstances (breach of confidentially, IP etc.) and this would be an unusual instance for an indemnity to apply. **Annexures:** • The technical description of the WBS service, which is largely contained within Annex 1 of Schedule 6.1, does not align well with typical industry best practice for 2019. The service delivered to the customer is not well defined and, based on what is defined, will deliver a less than ideal customer experience. Furthermore, it will be hard for any party involved – Access Provider, Access Seeker or customer – to determine whether the service is performing as expected or not. • The WBS product is described in the tables contained in Annex 1. The first table describes the upstream and downstream data rates which can be purchased. The table also defines that the Residential data rates are subject to a contention ratio of 15:1 and the Business data rates are subject to a contention ratio of 8:1.	exceptional circumstances is where such circumstances impact on its capacity to meet the relevant date. • The Authority supports the proposal to remove the restriction on batching WBS orders and has amended the relevant Service Description and SLs to reflect this. *Clause 10* • The Authority considers that continuity of sevice will be promoted where an End-User has the option to utilise a transfer process or a cease and provide ordering process. The Authority considers that clause 10.1 is sufficiently clear about the consequences of a transfer process. • In regards to troubleshooting, the Authority disagrees with Viva concerns and notes that it considers the Access Seeker is best placed to conduct preliminary troubleshooting with its end-user customers. • The Authority does not agree that indemnities should necessarily be limited in the way Viva has proposed. The Authority notes that the drafting has been included in previous bitstream service descriptions and considers that they remain suitable. *Contention ratios* • As noted above, the Authority has carefully reviewed the submissions of all stakeholders in regard to the proposed contention ratios for the WBS service and considers, on balance, there is no objective justification to retain them. Further the Authority notes that contention will generally be applied by the Internet Service Provider (ISP) at the Internet Gateways rather than at the access transport layer and accordingly has removed the contention ratios from the WBS Service Description. *Asymmetry between download and upload speeds* • The Authority notes that all upload speeds for WBS are at least 10% of downloads speeds which the Authority considers aligns

	Contention Ratios • Under the traditional use of the word “contention”, the WBS access product should not exhibit any contention. At the access level, there is no aggregation of traffic across all the services purchased by the Access Seeker from the Access Provider. Usually, contention would only be applied by the retail service provider at a point in their network where all traffic is aggregated and contention in the traditional sense can be applied on a truly statistical basis. • A definition of contention that could be applied in the access network is more correctly defined as over-subscription. Each line terminal port of a DSL or GPON Network Terminal Unit has a specified maximum throughput. For example, for GPON, the port is defined for a maximum downstream speed of 2.5Gbps and upstream speed of 1.25Gbps. • If this port is then used to feed an optical splitter located in a street-side cabinet, the port capacity can be distributed between a number of customers. A typical optical splitter ratio might be 1:24, which enables the single NTU port to provide service to 24 customers. With this ratio of splitter, each customer can be provided with 100Mbps downstream and 50Mbps upstream on a dedicated basis, with zero inherent contention for capacity. Of course, some customers may take a lesser capacity service than 100/50 Mbps and so it will be possible to distribute the surplus capacity amongst other customers who want services above 100/50 Mbps, say 200/100 Mbps. • However, in this situation (within a given splitter and port combination) over-subscription may occur. This especially applies if higher rate services are offered on the GPON network, such as the 500/50 Mbps service specified in Annex 1. If several customers attached to the same port want this type of service, then the maximum downstream and upstream capacities can be exceeded quickly, certainly before all ports on a 1:24 splitter are allocated. • Hence there needs to be some form of restriction on port over-subscription in order to avoid this form of contention in the access network. One way to define this over-subscription limit would be to define a port over-subscription limit of say 4:1 which would mean that, for a GPON port, the maximum sum of service subscriptions for any GPON port would be 10Gbps downstream and 5Gbps upstream. If either of these limits is exceeded by the SE, then the over-subscription limit is exceeded. Then it would be a requirement to shed customers	with industry practice. The Authority may consider revising such requirements in any subsequent review of the RO.

	until the over-subscription limit is brought back within limits. This may mean that it will be better to use a smaller split ratio on this port to avoid future excessive over-subscription. • The advantage of this approach is that it is very easy to implement, very straightforward to measure and fair for all retail service providers. It also enables different over-subscription limits to be applied for ports servicing business versus residential customers. An over-subscription ratio of 4:1, or possibly even 8:1, might be possible with residential customers, while a ratio of 2:1 would be more suitable for business customers who are typically going to select the higher rate services. • It should be noted that, when many customers want to select 1Gbps services and higher, it will be essential to firstly reduce split ratios per port and eventually to upgrade the technology to Next generation GPON solutions which offer higher port rates in the 10-40Gbps region. *Measurement of contention* • Furthermore, the measurement of acceptable performance is entirely unknown given this description of the service. Even if the definition of contention is defined in some more explicit manner as indicated above, then how will the performance of a given connection be determined in an objective manner? The measurement of contention is not straightforward. Furthermore, the definition of more readily measured parameters such as frame loss, latency and frame delay variation are not particularly helpful either in this context. With a contention ratio of 15:1 or even 8:1 in operation by almost any definition, the specification of target values for frame loss, and frame delay variation would be extremely difficult to determine and then subsequently to measure in some meaningful way. • There needs to be measurement tools available. All nodes should support TR069, support monitoring and have troubleshooting capabilities. • The use of a service like Ookla is suitable for measurement of the end to end retail service which includes the wholesale access component. It does not provide a direct measure of the performance of the wholesale access only component of the service, unless an equivalent service is specifically setup to do this. • On the other hand, if the over-subscription model as described above is used to manage contention in the access network, and the over-	.

	subscription ratios are constrained to the 4:1 or less ratios per port, then it would be possible to apply more standard methodologies to performance measurement. It would be necessary first to implement a port over-subscription audit to ensure that these limits are not being exceeded periodically. Then for any given wholesale access service it would be possible to define and measure performance against the following QoS parameters: ○ Round trip frame delay < 5ms ○ Frame delay variation less than <5ms ○ Frame loss < 0.01% *Asymmetry between download and upload speeds* • One further point of concern with the service description for WBS is the asymmetry between download and upload speeds as listed in Annex 1. The provision of services with 10:1 asymmetry between downstream and upstream is excessive, especially for the higher bit rate services that will largely be delivered by GPON over fibre. When using many protocols, especially with small frames, the provision of high asymmetry limits the throughput available to much less than the nominal rates would suggest. This even applies to widely used protocols such as TCP/IP, which requires acknowledgement packets within defined timeframes. The asymmetry combined with the contention will reduce the throughput for many protocols to unacceptable limits. • It is also unreasonable to enforce such levels of asymmetry based on the characteristics of the underlying technology. The GPON technology has an inherent asymmetry of 2:1 between downstream and upstream. Hence to enforce higher asymmetry than 2:1 is actually using the technology in an inefficient manner. Asymmetries of up to 5:1 might be acceptable to reflect consistent alignment with DSL technology, but to use asymmetry of 10:1 is both illogical and unreasonably restrictive on the service delivered to customers.	
	Schedule 6.2 WDC Service Description	**2. WDC** *Clause 2*

	• **Clause 2:** The definition of Minimum Service Period should be modified to consider Special Projects where there is a minimum service period of 1-month commitment. • **Clause 3.4**: The TRA must clarify what happens if a forecast is incorrect. Viva submit that the Access Provider must meet all requests that are within the tolerance parameters for the previous quarterly forecast. The Access Provider should not be able to be excused where a forecast for a future quarter, say in a year's time, proves to be inaccurate, provided that the immediately previous forecast was accurate within the threshold. This comment also applies to the other applicable Services in Schedule 6. • **Clause 3.7**: Viva submit that the Access Provider must warrant the accuracy of the online facility, to allow Access Seekers to have confidence in it and make their plans accordingly. • **Clause 3.11**: A penalty of 1 MRC (or more in the case of other Services) where the Access Seeker submits a Cancellation Request in these circumstances is excessive. Viva do not believe there is a valid justification for this charge, what loss has the Access Provider suffered, particularly as it is only related to notification of the Expected RFT and RFS Dates. The standard NRC should apply in these cases. This comment also applies to the other applicable Services in Schedule 6. • **Clause 3.13**: Viva have submitted above that a material breach by the Access Seeker should only be classified as an exceptional circumstance where this breach prevents the Access Provider from meeting the relevant timeframes. This comment also applies to the other applicable Services in Schedule 6. • **Clause 3.14:** Viva note that the Access Provider sets the next earliest dates under paragraph (a), but in Viva's view the Access Provider is incentivised to push the date out as long as possible. Accordingly, Viva request that the next earliest date must be no later than 2 working days after the date proposed by the Access Seeker. This comment also applies to the other Services in Schedule 6. • **Clause 3.15**: Viva don't believe it is proportionate for the Access Seeker to pay for the installation and configuration charges if the Access Provider technician did not turn up at all (e.g., because the 2 working days' notice was not provided). This comment also applies to the other Services in Schedule 6.	• The Authority considers that there is insufficient information regarding the requirements of "Special Projects" to implement Viva's proposal. In particular, it is not clear how to modify the definition of Minimum Service Period without introducing the risk of unintended adverse consequences to the SE. The present Minimum Service Period of 24 months for WDC depends on the level of MRC and that the NRC. As such, changing the definition of Minimum Service Period may impact on the appropriate level of the MRC and NRC**.** *Clause 3* • The Authority has concluded that WDC, DS and MBS be subject to non-binding quarterly forecasting from all Licensed Operators. In response to industry feedback regarding potential difficulties in providing accurate forecasts for the timeframe envisaged in Schedule 5 (Forecasting), the Authority has included a built-in tolerance of +/-10% so that up to this level, the service level terms in Schedule 7 (Service Levels) would still apply. Outside this tolerance, however, the service level terms in Schedule 7 (Service Levels) would not apply to those actual service requests (orders) for services in excess of + 10% of those forecast. • The Authority has included amended wording to clarify that the proposed new "Expected RFT" and "Expected RFS" Dates shall not exceed 2 Working Days from those previously notified. The Service Levels penalties apply to the Notification of Expected RFT and RFS Dates (and the revised Expected RFT and RFS Dates). • The Authority notes Viva's comment relating to the specific timing of the Expected RFT date (clause 3.16) and considers that this should be a feature of the appointment system that the SE should make available to Licensees. Further details in this regard may be provided in the Joint Working Manual (JWM). • The Authority has considered Viva's comments in relation clause 3.19 and notes that table set out therein provides for sufficient specificity as to the instances in which the SE may apply a NRC for Service Requests which require the deployment of fibre access.

	• **Clause 3.16**: Viva propose that that any Expected RFT Date must specify either morning or afternoon and provide the Access Seeker with a 2 working hours' time window to be present at the end-user site. It is an unreasonable inconvenience to require the Access Seeker or end-user to be available at any time on a particular day, particularly given the penal consequences under clause 3.15. Viva also consider that the Access Seeker should be able to charge the Access Provider (or have credited) if the Access Seeker's technician does not turn up at the appointed time (for an equivalent of two working hours). This comment also applies to the other Services in Schedule 6. • **Clause 3.19**: the Access Provider should bear the costs of any fibre deployed up to the manhole of a location, on the basis that these fibre resources are able to be used to provide other services to other Access Seekers in the future. Viva therefore oppose the fundamental premise of clause 3.19 that the Access Provider should be able to recover these costs from the Access Seeker if there is unlikely to be use by others. Viva do accept that this form of cost recovery is likely to be appropriate where the connection is to a radio site. If this provision is to remain substantially as is, then Viva suggest the TRA elaborate on what "the foreseeable future" might mean. This wording provides considerable discretion to the Access Provider to charge the Access Seeker. Further, if there is in fact use by others, the Access Provider should promptly reimburse the NRC to the Access Seeker. • **Clause 3.23**: Frame Loss should be included as a monitored parameter. This proposal also applies to the other comparable Services in Schedule 6. • **Clause 3.24**: Where the reason for terminating a WDC service is due to end user frustration over a poorly performing service, then there should be no payment made by the Access Seeker. Viva propose the payment not apply if there has been a serious or repeated service level failure in the last 3 months prior to the termination. This proposal also applies to the other Services in Schedule 6. • **Clause 3.38**: Viva propose that any Planned Maintenance should be for no longer than 3 hours in total. Viva consider a 20 working day notice period to be more appropriate. This comment also applies to the other Services in Schedule 6. • **Clause 3.43**: The Access Provider should respond to a fault as soon as it becomes aware of it, if that is before notification by the Access	• The Authority has added "Frame Loss" as one of the minimum monitoring parameters under 3.23 of the Service Description. • The Authority notes Viva's comments and has added wording to clarify that an Access Seeker shall not be liable to pay liquidated damages where a service is terminated for material breach of the Reference Offer. • The Authority notes that limiting Planned Maintenance in the manner proposed by Viva would unnecessarily restrict SE's capacity to conduct network maintenance as required. • The Authority agrees that monitoring and alarming of faults as they occur in the network is consistent with good industry practice. The Authority encourages NBNetco to implement such measures as would support meeting its repair/restoration timescales set out under the SL Schedule. • The Authority considers that the pricing of the full end-to-end physical and logical protection is consistent with the four principles set out in draft RO Order. Furthermore, service credits should apply if the primary connection fail and the secondary connection is activated and the Authority has added drafting to reflect this in the Service Description**.** *Annexures* • The Authority notes that the draft Service Description includes aggregation links of 1Gbps, 10 Gbps and 100Gbps circuits thereby addressing the requested range. Furthermore, the OLO can select multiple 1Gbps and 10 Gbps in order to tailor the increment to meet their own requirements**.** • The Authority agrees that there should be support for MTU, JUMBO frames and 1700 Byte frames when required and has included revised wording in Annex 2 to reflect this position. Q-in-Q should be matters controllable by the Access Seeker and therefore, the Authority has added wording to enable this in Annex 2. • The Authority agrees that there should not be any limitation on the number of ports utilised by the access seeker. Rather it should be able to utilize any of the ingress ports available on the CPE and

	Seeker. The Access Provider should have monitoring systems that inform them of any fault that requires their attention. This comment also applies to the other Services in Schedule 6. • **Clause 3.45:** Viva consider that full end-to-end physical and logical protection of a WDC connection at a premium of 30% mark-up on top of the applicable MRC raises a serious concern from a commercial perspective. The charges for full protection of a secondary connection should not be charged as a fixed mark-up of 30% on top of the MRC. Instead, there should be cost-based charges for each active equipment under logical protection (CPE and service node) and physical protection (i.e. connection per meter charge). Viva expect these would be relatively small incremental charges, such as Viva see in markets such as the United Kingdom. Further, Access Seekers shouldn't be restricted to equipment specified by the Access Provider, so as to avoid over-specification or over-inflated equipment. Instead, Access Seekers should have the flexibility to use its own CPE, which is consistent with Viva's request for colocation services to be provided by the Access Provider. • If there is a failure of the primary connection, and the secondary connection is activated, it should be clear that Service Credits continue to apply until the primary connection is reactivated. **Annexures**: • In Annex 1, Viva propose that the WDC service should be all provided over across optical fibre transport only. Copper delivery technology should be deleted, as these assets will be just an unnecessary cost on SE. • The aggregation link description should be amended to include aggregated speeds of 1Gbps and up to 100Gbps in appropriate increments. • In Annex 2, there should be support for Q-in-Q without limit and there should be support for MTU, JUMBO and 1700 Byte frames when required. • Viva believe the characteristics of the CPE should be defined, rather than specific types of CPE, which will always be changing as devices become obsolete and new devices are introduced. Therefore, Viva propose that a brief description of the key parameters for any CPE should be included in Annex 1, including such things as:	not just two. The Authority has made the appropriate amendments to clause 3.22 of the WDC SD. • The acceptance test must test with the largest frame size supported, with a minimum of 9,600 Bytes. • Given the need for BRE to supply existing copper based WLA Services, the Authority had removed references to copper in the relevant diagrams in the Annex.

	○ CPE options must include 1Gbps, 10Gbps and higher rate ports and throughputs; ○ All access switches must be non-blocking within their rated port throughput; and ○ Within a given switch configuration, all ports should be open for use by the Access Seeker. • Annex 3 provides a technical description of the aggregation link configurations which can be used with this service, including both delivery over copper and fibre. These appear to be aligned with good industry practice. • Annex 4 provides a description of the provisioning test which needs to be satisfied in order to verify proper provisioning and configuration. The test description is aligned with good industry practice, but should test with the largest frame size supported, which should be a minimum of 1700 Bytes. • In Annex 5, as noted above, Viva propose the removal of copper technology. The diagrams are difficult to read, so should be replaced with higher quality images. **Schedule 6.3 MBS Service Description** • **Clause 2**: The Minimum Service Period should be reduced from 24 months to 12 months and the Minimum commitment period should be limited to 12 months only. • **Clause 3**: The equivalent comments apply to those made in relation to the comparable provisions in Schedule 6.2. **Annexures**: • The MBS service appears to be a very specific instance of the more general WDS service as described in Schedule 6.2. • This service is well defined in terms of the technical performance to be delivered, in terms that are well understood and which use readily measured parameters. However there appears to be an error in clause 3.22 where Frame Loss is not included as a monitored parameter. This error should be corrected. • In Annex 1, while the aggregation speed ranging is up to 100Gbps, the interface specs are defined as 1 Gbps only and hence the interface should support 100 Gbps. Viva questioned also if the 25Gbps, 40Gbps, 50Gbps, 100Gbps are supported.	**3. MBS** • Viva has not provided any information to support its proposal. The Authority's view therefore remains that the Minimum Service Period of 24 months is reasonable given that there is no NRC for fibre deployment raising a potential risk of asset stranding. • The Authority refers Viva to its responses on Schedule 6.2 (WDC) SD. *Annexures* • The Authority has updated the relevant clause of the DS and MBS Service Descriptions to provide that "frame loss"/circuit is one of the minimum monitoring parameters. • The Authority notes that the draft MBS and DS Service Description includes aggregation links of 1Gbps, 10 Gbps and 100Gbps circuits thereby addressing the requested range. Furthermore, the OLO can select multiple 1Gbps and 10 Gbps in order to tailor the increment to meet their own requirements.

	• As noted above, in Annex 2, the MBS service will need to support a default MTU of a minimum of 1700 Bytes in order to enable the Access Seeker to include overheads into frames and have them pass transparently across the network without fragmentation. This would include for example, GTP tunnels, IPSec, MPLS Labels, GRL, IPv6in4 or IPv4in6 headers etc.
	• Rather than defining types of CPE to be supplied with the MBS, the characteristics of the CPE to be supplied should be defined and include the key parameters as follows:
	  ○ CPE options must include 1Gbps, 10Gbps and higher rate ports and throughputs;
	  ○ All access switches must be non-blocking within their rated port throughput; and
	  ○ Within a given switch configuration, all ports should be open for use by the Access Seeker.
	• The MBS service should support Unicast, Multicast and Broadcast packet distribution. If there are limits on any of these protocols, then these will need to be defined and justified.
	• Annex 3 provides a description of the provisioning test which needs to be satisfied in order to verify proper provisioning and configuration. The test description is aligned with good industry practice, but should test with the largest frame size supported, which should be a minimum of 1700 Bytes.
	• Annex 4 provides a description of technical topology used to provide the service, using both copper and fibre access infrastructure. The topologies described are aligned with good industry practice.
	
	Schedule 6.4 DS Service Description
	
	• **Clause 3**: The equivalent comments apply to those made in relation to the comparable provisions in Schedule 6.2.
	Annexures:
	• Again, this service appears to be a specific instance of the WBS service, with the major difference being the Quality of Service Performance relaxation to 5ms for Round Trip Delay and <5ms Frame Delay Variation.
	Viva's comments above in relation to the WBS and MBS service apply to the DS service as well.
		• The Authority agrees with Viva's proposal regarding frame size and has amended Annex 2 to refer to 1700 Bytes as the default frame size. However, the other specifications are not considered necessary at this time
		• The Authority noted Viva's comments on the need for Unicast, Multicast and Broadcast packet distribution.
		• The Authority agrees with Viva's proposal regarding frame size and has amended Annex 2 to refer to 1700 Bytes as the default frame size.
		• The Provisioning Validation Test table has been updated to include Tester Frame Size up to 9,600.
		
		4. DS
		
		• The Authority refers Viva to its responses on Schedule 6.2 (WDC) SD and Schedule 6.3 (MBS) SD above**.**
		• The Authority has maintained MBS and DS as 2 distinctive products at this time. The Authority notes that this position may be reviewed in any subsequent review to the RO.
		
		5. OWS

	Schedule 6.5 OWS Service Description • **Clause 1**: The Service Description for OWS as described in Clause 1, and supported by Annex 1, does not describe an Optical Wavelength service. Rather, it describes an Optical Transport Network (OTN) service. The two are related, but they are quite different in the outcomes that they deliver for Access Seekers. The Optical Wavelength Service expected to be delivered as a wholesale service is the provision of an optical wavelength from point A to point B with optical interfaces at each end. The OWS service described in Schedule 6.5 is an Optical Transport Network service, which provides a defined bitstream transport service from point A to point B with electrical interfaces at each end. Although if compliant with ITU-T G.709, the Optical Transport Network service can support a wide variety of transport services (not all of which are listed in Annex 1), it does not enable flexible transport services and associated protocols to meet all the needs of MNOs, or in fact all the possible needs of Access Seekers over time. Certainly the OTN interfaces as described in Annex 1 are not compatible with interfaces required by MNOs today. If the full range of electrical interfaces as defined in ITU-T G.709 were supported within Annex 1, then there would be improved compatibility, but for future flexibility it would be much better to have the OWS defined as an end-to-end optical product so that any current and future transport interfaces can be accommodated with ease. • **Clause 2:** The Minimum Service Period of 24 months for the OWS is too long and Viva suggest changing it to 12 months. • **Clause 3.2**: This provision suggests that Access Seekers should provide the location of the radio site or Point of Presence in the form of address or another identifier accepted by the Access Provider. Viva propose that the location be shared in the form of a geographical location such as Google map to since the full address is not always available for the MNOs' wireless radio sites or Point of Presence. • **Clause 3.5**: Viva do not consider there should be any penalty if the actual number of new Connections is less than forecast. There is no	• The OWS has been designed to utilise OTU3 and OTU4 interfaces. The Authority understands from technology vendors that optical interfaces will not be interoperable between multiple service providers. The Authority will further consult on such a proposal in the next review of the RO (in 18 months). • As noted elsewhere in this report, the Authority considers it reasonable to provide NBNetco with a grace period in which to finalise preparations for the supply of OWS. Accordingly, the Authority notes that while NBNetco will be expected to acknowledge Service Requests for new OWS Connections from the effective date, it will not be expected to complete these new Connections until 3 (three) months after the effective date. To be clear, NBNetco will be expected to meet the Service Levels (Schedule 7 – Service Levels) for all OWS Service Requests from this date onwards. • The Authority considers that the 24 month Minimum Service Period is reasonable and justified on the basis that there is no NRC for new network build that might be required in order to extend the network to reach an MNO site. The OWS is core network component and as such requires a longer term service commitment from both Access Seeker and Access Provider. *Clause 3* • The Authority agrees with Viva's comments, and has amended the address requirement to include GPS Coordinate. • In regards to forecasting, the Authority considers that efficient network design and deployment should respond to substantiated demand. The penalty requirement for FFS is intended to promote accurate forecasting of service requirements by Access Seekers. In the case of FFS and OWS the forecast should be based on a known network build / configuration plan from the operators rather than a customer driven order based forecast and therefore the Authority considers that it should be easier to provide an accurate forecast. • The Authority notes that OWS provides connectivity between (i) Access Seekers PoPs or an (ii) Access Seekers PoP and a

	apparent reason for such a provision, which Viva consider to be onerous. The same comment applies to the FAS Service in Schedule 6.6. • **Clause 3.10**: The Access Provider should publish the database of the OWS reachability footprints and, if the last mile connectivity is not available, the Access Provider should arrange to perform the civil works. • **Clause 3.18(b)**: It is not clear what the terms upgrade and downgrade mean in relation to the OWS. It would not be normal for there to be any ability to upgrade or downgrade a wavelength service as part of a Dense Wavelength Division Multiplex system. One could add or subtract wavelengths, but not change an allocated wavelength. • **Clause 3.20**: It is unclear what the term "Latency per circuit" means in relation to the OWS. It would be preferable to provide an Optical Time Domain Reflectometry (OTDR) based tool for monitoring the end to end performance of an optical connection. • **Clauses 3.24 and 3.25**: It is not clear what would be amended in relation to an OWS. The problem might be that the OWS is not clearly defined in terms of the optical characteristics provided to the Access Seeker by the Access Provider. This should be defined in terms of a colour of light with a defined optical bandwidth and loss per kilometre within this defined bandwidth. Given these parameters, the Access Seeker should be able to derive any form of transport service that fits within these parameters. These parameters need to be defined up front in the description, which would then eliminate the need to reference any form of upgrade or downgrade of the service. • Viva suggest that the OWS service be changed to become an Optical Wavelength Service, rather than an Optical Transport Service. This will require changes to the Annexures. • Viva proposes scenarios to deliver the OWS service in revised diagrams accompanying its submission, including (i) Connectivity with Optical Layer and (ii) Connectivity with Optical Layer ROADM. **Schedule 6.6 FAS Service Description**	wireless radio site and therefore does not involve connectivity over the last mile. The SE Licence places an obligation on the SE to provide online digitial maps setting out the fibre footprint. • The Authority notes that the OWS Service Description provides for 40Gb/s (OTU3) and 100 Gb/s (OTU4) speeds. Therefore, it is possible to Upgrade or Downgrade the speed of an OWS Service. To be clear the definitions of Upgrade and Downgrade have been slightly revised to confirm that "speed" may also constitute a Upgrade or Downgrade of a OWS Service. • The Authority agrees that "latency" is not applicable to an OWS Service and has removed this reference from the revised OWS Service Description. The Authority notes that Link Availability can be monitored through the SE Network Management System and has retained this reference. Further details may be developed through the ECTC and the JWM. • Amendments to the OWS Service may be amended by Upgrades or Downgrades to the speed of an OWS. The Authority understands from technology vendors that optical interfaces will not be interoperable between multiple service providers. The Authority will further consult on such a proposal in the next review of the RO (in 18 months). • The Authority considers that the technical diagram correctly reflects the scope of the OWS Service at this time. **6. FFS (previously FAS)**

	• **Section 1:** the restrictions on the use of the service are artificially restrictive. • The FAS is poorly defined in the service description as it stands. It is not clear where the demarcation points are and what connectors are to be used on the fibre at either end. It would also be expected that some form of OTDR would have been specified for commissioning and testing for faults.	• The Authority considers that the current limitations on the use of the FFS are justified at this time. The Authority considers that there are other wholesale products available to meet the service needs of corporate and enterprise customers as well as backhaul to landing stations. The Authority notes that limitations on the use of the FFS will help ensure that the NBNetco's investment incentives are aligned with the new industry structure**.**
Netco		
	Refer to NBNetco's marked up versions of the Service Descriptions included in the Draft Amended Reference Offer (provided with its response).	The Authority has carefully considered NBNetco's draft Service Descriptions and has reflected many of the suggested changes in the revised versions in the SE RO.
Zain		
	Zain refers to written correspondence with the Authority regarding a challenge it is facing to supply services to the US-Navy.	The Authority notes that the SDs require the Access Provider to include multiple CPE options which are available from alternative vendors. The Authority notes that the SLs will apply regardless of the CPE vendor.
Kalaam		
	Please see response to questions 1 and 2.	The Authority refers Kalaam to its response to Questions 1 and 2.
PRICE TERMS		
Question 7: Do you agree with the Authority's approach to determining the price terms to be offered by the SE? If note, please explain why.		

Viacloud		
	Yes – it is essential that pricing covers the Cost of capital for all services so that the required service levels are adhered to.	Noted.
Etisalcom		
	Yes	-
Infonas		
	Yes	-
BRE (Batelco)		
	Yes	-
Viva		
	• Viva reiterate that the TRA must act in accordance with Article 57(b) of the Law (tariffs to be fair, *reasonable and non-discriminatory, etc.).* • Article 57(b) applies to Interconnection, but it is also intended to apply to Access, as per Article 57(e). • As per the TRA's approach to determining the price terms offered by the SE, the TRA does not intend to apply the requirements of Article 57(b). Indeed, explicitly, the TRA intends to enable the Access Provider to charge tariffs that are above "forward-looking incremental costs". • The TRA has challenged Viva's views on Article 57(b); stating:	• As set out in Annex 4 of the Consultation on the draft SE Order, the Authority does not consider that Article 57(b) or Article 57(e) provide the appropriate legal basis for the determination of tariffs in the SE RO. This is because these Articles are predicated on the Public Telecommunications Operator in question having, or being found to have, a Dominant Position. • While the SE clearly has a unique position in the deployment and maintenance of the NBNetco, any consideration of the SE's dominance will need to consider the extent to which other services, such as, for example, mobile broadband services, may

	"Moreover as already communicated to Viva on a multiple of occasions, its interpretation of Article 57(b) of the Law is mistaken. Article 57(b) of the Law is not applicable until such time as the Authority has conducted an ex ante market analysis and determined that the SE enjoys a position of dominance in a relevant telecommunications market." Viva understand that the TRA is saying that the requirements under the Law for the terms and conditions and tariffs for Access to be "fair, reasonable and non-discriminatory", and "based on forward-looking incremental costs" or "benchmarking" do not apply, because the TRA has not yet determined the SE to be in a Dominant Position. • It is hardly debateable that the SE is in a Dominant Position. Access Seekers have been subject to Article 40(bis) of the Law, which has prevented them from deploying or maintaining a fixed telecommunications infrastructure in the Kingdom, as the intention is for the SE to be the monopoly provider. The dominance of SE is mandated by legislation. • Viva have recognised that a forward-looking incremental cost study as contemplated by Article 57(b) is impracticable now in the short time remaining until SE commences operations. In Viva's previous submissions, it proposed a benchmarking study, also as contemplated by Article 57(b), but the TRA has not accepted this request. • However, Viva consider that the pricing proposed in the draft Reference Offer continues to be excessively and unacceptably high and disconnected from cost and credible benchmarks. • In light of this, Viva propose that the TRA review these prices in the final version of the Reference Offer – if not conducting a formal benchmarking study, then at least by taking due account of benchmark pricing provided in these and Viva's previous submissions, and those provided by other parties, in resetting the SE's prices. • Although the TRA has some issues with Viva's previous examples of benchmark prices (to show that SE's pricing was excessive), Viva believe it has shown reasonable cause for the TRA to question further the pricing for SE's services. • Any pricing principles that depart from a consideration of SE's costs of providing the service, or benchmark proxies, must be disregarded by the TRA in Viva's view. The intent of the Law is clear.	act as effective substitutes for services offered by the SE. Moreover, the obligations on the SE in relation to the Reference Offer derive, at least initially, from the SE License rather than a dominance designation. Given this, it is not possible, to assign a position of dominance to the SE without undertaking a market review. • Consequently, the Articles of the Law highlighted by Viva do not apply here and the Authority does not consider therefore that any amendments are required. Notwithstanding the above, The Authority is committed to ensuring that the tariffs offered by the SE in its RO meet the key principles the Authority has set out, namely that they should: • Support the delivery of the NBN; • Promote efficiency in the supply of telecommunications products and services in the telecommunications market in Bahrain; • Promote service-based competition in the telecommunications market that is fair, effective and sustainable; and • Promote efficient investment and hence support the development of a sustainable, future-proof network. In practice, the Authority considers that these principles mean that the SE must be able, when operating reasonably efficiently, to earn a reasonable return, taking into account its cost of capital; while at the same time, the SE's prices must support fair, effective and sustainable, downstream competition. However, it does not require charges to be cost based at this time. This is because there are a number of uncertainties in the SE business case which mean that the future path and level of costs and revenues for the SE cannot be known with sufficient certainty to move directly to cost based prices, without creating a significant risk that some of those price reductions may need to be reversed in future. Given its position on the legal framework and a recognition that developing a forward looking incremental cost study is impractical, the Authority notes that Viva has instead proposed to use tariff benchmarks to set the SE RO price terms. The Authority accepts that benchmarks can be a useful tool

		when determining regulated price terms, especially when used as a cross-check against proposed prices derived using other means. It also accepts that developing a forward looking incremental cost study is impractical at this time and indeed, may not be required in the long run. Given this, the Authority did review, in Annex 4 of the Consultation of the draft SE Order, a number of benchmarks for bitstream and data connectivity prices, including those put forward by Viva and explained how it believes these support the price terms set out in the draft SE Order.
Netco		
	NBNetco has actively engaged with the Authority in fine tuning the Interim Business Case but remains cognizant of the number of uncertainties remaining in the Interim Business Case. NBNetco agrees with the Authority's approach in focusing on factors in the interim business case that influence the price terms for 2019. As set out above, the interim business case does not provide sufficient and robust data to set out regulated prices afterwards.	The Authority notes NBNetco's comments and broad agreement with the approach put forward by the Authority. The Authority believes it is important that, in the long run, prices are set at a level which does not allow the SE to benefit unduly from its unique position, while still maintaining its ability to invest in maintaining the fibre network.
Zain		
	(a) In answer to this question, Zain first establishes the following: <u>Regulated services price calculation</u> The Telecommunications Law has set the principle of setting the prices of regulated services. SE is by definition in a dominant position. Article 57 (b) states that *"Such terms and conditions and tariffs shall be fair, reasonable and nondiscriminatory and the tariffs shall be based on forward-looking incremental costs or by benchmarking such tariffs against tariffs in comparable Telecommunications markets."*	As set out above in response to the comments made by Viva to this question, and as stated previously by the Authority in the Consultation, the Authority does not consider that Article 57(b) is applicable to the SE RO, given that the SE has not been declared to hold a dominant position. Furthermore, given the uncertainty in the SE business case for the period beyond 2019, the Authority considers it would be inappropriate, at this time, to set prices equal to forward looking economic costs. This is because, if such costs were estimated today, such an approach could actually lead to the Authority having to subsequently increase prices, should the separation costs be higher than the initial estimate included in the business case or the take-up of products lower. Such variation in prices

	Authority has on various occasions clarified that fair and reasonable tariffs are based on *relevant, efficiently* incurred *economic costs calculated on a forward-looking incremental basis. As an example, paragraph 25 of the latest* Final Order on the Reference Offer of Batelco. <u>Separated Entity business model</u> • Zain understand and do agree that the SE should be given the opportunity to earn a reasonable return on its investment as per NTP-4, nonetheless, the NTP-4 equally envisaged an ***affordable***, secure and robust access to ultra-high speed ***fixed and mobile*** broadband networks; offering converged access to IP-based interactive, multimedia, and rich communications services, as well as evolving services such as the internet of things (IoT) and machine-to-machine (M2M) communications. • As consumer affordability is one of the main objectives of this policy, it would be a self-defeating effort to price the utility products at unfeasible price levels to achieve the SE business plan. • Furthermore, the proclaimed uncertainties surrounding the SE's business plan is unfounded in Zain's opinion. The current SE's business case has very conservative and understated demand values, combined with high return on income target. • In particular, Zain do agree with the Authority that the projected number of backhaul is expressively understated. For example, Figure 1 of Annex 4 – Proposed Price Terms, states that in 2019 the forecasted combined demand of Viva and Zain for mobile backhaul solution is 175. Where in fact, Zain submit it is the area where Zain have utmost certainty of connecting all Public Radiocommunications Sites ("**PRS**") in the Kingdom. • The BRE advised during one of the ongoing industry workshops that it already has 95% of its PRSs on fibre and in process of migrating them to the TDS/DS/MBS, • Zain expect to increase its next applications by a total of 300 sites, the business case presented projects 500 circuits by 2023 which is totally unreasonable. Zain foresee that by 2021 a minimum combined backhaul circuits for all MNOs to be in the range of 1300 – 1500. • With regards to residential bitstream the actual numbers forecasted are not disclosed. With only and a mere mention of 66% increase in orders	(i.e., large price falls followed by a price increase) would not provide any party with the stability required. The Authority is, however, content that the principles it has applied to review the proposed price terms, and as set out in the consultation, will lead to fair and appropriate price terms, consistent with the overarching objectives of the Authority and NTP4. With regards to Zain's individual points on the SE business model: • The Authority believes that the price (and non-price) terms as set out in the RO Order will support the delivery of affordable, secure and robust access to high speed networks. For example, alongside other recent price reductions (associated, for example, with the introduction of the transitional products), the RO Order will mean that bitstream prices will, for higher speed services (e.g., 100Mbps) have fallen by around 50% in the last three years, with backhaul prices having fallen by around 60%. • The Authority agrees that SE prices should lead to affordable retail prices, if the SE business case is to be achieved. For 2019, the Authority is comfortable that this is the case, with the demand forecast in the business case model being consistent with the proposed RO price terms. • The Authority believes that, looking beyond 2019, there are both demand and cost uncertainties in the SE business case. For this reason, the Authority will revisit price terms during its first RO review. • The Authority notes Zain's concerns regarding the demand forecast for mobile backhaul circuits included in the business case model. This is consistent with the concern raised by the Authority as part of the consultation. As such, the Authority does not consider that this merits changing proposed price terms for 2019 from those set out in the draft ROO. This is because any understatements in demand are likely to be more material, and have more impact on overall returns, on future years of the business case. When it reviews price terms in the first RO review, the Authority will take into account updated information on mobile backhaul demand, considering the full suite of connectivity products.

	between 2018 – 2023. Zain would like to highlight that the current home broadband subscribers will gradually be shifted to fibre through Bitstream as operators offload their mobile networks to enhance the customer experience both on Mobile and Home broadband due to the superiority of the fibre experience. • As for the business bitstream there is no reference to the estimated growth and revenues generated for the product, the introduction of high speed bitstream to the business market will generate significant traction as currently the market is being served with unlicensed microwave setups or mobile broadband setup neither provides the pricing points nor the quality and speeds of a bitstream service. • On the other hand, the SE operating cost forecasts has been unjustifiably overstated with taking and additional 10% mark-up for claimed contingency. Similarly, another mark-up of 25% for implementation costs of security, IT and brand costs. Overall this adds unduly burden on the SE business plan. The SE has enough expertise to identify the relevant costs and thus such mark-up buffers should be much less. • Lastly, Zain of the view that there is insufficient information shared with regards to the SE capex in Annex 4. The annual capex cost is constant (year two is double) throughout the next five years. While Zain do recognise SE's need for investing and expanding the fibre coverage, Zain do not however think that it is at steady value. It is rather incremental as the timelines set on Batelco to complete the fibre roll-outs is due in the first year. Also, the depreciation is a reducing value. Zain cannot foresee what are the annual investments required by the SE. • Zain therefore urges the Authority to revise the SE business plan to rationalise the submitted figures and workout the RO products prices accordingly. (b) Zain is of the view that the 10% reduction applied to the MBS/DS products does not reflect the pricing principle that should be followed to set the price of the backhaul service. • As stated above, that the SE's business case has significantly under estimated the demand for the backhaul service to levels lower than actual orders. The backhaul prices should be further reduced by 25%	• The Authority notes Zain's views that the demand for fibre bitstream services will increase over the period of the business case. The Authority accepts that this is likely and considers that this is already reflected in the business case model, with the demand for bitstream going at a CAGR of around 10% between 2018 and 2023. Again, demand forecasts will be reviewed at the time of the next RO review. • The Authority confirms that the business case model does also include business bitstream services. However, revenues for these services are below those for residential bitstream services. • The Authority does not consider that the cost forecast in the model is "unduly overstated". Rather, it reflects the uncertainties in the business case, particularly around the costs of separation in relation to, for example, the costs of IT systems separation or the creation of separate functions. Nevertheless, the Authority would like to reiterate that the purpose of the business case is to examine the financial viability of the SE under the proposed tariffs and not to set tariffs beyond 2019. Rather, these will be developed using inputs from a more detailed business model which will be developed prior to the next RO review and will reflect actual, rather than estimated, implementation costs. • The Authority will consider in detail the capital expenditure requirements of the SE. As such, this will be reviewed further at the time of the next RO review. However, the Authority notes that the network the SE is inheriting is, in significant parts, mature and subject to assets being retired and needing replacement. It is not unusual for telecommunication networks or utilities in general to exhibit a fairly stable annual capex requirement. As set out in the consultation, the Authority has followed two core principles when determining the prices in the ROO – ensuring the SE is able to earn a reasonable return so to support the single network objective, and ensuring that OLOs have sufficient margin to compete downstream with BRE existing pricing. The Authority is satisfied that its proposed prices meet these conditions. As set out above, it does not believe it should be setting "cost based" prices at this time. This is because moving to cost based prices now, when

	i.e. 30% from the previous price. The wholesale products such as DS, OWS and ICCS which are considered the backbone of operators should be treated as utility and should be priced at cost recovery level. • This is mainly because the backhaul product is a base product which the mobile operators have yet to build on by investing heavily in other network elements, systems and customer experience in order to be competitive in the market. Sudden increase on the mobile operators due to increases in Backhaul costs will have a direct impact on the mobile service price levels. • On the other hand, the Authority has applied significant reduction to the direct resale products in order to ensure OLOs would have sufficient margin to compete with the BRE, given existing Batelco retail prices for broadband services. • Such favouring of fixed network products over mobile networks will have a significant impact on the advancement of mobile technology in the Kingdom as the costs associated to expand, operate and roll out new technologies will not be recoverable due to regulatory pricing decisions. • In Zain's view, taking into consideration the uncertainty regarding the changes the pricing of the wholesale products that are pure resale or semi-resale products, such as WBS and WDC, should be offered with a return margin as these products have minor impact on the long run sustainability of the market and investment decisions unlike the DS/MBS and ICCS. Due to the nature of WDC and WBS products and the competition level at the retail level any reduction in the wholesale will immediately be reflected to the end price which will result in the overall market revenues generated by this segment will be eradicated, without any benefit to the SE, industry nor the consumers in the long run. • Furthermore, for such resale products, value-based price differentiation of residential versus business market segments is a mechanism by which it allows the SE to earn a fair return on investment without defeating NTP-4 goals. (c) The objective of having an ultimate backhaul product, the OWS, is the technical and financial feasibility required in order to meet the rapid and dynamic changes imminent with 5G and future radio technologies. Thus, pricing it at high capacity basis defeats the set objectives. The Authority's concern is	significant implementation cost items are uncertain, could lead to prices being unsustainable and so require prices to be increased in subsequent RO reviews. In the Authority's view, this would not benefit any party. However, in the longer term, the Authority accepts that pricing will follow that of a "utility model". The exact design of this will be the subject of further consultations with stakeholders. Furthermore, the Authority does not accept that its proposed price terms favour fixed network services over mobile. Rather, its proposed price terms seek to ensure there can be effective and sustainable downstream competition for the provision of fixed services, and that mobile operators have reasonable access to the inputs they require to provide advanced mobile services. The Authority does not believe that the proposed terms will negatively impact the advancement of mobile technology in the Kingdom. While it is possible that some consumers have, due to failures in the fixed market, historically relied heavily on mobile broadband services, the Authority does not believe it is its duty to "protect" the mobile operators from increased competition from fixed services. The Authority also disagrees that price reductions in WBS and WDC services would not lead to any long run consumer benefits. Rather, such price reductions, where those reduced prices still allow the SE to earn a reasonable return, should promote the take up of high speed services to the benefit of the Kingdom overall, while also increasing consumer welfare. The Authority does, however, agree with Zain that differentiating price terms for business and residential services can support the objectives set out by the Authority in the consultation. To this end, the Authority proposes to maintain the distinction in pricing put forward by the SE. The Authority notes that the OWS is intended as a service that can be used to provide transmission links within a MNO's core network. It is therefore appropriate, in the Authority's view, that the reference price for the service is that of high capacity active services (i.e., MBS), as proposed in the draft ROO. In relation to the three points made by Zain in this regard, the Authority directs Zain to its earlier responses on the matters of setting cost based prices in this ROO and the inputs used in the SE business case. Selecting a different method for pricing OWS compared to potential substitute products would not, in the Authority's view, be efficient and could

	that there is a direct substitutability between OWS and DS/MBS, which raise uncertainty to the success of SE's business case. Nevertheless, Zain reiterates that: - There is time factor in such substitutability, based on the network design and operational efficiency; - The profit margins targeted in the SE's business plan should not be mainly depended on making high returns from a utility services which is an input product to other markets characterised with high investment (i.e mobile broadband); and - The demand and cost factors taken into account in the SE business plan are inaccurate for the aforementioned reasons. Zain remain of the view that OWS is a utility service, serving the forthcoming superior backhaul requirement and therefore it must be priced at a much lower price than proposed in the Draft RO Order. Furthermore, the Authority has commented on Zain's proposed approach on how to price the wavelength products. The Authority advised that it is does not believe it would be appropriate to require the SE to offer, at this time, OWS priced at incremental cost. However, the Authority did not elaborate on the justification of such direction, which is not in line with the principle that is always followed by the Authority in determining regulated service tariffs (i.e. fair, non-discriminatory and forward looking). Also, it highlighted three main issue with the calculation made by Zain. The following is Zain's feedback: • The inputs and assumptions used in Zain's calculation are not appropriately documented: Please note that Zain have announced the manufacturer of the equipment used in the model and the exact model numbers, therefore the Authority can request the cost of such to validate the input figure employed by Zain in its calculation. In relation to the fibre and duct costs, this information is already part of Batelco's regulatory accounts used in SE's business model and therefore could be easily reconciled against the figures provided in the calculation. • The calculation does not make any assumptions regarding the utilisation of equipment and infrastructure: The 160 lambdas are the full capacity of the ring throughput, Zain has assumed 50% utilisation in its calculation. Hence, 80 lambdas in each direction. • The calculation also takes no account of the cost capital of 9.5% or operating expenses: The stipulated margins of the proposed pricing	lead to arbitrage between the wholesale services. In relation to Zain's first point, the time factor, the Authority assumes that Zain considers that substitution of active to optical products takes time and therefore would not result in an immediate impact on the SE's business case. The Authority agrees with this and again notes that it is committed to conduct a review of the RO within 18 months. At this time, it will consider further arguments in relation to the suite of services offered by the SE while also taking account, in determining price terms, of the actual take-up of the existing portfolio of services. Responding to further points made by Zain, the Authority notes that the reasons for setting prices based on higher capacity MBS products equally apply to why the Authority does not follow the cost based approach set out by Zain. In relation to the specific cost calculations provided by Zain, the Authority notes: • In commenting on the lack of documentation, the Authority did not refer to information in relation to equipment but rather to assumptions Zain made on the number of nodes and distances considered in its calculations. • In relation to utilisation, the Authority acknowledges Zain's clarification but still considers that such an assumption appears arbitrary. • In relation to WACC and Opex, the Authority acknowledges Zain's calculation. However, for the reasons set out above, the Authority does not propose to set price terms for OWS based on cost.

	easily accommodates the cost of capital of 9.5%. Furthermore, the calculation does consider operating expenses. Zain assumed 15% of the capex as other relevant operational and maintenance costs.	
Kalaam		
	No comment.	-
Question 8: Do you consider that the price terms proposed by the Authority for all the RO Services are reasonable? If not, please explain why.		
Viacloud		
	With the introduction of higher speeds on broadband over fiber (WBS) for non-residential end users, the use-case scenarios are witnessing a shift from WDC to WBS which is going to be accelerated by some of the price points in the proposed RO. In the interest of ensuring viability of business case for a healthy competitive market, Viacloud make a few points: 1. Setup fees for WDC service should be dropped from 400 BHD to around 100 BHD for speeds less than 150Mbps, also the minimum service period for lower speed links on WDC speeds should be removed. 2. There must be a differentiation between WDC and WBS services to justify the price difference. The quality of service and prices proposed for WBS are such that many non-residential end users (Corporates) will prefer switching existing WDC links to WBS due to increase capacity and performance available with fiber resulting in large revenue losses to the industry. Viacloud suggest that that upload speed for WBS service should be capped to no more than 2Mbps for speeds up to 40Mbps links and 4 Mbps for up to 500Mbps links in order to protect the cannibalization of WDC services for a minimum period of 3 years while the market and operators evolve to better understand the service levels and difference in services.	The Authority notes that Viacloud has not provided any evidence in support of its proposal to reduce setup fees for WDC. As such, the Authority has no basis on which to assess Viacloud's proposal and so maintains the fee level set in the draft ROO. WDC and WBS are technically different services where WDC is a symmetric dedicated pathway and WBS is asymmetric IP based pathway, and are priced accordingly. It is efficient to allow an end user to make their choice based on the available price and non-price terms rather than distort price and non-price terms in order to artificially limit demand of one service compared with another. The Authority does not accept Viacloud's proposal to cap upload speeds for WBS. The Authority believes it should be for retail customers to select the service which most closely meets their needs, taking into account both price and non-price characteristics of the service. Artificially restricting upload speeds on WBS in order to "protect" demand for WDC services would, therefore, not be appropriate and would not in the Authority's view, support the overall development of the sector.

		However, should the SE wish to reduce the proposed price terms for WDC, in order to attract demand to that service, it is open to it to do so.
Etisalcom		
	Etisalcom finds the price terms reasonable except for the once-off charges of the fiber installation work as it is not fully specified. The SE should stick to the stated NRC.	The table in paragraph 3.19 of the WDC Service Description sets out the approach taken for the recovery of the cost of fibre access cable deployment under specific scenarios. In particular, where there is a new connection this cost is recovered through the MRC and the NRC is zero. However, the Access Provider shall be able to fully recover the costs incurred in deploying a new fibre protection path by charging the Access Seeker an NRC.
Infonas		
	Yes	-
BRE (Batelco)		
	• The SE should apply a volume discount for all services, but in particular for WBS. BRE should be in a position to benefit from a volume discount if it commits to a subscriber volume linked to a specific promotion or for bulk deals in high rise buildings. This suggestion is supported for example by the position in the UK and Ireland where Openreach and Eircom Limited offer volume-based discounts for a number of products. BRE expects SE to propose a process where such special promotions are agreed on commercial basis based at the point in time. • There needs to be pricing for optional levels of protection for the WDC, MBS and DS services. Specifically, for the WDC, the proposed protection options should be provided as passive protections for active circuits (i.e. Active/Passive); and the proposal of a thirty percent (30%) uplift in fees should be applied for the highest level of passive protection as proposed in the RO while the lower levels should have	The TRA does not support the proposal for volume discounts on WBS. • In the Authority's view, any such discount should be cost oriented and reflect the cost savings the SE will make when providing a larger volume of services to an individual customer. However, the Authority considers that such costs (which are primarily likely to be non-network costs) are likely to be limited and hence unlikely to support any meaningful discount scheme. Furthermore, the Authority is concerned that any discount scheme should not unduly favour any one retail service provider. Given BRE's current share of fixed fibre broadband connections, it is likely that any such discount scheme for WBS would lead to it paying a lower average access price than any other OLO. The

	lower percentages. On the other hand, an Active circuit of protection should have the standard full price of a normal circuit. • There should not be a charge for rejections of WBS Orders, as shown in the Additional Charges for WBS in Schedule 3. BRE understands that this refers to the situation where an Order is placed and immediately rejected by the SE. In this case, the SE has not incurred an actual cost. • The proposed charge for changes of speed at BD 5 per event should be removed. BRE believes there should be no charge for this as change of speed is only a soft change on the network and involves no manual intervention from the SE. The proposed BD20 set up charge for new WBS circuits is excessive and will serve as a barrier to entry. BRE suggests this is reduced to BD10 per new installation in order to promote take up of fiber based services and allow for a more cost-effective entry point for customers. • BRE requests SE to offer up to 30 days free suspension for WBS and may then change BD5 per suspension event per month thereafter. • It is unclear what the charge for suspension at the Access Seeker's request means. The Supply Terms is clear that suspension occurs in very specific scenarios and does not refer to any such suspension made at the Access Seeker's request. BRE sees no reason as to why it would ask the SE to suspend the WBS connection if it would still be liable to pay the MRC. As such, BRE request that this charge and the event it refers to be removed altogether.	Authority does not believe that such a situation would be conducive to effective and sustainable competition. • The Authority considers that the pricing of the protection for WDC, MBS, and DS is consistent with the four principles set out in para 34.4.1 of the draft reference offer order. • The Authority considers that the WBS service description includes clear basis upon which the Access Provider may reject an order. The Access Seeker is best placed to ensure that an order meets these all the requirements and should therefore be required to do so. However, the Authority notes that the Access Provider must provide sufficiently detailed reason for a rejection. • The Authority notes BRE's comments on the charge for changes of speed, however, the Authority has retained these in this RO. The Authority may reconsider this position in any subsequent review of the RO.
Viva		
	The TRA needs to take due account of benchmark pricing provided by Viva and other parties in resetting the SE's prices for the final RO order. The benchmark data suggests that the price terms proposed by the Authority are not fair and reasonable. *The TRA's position on benchmarking*	As Viva is aware from the consultation, the Authority has considered a range of evidence when determining the appropriate price terms for the SE RO product set. That is, the Authority has taken a balanced approach in setting the proposed prices, considering the forecast costs and demand set out in the SE's business case and the uncertainty regarding these forecasts while the SE is further being established, as well as also taking into account benchmark information provided by other parties. This balanced approach is further reflected in the Authority's

	• The TRA has made a number of comments in relation to the benchmark pricing information provided in Viva's previous submissions; Viva respond as follows: "*any benchmarks should be considered with care and used alongside other sources of information to determine appropriate price terms, rather as the primary source*"; **Viva's response**: agree that care is required, although Article 57(b) requires either forward-looking incremental cost pricing or benchmarking, so limiting the extraneous factors that may be considered by the TRA. *"Unit costs for higher speed services on the fibre network are likely to remain higher if a large share of customers remains on the copper network";* **Viva's response**: acknowledge this may be right, although all countries benchmarked continue to provide services over copper networks. *"The Authority considers that a more accurate comparison might, therefore, compare average customer revenues more generally or the prices of flagship products";* **Viva's response**: don't accept this is a valid approach to setting wholesale prices, which are intended to be cost-based. If the prices were cost-based, we are likely to see Bahraini consumers getting far superior products for the same price that they pay today for low speed lesser quality copper products. *"The Authority also has concerns around the benchmarking provided by Viva for the connectivity products in the draft RO. In particular, the Authority notes that Viva has provided only a very small sample of benchmarks, with these also showing a significant variation in price terms, meaning it is difficult to draw conclusions from these benchmarks";* **Viva's response**: accept that there are a fairly small number of benchmarks for connectivity products, as the markets in many other jurisdictions are relatively competitive and price regulation is not as common as for other services (such as Bitstream). Viva therefore accept that further care is required in applying these benchmarks and	commitment to review again the RO terms and conditions within 18 months of the RO coming into force. The Authority considers that the benchmarks provided by Viva for WBS, especially when taking into account the concerns raised by the Authority on those benchmarks and the other benchmarks provided by the Authority, do not clearly show that price terms should be reduced further in the ROO. This is particularly the case given the uncertainties inherent in the SE business case. With regards to the specific points made by Viva: • The Authority has set out above, in responses to Question 7, why it is not appropriate or required to set prices at cost at this point in time. • While copper services may still be in use in the benchmarked countries, the pricing of such services is more restricted by higher regulated prices of the local loop (i.e. irrespective of capacity). In Bahrain, a gradient is applied between lower and higher speed services which implies that prices for lower speed services vary and also imply that higher speed service prices can differ more significantly from prices in other jurisdictions. • The Authority acknowledges Viva's acceptance that benchmarks need to be considered with care. It also accepts, as stated in the Consultation, that the benchmarks do show that the price terms initially proposed by the SE in its RO were out of line with price terms elsewhere. However, it does not accept that the benchmarks suggest that prices should be reduced further from the levels in the draft ROO.

	acknowledge there is variation. However, the variation that is most striking is not between the benchmark countries, rather between the benchmark countries and Bahrain (as further shown below). Viva suggest the TRA must work with what it has available to it and, again, the indications are clear that Bahraini prices are excessive as compared to other jurisdictions. *P2P Ethernet pricing* • Viva have updated its connectivity benchmark prices since its last submission. • In the case of SE's DS product, the monthly charge is now 351 BD for 1Gbps. • In New Zealand3, the price of Chorus' comparable product is 116.87 BD per month. approximately **one-third of the price**. • In the United Kingdom4, the price of Openreach's comparable product is 65.95 BD per month. Approximately **one-fifth of the price**. • While the price of this service has improved in the most recent draft reference offer, the price is still **three to five times more** than comparable benchmarks. • The monthly charge for SE's 10Gbps service is now 1,314 BD. • In New Zealand, the price of Chorus' comparable product is 340.55 BD per month. Approximately **one-quarter of the price**. • In the United Kingdom, the price of Openreach's comparable product is 168.80 BD per month. Approximately **one-eighth of the price**. • The discrepancy between the proposed price is more significant with the 10Gbps service. The proposed price for SE's 10Gbps is between **four to eight times more** than comparable benchmarks. *OWS pricing* • The UK (along with a few other countries) seek to regulate products similar to the SE's OWS service. • The monthly charge for SE's OTU3 service is 4,524 BD. In the United Kingdom5, the price of Openreach's comparable product is 354.42 BD per month. Approximately **one-thirteenth of the price**.	*P2P Ethernet pricing* The Authority again notes that its approach to determining the proposed prices set out in the draft SE Order balanced all the evidence available to it, such as service specific cost estimates, the SE's business case international benchmarks – both those provided by Viva and the additional benchmarks collected by the Authority. Viva states in its Consultation Responses that it has updated its connectivity benchmark, quoting a number of prices from New Zealand the UK. While the Authority notes that those prices are different (lower) from those Viva previously presented, it does not change the conclusion the Authority previously reached. In addition to the benchmarks Viva previously presented, the Authority identified a number of countries with prices for similar services that are higher than those set out in the draft SE Order. The Authority also generally concluded that prices vary significantly, something that the new price benchmarks provided by Viva continue to demonstrate. *OWS Pricing* As set out in the consultation to the draft RO order, the Authority views the OWS product as an alternative core network backhaul product to DS or MBS. This is reflected in the proposed price term, which is based on an extrapolation of MBS price terms. That is, the price terms for OWS in the

	• The monthly charge for SE's OTU4 service is 7,646 BD. In the United Kingdom, the price of Openreach's comparable product is 389.23 BD per month. Approximately **one-twentieth of the price**. • It is **thirteen to twenty times more** expensive in Bahrain for the comparable service in the UK. • If the price difference was the RO standard say five times more expensive than benchmarks, the price for the OWS service would reduce by 50-75%. As currently defined, the OWS service is very similar to the DS service and is considerably more expensive than that. • There are likely to be more sites required for 5G, as densification will be necessary to cope with capacity demands and higher frequencies will require increasing numbers of small cells, all fibre connected. The cost of deployment and operation, particularly of small cells, is heavily affected by the cost of fibre backhaul. The price level for the OWS service risks undermining the business case of MNOs for small cells in particular. The Government's aspirations for a dynamic 5G future may not be achievable with OWS charges at this level. *Fronthaul access service pricing* • Viva believe that the TRA should specify a price for the FAS, at least the MRC, as Viva are concerned that a POA pricing approach will be susceptible to gaming by SE. It may either be a per metre charge or a fixed charge. • Chorus' point to point dark fibre service is a fixed charge, at the equivalent of BD 89.20 per month. *Mobile backhaul service pricing* • Viva reiterate that the MBS service and the DS service are essentially the same and therefore do not understand why the MBS MRC charges should be higher than the DS charges, for example: - 1Gbps DS BD351 - 1Gbps MBS BD 540 - 10Gbps DS BD 1,314 - 10Gbps MBS BD 2088	draft SE Order are based on the price of hypothetical MBS services of 40 and 100 Gbps. In deriving that price, the Authority had regard to the fact that MNOs could benefit, in the core of their networks, from having access to an optical service at significantly higher capacities than is available in either the DS or MBS products. The proposed pricing also reflects the need to ensure that the introduction of OWS does not impact negatively on the SE business case, given that the OWS service could act as a substitute for MBS and DS. This means that it would not be appropriate to set a price for OWS at cost, given the Authority's general position on the principles applied in determining the appropriate price levels. The Authority is also of the view that any need for optical products for the purpose of 5G backhaul is likely to effectively arise closer to the next review of the RO. Prior to this, the Authority encourages OLOs to comment on the specific requirements that necessitate the use of optical services in relation to 5G backhaul. The Authority acknowledges that Viva has put forward one benchmark price for OWS. However, in examining this, the Authority notes that: 1. A single country does not represent a reasonable sample for a benchmark. 2. The service considered by Viva doesn't seem to be comparable to the OWS set out in the draft SE Order. 3. The pricing considered by Viva seems to be incomplete. In relation to 2, the Authority notes that the description of the Openreach service Viva refers to explicitly prohibits the use of the optical access product in the core of the network.[1] The service also considers the use of the product for a number of capacities that the Authority clearly considered out of scope for OWS. In relation to 3, the Authority notes that the Openreach service referred to by Viva consists of a number of different elements and options. It is unclear, what the precise equivalent of the OTU3/4 service is, but, while the Authority has not reviewed the service description in detail (since other considerations than benchmark prices have led to its proposal for OWS prices), it notes that the benchmark Viva seems to refer to is for a

[1] Openreach, "Optical Spectrum Access: OSA FSP3000 (inc. Filter Connect) and OSA XG210 Filter Connect", October 2018.

	• Viva have shown above that the DS service should be aligned with best practices, which are three to eight times less expensive than benchmarks.	single equipment unit for establishing an optical network link.[2] It seems at least two of those units would be required for establishing such a link, while the access seeker would also have to pay a charge per meter for the length of that link. ***Fibre Fronthaul Service (FFS) pricing*** In the ROO Consultation, the Authority set out the possibility that the FFS (previous referred to as FAS) could be supplied in one of two ways. Firstly, the FFS could be supplied by the SE, with the SE taking responsibility for the deployment of any required fibre infrastructure. Alternatively, given the nature of the FFS, MNOs could be allowed to self-provide the FFS links. • Under the first approach in the ROO Consultation, the Authority proposed that price terms should be set on a bespoke basis. The Authority therefore did not include a price for FFS in the ROO Consultation. • Under the second approach in the ROO Consultation, the Authority proposed to allow the SE to levy a monthly recurring charge on MNOs to cover the cost the SE would incur in maintaining and monitoring the links, as well as carrying out any necessary repairs and to make an appropriate contribution to common costs. However, no specific amount was proposed by the Authority. The Authority has considered industry feedback to the ROO Consultation regarding both the price and non-price terms for FFS. Having taken into account industry feedback, the Authority has amended the FFS Service Description from that included in the draft ROO. As noted above, the supply of FFS will be based on the following: • Schedule 6.6 of the RO, which contains the FFS Service Description. This Schedule describes the process and terms and

[2] https://www.openreach.co.uk/orpg/home/products/pricing/loadProductPriceDetails.do?data=NYi8APidowr%2Bbghq2bp1lTA1Qq62Iq84hjXAzqsrsMlZ6rNZujnCs99NbIKJZPD9hXYmiijxH6wrCQm97GZMyQ%3D%3D

		conditions by which fibre cables for fronthaul will be deployed in SE duct; and • Schedule 6.7 of the RO, which contains the FAS Service Description. This Schedule describes the process and terms and conditions by which MNOs will rent duct space from the SE, through which the FFS will be supplied. As a result of these changes, the Authority believes it is also reasonable to move away from having purely bespoke charges for the FFS Service. In doing so, the Authority believes this should reduce the possibility for the SE to unduly delay the provision of FFS or for the SE to provide the service on different terms to particular MNOs. In particular, the Authority will require: • The Access Seeker (MNO) wishing to use the FFS, to pay Non-Recurring Charges to cover the Application, Field Studies and Installation processes • The SE to then maintain that fronthaul fibre, including carrying out repairs to the fronthaul fibre in the event of any damage caused to it. The Access Seeker will be required to cover the costs of replacing fibre that has degraded through normal wear and tear. • The Access Seeker to pay to the SE a monthly rental charge for the duct space (FAS) used in the provision of the FFS, together with all necessary ancillary charges, as set out in Schedule 3 (Pricing) and consistent, as set out below, with FAS charges. Given this, the SE is required to set out in the RO, a fixed, per metre monthly recurring charge for the duct rental aspect of the FAS. The FFS is not covered by the SE's interim business case. As such, this does not provide a direct input to determining an appropriate charge for this service. However, the business case model does include duct rental (FAS) revenues for the existing (legacy) duct rental service provided by Batelco to OLOs, with these revenues being based on the duct rental charge included in Batelco's existing Reference Offer (in force immediately prior to the effective date of the SE Order) of 189 Fils per metre per duct bore per month. The Authority therefore requires the SE

		to apply this duct rental charge for the FFS. No additional charges should be levied by the SE on MNOs for the maintenance and monitoring of those links. ***Mobile backhaul service pricing*** The Authority has responded, above, to Viva's additional benchmark evidence on the pricing of mobile backhaul services. It also acknowledges the differences in price terms for MBS and DS. Given that MNOs have a choice over which backhaul product to use, the Authority will, for this SE Order, maintain this price differential.
NBNetco		
	With the exception of OWS and FAS, NBNetco considers the price terms proposed by the Authority to be reasonable. These prices align with NBNetco's position regarding the interim business case.	The TRA notes the SE's acceptance of the majority of price terms set out in the draft SE Order. The Authority has not received detailed price proposals from NBNetco for either OWS or FAS.
Zain		
	a) As per Zain's response to question 7, Zain is of the view that the price terms proposed by the Authority for OWS and DS, which is an essential input product for mobile services, are not fair and will have high constraints on the service affordability and investment sustainability in the mobile broadband market. b) Paragraph 34.7.3 of Annex 1 – Draft Reference Offer Order denotes that there should be no additional non-recurring fee levied on Licensed Operators when a WDC Service is supplied to either a small business building or cell site that is not connected with fibre. The same position is contemplated to the DS and WBS services, and the service description were correctly reflected this direction. However, paragraph 3.19 of the WDC service description is still referring to a table of cost recovery by the SE for the	The Authority refers Zain to its response to its comments on Question 7 of the Consultation. (b) Paragraph 34.7.3 of Annex 1: The Authority notes Zain's comment that there should not be any additional non-recurring fee. This is reflected in the SE Order and the relevant Service Description. The table in paragraph 3.19 of the WDC Service Description sets out the approach taken for the recovery of the cost of fibre access cable deployment under specific scenarios. In particular, where there is a new connection this cost is recovered through the MRC and the NRC is zero. However, the Access Provider shall be able to fully recover the costs

	deployment of a new fibre access cable. Zain is therefore of the view that paragraph 3.19 is invalid and should be deleted.	incurred in deploying a new fibre protection path by charging the Access Seeker an NRC**.**
Kalaam		
	Kalaam face margin squeeze issues with WBS due to regular retail offers that sell bitstream services to End Users directly at a cheaper value than what is being offered to Access Seekers at a wholesale level. Kalaam requests that the RO includes any offers given by BRE is also reflected through NBN offers.	The Authority has, in considering appropriate charges for WBS, considered the margins that would be available to OLOs given the SE's pricing and BRE's current headline retail prices. The Authority is satisfied that this margin should be sufficient. However, the Authority will continue to monitor the market (through, for example, regulatory accounting obligations) to ensure that BRE and SE do not, together, engage in margin squeeze. Should the Authority consider that a margin squeeze may be taking place it will consider taking enforcement action against the relevant parties in line with the provisions of Article 65(b) of the Law and the Authority's Competition Guidelines. The Authority may start such investigations following the receipt of complaints from other parties or as "own initiative" investigations.
NON-PRICE TERMS **General questions**		
Question 9: Do you consider that the proposed non-price terms, as set out in the Schedules to the Draft Amended Reference Offer, including the Main Body Terms, Supply Terms and Definitions, are fit for purpose and meet the reasonable requirements of Licensed Operators?		
Viacloud		
	Yes	-
Etisalcom		

	Overall Etisalcom finds the non-price terms to be fine but would like more clarity as to what would happen about current disputes and other financial/invoicing issues related to Batelco Wholesale.	The Authority agrees that more clarity is required in relation to financial/invoicing issues related to wholesale activities. The Authority expects that these matters should be addressed to NBNetco going forward however, this can only be confirmed upon crystallisation of the relevant agreements between NBNetco and Batelco.
Infonas		
	-	-
BRE (Batelco)		
	• It would be useful if the Authority could provide the OLOs with a track-change version of the documents showing the changes made with this round of consultation (to identify the changes made by the Authority since the last round). • BRE reserves its right to provide comments on other aspects of the non-price terms of the Draft SE RO to the Authority either generally or during the course of subsequent reviews of the SE RO.	BRE (Batelco)'s comments are noted.
Viva		
	• The Schedules are a considerable improvement on the previous draft. • However, Viva have the following comments on the proposed non-price terms: **Schedule 1 Main Body Terms** • **Clause 6**: If an Access Seeker proposes dark fibre access as a new service under clause 6, then Viva anticipate that SE may reject this request. The Access Seeker may then apply to the TRA for resolution in accordance with Article 57(e) of the Law. The initial request would presumably be a New Service Request under clause 6.1 and the	**Schedule 1 Main Body Terms** • Clause 6: Viva's comments are noted. At a principles level, any service which is not addressed in a Service Description under the Reference Offer would be treated as a new service request. • Clause 6.8 and 6.9: Viva's comments are noted. The reference to private negotiations is not intended to enable bespoke

	Access Seeker would comply with clause 6.2. Please see Viva's comments in relation to the definition of Service in the Dictionary. • **Clause 6.8 and 6.9**: Please clarify how these provisions are intended to operate. Viva don't expect private negotiations with the Access Provider, given that equivalence requires each service provider to be treated equally. **Schedule 8 Dictionary** • **Definition of Change of Control**: Given that a Change of Control can lead to termination of the Supply Terms for an Access Seeker, Viva propose tightening up this definition, if it is to remain in the document. A change in the ability of a stakeholder to appoint the board may arise, for example, if there is a new minority shareholder that can appoint a single board member. Viva recommend that this definition, if it is to be retained, apply to where a new shareholder acquires greater than 50% of the company. • **Definition of Facility**: Viva propose that "cable station" should be reinserted in this definition. Viva believe the default position should be that the Access Provider provides cable station access, which Viva discuss further in Annex 3 of their response. • **Definition of Force Majeure**: Viva have previously submitted, in the context of the draft licences, that the reference to "governmental or States' acts or regulations" should only be regarded as Force Majeure with the approval of the TRA. • **Definition of Insolvent**: Viva propose a more conventional definition of insolvent, as follows: "where a party ceases to be able to pay its debts as they become due or is or becomes unable to pay its debts". • **Definition of Response Time**: Viva query whether the start of the period should begin "following Fault Acknowledgement", as this incentivises the Access Provider from delaying Fault Acknowledgement. Rather, it should begin at the time of discovery or notification of the fault, whichever is earlier. The same comment applies to the definition of Restoration Time.	negotiations regarding services, but rather would be as part of the general discussion regarding offering of new services. This includes as part of the ECTC. Any new services agreed with the SE would have to be made available to all Licensed Operators. **Schedule 8 Dictionary** • Definition of Change of Control: Viva's comments are noted. However the Authority considers that the current definition of Change of Control (which refers to a material change in the equity structure of a company giving rise to a change in the ability of a stakeholder to appoint the board of the company) is sufficient. • Definition of Facility: There will be no reinsertion of "cable station". Access to international submarine cables, via the GBI and Falcon cable landing stations will remain with BRE. • Definition of Force Majeure: Please see the Authority's earlier response. The current definition is in line with the standard recognised definition of Force Majeure. • Definition of Insolvent: The Authority agrees with Viva's comments; however the Authority considers it best to keep the definition of "Insolvent" in line with the law of Bahrain. The Authority has therefore updated the meaning of "Insolvent" to mirror the definition that is set out in Bahraini Law No (22) of 2018 promulgating the Restructuring and Insolvency Law. • Definition of Response Time: The Authority has considered Viva's comments, however, it is of the view that, at this time, it would not be practicable to introduce a proactive obligation on the SE to apply rebates up front. The Authority notes that this could be considered as part of the discussions in the ECTC.

	• **Definition of Service**: Viva propose that the definition of Service (which is a part of the definition of New Service) should be a service that the Access Provider is required to provide under the Law, rather than under the Licence as Viva have submitted that the obligations under the Licence are narrower than the requirements to provide Access under the Law. **Schedule 9 Supply Terms** • **Clause 2.5**: The Access Provider should obtain the TRA's approval before any amendment to the Supply Terms. • **Clause 7.2**: Viva note the Access Provider requires the TRA's approval for any "major changes", which Viva support in concept. However, the reference to major changes should be to "material changes" for consistency with clause 7.1. 32 • **Clause 8.2**: In paragraph (b), there should be an exception where the loss or damage is caused by the Access Provider or its contractors. In paragraph (b), the virus should not be introduced by the Access Provider or its contractors. • **Clause 9.9**: Modern reference offers require that access providers automatically apply service credits to the next invoice, without having to require the access seeker to make a claim. Viva propose this be followed in clause 9. • **Clause 10.2**: Viva propose that the condition that an Access Seeker "adopt a commercial approach to negotiation" be removed. This is an open ended condition that may be applied by the Access Provider if it disagrees with the request. The Access Provider may consider that any request that does not meet its commercial requirements is adopting a non-commercial approach to negotiation. • **Clause 16.11**: Viva propose that the "sole and exclusive remedy" wording in this provision be reviewed, in line with Viva's comments	• Definition of Service: The Authority considers that the reference and definition to "Service" should relate to service provided under the Reference Offer and SE License. **Schedule 9 Supply Terms** **Clause 2.5:** The Authority does not accept Viva's proposal. Requiring approval from the Authority for all amendments could result in unnecessary restrictions and be counter productive. • **Clause 7.2**: The Authority's view is that there is a distinction between 'material' changes in clause 7.1 and 'major' changes in clause 7.2. The 'material' change in clause 7.1 refers to the SE's network; whereas the 'major' changes in clause 7.2 refers to the changes that would have to be made to an OLO's network (following a SE material change). The Authority therefore has not made any changes to the relevant clause.. • **Clause 8.2:** in respect of clause 8.2(b): The Authority does not consider Viva's wording to be appropriate. It would be difficult to understand how NBNetco could be responsible as the equipment will be within the Access Seeker's possession. This is notwithstanding the wording in clause 8.5 which means that the Access Seeker has to give access to NBNetco to access the premises and repair faults etc.. The Authority therefore has not made any changes to this aspect of clause 8. In respect of clause 8.2(c): the Authority disagrees with Viva's proposal. The Authority does not think that this is necessary, but that the wording in the brackets "(other than software provided by the Access Provider)" sufficiently address Viva's concerns. It is unclear from Viva's responses how NBNetco would introduce a virus other than via software provided by it. The Authority therefore has not made any changes to this aspect of clause 8. • **Clause 9.9:** The Authority notes Viva's suggestion. In respect of 9.9(a): While the Authority considers that there could be merit in

	above. There is rarely, if ever, a justification for a sole and exclusive remedy provision in reference offers. • **Clause 16.15**: This provision should be deleted (See Viva's comments on clause 9.6). • **Clause 20.4**: Viva query whether the right to disclose should extend to disclosures to the Equivalence Compliance Committee and the Industry Forum. Viva do not consider that Confidential Customer Information should be disclosed by the Access Provider to these bodies, but the Supply Terms or confidential information of the Access Provider may be. • **Clause 20.12**: Viva query the continued need, or appropriateness, of paragraph (b) which addresses personnel with multiple roles that include sales and marketing. The Access Provider is intended to be a wholesale only operator and any sales and marketing is confined to licensed operators. Viva also believe paragraph (c) should be reconsidered in this context and Viva believe it should be deleted. • **Clause 21.3**: The question of "false attribution" is problematic where there is a fault and the Access Seeker must act swiftly in notifying its customers. Transparency requires some disclosure of the apparent cause, but this provision may prevent this, out of risk of false attribution. Viva prefer language such as "the Access Seeker shall act in a balanced and fair manner in attributing to the Access Provider…".	Viva's proposal, the Authority considers that this might be worth revisiting in subsequent reviews of the Reference Offer.. • **Clause 10.2:** The Authority notes Viva's reasoning and has removed reference to 'adopt a commercial approach' from the relevant sub-paragraph in clause 10.2. • **Clause 16.11:** The Authority notes Viva's concern regarding the necessary threshold and/or burden of proof to establish that a remedy should be a sole and exclusive remedy. However, the Authority considers that such threshold is positive for Access Seekers. The Authority notes that clause 16.11 is now subject to clause 9.6. • **Clause 16.15**: The Authority agrees with Viva's suggestion and has deleted previous clause 16.15. • **Clause 20.4**: The Authority does not consider that it is necessary to have specific reference to disclosures to the ECTC. The Authority therefore does not propose to change the wording. • **Clause 20.12**: The Authority notes Viva's comments but does not consider it appropriate or necessary to remove (b) and (c). The Authority considers that the wording in subparagraph (b) represents a recognised standard position, and that the wording in subparagraph (c) should be retained as beneficial for Access Seekers. The Authority therefore has not amended the wording in these subparagraphs. • **Clause 21.3**: The Authority notes Viva's comments. The Authority considers that it would be necessary to demonstrate reasonableness regarding any alleged false attribution. The Authority further considers that the proposed wording by Viva could result in increased uncertainty. The Authority therefore has not proposed to amend this clause.

NBNetco		
	• In general, NBNetco considers that the Main Body Terms meet the reasonable requirements of Licensed Operators. While the Supply Terms are largely suitable to meet Licensed Operator requirements, however, NBNetco has noted some drafting inconsistency and provides as part of its response to this Consultation, a marked up version of the Supply Terms. • NBNetco has made certain changes to the Definitions aligning with the NBNetco model of removing interaction between NBNetco and the end-user. As such NBNetco has removed references to end-user consent and end-user management as these remain the sole responsibility of the OLO. • Accordingly, these terms have been amended in the relevant Service Descriptions (see additional documents provided by NBNetco).	NBNetco's comments on the Main Body and Supply Terms are noted. The Authority agrees that the Access Provider will not have a direct commercial relationship with the End-User. The Authority considers that the existing drafting of the Service Description is consistent with this view. In regards to relevant definitions: • The Authority has revised the definition of "End User" as "the ultimate recipient of a Service provided to an Access Seeker, where the recipient is a legal or natural person". • The current definition of "End User Consent" includes additional wording to clarify that this consent may, depending on the relevant SD, require "confirmation that the End User has obtained necessary consents, approvals, rights of way and rights of access". The Authority considers that such a requirement is necessary given that the End-User is best placed to obtain such approvals on behalf of the Access Seeker. • The WBS SD includes an appropriate safeguard in that the Access Providers request for a copy of the End-User consent must be reasonable and justified. • The definition of End-User Management remains unchanged and highlights that the Access Seeker has primary responsibility for the End-User relationship.
Zain		
	<u>WBS Service Description:</u> • The Access Provider Exchange definition in the WBS service description is invalid as the access seeker has no physical or logical access to the Access Provider's OLT nor the distribution points in order to conduct necessary end-to-end troubleshooting. • The service description has scattered paragraphs that details the responsibilities and process of WBS Transfer Request which are	<u>WBS Service Description</u> • The Authority has clarified the definition to remove reference to physical or logical access • The Authority agrees that the Access Provider will not have a direct commercial relationship with the End-User. The Authority considers that the existing drafting of the Service Description is

	deemed not acceptable by Zain, as such clauses unduly interfere in the relation between the end user and service provider. For example (i) the definition of Invalid Transfer, (ii) paragraphs 8.24 - 8.25 (Reversal of a Service Request) and (iii) paragraphs 10.1 - 10.2 (WBS Transfer Request) of the WBS Service Description. In addition, Zain have the following concerns: • The ordering process for WBS should not be treated as service porting transaction from a service provide to another service provider as there is a possibility that the customer desires to have more than one connection, from the new access seeker and from the previous access seeker; • The contractual relation between the end user and service provider, has its own statutory obligations on both parties (such as minimum service commitment), in which, the SE has no visibility nor the power to terminate; and • The SE's responsibility is limited to service delivery, service changes (speeds upgrade/downgrade) and service termination. It is the responsibility of the end user to manage his/her services with the service providers of his/her choice. Therefore, these paragraphs should be omitted. • The SE should not be involved in the relationship between the Licensed Operator and the end user. Accordingly, paragraph 10.4 should be omitted. • For the reasons set out above, paragraph 10.5 (e) is not a valid scenario and should be omitted. <u>WDC Service Description:</u> • Paragraph 34.7.3 of Annex 1 – Draft Reference Offer Order denotes that there should be no additional non-recurring fee levied on Licensed Operators when a WDC Service is supplied to either a small business building or cell site that is not connected with fibre. • The same position is contemplated to the DS and WBS services, and the service description was correctly reflected this direction. However, paragraph 3.19 of the WDC service description is still referring to a table of cost recovery by the SE for the deployment of a new fibre access cable. Zain submit that paragraph 3.19 is invalid and should be deleted.	consistent with this view. That said, the Authority has amended aspects of the drafting as suggested by Zain, and in particular, has removed the reference to Invalid Transfer. • In regards to contractual relation; the Authority considers that it should be for Licensed Operator to ensure back-to-back provisions in its contracts with its customers. • Service delivery: The Authority agrees that it should be the responsibility of the End-User to manage his/her services with the service providers of his/her choice and that the current wording in the Service Description reflects this. • The Authority considers that continuity of service will be promoted where an End-User has the option to utilise a transfer process or a cease and provide ordering process. The Authority considers that clause 10.1 is sufficiently clear about the consequences of a transfer process. • In regards to para 10.4, the Authority notes that the relevant wording is designed to make clear that the SE should not have any direct contact with the End-User; this includes that the SE should not bill the End-User. • The Authority considers that the requirements on the Access Seekers to provide information about the transfer will promote competition and safeguard End-Users and therefore has retained 10.4 and 10.5(e). The Authority does not consider that the Service Description in anyway restricts an End-User from having multiple WBS Services. <u>WDC Service Description</u> • The Authority has considered Zain's comments in relation clause 3.19 and notes that table set out therein provides for sufficient specificity as to the instances in which the SE may apply a NRC for Service Requests which require the deployment of fibre access. • The Authority has included amended wording to clarify that the proposed new "Expected RFT" and "Expected RFS" Dates shall not exceed 2 Working Days from those previously notified

	• Paragraph 3.14 of the WDC service description set course of actions to be followed in the event the access provider's technician presented at the end user premise to install a WDC service, and the access seeker or the end user cannot be available on the Expected RFT Date for such installation. In Zain's view, the access provider should notify the access ahead of time (at least two Working Days), with such intended visit, in order to manage the resources availability or coordinate with the end user. There is a high chance that the access seeker might not be able to attend this installation if the access provider's technician attended on the same day without prior arrangement. <u>DS Service Description:</u> • Paragraph 3.14 of the DS service description sets the course of actions to be followed in the event the access provider's technician presented at the Wireless Radio Site to install a DS service, and the access seeker cannot be available on the Expected RFT Date for such installation. In Zain's view, the access provider should notify the access seeker ahead of time, with at least two Working Days, of such intended visit in order to manage the resources availability and/or coordinate for applicable access approval procedures.	<u>DS Service Description</u> • <u>The Authority has included amended wording to clarify that the proposed new "Expected RFT" and "Expected RFS" Dates shall not exceed 2 Working Days from those previously notified</u>
Kalaam		
	• Fiber availability is unclear – the system is outdated and Kalaam do not have visibility over the lead time to make fiber available. The Draft RO should ensure that the system is up to date. • In case of not meeting the SLAs and it causes the Access Seeker to lose the End User, the Access Provider should compensate the Access Seeker the full contract value with the End User. Not only have Kalaam lost many customers for this reason but also it has affected the reputation in the market when we constantly not able to deliver the service as per the SLAs.	• The Authority has revised the drafting of clause 4.6 of the WBS Service Description, to require that the coverage maps are accurate. However, in regards to the frequency of the updates to the coverage maps, the Authority considers that the current requirement of monthly updates, is sufficient at this time. • The Authority considers that the current framework (which refers to service credits) strikes an appropriate balance between the needs of Licensed Operators and NBNetco. The Authority notes that clause 16 of the Supply Terms has been revised to remove restrictions on Access Seekers contractual damages over and above service credits.

Question 10: Do you consider that the technical requirements as set out in Annexes to the Service Descriptions are appropriate? Please provide your views on the appropriate technical requirements for FAS and OWS.		
Viacloud		
	Yes	-
Etisalcom		
	N/A	-
Infonas		
	-	-
BRE (Batelco)		
	BRE refers to its position regarding FAS and OWS. Without prejudice to its position, BRE is of the view that the OWS Service should include Optical Ethernet/GE interfaces. The OTU interface is a DWDM interface while BRE does not operate a DWDM network. Therefore, the current technical setup of OWS puts BRE at a significant disadvantage compared to other OLOs. This highlights the urgent need to promptly obtain certainty on other OLOs' fiber networks and the need to have these networks handed over to the SE to ensure all retail operators are on a level playing field.	The Authority notes that the OWS does not currently include optical interfaces. Therefore, BRE will be able to interface with SE's DWDM network and accordingly will not be at a disadvantage in acquiring the OWS Service from SE.
Viva		

	In summary, Viva state the following: • **WBS**: The technical description of the WBS service does not align well with typical industry best practice for 2019. The service delivered to the customer needs to be better defined, and as currently framed will deliver a less than ideal customer experience. It will also be hard for any party involved to determine whether the service is performing as expected or not; • **WDC**: The technical description for the WDC service is largely acceptable. It appears to support most of the interfaces required for the support of synchronous and Ethernet data connectivity; • **MBS and DS**: The MBS and the DS service appear to be a very specific instance of the more general WDS service, but the technical descriptions are generally acceptable; and • **OWS and FAS**: As mentioned above, the technical descriptions for the OWS and FAS services are artificially restrictive and, in the case of the OWS service it should be an optical service.	Viva's general comments are noted. The Authority refers Viva to its specific responses on the technical aspects of each SD.
Netco		
	Refer to responses to questions 1, 2 and 3 above.	The Authority refers NBNetco to its responses to Questions 1, 2 and 3.
Zain		
	Zain does consider that the technical requirements as set out in Annexes to the Service Descriptions are appropriate. However, the following provisions must be addressed: <u>WBS service description:</u> a) In order to have an efficient setup and service order experience by the end user, Zain's preference is to supply a preconfigured ONT quantity stock to the SE to be installed during the service provisioning, giving a one visit experience to the end users. Indeed, the ONT model will be agreed upon between SE and the access seeker and all compatibility test shall be performed to get the ONT model approved by the SE for the WBS service. SE shall have full visibility on the ONT and ONT management and OLO shall have TR69	<u>WBS Service Description</u>: • The Authority agrees that competition may be promoted where operators are able to deploy their own ONT through the installation process. However, at this time, and without further information in support of the benefits of this proposal, the Authority considers that it may impose a disproportionate operational burden on the SE to deliver. Accordingly, the Authority encourages the industry to consider whether the relevant processes may be efficiently developed through the proposed ECTC.

	capability extended in both cases ONT supplied by SE or self-provide. The ONT quantity stock management shall be in accordance with the forecasts submitted by the access seekers. Accordingly, Zain requires that the service description to be amended to facilitate the option and process of ONT selection by the OLO. b) Zain are seeking further clarification regarding the proposed contention ratio in Annex 1 under this service description. How it is enforced, at which network element and whether it has a relation to the split ratio. Zain recommend reflecting such contention ratio mechanism on the technical diagrams provided in the annex. According to Authority's quarterly published fixed broadband QoS reports, the lower speed connection performs better than advertised and the higher speed connection is performing at advertised speeds as 10% is usually taken for headers, contention ratio is non-existing. <u>WDC service description:</u> a) Jitter is the variance in time delay in milliseconds (ms) between data packets over a network. This delay occurs due to propagation delay, transmission delay, queuing delay or node processing delay. Amongst these, only propagation delay is a constant whilst the rest are variable in a transmission network, hence Jitter cannot be totally removed. Accordingly, the Jitter value in the WDC service description should be 1ms. b) Regarding paragraph 3.22 of the WDC service description: there should not be any limitation on the number of ports utilised by the access seeker. Rather it should be able to utilize any of the ingress ports available on the CPE and not just two. c) Regarding paragraph 3.23 of the WDC service description: although the list of parameters available in the monitoring tool as per this paragraph are not exclusive, Zain require further minimum technical parameters to be added to this list: <u>Node Details:</u> i. Name ii. Location iii. Active Alerts	• The Authority has carefully reviewed the submissions of all stakeholders in regard to the proposed contention ratios for the WBS service and considers, on balance, there is no objective justification to retain them. Further the Authority notes that contention will generally be applied by the Internet Service Provider (ISP) at the Internet Gateways rather than at the access transport layer and accordingly has removed the contention ratios from the WBS Service Description. <u>WDC Service Description</u>: • The Authority agrees and has amended the Jitter value in the WDC service description to be 1ms. • The Authority agrees that there should not be any limitation on the number of ports utilised by the access seeker. Rather it should be able to utilize any of the ingress ports available on the CPE and not just two. The Authority has made the appropriate amendments to clause 3.22 of the WDC Service Description, • The Authority has included "Frame Loss" per circuit as a specified technical parameter to be monitored and has also included wording that allows for additional technical parameters to be defined in the Joint Working Manual (JWM). • In regards to Annex 1, the Authority agrees with Zain's proposal and has amended Annex 1 to reflect this position. • The Authority has amended the table in Annex 2 to provide for multiple VLANs. • The Authority has amended Annex 4 to provide that the Tester Frame Size should is 9,600 for fibre links.

	iv. Interfaces Utilization v. Uptime vi. Latency <u>Interface Details:</u> i. Name ii. Status iii. Type iv. Administrative Status v. Operational Status vi. Last Change State vii. Bandwidth viii. Current Traffic – Min/Max/Avg ix. Percent Utilization – Min/Max/Avg x. MTU xi. Interface Errors xii. Interface Discards xiii. Interface Octets xiv. Interface Unicasts xv. Interface Multicasts xvi. Interface Broadcasts xvii. Events d) In Annex 1, the table incorrectly specifies FE & GE as interfaces for 100Gbit/s Aggregation Link, which technically do not support 100Gbit/s. Furthermore, the topology of the 100Gbit/s Aggregation Link should include both Synchronous Digital Hierarchy SDH and Ethernet. e) In Annex 2, the table restrict the (CE-VLAN - PE-VLAN ID Map) attribute to two VLANs per Connection. Such limitation did not exist in the previous WDC service and there should not be any restrictions introduced. Accordingly, Zain recommend keeping this service transparent with no restriction on the number of VLANs. f) The casting attributes mentioned in the table of Annex B does not specify why a limit is applied, nor what is the limit implemented. Unicast traffic is	

	genuine traffic and has no impact on the service provision and delivery and therefore there is no rationale to apply a limit. g) In Annex 4 the Tester Frame Size should be 9,600 for fibre links and 512 for copper. <u>DS service description:</u> a) Taking into account Zain's comments that the DS and MBS from the definitions and service description provided are exactly the same technical solution, the QoS parameters stipulated in the DS service description should match what is specified under the MBS service description. Zain submit that MBS product should be omitted, and the DS quality of service parameters should be set to 2ms for Round Trip Delay and 1ms for Jitter. b) The default Frame Size specified in Annex 2 table should be 9,600 instead of 1,522. This is technically required to utilise DS for Zain's network transmission and backhauling. c) With regards to the Provisioning Validation Test table, Jitter should be included as a further testing parameter it is a main QoS service parameter, In addition, to include jumbo frames testing. <u>OWS service description:</u> a) In the absence of dark fibre product, Zain believe that the proposed technical topology of OWS does not serve the purpose OWS was founded for. The idea is to have a product that provides flexibility, latency and scalability to the mobile operator while running the next generation of Radio Access Network. To this effect, Zain highlighted that maintaining lower connectivity layer in the mobile operator network will help in meeting the stringent latency requirements needed for 5G applications, and on a broader level have the following advantages which will assist in: • Innovation and flexibility: mobile operators will have full control over the traffic routing, adoption of new technologies as business requirements dictate and interoperability; and • Expansion and replacement cost: as the proposed optical topology solution is a fully transparent protocol, adapting existing services is	<u>DS Service Description:</u> • The Authority notes Zain's comments. However, the Authority has had regard to all stakeholder feedback and accepts that MBS and DS should be maintained as 2 distinctive products at this time. The Authority notes that this position may be reviewed in 18 months' time. • The Authority notes that the relevant Annexes in the MBS and DS Service Descriptions already provides that the maximum frame size is 9,600. • The Provisioning Validation Test table has been updated to include Tester Frame Size up to 9,600. <u>OWS Service Description:</u> • The OWS has been designed to utilise OTU3 and OTU4 interfaces. The Authority understands from technology vendors that optical interfaces will not be interoperable between multiple service providers. The Authority will further consult on such a proposal in the next review of the RO (in 18 months). • The Authority has updated Annex 3 in the final OWS Service Description to set out the specifications for the Acceptance Criteria and Test Results applicable to the OWS Service Provisioning Validation Test<u>.</u>

	straightforward and leaves current network deployments intact. The enhanced multiplexing capabilities of the optical network allow for different traffic types to be carried over a single wavelength. Therefore, the cost of expansion or replacing network components whenever new technologies emerge is significantly minimised. • Therefore, in order to maximising the benefit of such superior solution, the interface should not be limited to OTU. Doing so means that the access seeker should deploy another OTN equipment to have a different interface drop, which overthrows all the benefits sought out of such solution. The access seeker should have the flexibility to use the interfaces on the CPE, the OWS service should ensure optical service to the PRS and the drop should offer SDH, OTN and Etherwave interfaces. Zain included a table setting out its preferred technical specifications for each interface. • The OWS service description is lacking explicit details on the process of provisioning validation testing, and how will the service be deemed acceptable. <u>FAS service description:</u> • The document lacks details on the technical deployment of FAS. At minimum Optical Time Domain Reflectometer ("OTDR") is expected for acceptance testing given the passive nature of the product.	<u>FFS (formerly FAS) service description:</u> • The Authority notes that the relevant deployment process details have been added to the FFS Service Description, including a reference to the existing processes under the Facilities Access Service. There is testing required under the existing Duct Sharing Process (Schedule 6-7.3). The Authority considers that this is fit for the purpose of delivering FFS. If required, further details may be set out in the JWM.
Kalaam		
	FAS and OWS: N/A. <u>WDC technical requirements:</u> • Kalaam repeats it's response to question 1.	Please refer to the Authority's response to Kalaam at question 1.

Definitions and scope		
Question 11: Do you agree with the definition of "End User" in each of the relevant Service Descriptions?		
Viacloud		
	Yes	-
Etisalcom		
	Yes	-
Infonas		
	-	-
BRE (Batelco)		
	No. There are no definitions of "End User" in the Service Descriptions. "End User" is defined in Schedule 8 of the Draft SE RO as: *"…the ultimate recipient of a Service who is a legal or natural person, that is neither a Licensee, nor Affiliated to or Controlled by a Licensee".* This definition ignores the possibility that Licensees may be End Users either obtaining services for their own internal use (as a retail or enterprise user), or providing services to other Licensees. This possibility needs to be accommodated.	The Authority has revised the definition of “End User” as “the ultimate recipient of a Service provided to an Access Seeker, where the recipient is a legal or natural person”. The Authority notes that the definition of “Access Seeker” is ”in relation to a Service, the Licensed Operator that has requested the Access Provider to supply that Service.” The Authority considers that these definitions are fit for the purposes of the SE RO.

Viva		
	Viva query why an affiliate etc. of a Licensee should not be an end user, if in fact they are the end user of the Services. They should be entitled to the same protections as any other end user.	The Authority refers Viva to its response to BRE above.
Netco		
	• "End User" is defined in the Schedule 8 – Dictionary and not in the Service Descriptions. NBNetco has amended the definition of End User in Schedule 8. As previously drafted, the definition of End User was the ultimate recipient of a Service with Service defined as the Access Provider's service. NBNetco will not be providing Services to End Users but only to licensed operators and has therefore amended the definition to reflect this. However, OLO will be responsible to submit the correct information to differentiate between Business and residential end-users such as CR or CPR. • Furthermore, NBNetco has removed interactions between NBNetco and the End User in the Service Descriptions. NBNetco's customers remain strictly the licensed operators and all responsibility for obtaining consent, access rights and management of the End User remain the sole responsibility of the End User.	• The SDs do not contemplate that NBNetco would be providing Services directly to End Users. The Authority refers NBNetco to its response to Question 9 for further details.
Zain		
	• There is no definition of End User in the service descriptions, but Zain agrees with the proposed definition of End User in Schedule 8 – Dictionary. • There is a reference throughout the services descriptions of End User Premises, however this is not defined in the services descriptions nor in Schedule 8 – Dictionary. • Zain are of the view that there should be definitions for both Residential and Non-residential. Accordingly, Zain propose that Non-residential definition should be further expanded to the following:	• End User Premises is defined in Schedule 8 (Dictionary) as "the End User's permanent physical location in Bahrain." • Non-residential is defined in Schedule 8 (Dictionary): "means an End User with a commercial registration". The Authority considers that this definition is sufficient. The Authority does not consider it necessary to include the additional proposed wording for the address to have "commercial activity/nature" which could introduce an element of uncertainty into the definition that would be difficult to assess/monitor.

	"means an End User with a commercial registration, or where service is delivered to an address that has commercial activity/nature." • And Residential to be defined as follows: "*means an End User that is not a commercial entity with a commercial registration, neither the service is delivered to an address that has commercial activity/nature."*	• Similarly, the Authority does not consider it necessary to include a definition of Residential.
Kalaam		
	-	-
Question 12: Do you agree with the mechanism for determining the "Exceptional Delivery Date" included in the Service Descriptions?		
Viacloud		
	Yes	-
Etisalcom		
	Yes	-
Infonas		
	-	-

BRE (Batelco)		
	Yes	**-**
Viva		
	Yes. But as noted elsewhere in Viva's submissions, it believes the material breach by the Access Seeker should only be an exceptional circumstance where that breach prevents the Access Provider from meeting the relevant date.	The Authority agrees with Viva's comments. The Authority notes that it has included amended wording to clarify that the proposed new "Expected RFT" and "Expected RFS" Dates shall not exceed 2 Working Days from those previously notified. The Service Levels penalties apply to the Notification of Expected RFT and RFS Dates (and the revised Expected RFT and RFS Dates).
NBNetco		
	Yes	**-**
Zain		
	Zain agrees that the circumstances highlighted in the service descriptions: (i) force majeure and or regulatory event (ii) emergency maintenance and (iii) material breach by the access seeker will cause delays that the access provider cannot be held liable for but the mechanism for determining the "Exceptional Delivery Date" is not specified or included in the Service Descriptions.	The Authority considers that the mechanism is sufficiently addressed in the relevant wording in the SDs.
Kalaam		
	-	-

Question 13: Do you agree with the proposed definition of "Point of Presence" in the Dictionary?		
Viacloud		
	Yes	-
Etisalcom		
	Etisalcom disagrees as the definition does not include Colocation POP, e.g. hosted nodes in other data centers.	The Authority has considered Etisalcom's comments and notes that the definition of Point of Presence (POP) "means a permanent physical location where an aggregation link or connection of a relevant Service is terminated at premises owned or leased by the Access Seeker or at the Access Provider's colocation facility..." (but excludes a number of specific items). The Authority considers that this definition is fit for the purpose of the SDs under the SE RO.
Infonas		
	Infonas does not agree with the proposed definition of "Point of Presence" in the Dictionary – the existing definition of "Point of Presence" limits the Service Seekers from having a Point of Presence in certain locations unless it is a rented space/colocation. In a scenario where a customer has a data center and provides free space to operators in the data center's meet-me room, the OLO has a Point of Presence at a customer's DC. However, where the Service Seeker is given the space for free, then the Service Seeker will have issues ordering certain services as it will not be considered a POP. Infonas believes that the above condition should be removed, and the "Point of Presence" definition should include a telecom node located in any data center.	The Authority has considered Infonas comments and has removed the reference to "shown to be" from the definition of "PoP". The Authority considers that this means that an Access Seeker does not have to provide evidence that it is in fact leasing the premises at which an aggregation link or connection of a relevant Service is terminated in order for it be a PoP. However, the Authority notes that the SDs all include specific scenarios in which a Service may be deployed, which are generally all dependant on maintaining a distinction between "End-User Premises" and a "POP". Accordingly the Authority considers that the exclusion of "End-User Premises" remains valid for the purposes of this RO.

BRE (Batelco)		
	Yes	**-**
Viva		
	Yes	**-**
Netco		
	Yes	**-**
Zain		
	Yes, but there is a reference in this definition of End User Premises, however such term is not defined in the services descriptions nor in Schedule 8 – Dictionary.	The Authority notes that End-User Premises is defined in Schedule 8 – Dictionary.
Kalaam		
	-	-
Scope of specific Schedules		
Question 14: Do you agree with the proposed scope of the Service Request Form (Schedule 2) and its provisions? Do you believe that such a form is necessary and if so, are there any changes you would suggest / recommend in relation to it?		

Viacloud		
	Yes	-
Etisalcom		
	Yes	-
Infonas		
	-	-
BRE (Batelco)		
	Generally, yes. However please note the following observations: • It is not clear what the purpose of paragraph 4(d) of Schedule 2 is for; • No form was attached to Schedule 2 for BRE to review; and • BRE recommends that that request form and system be an automated system to allow for requests, and tracking their progress, such as those used by Openreach.	• The Authority notes that the form submitted by NBNetco as part of the draft Reference Offer for New Services appears to address only on-boarding of new operators, rather than also addressing circumstances for provision of new types of services. • The following two forms are now included under Schedule 2 of the SE RO; (i) Notification and Acceptance of Service Request and (ii) New Service Request; which have been adopted from the existing Schedule 2 of the Batelco Reference Offer. • The lodgement of such forms may be automated through the online digital portal that NBNetco is required to make available for placing and tracking orders within 1 month of the effective date of the SE Licence.
Viva		

	Viva generally agree with the proposed scope of Schedule 2; with the exception of the following specific comments: • For the various services, the Maximum Time for Service Request Acknowledgement is 15 minutes and Maximum Time for Service Request Confirmation is 2 working days, with no service level penalty in case of breach in most cases. In any case where there is not a penalty, Viva believe that there should be a penalty of 5 SC for each ½ hour imposed for failure to comply with the Maximum Time for Service Request Acknowledgement, and 10SC for each working day for failure to comply with Maximum Time for Service Request Confirmation as poor acknowledgement and confirmation processes by the Access Provider can be very disruptive for Access Seekers. • Further, there should be deemed acceptance of an Access Seeker's order if SE fails to respond within the Maximum Time for Service Request Confirmation. • If incorrect or insufficient information is provided by the Access Seeker, then SE notifies the Access Seeker and the clock stops for the Actual Time for Service Request Confirmation. If there has been error by SE and they miss the opportunity to respond to the Access Seeker's Service Request, then SE should bear the consequences. • Viva note that the Access Provider is to provide reasons for rejecting a Service Request. However, Viva believe the TRA should go further and provide that failure to include these reasons should be an invalid Service Request Confirmation. This failure by SE may lead to deemed acceptance by SE if they do not provide a valid Service Request Confirmation by the end of the Maximum Time for Service Request Confirmation.	• The Authority has considered Viva's comments. However the Authority considers that at this time, the imposition of the proposed SCs as a penalty for failure to comply with Maximum Time for Service Request Acknowledgement may result in diverting the SE from focusing its resources on service delivery. However the Authority considers that this is something which could be reviewed in due course, should this prove to be an issue. The Authority notes that the SE License provides for the SE to put in place within one (1) month of the Effective Date of the License, an online digital interface (portal) for ordering and tracking of orders. This portal should provide transparency to Access Seekers regarding progress of their orders. • The Authority has considered Viva's comments. The Authority has amended the Service Descriptions to provide for deemed acceptance (after 2 Working Days). • The Authority considers that the current wording regarding provision of detailed reasons for rejection of a Service Request is sufficient. Should the Access Seeker consider that sufficient reasons have not been provided, this would be a breach of the provisions of the Service Description. The Access Seeker would also remain free to resubmit a Request.
NBNetco		

	NBNetco agrees with Schedule 2. NBNetco has made an amendment to Schedule 2 to provide clarity that a First Service Request made pursuant to Schedule 2 does not discharge the Access Seeker of its obligations with regards to any relevant Service Description.	The Authority does not consider that NBNetco's proposed amendment is necessary. The following two forms are now included under Schedule 2 of the SE RO; (i) Notification and Acceptance of Service Request and (ii) New Service Request; which have been adopted from the existing Schedule 2 of the Batelco Reference Offer.
Zain		
	Yes – it is necessary to have a new service to ensure that fit for purpose products are always available. The consultation has omitted Schedule 2 (request new service) and only included Schedule 2 (Request offered service). Zain is of the view that the Supply Terms are the general terms for all services and the service descriptions are the specific terms of the offered services and accordingly Zain propose that Schedule 2 (request offer services) should be removed and Schedule 2 (request new service) to be reinstated.	The Authority agrees – please see our comments above.
Kalaam		
	Kalaam is not clear on what will happen in regards to the existing Bank Guarantee provided to Batelco – will it need to be transferred to the SE?	The Authority expects that any existing Bank Guarantees should be transferred by Batelco to the SE.
Question 15: Do you agree with the Authority's proposed approach to forecasting (Schedule 5 - Forecasting)?		
Viacloud		
	The proposed quarterly cap of difference is difficult to manage and not practical. Viacloud suggest an overall cap of 25% maintained. The SE will have to dimension the Network and resources with 25% buffer which should be priced into the services cost.	The Authority has amended Schedule 5 (Forecasting) by including a new paragraph 1.9 which builds in a tolerance of +/- 10%. The consequences of not adhering to the forecasts are not penalties but it means the SE cannot guarantee that orders placed outside the forecast parameters will

		be met within the service level timeframes although there is a reasonable endeavours obligation to do so.
Etisalcom		
	It's a new model that has never been tried before and Etisalcom may therefore comment on this after the first two quarters.	Noted.
Infonas		
	-	-
BRE (Batelco)		
	Generally BRE considers the proposed non-binding forecasting approach to be acceptable, however BRE submits that Schedule 5 should be explained further.	The Authority has amended Schedule 5 (Forecasting) by including a new paragraph 1.9 which builds in a tolerance of +/- 10%. The consequences of not adhering to the forecasts are not penalties but it means the SE cannot guarantee that orders placed outside the forecast parameters will be met within the service level timeframes although there is a reasonable endeavours obligation to do so.
Viva		
	• Viva remain concerned that the tight reliance on long term forecasts in Schedule 5 is inappropriate. It is the Access Provider that will have the best appreciation of likely uptake in demand overall for new connections, as they are the wholesale provider to all of the Access Seekers, including BRE. It therefore has the largest dataset overall and, although it may not know what a particular Access Seeker's demand is likely to be, it has the best view of the market as a whole.	• The Authority has considered Viva's comments and reiterates its view that considers that forecasting is a fundamental input to ensure that the SE is able to meet the service requirements of Licensed Operators. The Authority considers that this is particularly the case in relation to non-mass market related products, where an Operator is better placed to accurately forecast demand.

	• From an Access Seeker's point of view, it has far less visibility of the market as a whole, with substantial adverse consequences if its forecast is inaccurate. The service credits, which are required to incentivise the Access Provider to meet the delivery service levels, will turn out to be no incentive whatsoever if the Access Seeker is inaccurate in its forecasting, which may be through no fault of their own. • Viva recommend either removing entirely the linkage between forecasting and payment of service credits or, if this linkage is to be retained, clarify what happens if an Access Seeker's forecasts are inaccurate, outside the thresholds in Schedule 5. • Viva propose it be made clear that this exclusion of liability should only apply where the orders are outside of the thresholds indicated by the previous quarterly forecast. This is because the Access Provider should not be excused where a forecast for a future quarter for e.g. in a year's time proves to be inaccurate, provided that the immediately previous forecast was accurate within the threshold.	• Therefore, the Authority has concluded that WDC, DS and MBS be subject to non-binding quarterly forecasting from all Licensed Operators. On the other hand, the Authority considers that forecasts for OWS and FAS must be binding, given that these are new products for which it is reasonable to expect careful planning. • In response to industry feedback to the ROO Consultation regarding potential difficulties in providing accurate forecasts for the timeframe envisaged in Schedule 5 (Forecasting), the Authority has included a built-in tolerance of +/-10% so that up to this level, the service level terms in Schedule 7 (Service Levels) would still apply. • In the case where the number of actual service requests (orders) is greater in a quarter than the forecasted amount (including the above tolerances), the SE shall use all reasonable endeavours to supply the connections requested, but will not be expected to guarantee that the service will be provided in the timescale set out in the Service Level.
Netco		
	Yes	-
Zain		
	(a) Zain disagrees with the proposed approach to forecasting in Schedule 5: • Each service description has its own forecasting requirements which in Zain's view is appropriate to have the forecasting requirement at a product level as a general forecast approach cannot be applied universally on all services with same level of variation threshold because of the nature of service. Zain is of the opinion that the specified forecasting thresholds do not factor the scalability of the service. For example, while Zain has more vivid plan on DS service	• The Authority has considered Zain's comments and reiterates its view that considers that forecasting is a fundamental input to ensure that the SE is able to meet the service requirements of Licensed Operators. The Authority considers that this is particularly the case in relation to non-mass market related products, where an Operator is better placed to accurately forecast demand.

	required for its PRS backhaul, there is much less visibility and certainty on number of enterprise customers that will be connected via WDC (based on tendering process, customer specifics and competition from other service providers). The same applies to the WBS; • In relation to providing the number of new Connections per Access Provider exchange area per exchange as per paragraph 3.2 (a) of the service description, are applicable only for the DS service, and in order to be able to provide such information as requested by the SE it should share the exchange list and coverage map per exchange. Whereas this information cannot be forecasted in the case of WDC, as there is no certainty on number of potential enterprise customers in each geographical area for the forecasted duration; and • Related to the FAS are invalid as there are no investment or network dimensioning required by the SE. (b) None of the service descriptions in Schedule 6 has a reference to follow an acceptance criterion for the submitted forecasts. Therefore, Zain submits that paragraphs 1.5-1.8 of Schedule 5 should include the criteria such as: • Missing information • Further clarification if the forecast is higher than SE expectation based on market size.	• The Authority has also required in the relevant service descriptions for WBS and WDC that the SE provides access to an online tool that identifies up-to-date accurate digital coverage maps for the areas in Bahrain covered by the relevant WBS / WDC Service and the maximum speed supported for each address (i.e., block or building) and the Connection type (i.e., copper or fibre) to ensure that the right service is offered by the Access Seeker to the End User. This online tool should be updated at least on a monthly basis. • The Authority may consider amending the approach to forecasting in its subsequent review of the RO. The impact of the updated estimate on price will be assessed at that time. • In regards to FFS (previously FAS), the Authority disagrees with Zain's view and considers that binding forecasts are required in order to ensure that NBNetco can allocate sufficient resources to the deployment of FFS. The Authority agrees that forecasting should not cover the capacity required to connect the BBU and RRH and accordingly has deleted this wording. Rather, the Authority consider that the forecasts should cover the number of fibre cables and physical dimensions of the fibre cables and inserted appropriate wording to reflect this.
Kalaam		
	-	-
Question 16: Do you agree with the proposed inclusion of Schedule 7 and with the proposed approach adopted in that Schedule, especially in regard to Service Level timeframes and Penalties?		
Viacloud		
	Viacloud are in agreement but note that no penalty has been provided for Service Request Acknowledgement (WBS/WDC) or Service Request Confirmation	

	(WDC). Unless it is clarified that the service levels for the next stage for each service (where Service Level Penalties are applicable) will be counted from the date of the original Request, if Access Provider delays acknowledgement, then access seeker has no remedy. Hence, Viacloud suggest that there must be penalties mechanism at all stages.	The Authority has amended the Service Descriptions to provide for deemed acceptance of a Service Request after two (2) Working Days. The Authority considers that this addresses ViaCloud's concerns.
Etisalcom		
	Yes	-
Infonas		
	-	-
BRE (Batelco)		
	BRE agrees in general to Schedule 7. However, BRE recommends that it should be granted the ability to further commercially negotiate with the SE for different SLAs for exceptional and/or special events. As a retail entity, BRE is expected to be agile and reactive to market needs and cannot be limited to basic and fixed SLAs.	The Authority notes BRE's comments. However, it is inappropriate for BRE to seek to negotiate separate commercial terms with the SE. Such approach would undermine the obligations on SE to comply with equivalence and non-discrimination requirements.
Viva		
	Generally, yes – although note the following: • Viva believe Schedule 7 is a distinct improvement on the previous version. However, Viva have concerns that it will be more economical for the Access Provider to "take a hit" on service credits than resolve the problem at hand..	• The Authority notes Viva's comments. However, the Authority considers that the Service Credits strike the appropriate balance. Further, the Authority considers that the current framework pursuant to which Access Seekers should apply for a rebate to the SE is appropriate. However, the Authority could consider further representations including those regarding introduction of

	• Viva also propose that rebates should not be claimed by Access Seekers, but rather should be directly reflected by the Access Provider in the next monthly invoices and that, if the rebates exceed the amount of the monthly invoice, then any unutilised credits get carried over into subsequent months. **Specific comments on Schedule 7 Service Levels:** • The Actual Fault Acknowledgement Time begins when the Access Seeker notifies the Access Provider of a fault, but the Access Provider should be required to pro-actively notify the Access Seeker of a fault when it discovers it, whether or not first notified by the Access Seeker. As soon as the Access Provider becomes aware of the fault, for whatever reason, this should signal the commencement of the Actual Response Time and Actual Restoration Time periods. • Viva mention above that any Expected RFT Date must specify either morning or afternoon and provide the Access Seeker with a 2 working hours' time window to be present at the end-user site. It is an unreasonable inconvenience to require the Access Seeker or end-user to be available at any time on a particular day. **Service Request Acknowledgement and Confirmation** • For the various services, the Maximum Time for Service Request Acknowledgement is 15 minutes and Maximum Time for Service Request Confirmation is 2 working days, with no service level penalty in case of breach in most cases. In any case where there is not a penalty, Viva believe that there should be a penalty of 5 SC for each ½ hour imposed for failure to comply with the Maximum Time for Service Request Acknowledgement, and 10SC for each working day for failure to comply with Maximum Time for Service Request Confirmation as poor acknowledgement and confirmation processes by the Access Provider can be very disruptive for Access Seekers. • Further, there should be deemed acceptance of an Access Seeker's order if SE fails to respond within the Maximum Time for Service Request Confirmation. • If incorrect or insufficient information is provided by the Access Seeker, then SE notifies the Access Seeker and the clock stops for the Actual	a pro-active rebate framework to be applied by the SE, in subsequent reviews of the Reference Offer and/or as part of the discussions in the ECTC. • The Authority considers that a functional Service Level framework is important to ensure that Licensed Operators' requirements are met in a timely manner, allowing Licensed Operators to meet their own service guarantees to customers. It also ensures that the SE is required to provide services equally to all Licensed Operators. • The Service Levels and penalties in the draft RO have been changed to include penalties which serve as a sufficient deterrence. The key purpose of the delivery times within the RO is to set targets that are achievable and which would result in a limited recourse to the Service Levels and associated penalties. This SE Order will serve as a baseline of performance against which performance targets and penalties can be adjusted. It would therefore not be appropriate to set Service Levels at a level not achievable by the SE. • The Authority has included Service Levels for FFS based on the process in Schedule 6.7.3 (Duct Access Process) of the Facilities Access Service. Specifically, the SE will be required to deliver the FFS within five (5) Working Days after physical installation works are complete. • In order to encourage the SE to improve the delivery of the RO Services, the RO includes Key Performance Indicators (KPIs) which will allow Licensed Operators and the Authority to monitor the SE's performance on a range of measures. The Authority has added relevant KPIs for OWS and FFS. The Authority has also included targets for the SE to address repeat and persistent faults regarding all RO Services. • In regards to Viva's specific comments on the Service Levels, the Authority considers that it has addressed these elsewhere in this report. In particular, the Authority notes that it has introduced

	Time for Service Request Confirmation. If there has been error by SE and they miss the opportunity to respond to the Access Seeker's Service Request, then SE should bear the consequences. • Viva note that the Access Provider is to provide reasons for rejecting a Service Request. However, Viva believe the TRA should go further and provide that failure to include these reasons should be an invalid Service Request Confirmation. This failure by SE may lead to deemed acceptance by SE if they do not provide a valid Service Request Confirmation by the end of the Maximum Time for Service Request Confirmation. **Maximum Delivery Time** • Maximum Delivery Time is critical for the customer switching process as prolonged waits for this work to be undertaken causes many customers to abandon their intended switch. For customers that have a poor experience during their switch – including long waits, missed appointments, new services not working or becoming faulty soon after installation – they will be deterred from switching again in future and may deter others from switching by relating their poor experience. • Viva believe changes should be made to these Maximum Delivery Time service levels for the various services (MBS, DS, WDC, WBS) as follows: ○ For a soft Upgrade/Downgrade Request, the Maximum Delivery Time is 2 working days; ○ For transfer, the Maximum Delivery Time is 10 calendar days; ○ For a New Connection Request, or a Migration Request: ▪ The Maximum Delivery Time should be 5 working days when fibre is available for a new Connection. This compares to 5 working days in the Chorus bitstream General Terms and 3-5 working days for standard (fibre available) delivery in the Nucleus Connect RIO; ▪ the Maximum Delivery Time should be 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. This compares to 13 working days for non-residential, non-standard delivery in the Nucleus Connect RIO11; and	deemed acceptance requirements for new Service Requests. Further amendments to the Service Level regime may be considered in subsequent reviews of the RO.

	▪ the Maximum Delivery Time should be 30 calendar days when new ducts must first be installed before deploying a new fibre access cable. • Viva also consider that the service level penalties for failing to meet the Maximum Delivery Time should be increased to 50SC for failure to meet the Maximum RFS Date and 50 SC for each additional Working Day thereafter. Viva believe this is a more appropriate level, particularly if the TRA rejects Viva's submission that service level penalties should not be an exclusive remedy for an Access Seeker. **Fault Acknowledgement and Response Time** • Similarly, for the various services, the Maximum Fault Acknowledgment Time is 15 min and Maximum Response Time is 1 or 2 hours, but with no service level penalty. Viva believe a proportionate penalty would be 15 SC per hour for each ½ Hour after the Maximum Fault Acknowledgement Time and Maximum Response Time. • In respect of the OWS service, the Maximum Response Time should be 1 working hour during working hours and 2 hours outside of working hours, to align with DS and MBS service levels as they are based on the same network. **Restoration Time** For WBS, Viva propose that the Maximum Restoration Time should be two hours, rather than 48 hours, except where the fault is due to a fibre cut, in which case 48 hours would be acceptable. **Persistent failures** Viva recommend that a Service Credit be introduced for persistent failure of a connection. Persistent, small failures ("flapping", which results in the circuit being up and down rapidly) can cause end user disruption in the same way as a large, one-off failure. There should be an additional level of compensation for Access Seekers where there are repeated instances of faults, for example three or more total losses of service in a three-month period. Where this	

	occurs, the monthly rental charge may be waived until the circuit has been free of further faults for a period of 12 months. **Ratchet for poor performance** Viva believe the service level regime needs to be enhanced with a "ratchet" mechanism, so that higher levels of poor performance (which may be on an aggregated level) become subject to higher and higher levels of penalty. For example: • if the Access Provider incurs service credits in greater than 25% of the Access Seeker's service requests in any calendar month, then there would be a further aggregate service credit of 25 SCs across all Access Seeker connections from the end of that month; and • if the Access Provider incurs service credits in greater than 25% of the Access Seeker's service requests in any three-calendar month period, then there would be a further aggregate service credit of 75 SCs across all Access Seeker connections from the end of that three-month period. **Service level dispute resolution** • TRA should address the circumstances where there is a dispute between the Access Provider and the Access Seeker over whether service level terms have been met. For instance, validation based on Acceptance Criteria is a key moment in the delivery process and where delay and uncertainty around the outcome of the dispute is disproportionately felt by the Access Seeker. • There should be an adjustment to the dispute resolution process to address this. Viva suggest that, pending resolution of that dispute under clause 22 of the Supply Terms, the Access Seeker's decision prevails and if the dispute resolution results in a determination that the service level terms have in fact been met then the Access Seeker should be required to refund any resulting service credits to Access Provider, plus interest. The requirement to refund with interest would deter potential frivolous disputes by the Access Seeker.	
Netco		

	NBNetco agrees with the inclusion of Schedule 7 but has amended Schedule 7 to reflect the transitional nature of this Reference Offer. During this period, NBNetco will be in a better position to assess its capabilities and develop more accurately its Service Level timeframes and Penalties. For the transition period, NBNetco has revised Schedule 7 to reflect the existing SLA values. NBNetco is open to discussion with the industry to review these values during the transition period.	The Authority notes NBNetco's comments. However the Authority considers that the approach it has adopted in Schedule 7 (Service Levels) strikes the appropriate balance to encourage the SE to meet the KPIs and provide Access Seekers with sufficient protection regarding quality of the services to be provided by the SE. Accordingly, the Authority has not implemented NBNetco's proposed changes at this time, though may take them into consideration in any subsequent review of the RO.
Zain		
	Zain agrees to the inclusion of Schedule 7. Zain's comments on the proposed timeframes and penalties are: • There are no set penalties or deterrent actions if the SE had missed the set target of Maximum Time for Service Request Acknowledgment. Unfortunately, the applicable penalties under service request process takes effect only subsequent to an Accepted Service Request, hence if the service request was not acknowledged, the timer for Accepted Service Request will not commence. • Under the MBS, the penalty for not achieving the Maximum Time for Notification of Expected RFT and RFS Date is 25 SC for each Working Day until such time the MNO receives the Notification. Whereas the same Service Level Penalty is set at 20 SC for the DS and WDC services. Zain submit that the Service Level Penalty for defaulting the Maximum Time for Notification of Expected RFT and RFS Date should also be set at 25 SC for each Working Day in case of DS and WDC services. • In case of WBS: the proposed Service Level Penalty of 10 SC for each Working Hour if the SE failed to adhere to Maximum Time for Service Request Confirmation and Maximum Time for Notification of Expected RFT and RFS Date, does not provide adequate incentive or deterrent to the SE. For example, the monthly recurring charges of WBS residential service of 20Mbps is BD 10.04, that means SE may inefficiently communicate delivery service date to the access seeker	The Authority has considered Zain's comments. The Authority has amended the Service Descriptions to provide for deemed acceptance. The Authority considers that the current wording regarding provision of detailed reasons for rejection of a Service Request is sufficient. Should the Access Seeker consider that sufficient reasons have not been provided, this would be a breach of the provisions of the Service Description. The Access Seeker would also remain free to resubmit a Request. The Authority has also amended the relevant SCs to 25 SC for each of MBS, DS and WDC.

	after 20 days of the service request confirmation date, and such inefficiency would cost them only BD 20.08. whereas the relation and perception of the licensed operator providing this service to the end user is profoundly impacted. • This service has a direct relation to the potential anti-competitive act, favouring BRE. It is also the one with direct impact on end user's perception of other licensee as competent fibre based fixed broadband providers. Therefore, Zain request to increase the subjected Service Level Penalty to 20 SC per each day.	
Kalaam		
	Kalaam is doubtful of the Access Provider being able to meet them and these are the same SLAs we mirror to the End User. Kalaam request that if the Access Provider breaches the SLAs and it leads to loss of customers, then the Access Provider should compensate the Access Seeker with loss of profit (equal to the contract value with the End User that terminated the contract directly due to the Access Providers breach of the SLAs). In case of not meeting the SLAs and it causes the Access Seeker to lose the End User, the Access Provider should compensate the Access Seeker the full contract value with the End User.	The Authority considers that the current framework (which refers to service credits) strikes an appropriate balance between the needs of Licensed Operators and the SE.
<u>Contractual liability</u>		
Question 17: Do you have any views concerning the current apportionment of liability between the SE and Licensed Operators, including the proposed requirement on Licensed Operators to provide Security to the SE and /or put in place (and maintain) stipulated levels of public liability and property insurance (as set out in clause 19 and clause 16 respectively of the Supply Terms).		
Viacloud		
	Viacloud is in agreement.	-

Etisalcom		
	Etisalcom is in agreement.	-
Infonas		
	-	-
BRE (Batelco)		
	BRE (Batelco) is in agreement. **Note:** There appears to be a typographical error in clause 19.7. Is the reference to "clause (g)" a reference to clause 19.3(g)? The third sentence of clause 19.7 should include the words "Access Seeker" after the word "indemnify".	The Authority notes BRE (Batelco)'s comments. The Authority has clarified the reference to clause 19.3(g), and the inclusion of the words "Access Seeker" after the word indemnify.
Viva		
	• Service credits should not be the exclusive remedy for an Access Seeker for service level failure. Instead, the Access Seeker should be entitled to seek damages. This is not currently permitted under the reference offer. The reality is that the Access Seeker's losses could exceed the caps in the case of a serious service level failure and, in those instances, the Access Seeker should be able to sue for damages. • Also, the Access Seeker might lose major deals with their retail business customers because of the service delivery delays from the Access Provider. Loss of revenues or profits of Access Seekers should not be excluded where these are direct losses of the Access Seeker.	The Authority notes Viva's comments and refers to it to the above responses. In particular, the Authority notes that it has revised the Supply Terms (clause 16) to clarify that service credits are not the sole and exclusive remedy. That said, the Authority considers that the Service Credits strike the appropriate balance between the needs of Licensed Operators and the SE at this time. The Authority confirms that, whilst it has the power to make changes to the various Schedules, it should not, as an Authority, be opining on what are essentially commercial deals.

	This is consistent with the position in the United Kingdom, where loss of profits is not excluded from liability under Openreach's Ethernet terms and conditions. • This is not contrary to Bahraini law. The Bahraini Civil Code No. 19 of 2001 does not explicitly distinguish between direct and indirect damages, both of which are considered as "damage" or "injury act".7 Therefore, the person who gets injured from a damage or injury act is entitled to be compensated for: - the loss suffered; - the loss of profits (profits of which the injured person has been deprived); Article 161(b) provides that: *"A loss sustained, or loss of profit shall be deemed as a natural result of an unlawful (or injury) act [الضار الفعل] unless it is possible to avoid them by making a reasonable effort as required by the circumstances from an ordinary person".* Article 140 (a) states that: *"In bilateral binding contracts if one of the parties does not perform his obligation, the other party may, after serving a formal summons on the other party, demand from the judge the performance or dissolution of the contract, with damages, if due, in either case, unless the party demanding dissolution does not also perform his obligation".* • Viva request there should be no limits of the Access Provider's liability. This is to dissuade Access Provider from any abuse of its monopoly position, and because of the level of direct damages that might be incurred by Access Seekers [such as losing major deals with major corporate customers] due to the Access provider's eventual breaches of its contractual obligations and SLA. • Viva generally believe that the use of security provisions in the service descriptions may be abused by the Access Provider. Any requirement for Security should first be subject to the TRA's approval. • Viva also don't believe a change of control should be a ground for acting under the security provision and Viva believe the "set off" language in the previous equivalent provision should be reinstated to reduce the potential amount that should be subject to security.	The Authority notes Viva's comments regarding use of security provisions. Should an Access Seeker have concerns regarding potential abuse of specific requirements relating to provision of additional security, the Access Seeker could raise the particular issue with the Authority. The Authority notes Viva's comments change of control. The Authority considers however that the current wording strikes the appropriate balance, and that changes of control (depending on their nature) could require additional security to be provided for example, where the financial stability of new owners may be questionable. In the event that an Access Seeker is concerned that the security provisions are being misused, the Access Seeker could raise the particular issue with the Authority.
Netco		

	NBNetco is in agreement.	-
Zain		
	• Zain does not agree with clause 16.3 of the Supply Terms - the SE should be liable for Consequential Loss as Zain's services to its customers are reliant on SE's delivery and performance. • Zain does not agree with clause 16.11 of the Supply Terms as the penalties referred to in Schedule 7 are minimal and do not reflect the magnitude of damages.	The Authority notes Zain's comments. The Authority notes that it has revised the Supply Terms (clause 16) to clarify that service credits are not the sole and exclusive remedy.
Kalaam		
	-	-
Question 18: Do you have any views concerning the proposed amendments to the suspension and / or termination in the Supply Terms? What rights should the SE have to suspend or terminate (a) specific services; (b) all of the Services (including possibly other unrelated services to the specific Service Description in question); and what would be the appropriate circumstances for this? Should the Authority's approval be required for suspension and/or termination of services by the SE?		
Viacloud		
	Yes - regarding termination, SE should not have a right to terminate unrelated services. Viacloud also suggest that the Authority's approval must be required for suspension of services by the SE.	Noted. The Authority considers that the termination provisions in the Supply Terms refer to the relevant service in question, and not to 'all' services (except in the event that the Reference Offer is revoked in its entirety). The relevant provisions in the Supply Agreement require the Authority's approval prior to suspension of services by the SE.

Etisalcom		
	Yes, Authority's approval should be required for suspension and/or termination of services by the SE.	Noted. The Authority's approval is required for suspension of the services. As regards termination the Authority has amended the relevant provision in clause 13.2 of the Supply Terms to require the Access Provider in the event of proposed termination of services to provide a copy of the notice to the Authority at the same time, as sending the notice of termination to the Access Seeker. The Authority considers that this strikes the appropriate balance in providing transparency to the Authority and enabling the Authority to further investigate any proposed termination of services, should this be appropriate.
Infonas		
	-	-
BRE (Batelco)		
	• Generally, except in the case of emergencies, BRE considers that all suspension or termination of Services by the SE should be subject to the prior written approval of the Regulator. • BRE note that there appear to be inconsistencies between the notice periods in the Supply Terms for suspension and termination, and the same periods in the services descriptions - see for example paragraph 3.4 of the WDS Service Description. While where there is inconsistency between a Service Description and the Supply Terms the Service Description will prevail, such difference will introduce unnecessary complication.	The Authority notes BRE (Batelco)'s comments. The Authority disagrees that there should be a carve-out for emergencies. However, the Authority has amended he list of circumstances in clause 12.4 where seven (7) days' notice is required. The Authority considers that these circumstances represent the most pressing cases (emergencies). The Authority notes BRE (Batelco)'s comments regarding the timeframes in the Supply Terms and those in the Service Descriptions. The Authority does not consider that the provisions in the Supply Terms must be amended at this time, but could be considered as part of subsequent reviews of the Reference Offer. As BRE (Batelco) notes, in the event of

	Suspension • It is not clear to BRE why clause 12.3(a) provides a time frame of twenty-one (21) calendar days for rectification of a Material Breach of an obligation by the Access Seeker, whereas clause 12.2 requires the Access Provider to provide the Access Seeker with thirty (30) days (not twenty-one (21) calendar days). This appears to be inconsistent. • Similarly, it is not clear to us why clause 12.2 and 12.4 are separate, given that the time frames for rectification of issues are the same in both clauses. • BRE recommend that clause 12.4 (e) be amended by adding the word "lawfully" before the word "directs".	inconsistency the timeframes in the Service Descriptions would take precedence. ***Suspension*** • The Authority notes that clause 12.2 and clause 12.4 address different situations. Clause 12.2 applies where there may be a material adverse effect on the efficient / safe operation of the SE's Network. Clause 12.4 applies where the Access Seeker's Network poses a threat to any person, a material hazard to the SE's equipment or 3rd party equipment, or an imminent threat to the access, integrity or security of either the SE's Network or any Access Seeker's Network. • The Authority notes BRE (Batelco)'s comment regarding clause 12.4(e). The Authority is required to act in accordance with the Law (see for example, Article 3(c) of the Law). Accordingly, the Authority does not consider it necessary to incorporate the word 'lawfully' before 'directs'.
Viva		
	While the TRA must approve any suspension, there should be the same requirement for termination. Viva believe the TRA must approve a termination on the same basis as for suspension.	**The Authority notes Viva's comment.** As regards termination the Authority notes Viva's comments. The Authority has amended the relevant provision in clause 13.2 of the Supply Terms to require the Access Provider in the event of proposed termination of services to provide a copy of the notice to the Authority at the same time, as sending the notice of termination to the Access Seeker. The Authority considers that this strikes the appropriate balance in providing transparency to the Authority and enabling the Authority to further investigate any proposed termination of services, should this be appropriate.
Netco		

	Yes	--
Zain		
	There are no merits in a complete suspension or termination of a specific service. In the event of a breach that is due to a single circuit or service then that single circuit should be suspended, whereas in the cases that there is a material breach by the operator to the Supply Terms such as example non-payment then the suspension right should be applicable to all services. The circumstances and scenarios listed in the Supply Terms that permits the suspension/termination must be based on Authority's approval as indicated.	The Authority notes Zain's comments with regard to suspension and termination of specific services, and those cases where there is a material breach of the Supply Terms. The Authority considers that Zain's position is reflected in the wording of the relevant provisions of the Supply Terms. As regards Zain's comments on suspension/termination, the Authority notes that the Authority's approval is required for suspension of the services. As regards termination the relevant provisions in clause 13.2 of the Supply Terms enable the Access Seeker (in the event of a threatened termination of services) to engage in discussions with (among others) the Authority. The Authority considers that this provision provides the requested protection for Access Seekers. Accordingly the Authority has not proposed any amendment to this provision in the Supply Terms.
Kalaam		
	• Please refer to Kalaam's response to question 14. • Regarding the Suspension in clause 12, it is not clear who will determine the conditions set out in 12.2 that amounts to affecting the Access Provider's Network. The Authority should be involved to allow for more transparency and the Access Provider should provide a solution to the Access Seeker in order to be able to continue the service for the End User.	The Authority considers that clause 12 indicates that the SE would determine these conditions which must be assessed / determined 'in the reasonable opinion' of the SE. As regards termination the Authority notes Kalaam's comments. The Authority has amended the relevant provision in clause 13.2 of the Supply Terms to require the Access Provider in the event of proposed termination of services to provide a copy of the notice to the Authority at the same time, as sending the notice of termination to the Access Seeker. The Authority considers that this strikes the appropriate balance in providing transparency to the Authority and enabling the Authority to

		further investigate any proposed termination of services, should this be appropriate.
Question 19: Do you agree with the Authority's proposed amendments to clause 8 of the Supply Terms that the SE should be responsible for removing its own Equipment, where it is no longer required?		
Viacloud		
	Yes	-
Etisalcom		
	Yes	-
Infonas		
	-	-
BRE (Batelco)		
	Yes - however, BRE notes however that clause 8.4 is not clear what the Access Seeker can do with equipment that is removed by the Access Seeker in the event that SE does not remove equipment within the stipulated time frame. For example, must the Access Seeker return the equipment to the Access Provider, at the Access Provider's costs, or may it sell the equipment and return the proceeds, less costs, to the Access Provider?	The Authority notes BRE (Batelco)'s comments. The wording in the relevant provision of the Supply Terms is clear that should the Access Provider fail to remove its Equipment, the Access Seeker shall be entitled to remove the Equipment. The Access Seeker shall be able to deal with that Equipment as it sees fit.
Viva		

	Yes, but Viva have a few minor technical comments on clause 8 (as set out above).	The Authority understands that Viva want clarification inserted such that the Access Seeker only pays where this is not NBNetco's fault. The Authority's view is that it would be difficult to understand how NBNetco could be responsible as the equipment will be within the Access Seeker's possession. This is notwithstanding the wording in clause 8.5 which means that the Access Seeker has to give access to NBNetco to go in and repair faults etc. The Authority therefore does not propose to change the wording of this clause.
NBNetco		
	NBNetco has made an amendment to this clause where the OLO remains responsible for obtaining all necessary approvals for the use such equipment. • **Specific questions on individual service descriptions:** NBNetco includes as part its response marked up versions of the Service Descriptions which responds to questions 20 to 29 of the Consultation Document. With regards to OWS and FAS, NBNetco refers the Authority to its response to question above.	The Authority refers NBNetco to its responses above.
Zain		
	• Regarding paragraph 8.2. b) of the supply terms: the liability on the access seeker to pay or repaid the damage to the equipment must be limited to the damage that is as a result of the negligence and misuse by the access seeker (whereby any damage to the equipment that is not caused by the access seeker should be responsibility of the access provider). • Zain agrees with the Authority's proposed amendments to clause 8 of the Supply Terms that the SE should be responsible for removing its own Equipment but disagrees with the obligation set out under paragraph 8.3, which obligates the access seeker to send a separate	The Authority repeats its above comments (in response to Viva) and does not propose to change to the drafting but leave as is. The Authority's rationale for this is: (i) it should be clear under the standard contract law that NBNetco cannot claim more than actual damage suffered; and (ii) carving out liability ignites a debate about what happens if a 3rd party causes damage and whether / how that is 'caused' by the Access Seeker – it does not seem fair to leave NBNetco out of pocket if the Access

	notification for equipment removal. This is not required as the access seeker will be sending a cessation/termination request and accordingly that should be considered the notification to the access provider.	Seeker has not taken reasonable care to protect equipment from 3rd party.
Kalaam		
	-	-
Specific questions on individual Service Descriptions **WBS**		
Question 20: Do you agree with paragraphs 3 and 4 in the WBS Service Description? If not, please indicate why.		
Viacloud		
	Yes	-
Etisalcom		
	As forecasting is a new requirement, Etisalcom would like to have some more clarity on this such as Exchange areas, infrastructure availability, etc).	Noted.
Infonas		
	Paragraph 3.2: Infonas notes that a building's management/owner may contract with a Service Seeker for a high capacity link in order to split it amongst the	The Authority has considered industry feedback and has implemented changes to Article 3 of the WBS Service Description that the Authority considers adequately address Infonas's concerns.

	tenants. Such a scenario should not pose a problem and should therefore be acceptable.	
Nuetel		
	3.24: Batelco will have no effect financially from any LD since they are belongs to the same stakeholders. 3.26: Auto renewing should not exceed 6 months rather than one year this if it is must but Neutel prefer to shift to open contract after the minimum period but with 3 months' notice. 3.30: Need more elaboration on VIP, are they defined? Or there are measurements to define them? Nuetel also wish to remove the obligation since it is not the same case with the BRE. 3.40: 5 Hours is long for report. 4.5: • Limitations of speeds are possible with subject to physical distribution of bandwidth of splitter and contention ratio. • Access provider should ensure availability of all bandwidth mentioned in Annex.	The Authority notes Nuetel's comments and has made a number of amendments to the WBS SD that it considers address many of its concerns.
BRE (Batelco)		
	In general, yes, but subject to the following: • As stated in response to question 18, above, BRE note that there appear to be inconsistencies between the notice periods in the Supply Terms for suspension and termination, and the same periods in the services descriptions - see for example paragraph 3.4 of the WDS Service Description. While where there is inconsistency between a	Please see the Authority's response to BRE at question 18. The Authority agrees with BRE's concerns in relation to termination and considers that these are adequately addressed through the changes to Article 3 of the WBS Service Description.

	Service Description and the Supply Terms the Service Description will prevail, such differences will cause unnecessary complication. • It is not clear if the reference to termination in clause 3.5 and 3.5 refers to a termination of the *entire* WBS Service in the event that the Access Seeker is in breach of clause 3.2, or just those lines that are in question under clause 3.5. • While the SLA for delivery of WBS is currently listed from a maximum delivery time point of view (currently 12 days), BRE should be in a position to commercially agree with the SE better SLAs for committed orders of WBS at a set threshold.	
Viva		
	Yes, generally; although see Viva's detailed comments on clauses 3 and 4 in the WBS Service Description question above).	The Authority refers Viva to its response to Question 6.
Netco		
	NBNetco has made changes to paragraph 3 to reflect that NBNetco's interaction is strictly with the Access Seeker and has no engagement with the End User. With regards to paragraph 4, NBNetco has made changes to paragraph 4 to reflect NBNetco's position with of providing fiber based only wholesale products.	The Authority agrees that the Access Provider will not have a direct commercial relationship with the End-User. The Authority considers that the existing drafting of the Service Description is consistent with this view. The Authority refers NBNetco to its response to Question 9 for further details.
Zain		
	• Paragraphs 3.2, 3.4 and 3.5 establish an onerous obligation on the access seeker to ensure the WBS Service is not subdivided or split between multiple End User Premises, and takes a drastic measure which is not proportionate to the potential violation whereby access seeker has the right to suspend the whole WBS service in the event of such individual violation.	The Authority agrees with Zain's concerns relating to sub-division or splitting. The Authority considers that the changes to Article 3 of the WBS Service Description adequately address VIVA's concerns.

	• The access seeker has no technical visibility on such misuse. The access seeker also is not part of the physical service provisioning or repair to perform such inspection. Lastly, it is not a wrongdoing of the access seeker. • Zain agree that the access seeker should notify the access provider if it became aware of such violation; moreover, in the event of not rectifying such breach within the notice period then access provider shall have the right to suspend the breaching bitstream connection only. • Accordingly, the access seeker shall include in its service terms & conditions the relevant clauses that stipulate that the End User is not allowed to subdivide the service between different End User Premise that are not under the same owner or leased by the same owner (i.e. compound with multiple of houses and the owner would like to have full Wi-Fi coverage in the compound, this should be allowed). Zain recommend amending paragraphs 3.2, 3.4 and 3.5 accordingly. • The wording of paragraph 4.2 denotes that *GPON fibre considered available only where a fibre access cable has been dropped to the fibre distribution point nearest to that End User Premises* ***and that End User Premises can be connected to the Network upon request within the timeframes provided for in Schedule 7 - (Service Levels) of the Reference Offer***. Zain recommend amending the paragraph whereby fibre shall be considered available only based on nearest distribution point and not based on SE being able to comply with Schedule 7 - (Service Levels) of the Reference Offer. • In relation to paragraph 4.5, the limitation of maximum speed is understandable for copper ADSL connections, however in the case of GPON fibre there is vagueness about the implemented contention ratio, how it works and at which network element. Zain seek further clarification on this. • The service description has scattered paragraphs that details the responsibilities and process of WBS Transfer Request which are deemed not acceptable by Zain, as such clauses unduly interfere in the relation between the end user and service provider. For example (i) the	The Authority has included wording to clarify that where GPON fibre is not available, the Access Provider is obliged to supply a copper based WBS Service upon request from the Access Seeker. The Authority has also added wording to ensure that, in circumstances where only copper is available, the SE is obliged to provide the Access Seeker with its roadmap of when it intends to deploy fibre to the area. The Authority has carefully reviewed the submissions of all stakeholders in regard to the proposed contention ratios for the WBS service and considers, on balance, there is no objective justification to retain them. The Authority agrees that the Access Provider will not have a direct commercial relationship with the End-User. The Authority considers that the existing drafting of the Service Description is consistent with this view. That said, the Authority has amended aspects of the drafting as

	definition of Invalid Transfer, (ii) paragraphs 8.24 - 8.25 (Reversal of a Service Request) and (iii) paragraphs 10.1 - 10.2 (WBS Transfer Request) of the WBS Service Description. Zain reiterates its concerns re: WBS as set out in its response to question 9 and repeats that the paragraphs in question be omitted. • Zain require that the coverage maps tool provided by the SE pursuant to paragraph 4.6 to be actively up to date, and on the occasion where there might be an update on a new location but where the coverage tool is not updated, Zain should expect a notification from SE on this update. Zain also need to agree on a process in the event that the coverage maps tool was not accurate or not updated.	suggested by Zain, and in particular, has removed the reference to Invalid Transfer. The Authority has revised the drafting of clause 4.6 of the WBS Service Description, to require that the coverage maps are accurate. However, in regards to the frequency of the updates to the coverage maps, the Authority considers that the current requirement of monthly updates, is sufficient at this time.
Kalaam		
	Kalaam have received rejections for its WBS orders based on lack of internal wiring at End User's premises, no lead in duct, fiber termination box at full capacity – without a proposed solution or an effective timeline for the delivery of services in these cases. As a result, Kalaam has lost many customers on monthly basis – Kalaam requests that the RO addresses how the Access Provider will mitigate these situations and that the same SLAs will apply in these situations.	The Authority notes Kalaam's comments and has included wording to clarify the instances in which the SE will be expected to undertake maintenance works in accordance with the service levels set out in Schedule 7. In regards to pricing, the Authority has also added additional detail to Schedule 3 of the Pricing Schedule to clarify the pricing on the charges that SE is to apply for "time and materials".
Question 21: Do you consider that the SE should be required to offer multiple VLANs as part of the WBS Service? If so, please indicate why.		
Viacloud		
	Yes – this is useful if multiple level of services needs to be provided to customers, like voice and data over public and private networks from the Operator perspective.	The Authority considers that a minimum of three VLANs/operator should be available to any Licensee acquiring WBS and this has been reflected at new 3.2 of the Service Description.
Etisalcom		

	Not required by Etisalcom at the moment but it will be added value if this option will be available for upcoming technology.	Noted
Infonas		
	Yes – the SE should be required to offer multiple VLANS as part of the WBS Service. Infonas finds that multiple VLANs need to be allowed in case a second VLAN is needed for management purposes, or if required by the customer. Moreover, QinQ is frequently requested by customers and needs to be permitted.	The Authority refers to its response to ViaCloud above.
BRE (Batelco)		
	Yes	-
Viva		
	The SE should offer multiple VLANs as part of the WBS service. For business customers, this will be essential so that they can separate out different types of traffic into VLANs to carry across their wide area networks in a differentiated manner. Some residential customers may wish to do similar traffic differentiation also, so providing VLANs as a standard part of the service description would be useful.	The Authority refers to its response to ViaCloud above.
Netco		
	NBNetco will deliver a transparent Bitstream service and the inner VLAN configuration is the responsibility of the Access Seeker.	The Authority refers to its response to ViaCloud above.

Zain		
	The SE is required to provide multiple VLANs as part of the WBS Service. This is mainly due to the fact that licensed operator required to optimize traffic distribution and resource utilization across the network, specifically in the case of multiple service provisioning (i.e. voice, data, IPTV … etc.). In the absence of multiple VLANs, the licensed operator will not be technically able to manage and offer different commercial offers/services on bitstream circuit.	The Authority refers to its response to ViaCloud above.
Kalaam		
	-	-
Question 22: Do you agree with the proposed approach for batching under the WBS Service Description? If so, please indicate why?		
Viacloud		
	Yes	-
Etisalcom		
	Yes	-
Infonas		
	-	-

BRE (Batelco)		
	BRE recommend that there should be no batching system, but rather an automated system allowing for requests to be submitted automatically once raised.	The Authority refers to its response to NBNetco below.
Viva		
	Viva note the increase in batch numbers to 10 per day. However, Viva do not consider there should be any limit in batch numbers. OLOs should be allowed to submit their orders in accordance with the same system and with the same single common interface (SE's licence) as BRE - which Viva understand does not have a daily limit applied.	The Authority refers to its response to NBNetco below**.**
Netco		
	NBNetco has removed the restriction for batching and has amended the service levels to reflect this change.	The Authority supports the proposal from NBNetco to remove the restriction on batching WBS orders and has amended the relevant Service Description and SLAs to reflect this.
Zain		
	Zain do not see the reason behind the proposed approach for batching under the WBS Service Description, in particular what is warranting the limitation of 10 batches per day. Zain agree that there is a maximum cap of 100 application per day. The ordering process as stipulated in the service description follows an electronic format, email or a portal. This limitation will restrict the access seeker from digitalising the flow of ordering. The access seeker in this method will need to undertake pooling of the request before applying them with the SE, such pooling would most likely require a second line operation making the whole process inefficient.	The Authority refers to its response to NBNetco above**.**

Kalaam		
	Kalaam disagrees as we have SLAs to meet with the End User and depending on the conditions in the market, some days we do not receive enough to make the 10 batches set minimum and some days we receive high number of orders – which will result in delaying the orders by few more days and this will affect the delivery of service to the End User.	The Authority refers to its response to NBNetco above**.**
Question 23: Do you agree with the range of speeds for the WBS Service Description? If not, please indicate why.		
Viacloud		
	Yes – in agreement on the speeds but suggest limiting upload speed for WBS service to no more than 2Mbps for up to 40Mbps links and 4 Mbps for up to 500Mbps links in order to protect the cannibalization of WDC services as in Viacloud's earlier comment above.	Noted however, the Authority considers that upload speeds should increase proportionately to increases in download speeds. The Authority notes that this is consistent with good industry practice. The Authority refers its response to the comments received on Question 8.
Etisalcom		
	Yes in terms of Download speeds but Etisalcom disagree with the upload speeds, Why: • Mobile data network provides much more upload speed. • Compare to the region, upload speeds are much lower in Bahrain. • One of Etisalcom's services delivered on WBS circuits for enterprise customers is SIP based (IP Based Voice/Video calls) with multiple channels requires higher upload speeds.	The Authority notes that all upload speeds are at least 10% of downloads speeds which aligns with industry practice. The Authority may reconsider these requirements in subsequent reviews of the RO.
Infonas		

	Infonas finds the upload speeds to be very low and believes that the same needs to be revisited.	The Authority refers to its response to Etisalcom above**.**
Nuetel		
	ANNEX1 WBS Product List: • Product was designed to be suitable for Data only while there is nothing suitable for Voice & Video. • Lower speeds is not mentioned into pricing of schedule 3, the minimum is speed is 1 Mbps into 1D WBS pricing, if a client required voice service the cost will be Bd2.9 While current BTC charge is BD1.	The Authority agrees that a WBS service priced at a level comparable to existing copper based voice services should be offered by the SE and therefore included in the Pricing Schedule (Schedule 3).
BRE (Batelco)		
	Yes	
Viva		
	No. The only reason for having the current wide range of speeds for the WBS Service Description would be to enable a greater degree of price differentiation. There is no technical reason today for having such a wide range. Most of the lower speed services below 1Mbps downstream have no use with most of the applications in practical use today. Then the downstream speeds of 2, 4, 6 and 8 Mbps provide no real technical differentiation, so could be readily eliminated. Similarly, the technical differentiation between 20Mbps downstream and 30 Mbps is not significant. Hence it would be better to define the services as 10Mbps, 20Mbps, 50Mps and 100Mbps downstream with 4-5:1 asymmetry for residential and 2-3:1 asymmetry for business.	The Authority considers that allowing for lower speeds caters to the breadth of the demand that exists in the Bahrain broadband market at this time. That said, the Authority has removed speeds below 1Mb/s for residential services, but retained these for non-residential. In response to industry feedback, the Authority has also introduced voice only products in each WBS market segment.
NBNetco		

	Please refer to NBNetco's response on the WBS product above.	The Authority refers to its responses on the WBS Service Description above**.**
Zain		
	Yes – also licensed operators should be able to request a new speed if there is at minimum 100 orders commitment over of a period of six months and any speed introduced shall be offered to all with an immediate notice period once the speed has been accepted by SE.	The Authority does not consider that Zain's proposal is proportionate and in any event, considers that there are sufficient range of speeds available to meet market demand. That said, the Authority notes that new services, including in relation to speeds, may be considered through the proposed ECTC.
Kalaam		
	-	**-**
WDC **Question 24: Do you agree with the scope of the Service as described at paragraph 1 of the WDC Service Description?**		
Viacloud		
	Yes	-
Etisalcom		
	In case of requirements where entities are looking for a connectivity solution from point A to point B within Bahrain, either everyone including BRE should be charged for two separate circuits (i.e. Point A to Licensed Operator's Data Center	The Authority notes that the revised WDC Service provides that Licensed Operators can use a WDC Service between two Points of Presence. This will be included in the final version of the Service Description.

	and from Point B to Licensed Operator's Data Center) or everyone including OLOs should be allowed to deliver connectivity from Point A to point B as a single circuit just like Batelco is able to currently.	
Infonas		
	Infonas does not agree with the scope of the WDC Service. The WDC product should include an option for P2P connections, whereas limiting all links to be delivered to a WDC aggregation is not practical. For example: Delivering ONE 100G link between two customer locations (P2P) requires the Service Requester to request two 100G WDC links and two aggregation links, which results in doubling the cost for no good reason. This is in addition to the hardware cost to support the two 100G aggregation links. Moreover, WDC aggregation link is a single point of failure, resulting in affecting all customers on the link in the event of an issue with the aggregation link. Infonas understands that there is an option of having a 2nd WDC aggregation to back up the links, however the argument is that not all customers will be interested in having a backup link.	The Authority notes that the revised WDC Service provides that Licensed Operators can use a WDC Service between two Points of Presence. This has been included in the final version of the Service Description. The Authority notes that the SDs all include specific scenarios in which a Service may be deployed, which are generally all dependant on maintaining a distinction between "End-User Premises" and a "POP". In response to industry feedback, the WDC SD has been amended to allow direct End-User to End-User connectivity.
Nuetel		
	WDC Annex 1: Interfaces of connections terminating at end user promises or point of presence and aggregation links for speeds 2Mbps to 10Gbps to be with sufficient connection requirements	The Authority refers Nuetel to the above response.
BRE (Batelco)		
	Please refer to BRE's position on WDC, particularly with regards to the merging of the existing WLA and WDC products into one.	Please see the Authority's wider responses to BRE's position on WDC within this Consultation Report.

Viva		
	Yes	**-**
Netco		
	Please refer to NBNetco's response on the WDC product above.	Please see the Authority's above response to Netco's position on WDC within this Consultation Report.
Zain		
	Yes	**-**
Kalaam		
	-	-
Question 25: Do you consider that the WDC Service should be available to all Licensed Operators?		
Viacloud		
	Yes – it should be applicable to all licensees holding valid ISP license.	Noted.
Etisalcom		

	Yes, it should available for Licensed Operators only. (Ex. SE should not offer this service to Gov. or any non-licensed operator)	Noted.
Infonas		
	Yes	-
BRE (Batelco)		
	No. WDC should not be made available to licensed operators having their own DWDM network given that BRE does not have a DWDM network and will thus be disadvantaged.	The Authority does not agree with BRE. The Authority notes that other Licensed Operators DWDM networks are geographically limited and further access to the SE's fibre network will not be facilitated. Therefore, other Licensed Operators require access to WDC in order to provide services across Bahrain.
Viva		
	Yes	-
Netco		
	Yes	-
Zain		
	Yes	-

Kalaam		
	Yes	-
Question 26: What do you consider should be the appropriate framework for charging for optional levels of protection? For example, should optional levels of protection be treated as an additional circuit, for charging purposes?		
Viacloud		
	The optional level protection is being offered for resilience only and must not be treated as separate circuit. A simple option would be percentage level increase in the circuit charge per increased level of protection.	The Authority considers that the pricing of the full end-to-end physical and logical protection is consistent with the four principles set out in para 34.4.1 of the draft reference offer order. Furthermore, service credits should apply if the primary connection fail and the secondary connection is activated and the Authority has added drafting to reflect this in the Service Description.
Etisalcom		
	30% Extra charges on MRC is acceptable if the physical protection is being delivered	Please refer to the Authority's earlier response**.**
Infonas		
	Protection should be offered at 30% of the price. Infonas has never seen a protection offered at full price except where the protection is offered by a different operator.	Please refer to the Authority's earlier response.
BRE (Batelco)		

	Refer to BRE's earlier response on protection levels.	Please refer to the Authority's earlier response.
Viva		
	The charge would depend on the type of protection service being provided. It may well be treated as an additional circuit if the protection circuit is required to be completely independent of the primary circuit. This requires the use of totally independent infrastructure for the provision of the protection circuit at all levels and the maintenance of this independence over time. In this case, a charge could be applied as if it is an additional circuit. Alternatively, if complete independence is not a requirement, then a discount should be applied to the provision of the protection circuit. The level of discount should reflect the level of independence required.	Please refer to the Authority's earlier response**.**
Netco		
	NBNetco considers that each level of protection should have equivalent charging levels. For the full protection, that is a physical and logical protection, this is effectively a separate physical link and should therefore be treated as an additional circuit.	Please refer to the Authority's earlier response**.**
Zain		
	The aggregation link must have geo and equipment redundancy by default, as stipulated in the current Batelco's Reference Offer. Whereas for each WDC Connection, there should be a different charging mechanism based on level of protection required, as the protection link will not be adding any utilisation to the network. Zain agree with paragraph 3.45 of WDC service description.	Please refer to the Authority's earlier response.

Kalaam		
	-	-
DS / MBS		
Question 27: Do you agree with the scope and terms of the DS Service as described in the DS Service Description? If not, please give reasons.		
Viacloud		
	N/A	-
Etisalcom		
	DS is still limited to the mobile operators, and Etisalcom is of the view that it should be extended to OLOs as well as it will help OLOs to connect their own POPs within Bahrain.	The Authority notes that the revised WDC Service provides that Licensed Operators can use a WDC Service between two Points of Presence. This has been included in the final version of the Service Description. The Authority notes that the SDs all include specific scenarios in which a Service may be deployed, which are generally all dependant on maintaining a distinction between “End-User Premises” and a “POP”.
Infonas		
	No, Infonas does not agree that the DS service is limited to the MNO’s. A P2P option must be available to Service Requester (see response to question 24).	Please refer to the Authority’s response to Question 27.

BRE (Batelco)		
	Yes	-
Viva		
	Yes, although Viva have some specific comments in relation to the DS Service as set out above.	Noted – the Authority has responded to these above.
Netco		
	Please refer to NBNetco's response on the DS Service Description above and the amended Service Description.	Noted – the Authority has responded to these above.
Zain		
	Zain agrees with the scope of the DS Service but has the following comments on the terms of the DS service description: • As per Zain's response to question 7, the price terms proposed by the Authority for OWS and DS are not fair and will have high constraints on the service affordability and investment sustainability in the mobile broadband market. • As per Zain's comments that the DS and MBS from the definitions and service description provided are exactly the same technical solution, the QoS parameters stipulated in the DS service description should match what is specified under the MBS service description. Zain are of the view that the MBS product should be omitted, and the DS quality of service parameters should be set to 2ms for Round Trip Delay and 1ms for Jitter.	The Authority responds to Zain's comments as follows: • The Authority sets the price for the OWS product by extrapolating the price schedule for MBS to derive equivalent prices for a 40Gbps and a 100Gbps MBS product and to use this as the basis for the OWS tariffs. By deriving a price for OWS according to the price of the MBS product, the risk of any inefficient substitution between OWS and MBS and hence the risk to the viability of the SE, should be limited • The draft RO included two products which can be used for mobile backhaul, MBS and DS, with differentiated pricing. The Authority considers these price terms are appropriate and in line with the principles it has applied in its review. The Authority is satisfied that these price terms, when combined with other

	• The default Frame Size specified in Annex 2 table should be 9,600 instead of 1,522. This is technically required to utilise DS for Zain's network transmission and backhauling. • Regarding the Provisioning Validation Test table, Jitter should be included as a further testing parameter it is a main QoS service parameter. In addition, to include jumbo frames testing. • Paragraph 3.14 of the DS service description sets the course of actions to be followed in the event the access provider's technician presented at the Wireless Radio Site to install a DS service, and the access seeker cannot be available on the Expected RFT Date for such installation. Zain submit that the access provider should notify the access seeker ahead of time, with at least two Working Days, of such intended visit in order to manage the resources availability and/or coordinate for applicable access approval procedures.	aspects of the SE Order, will support MNOs' investment decisions in high-speed 4G and 5G mobile networks. • The Authority notes that it has responded to the specific technical points raised by Zain elsewhere in this report.
Kalaam		
	-	-
Question 28: Do you agree with scope and terms of the MBS Service as described in the MBS Service Description? If not, please give reasons.		
Viacloud		
	N/A	-
Etisalcom		
	N/A	-
Infonas		

	-	-
BRE (Batelco)		
	Yes, however, please refer to BRE's earlier response on protection services.	Noted – the Authority has responded to these above.
Viva		
	Yes, although Viva have some specific comments in relation to the MBS Service as set out above.	Noted – the Authority has responded to these above.
Netco		
	NBNetco has made amendments to the MBS Service Description to reflect that the MBS Service carries strictly mobile traffic.	The Authority has noted NBNetco's comments and will consider them in any subsequent review of the RO.
Zain		
	No as it considers it a non-justified duplicated product. The service description failed to describe and detail how the MBS product will perform differently than the DS, unless there is intentional applied service degradation by the SE to push the MNOs towards MBS.	The draft RO included two products which can be used for mobile backhaul, MBS and DS, with differentiated pricing. As set out above, the Authority considers it appropriate to retain both Services within the RO, in order to give Licensed Operators a greater range of wholesale services inputs.
Kalaam		

	-	-
Question 29: Do you consider that the MBS and DS Services are sufficiently different with respect to the QoS to warrant separate Service Descriptions? If not, please give reasons.		
Viacloud		
	N/A	-
Etisalcom		
	N/A	-
Infonas		
	-	-
BRE (Batelco)		
	It is not clear to BRE why the QoS for MS and DS are different for both services, given that they are using the same media. BRE would like more details regarding how the QoS will be guaranteed.	The Authority refers BRE to its response to Questions 1 and 2 above.
Viva		
	No – there should not be a separate MBS and DS service. The only difference appears to be the change in latency and frame delay variation by a few ms (such differentiation is technically unreasonable), which will have minimal	The Authority considers that it is appropriate to continue to offer MBS and DS in accordance with the proposal set out in the draft SE RO. The Authority refers Viva to its responses to Questions 1 and 2 above.

	impact in most situations. The only reason for keeping the distinction between these two services could be based on price.	
Netco		
	Yes	-
Zain		
	• Zain does not consider that the MBS and DS Services are sufficiently different with respect to the QoS to warrant separate Service Descriptions. There is no evidence nor clarification of how the MBS product will perform differently than the DS, neither the technical elements that makes MBS have superior quality than the DS. In Zain's opinion and based on current circuits in service, both MBS and DS are technically using the same network architecture, resources, equipment and technology. Zain's current backhauls leased line circuits, using WDC and TDS, are performing the same and utilising the same aggregation link. By which these backhaul leased lines that are currently in service are achieving lower than 2ms for Round Trip Delay and 1ms for Jitter. • As per Zain's view that the DS and MBS are exactly the same service, the QoS parameters stipulated in the DS service description should match what is specified under the MBS service description.	The Authority refers Zain to its responses to Questions 1 and 2. The Authority notes that it has responded to the specific technical points raised by Zain elsewhere in this report.
Kalaam		
	-	-
FAS		

Question 30: Do you consider that forecasts for FAS should be binding on Licensed Operators? Should there be any penalties relating to the provision of inaccurate forecasts and, if so, what form should such penalties take?		
Viacloud		
	N/A	-
Etisalcom		
	N/A	-
Infonas		
	No comment	-
BRE (Batelco)		
	Without prejudice to its position on FAS, BRE suggests that the forecast for FAS should be non-binding.	The Authority disagrees with BRE's view and considers that binding forecasts are required in order to ensure that NBNetco can allocate sufficient resources to the deployment of FFS.
Viva		
	No – Viva generally submit above about its concerns related to the tight reliance on long term forecasts in the reference offer. Viva have proposed either removing entirely the linkage between forecasting and payment of service credits or, if this linkage is to be retained, clarify what happens if an	The Authority notes Viva's comments. The Authority has amended Schedule 5 (Forecasting) by including a new paragraph 1.9 which builds in a tolerance of +/- 10%; thus the consequences of not adhering to the forecasts are not penalties but it means the SE cannot guarantee that

	Access Seeker's forecasts are inaccurate, outside the thresholds in Schedule 5.	orders placed outside the forecast parameters will be met although there is a reasonable endeavours obligation to do so.
Netco		
	Yes	
Zain		
	In the case of FAS the Access Provider is not required to take any measures in terms of dimensioning or investment as the FAS is a passive short distance fibre cable to be deployed in existing ducts. Moreover, it is fully passive dark fibre cable deployment, thus there is no "*Capacity required to connect the BBU to the RRH*" as stipulated in paragraph 3.2(c) in the FAS service description. Therefore, Zain do not consider that that forecasts for FAS should be binding on Licensed Operators, nor should there be any penalties relating to the provision of inaccurate forecasts.	The Authority considers that forecasts for FAS must be binding, given that it is a new product for which it is reasonable to expect careful planning.
Kalaam		
	-	-
Question 31: Do you agree with the proposal that cancellations should incur a fee equivalent to 3 monthly recurring charges (MRCs)? Do you consider that MRCs are the right framework for these fees, given that any MRC for FAS could be nominal?		
Viacloud		
	N/A	-

Etisalcom		
	N/A	-
Infonas		
	No comment	-
BRE (Batelco)		
	BRE disagrees that cancellations should incur a fee equivalent to 3 monthly MRCs. The best way to charge a cancellation fee would be to set them at the level expected to cover any unavoidable costs incurred because of the cancellation. With regards to FAS, BRE refers the Authority to its position on FAS set above in this response.	The Authority has noted BREs comments and has removed the text concerning cancellation charges in the Fronthaul Access Service SD. The FFS deployment process relies on the existing Facilities Access Process, which provides for the calculation of the relevant charge at clause 8(e) of the existing service description.
Viva		
	Viva submit that a penalty of a multiple of MRCs where the Access Seeker submits a Cancellation Request is excessive. Viva do not believe there is a good reason for this charge. The loss that the Access Provider suffers in this situation is uncertain, particularly as it is only related to notification of the Expected RFT and RFS Dates. This comment also applies to the other applicable Services in Schedule 6.	Please see the Authority's response above.
Netco		

	Given NBNetco's position regarding the inclusion of FAS and the uncertainties surround this new product, NBNetco considers that questions 30 and 31 are premature at this stage.	NBNetco's comments are noted. The Authority has revised the FFS forecasting and fee related terms in accordance with industry feedback and existing duct deployment processes under the Facilities Access Service Description.
Zain		
	• In the absence of a dark fibre product in general, Zain agrees that there has to be a product that fulfils the fronthaul requirements of mobile technology to ensure that the latest mobile technologies are deployed in the Kingdom of Bahrain. • Zain agrees with the approach that the MNOs should be able to self-provide the FAS and recommends that the following controls are in place: - FAS deployment is conducted under the supervision of SE (if required by SE); and - FAS deployment is conducted only through the approved contractors of SE; - FAS deployment follows the standards set by SE. • Zain does not see the requirement to transfer the fibre to the SE. In the cases where Batelco's duct is being utilised then a rate per meter should be defined. • Under this approach, the MNO will incur the upfront expenditure in deploying these fronthaul links, including the civil work required (if any). As suggested in the Consultation Document, there should not be any monthly recurring cost for service provisioning. This should be valid to any operating cost of maintenance and repair of such links. It is a passive link that has no active component for monitoring by the SE, therefore there is no such monitoring or maintenance cost. Thus, under the FAS self-provide approach, there are no applicable monthly recurring charges to the MNO nor Cancellation Fees. • In cases where underground ducts are required to be built in public land then Zain proposes that the request is sent to SE and SE shall provide the new duct and charge the MNO. As for lead-in duct to the buildings they shall be handled by the MNO.	The Authority agrees with Zain's comments and considers that there is clear demand from MNOs for a mobile fronthaul product. Accordingly, the SE RO now includes the Fibre Fronthaul Service (FFS), which is based on the Fronthaul Access Service proposed in the ROO Consultation. The Authority points NBNetco to its response to BRE on the FFS above. For reasons set out elsewhere in the report, the Authority has renamed the Fronthaul Access Service that was consulted on in the ROO Consultation to Fibre Fronthaul Service or FFS, so as to distinguish this from the Facilities Access Service, over which the FFS will now be delivered. The FFS Service Description in Schedule 6.6 of the RO indicates that the ownership of the one (1) kilometre fibre cable will remain with the SE. The MNO will be required, for the purposes of requesting this service under the processes outlined in Schedule 6.6 (Fibre Fronthaul Service) and related Schedule 6.7 (Facilities Access Service), to use a contractor that is approved by the SE for the installation works carried out in accordance with the existing duct access process under Schedule 6.7.3 (Duct Access Process).

Kalaam		
	-	-
OWS		
Question 32: Do you consider that forecasts for OWS should be binding on Licensed Operators? Should there be any penalties relating to the provision of inaccurate forecasts and, if so, what form should such penalties take?		
Viacloud		
	N/A	-
Etisalcom		
	N/A	-
Infonas		
	There should not be any penalties based on the forecasts.	Noted.
BRE (Batelco)		
	BRE suggests that the forecast for OWS should be non-binding after the first quarter.	The Authority notes BRE's comments on the Supply Terms.

	• BRE note that forecasts in the current RO are **not** legally binding - please see clause 19.8 of Schedule 9 of the current Batelco RO Supply Terms. In the event that an actual order is less than a confirmed Forecast then the Access Provider must make reasonable endeavours to mitigate any loss by seeking to re-use relevant equipment or facilities within 6 months of the relevant later forecast. The Access Seeker must pay the Access Provider the amount of any loss to the extent it has not been mitigated within 30 days of receipt of an invoice - please see clause 19.9 of the current Batelco RO Supply Terms. • In the current Batelco RO Supply Terms, where actual traffic exceeds the relevant forecast (other than because of Artificially Inflated Traffic), then the Access Provider shall use all reasonable endeavours to provide the Services to the Service Levels - please see clause 19.10. • If the Authority is minded to continue with "binding" forecasts then BRE recommends that the same approach be adopted as in the current Batelco RO, namely that no specific and pre-calculated penalty should be applied for not meeting forecasts.	The Authority considers that forecasts for OWS must be binding, given that it is a new product for which it is reasonable to expect careful planning. In the case where the number of actual service requests (orders) is greater in a quarter than the forecasted amount (including the above tolerances), the SE shall use all reasonable endeavours to supply the connections requested, but will not be expected to guarantee that the service will be provided in the timescale set out in the Service Level. The Authority also notes that it considers it reasonable to provide NBNetco with a grace period in which to finalise preparations for the supply of OWS. Accordingly, the Authority notes that while NBNetco will be expected to acknowledge Service Requests for new OWS Connections from the effective date, it will not be expected to complete these new Connections until 3 (three) months after the effective date. To be clear, NBNetco will be expected to meet the Service Levels (Schedule 7 – Service Levels) for all OWS Service Requests from this date onwards.
Viva		
	Viva do not consider there should be any penalty if the actual number of new Connections is less than forecast. There is no apparent good reason for this provision, which is onerous. The same comment applies to the FAS Service in Schedule 6.6.	The Authority considers that efficient network design and deployment should respond to substantiated demand. The penalty requirement for FFS is intended to promote accurate forecasting of service requirements by Access Seekers. In the case of FFS and OWS the forecast should be based on a known network build / configuration plan from the operators rather than a customer driven order based forecast and therefore it should be easier to provide a forecast.
Netco		
	Yes	
Zain		

	Zain agrees that forecasts for OWS should be binding on Licensed Operators. Nonetheless, given that such product is required to establish the base transmission network required for future technologies, this would be SE network and any single access drop to a PRS or core site would not have a significant cost that justify applying penalties. Therefore, there should not be any penalties relating to the provision of inaccurate forecasts. Rather, in order to give a binding nature for the OWS, Zain welcomes SE to require minimum service period for such investment.	The Authority considers that forecasts for OWS must be binding, given that it is a new product for which it is reasonable to expect careful planning. In the case where the number of actual service requests (orders) is greater in a quarter than the forecasted amount (including the above tolerances), the SE shall use all reasonable endeavours to supply the connections requested, but will not be expected to guarantee that the service will be provided in the timescale set out in the Service Level.
Kalaam		
	-	-
Question 33: Do you consider that Quality of Service provisions are required or appropriate for OWS?		
Viacloud		
	N/A	-
Etisalcom		
	N/A	-
Infonas		
	-	-

BRE (Batelco)		
	Yes. OWS is a service by the SE which is provided over its active network, and on which critical (mobile) services will rely. There must be a QOS on this service – BRE recommend the same QOS as at clause 1.4 of the MBS service description.	The Authority notes that the nature of the OWS Service is such that the transport level will be transparent to the SE. Accordingly, the SE will not be able to monitor the performance of the service. However, the Authority notes that Link Availability can be monitored through the SE Network Management System and has retained this reference. Further details may be developed through the ECTC and the JWM.
Viva		
	• It is certain that QoS provisions are required for OWS. It will be essential to ensure that the end-to-end performance can be tested against a defined set of parameters upon both commissioning and post- any service disruption. It will also be essential for both the Access Seeker and Access Provider to know when a fault has occurred. • The details of the QoS provisions will depend on the definition of the service. Currently the OWS is defined with electrical interfaces at each end, based on the Optical Transport Network specifications contained in ITU-T Recommendation G.709. Viva disagrees with such service specifications, which do not meet Viva's network backhauling requirements. • The OWS should be defined as an optical wavelength service with optical interfaces at each end so that the end-to-end service is purely optical. In this case, the QoS provisions will relate to light wavelength, light channel bandwidth, optical loss over the given path and identification of any optical mismatch anomalies. These parameters would need to be tested with an Optical Time Domain Reflectometer test set of some kind. • It will be essential for these QoS parameters to be both defined and measured for the successful delivery of the OWS.	The Authority understands from technology vendors that optical interfaces will not be interoperable between multiple service providers. The Authority will further consult on such a proposal in the next review of the RO (in 18 months). The Authority has updated Annex 3 in the final OWS Service Description to set out the specifications for the Acceptance Criteria and Test Results applicable to the OWS Service Provisioning Validation Test.
NBNetco		

	Given NBNetco's position regarding the inclusion of OWS and the uncertainties surround this new product, NBNetco considers that questions 32 and 33 are premature at this stage. However, NBNetco has made general comments on forecasting especially with regards to giving flexibility to OLOs but also putting in place the necessary controls to prevent gaming of the forecasting system.	The Authority notes NBNetco's comments. The Authority has amended Schedule 5 (Forecasting) by including a new paragraph 1.9 which builds in a tolerance of +/- 10%; thus the consequences of not adhering to the forecasts are not penalties but it means the SE cannot guarantee that orders placed outside the forecast parameters will be met although there is a reasonable endeavours obligation to do so.
Zain		
	Yes. The QoS parameters should be superior to the ones provided for MBS, DS or WDC. Zain has set out what it believes the QoS parameters of OWS should be on pages 33-34 of its response.	The Authority refers Zain to its responses to Questions 1, 2 and 6.
Kalaam		
	-	-
TERMS OF THE DRAFT RO ORDER		
Question 34: Do you have any comments on the terms of the Draft RO Order? Do you agree with the legal reasoning?		
Viacloud		
	Yes – agree with legal reasoning.	-
Etisalcom		

	-	-
Infonas		
	-	-
BRE (Batelco)		
	No comment (rights to make comments reserved).	Noted.
Viva		
	Yes – agree with legal reasoning.	-
Netco		
	• The key legal instrument underpinning the Draft RO Order is the NBNetco Licence which has not been issued yet nor have we seen the TRA's response to comments on the last round of consultation on that licence. • As such it is unclear how the final licence and the RO order would work together particularly around issues such as EOI and systems separation, given that the Authority will need to take into account comments on the RO order as well. • Without an opportunity to consider both documents in their proposed final state and, given that both the NBNetco License and the RO Order will be published within a short space of time, it would not be reasonable or appropriate to create a prescriptive obligation on EOI and systems separation based on the RO order.	NBNetco'S comments are noted. The Authority recognises that the NBNetco Licence and the NBNetco RO Order are to some degree overlapping legal documents that impose related, though distinct, legal obligations on NBNetco with regards to the supply of its wholesale services. The Authority disagrees however that the movement to the provision of wholesale services on an EoI basis is a matter best left to NBNetco's discretion. The Authority is the body empowered by statute with the monitoring and enforcement of regulatory obligations on Licensed Operators. In so far as flexibility in the implementation of EoI is necessary/desirable, that it a matter for the Authority's discretion.

	• NBNetco should be given flexibility in moving towards EOI and systems separation as set out in the commitments set out in its draft Undertakings. • As NBNetco has noted before, adopting a very prescriptive approach will lead to material inefficiencies as resources are diverted from enhancing the NBNetco product set and customer engagement to minute requirements on compliance. • It is NBNetco's firm view that NBNetco and Batelco as a whole are the best placed to determine the most technically and financially efficient route to deliver EOI. and the various obligations and documents need to be adopted in a consistent and transparent fashion and with full visibility of the full suite of obligations for all parties.	The Telecommunications Law under Article 3(a) sets out the manner in which the Authority must exercise its obligations. The Authority has initiated two consultation processes relating to both the NBNetco Licence and Reference Offer and has considered a broad range of submissions on the appropriate delivery of services on an EoI basis. In addition the Authority is currently consulting on the terms of reference of the ECTC that will have a role in monitoring the delivery of NBNetco's service. In these circumstances the Authority does not believe there can be any prejudice to NBNetco in maintaining the current wording.
Zain		
	Yes – agree with legal reasoning.	-
Kalaam		
	-	-
Question 35: Do you consider any terms are missing or there are other issues that should be addressed in the Draft RO Order?		
Viacloud		
	No	-
Etisalcom		

	-	-
Infonas		
	-	-
BRE (Batelco)		
	New Infrastructure and Services in Areas where no Services • It is not clear what the process or timeframes are for the development of new infrastructure to offer the services in areas where there is currently no infrastructure or services. For example in the previous draft SE Reference Offer clause 3.2 (j) of the WDC Service Description referred to sixty (60) Working Days as a timeframe to deliver a New Connection Request in a service area where the WDC product is not yet supported. This paragraphs refers to this time period as being "*the same maximum delivery time that is applicable for cases where new ducts must first be installed before deploying any fibre access cable".* This reference has now been removed from the Service Description and the only reference to the sixty (60) day period is in Schedule 7 of the current draft RP, under Data Service. It is not clear in the current draft SE RO how new services will be provided in similar areas. This needs to be addressed fully with a clear process and timeline for the installation of new duct and fibre, and relevant wholesale services through that infrastructure, in areas that do not have this infrastructure or services. *New Products, Short Term Products and Special/Bespoke Products* • Paragraph 7.10 of the Consultation Document notes that the Draft RO Order provides that the "Authority may require the SE to supply particular customers with bespoke services on an exceptional basis, in order to meet the needs of specific policy requirements. The supply of such services shall be subject to the approval of the Minister".	The Authority notes BRE's comments and refers BRE to its response to NBNetco under Question 1 above. The Authority agrees that a key objective of the NTP 4 is the delivery of a ubiquitous fibre network for the delivery of high speed connectivity services. The Authority understands that NBNetco's existing DWDM network is nationwide. The Authority considers that the SE will supply existing WDC Services and offer new WDC Services. Annex 1 of the WDC Service Description provides that WDC may be provided over copper and fibre access and Ethernet and SDH topologies. The Authority considers that the WDC is suitably technology agnostic to ensure delivery of services where fibre is yet to have rolled out. The Authority expects that the full set of WDC speeds includes those which will be provided by existing copper networks as well as some that will be provided on the SE's fibre will be made available via the RO. The SE will comply with any requirement of the Authority to supply particular customers with bespoke services which may include dark fibre and/or duct access on an exceptional basis, in order to meet the needs of specific policy requirements (so-called "Exceptional Facilities Access Service" or "Exceptional FAS"). The supply of such Exceptional Facilities Access Services shall be subject to prior approval from the Minister. In considering a request for Exceptional Facilities Access Services to particular customers, the SE shall comply with the relevant processes

	• BRE believes that the RO should include more detail on this process. The form for requesting special services needs to be detailed and should also include SLAs to guide OLOs on the lead time for assessment and fulfilment of such requests. *Review of Draft RO* • Paragraph 7.12 of the Consultation Document refers to a review of the RO within the first eighteen (18) months of its publication. BRE consider that comments should be received and compiled immediately upon the RO coming into effect and that the RO should be amended to reflect comments received from OLOs.	outlined in the Facilities Access Service (Schedule 6.7 – Facilities Access Service) of the RO. BRE's remaining comments are noted.
Viva		
	No. Viva have highlighted all the outstanding issues in its wider response.	Noted.
Netco		
	NBNetco addresses the key issues in the Draft RO Order in its response to questions 34 and 36.	Please see the Authority's response to questions 34 and 36.
Zain		
	• The product set does not include a product that addresses the connectivity to the international landing stations in the Kingdom of Bahrain. • In the 2013 Dominance Determination in the wholesale market for the supply of international capacity from locations within Bahrain, the determination outcome was conditional upon access being available to Batelco ducts (and associated facilities required to utilize ducts for the purposes of proving international capacity), domestic wholesale leased lines, and the IFC service on fair, reasonable, and non-discriminatory	Zain's comments are noted. For completeness, the WDC Service is designed to enable Licensed Operators to connect to cable landing stations. In respect of International connectivity and cross connection at the GBI and Falcon landing stations, this remains with BRE. The Authority considers that it has responded to the points raised in other sections of this Report and in previous consultation processes.

	terms. However, the Authority's in 2015 have halted all access to ducts rental service and accordingly Batelco's non-dominance in the identified market is no longer valid. • In respect of the Authority's market review of the entire supply chain for international connectivity later this year, Zain repeats its comments and interim solutions as set out in response to question 1 above.	
Kalaam		
Question 36: Do you agree with the Authority's proposed approach and timelines (including interim milestones) for delivering EOI on a service-by-service basis?		
Viacloud		
	Yes	-
Etisalcom		
	-	-
Infonas		
	-	-
BRE (Batelco)		

	No. Given that the period up until the next review of the SE RO would effectively be a transition phase, BRE considers that the Authority should ensure that OLOs benefit from the Equivalence of Outputs (EOO) principle rather than EOI. The process towards EOI affects BRE and SE but specially BRE as BRE will face a complete overhaul of its business processes, systems and network. Imposing prescriptive requirements regarding EOI with the timelines set by the Authority will put BRE at a disadvantage. As an example, where BRE has existing systems in place, it will be forced to adopt similar provisioning systems as being offered to OLOs while bearing the costs of both this and its existing systems.	BRE (Batelco)'s comment is noted. As stated in by the Authority in its response in the First Consultation Report, the Authority intends to conduct a review of the RO **within** 18 months of its publication. The Authority also notes that the second public consultation on the draft SE License (LAD/0219/055) published on 28 February 2019 and section 4.9 of the Amended SE License propose that the Authority may request more frequent submission of a revised draft RO from the SE. The Authority expects to commence the work needed.
Viva		
	• Viva don't agree with a service-by-service progressive implementation of EoI and believe this is not the appropriate way of doing it. • Under clause 5.4 of the SE's licence, the Licensee shall provide the Licensed Services on an EoI basis, unless otherwise determined by the TRA. Viva have supported this approach and it should be the general presumption. • EoI requires SE to provide BRE and OLOs "*… with the same service, on the same time-scales and on the same terms and conditions (including price, non-price terms and service levels), using the same systems and processes (including operational support), with the same degree of reliability and performance and providing the same commercial information about the service and the systems and processes*". • In other countries (UK and NZ particularly), the reason why EoI was not immediately implemented was primarily because of the IT work required, which is the issue addressed by Layer 1, 2 and 3 systems separation in the Batelco and SE licences. • Certain other key aspects of EoI are already being addressed in the SE's (and BRE's) licences, particularly the requirement for a single common interface for Licensed Operators, presumably including BRE, to order and track the progress of orders for the Licensed Services and addressing shared services and functions. • Viva imagine that there could be justifiable minor variations in the services that BRE receives or in their reliability or performance (Viva	The Authority notes Viva's comments regarding EOI. The Authority considers that it is prudent to approach EOI on both a service-by-service basis (as stated in the SE Order), as well as setting specific milestones for systems separation (as stated in the SE Licenses) which would apply across all services. The SE Order makes clear that the maximum periods for the SE to provide services on an EOI basis would be as follows, calculated from the effective date of the SE Order: • WBS: within nine (9) months; • WDC: within twelve (12) months; • MBS and DS: within eighteen (18) months; • OWS and FFS: within twenty-four (24) months. These timelines are consistent with the obligation in section 5.4 of the SE License that requires the SE to ensure EOI by the end of twenty-four (24) months from the effective date of the SE License. The SE Order however sets out a clearer roadmap to encourage a progressive step towards EOI, rather than leaving EOI for all services to be available only at the end of the twenty-four (24) month period. The SE Order further clarifies that important operational and technical measures to support delivery of EOI should be in place shortly after the

	don't know whether this is so or not). However, the TRA should scrutinise these variations to ensure that they are justified and that they do not provide BRE with a discriminatory advantage over OLOs. Viva don't think there can be any reason for differences in the newer services, OWS and FAS. • Viva propose that Batelco be given a period of one month after the Order to provide details of all variations in the services that BRE receives or in their reliability or performance, as compared to OLOs. The TRA should then perform an assessment, which involves (a) whether the variation is justified and (b) whether it provides BRE with a discriminatory advantage over OLOs. The burden of proof should be on Batelco. • If the TRA determines that Batelco has not demonstrated justification or that the advantage is discriminatory, then it must require the services and their reliability and performance to be the same as for OLOs. The TRA should make this determination within two months of the Order and Batelco and SE must implement it within three months of the Order. • There should not be different timescales for delivery of the services or different terms and conditions (price, non-price terms and service levels) or different commercial information provided by SE to BRE. • Thus Viva's proposal is for a much more granular approach than a service-by-service progressive implementation of EoI. The definition of EoI is broad, and justifiably so, but there is no good reason why aspects of it cannot be implemented immediately under an approach that requires the TRA to be convinced that variations are justified and are not discriminatory. • In terms of the milestones, Viva propose that the portal related to all wholesale products be available as soon as possible. If it is not available on the date of the Order, then Batelco should be given not more than 3 months to put this in place. The other milestones are acceptable.	effective date of the SE Order. In particular, the SE is required in the SE Order to ensure: • provision of a portal for the automated handover of orders, including updates and completion notifications: within six (6) months; • provision of a portal for the automated handover of fault reports, including updates and fault clear notifications: within six (6) months; • access to engineering appointment books: within six (6) months; • access to an address matching process/system: within six (6) months; and • access to digital network availability information (by address / customer): within nine (9) months. The SE License further requires that the online portal for ordering and tracking of orders must be available within one (1) month of the effective date of the SE License. As regards Viva's comments concerning potential variations that may be required by BRE, the Authority notes that as from the effective date of the SE License and SE Order, the SE will be required to treat BRE in the same way as other Licensed Operators. Any concerns from OLOs that BRE is being granted favourable treatment could be referred to the Authority under the Authority's complaint mechanisms.
Netco		

	• NBNetco has already conducted an assessment on its current processes and systems and has identified which systems are shared between BRE & wholesale as well as developed a detailed report on Information Systems(IS) & Information Technology(IT) current status which outline which systems are legacy and need to be replaced. Accordingly, there is no need to conduct such an audit again and this will save 6 months of efforts and cost. • The timeline for achieving EOI systems as per the submitted draft Undertakings is to be achieved by 31st October 2021. As set out in the response to question 34 above, the Draft RO Order should be focused on defining a product set that allows OLOs to compete under the general umbrella of non-discrimination as set out in the Telecommunications Law. The operational aspect of delivering on EOI should be left within the remit of NBNetco with the TRA having an oversight on the progress towards EOI. • NBNetco has committed to provide updates the progress on achieving EOI. • The requested portal features set out in the RO timelines possibly can be provided part of the final B2B portal by the end of October 2021 when B2B and BSS/OSS integration between NBNetco and OLO including BRE can be implemented. This is due to current systems capabilities limitation that limits provision of all portal features at this stage because the current systems are integrated and shared between retail and wholesale. • However, as transitional set-up, enhancements on the current RO portal can be introduced which can cover the following functionalities: - Place TBS new order on the RO Portal - Place TBS change order request on RO portal - Track TBS orders. • NBNetco will be utilizing current systems for its operation during the transitional period. To achieve EOI, it is considering a number of separation options including the purchase of new systems. Selecting the appropriate separation option will depend on the system architecture, solution capabilities to be selected and Information technology infrastructure (cloud based or on premises). • While moving towards achieving EOI on separate business processes and systems, NBNetco will provide the products and services on an equivalence of outputs ("EOO") basis from cost and time perspective.	The Authority notes NBNetco's comments regarding the Authority's ability to appoint an auditor. It is important that the Authority retains the ability to appoint an auditor, especially in absence of receipt of a detailed systems separation plan from NBNetco. The Authority considers that NBNetco should be required to provide all services on an EOI basis at latest, by twenty-four (24) months after the effective date of the SE License and SE Order. NBNetco should ensure that these timelines are reflected in the Undertakings.

Zain		
	Zain disagrees with the timelines for the EoI on WBS and WDC products as six months for the Audit and a further nine and 12 months is too long for products that are in direct completion. A maximum of three months from the order date should be granted for WBS and WDC.	The Authority notes Zain's comments. The Authority has amended the commencement date for the EOI milestones that will apply on a service-by-service basis so that these apply as from the Effective Date of the SE Order, and not only after completion of an asset audit. The Authority notes that Zain has proposed a maximum of 3 months from the date of the SE Order for EOI regarding WBS and WDC. While the Authority is mindful of the need for the SE to be required to meet EOI as quickly as possible within the twenty-four (24) month timeframe referenced in the SE License and SE Order, the Authority considers that the current timelines for WBS and WDC strike the relevant balance. The Authority considers that it necessary to take a pragmatic approach, and to avoid setting deadlines that may not be achieved in practice.
Kalaam		
	-	-
Question 37: Do you agree with the proposal for the Authority to have power to appoint an independent auditor to establish a stepped approach for the SE's progress towards achieving EOI?		
Viacloud		
	Yes	-
Etisalcom		

	Yes	-
Infonas		
	-	-
BRE (Batelco)		
	No. BRE considers that Batelco's Board of Directors have already delivered on its commitment to separate. The operational aspect of progressing towards achieving EOI should be left at the discretion of the Batelco Board of Directors. The TRA should be concerned that products and services are offered on non-discriminatory/EOO during the transition period. Importantly, Batelco has committed to provide the Government and the Authority with transparency on its progress towards separation and this commitment remains.	The Authority has considered BRE (Batelco)'s comments. The Authority considers that it is important that the SE provides the Authority with detailed oversight of the steps it is taking to achieve EOI and that this is in compliance with the SE's obligations under the SE Order and SE License. The Authority therefore maintains its view that the Authority should have the ability to appoint an auditor to review the SE's compliance, if necessary.
Viva		
	Viva agree with the appointment of an independent auditor. The wording in paragraph 7(i) of the draft Order should clarify that the audit is "to confirm SE's compliance with paragraph 6 above". Viva propose that SE be required to comply with requests for information from the auditor and to answer their questions orally and in writing (with copies to the TRA).	The Authority notes Viva's comments. The Authority has amended the wording in the relevant paragraph in the SE Order to clarify that the SE shall give its full cooperation to the auditor and shall provide complete and accurate responses to the auditor's requests for information "in a timely manner". The Authority retains the right to issue a request for information under Art 53 of the Law should this be necessary.
Netco		

	• NBNetco has fully engaged with the Government, Ministry and Authority to deliver legal separation of Batelco. However, NBNetco remains in the best position to understand and tackle the operational, technological and organizational limitations and difficulties in separating. • As such, NBNetco is of the firm view that NBNetco along with the wider Batelco Board would be in the best position to monitor and evaluate NBNetco's progress towards EOI. Nonetheless, NBNetco, in its draft Undertakings, has agreed with the setting up of the Equivalence Compliance Committee (ECC) reporting to the General Director of the Authority. • NBNetco believes that the ECC, as currently envisaged in the draft Undertakings, will provide the required oversight on NBNetco's progress towards achieving EOI and limit the requirement to have an independent auditor. • Furthermore, in its draft Undertakings, NBNetco proposes to provide the Authority with regular updates on the various streams towards legal separation including its move towards EoI. • With this committed level of transparency and information, NBNetco believes that the need for an independent auditor is significantly reduced and suggests that the Authority remove this requirement from the RO order.	The Authority has considered NBNetco's comments. The Authority welcomes NBNetco's indication that it will provide regular updates to the Authority regarding its progress towards EOI. The Authority disagrees however, that NBNetco is best placed to assess its own compliance with the relevant EOI obligations in the SE Order and the SE License. The Authority is the correct body to monitor a licensee's compliance with its obligations under its License. The Authority notes NBNetco's comments regarding the ECC referenced in the draft Undertakings provided by NBNetco to the Authority. The Authority does not consider that the ECC as described in the draft Undertakings meets the relevant standards required of NBNetco. The Authority refers NBNetco to the Authority's consultation regarding the Equivalence Compliance and Technical Committee (ECTC) (Ref: LAD/0519/121 dated 9 May 2019) that will combine the functions of the ECC that was referenced in the draft SE License with those of the Industry Forum that was referenced in the draft ROO Consultation.
Zain		
	Yes	-
Kalaam		
	-	-
Question 38: Do you agree with the proposed terms in relation to the establishment of an industry forum to enable Licensed Operators to discuss their product and technical requirements with the SE and the proposed timeframe? Do you have comments regarding the proposed framework for such an		

industry forum, including its composition, functions, obligations and remit, as well as processes for operational matters (including frequency of meetings) and any proposed measures concerning transparency and/or reporting?		
Viacloud		
	Yes - this should benefit the licensees and share common thoughts/issues and representation that can be collectively made to regulator or SE.	Noted.
Etisalcom		
	-	-
Infonas		
	-	-
BRE (Batelco)		
	Yes. BRE agrees with the establishment of the Industry Forum, however as discussed in the sections above regarding suspension and termination BRE believes that its role could be enhanced to have a more formal role in suspensions or terminations of Services in certain circumstances, namely, where the Access Provider or Regulator are considering withdrawing a Service from the RO.	The Authority notes BRE (Batelco)'s comments regarding the role of the Industry Forum (which is now included in the Authority's consultation on the Equivalence Compliance and Technical Committee (ECTC) (Ref: LAD/0519/121 dated 9 May 2019). The Authority invites BRE (Batelco) to submit its proposals for the role of the ECTC as part of its responses to that consultation. As regards any proposed suspensions or proposed terminations by the SE, the Authority has inserted additional wording in the relevant provisions in clauses 12 and 13 of the Supply Terms (Schedule 9 of the SE Reference Offer) to clarify that the SE cannot suspend a service without first obtaining the Authority's approval; and that in the event that the SE proposes to terminate a service, the SE would be required to send a copy of the notice of termination to both the Access Seeker and the

		Authority (at the same time), so as to enable the Authority to have oversight of any proposed terminations.
Viva		
	Yes.	-
Netco		
	In its response to the first consultation on the NBNetco Reference Offer, NBNetco underlined its active transition towards a customer engagement model. NBNetco believes that an Industry Forum is essential but that there needs to be clear obligations of stakeholders while participating in this forum. It is essential that if this Industry Forum is to be used for the development of NBNetco products and services, then the requirements for such products to be fully substantiated and the demand for these products need to be clearly defined.	The Authority notes NBNetco's comments regarding the role of the Industry Forum (which is now included in the Authority's consultation on the Equivalence Compliance and Technical Committee (ECTC) (Ref: LAD/0519/121 dated 9 May 2019, that will combine the functions of the ECC that was referenced in the draft SE License with those of the Industry Forum that was referenced in the draft ROO Consultation). The Authority agrees with NBNetco's views that a key aspect of the ECTC will be to enable the SE and Licensed Operators to discuss Licensed Operators' needs regarding existing and future products and services, as well as the technical and operational delivery of those products and services. NBNetco is invited to submit its comments on the ECTC in its responses to the consultation referenced above.
Zain		
	Yes - industry forum should comprise all interested operators chaired by the regulator to discuss technical and product requirements with updates to be provided by SE on the any major issues and roll outs.	The Authority notes Zain's comments regarding the role and composition of the Industry Forum (which is now included in the Authority's consultation on the Equivalence Compliance and Technical Committee (ECTC) (Ref: LAD/0519/121 dated 9 May 2019, that will combine the functions of the

		ECC that was referenced in the draft SE License with those of the Industry Forum that was referenced in the draft ROO Consultation). The Authority agrees with Zain's views that the ECTC should enable the Licensed Operators to discuss with the SE their needs regarding existing and future products and services, as well as the technical and operational delivery of those products and services, and planned roll-out of fibre. Zain is invited to submit its comments on the ECTC in its responses to the consultation referenced above.
Kalaam		
	-	-
Question 39: Do you agree with the proposed requirement for the SE to submit a joint working manual for the Authority's approval and the proposed timeframes? Do you consider that this should be extended to include other documents, such as fault management processes, template order forms or service requests?		
Viacloud		
	Yes	-
Etisalcom		
	-	-
Infonas		

	-	-
BRE (Batelco)		
	Yes – the other documents would make it better and should be included.	-
Viva		
	Yes. Viva also submit that all OLOs should be consulted on the Joint Working Manual and other documents.	Noted.
Netco		
	NBNetco agrees with the proposal to submit a Joint Working Manual but believes this should be developed in a collegiate manner between NBNetco and its customers during the transition period. NBNetco believes that fault management processes are essential but given that the next 18 months represent a first step into a new environment for the industry, it is essential that a decision on what other documents to include be made after a thorough review of the transition period.	The Authority notes NBNetco's comments regarding the development of the Joint Working Manual (JWM). The SE Order requires NBNetco to submit for the Authority's approval a copy of the JWM to the Authority within 4 months of the Effective Date of the SE Order. The Authority expects that the JWM (and related operational documentation including template order forms etc) would be developed by NBNetco in discussion with Licensed Operators as part of the Equivalence Compliance and Technical Committee (ECTC). NBNetco is referred to the Authority's consultation on the Equivalence Compliance and Technical Committee (ECTC) (Ref: LAD/0519/121 dated 9 May 2019, that will combine the functions of the ECC that was referenced in the draft SE License with those of the Industry Forum that was referenced in the draft ROO Consultation.

		NBNetco is invited to submit its comments on the JW in its responses to the ECTC consultation referenced above.
Zain		
	Yes - the scope of joint manual and Authority's approval should be extended to other areas such as but not limited to fault management processes, template order forms or service requests as each of those areas could have a bottleneck in achieving the desired EoI and non-discrimination. This can be further included under the scope of the forum.	The Authority notes Zain's comments regarding the development of the Joint Working Manual (JWM). The SE Order requires the SE to submit for the Authority's approval a copy of the JWM to the Authority within 4 months of the Effective Date of the SE Order. The Authority expects that the JWM (and related operational documentation including template order forms etc) would be developed by the SE in discussion with Licensed Operators as part of the Equivalence Compliance and Technical Committee (ECTC). Zain is invited to submit its comments on the JW in its responses to the ECTC consultation referenced above.
Kalaam		
	-	-
OTHER COMMENTS		
Question 40: Do you have any other comments not considered specifically above that you wish to raise? If so, please order your comments according to sections in the consultation document or specific aspects of the Draft Amended Reference Offer or Draft RO Order.		
Viacloud		

	1. WDC Service description clause 3.19: it's mentioned that Access Provider may seek to recover costs of additional passive infrastructure which would be for the Access Seekers exclusive use for the foreseeable future. Viacloud's experience has been that this is not practical to monitor or enforce, and this premise is used unfairly in most cases since it is subjective. Eventually, in most cases - despite the Access Seeker covering the additional costs - the deployment is not for the exclusive use of the Access Seeker. There is nothing preventing any spare capacity deployed to be used by any other Access Seeker to provision services to other end customers in the Building / Area. Viacloud believe that the penetration of Fiber will be extensive throughout the country, only when deployment of fiber is within a privately-owned single tenant property (not including commercial buildings) should the Access Provider be allowed to recover such costs. **2.** The SE should be responsible to deliver the WDC and WBS connectivity up to the end user premises not only to the basement, and other common areas and the Authority can set the limit of how many floors will be covered with the setup charges (example 25) and any end user premises higher than such floors may be charged an additional amount.	The Authority notes Viacloud's comment. The Authority has retained the table at clause 3.19 of the WDC SD and refers ViaCloud to its responses in relation to this matter elsewhere in this Consultation report. The Authority notes that the NBNetco will be responsible for service assurance for the end-to-end wholesale connectivity specified under each service description.
Etisalcom		
	-	-
Infonas		
	In response to Sections D and E, please find below Infonas's general comments on the Draft Amended Reference Offer or Draft Order. **In response to 1.7 page 3** Infonas requests the TRA to treat the responses submitted in a confidential manner, as publishing them shall greatly impact the company's business. **In response to 5.1 page 7**	The Authority has proposed KPIs in the revised draft RO. -- The Authority refers Infonas to its responses to the comments made by other parties on Questions 1, 2, 6, 7 and 8 of this Consultation Report. The price terms proposed by the Authority have been determined to ensure both that NBNetco has the opportunity to earn a reasonable

	The paragraph mentions “offer next generation services”. Infonas requests the TRA to decide on KPIs that will guarantee that SE will stay updated with the latest technologies available in the market. Infonas is of the opinion that not having such KPIs in place may impact delivering feature rich and latest services to end-users, which in return will impact the Kingdom’s 2030 vision of Bahrain being the technology and telecom hub of the region. E.g. following receipt of a request from OLOs, the TRA decided to add 100Gbps services to the RO. However, 400Gbps services will be in the market soon, which means SE will once again be one step behind. With the direction Bahrain is taking with hosting tier-4 and tier-5 data centers, providing the latest bleeding edge technologies becomes a necessity. **In response to 5.2.4- page 8** Infonas recommends setting out a clear time frame in which the SE’s website is to go live. **In response to 6.2- page 9** The authority’s assumption is not accurate, IFL license holders require this backhaul connectivity to their international landing stations be able to deliver its services and capacities. This has been raised in the last draft to the TRA. **In response to 6.4.8 page 10** Infonas would like further clarification on the definition and scope of “increased protections” **In response to 7.2.3 page 12** In response to “the authority does not take a determinative view at this time on the position of international connectivity”. Infonas believes that international connectivity falls under different regulations and jurisdictions. **In response to 7.7- page 14** The Authority makes references to the United Kingdom and Ireland throughout the document. However, in this particular instance, the Authority does not reference the jurisdiction it is referring to, nor does it outline the method and findings of such comparison. **In response to 7.8 – page 14**	return, taking into account the significant uncertainties which remain in its business case, and that there is scope for effective and sustainable competition downstream. The Authority will further review the RO price terms in the first review of the RO. This will take place within 18 months’ time. The Authority considers this is preferable than developing more detailed risk assessments or budgeting studies at this stage as such studies would not resolve the uncertainties within the SE business case.

	Infonas agrees with allowing MNOS to use OWS and pull fiber, provided that MNOs do not use their towers to deliver last mile connectivity over wireless for their non-mobile users. Whereas allowing MNOs the use of their towers to deliver last mile connectivity over wireless for their non-mobile users will give MNOs a clear advantage in the sense of reachability and cost control, which does not align with the principles of NTP4 of creating a level-playing field. **In response to 7.10 - page 17** • Specific criteria and metrics must be identified for *"bespoke services"*. Infonas finds the term and paragraph to be vague as there is no definition or indication to what constitutes 'bespoke services' specially whilst taking into consideration that such services may be considered a 'special request' by a customer at a point in time but may very well then establish itself as a key product after some time. • The process for obtaining the approval referred to in the concerned paragraph needs to be set out in order to ensure transparency. • Paragraph 7.10 refers to 'customers'. However, the SE is only meant to deal with OLOs. As such, Infonas requests some clarification as to whether the term refers to OLOs requesting such service (for their own customers). • 'Bespoke' service must not contradict the principles of the NTP4, nor compete against OLOs in any way. **In response to 7.12 -page 18** Please provide clarification on the decisive factors for the inclusion of dark-fiber as a service the SE. Clear criteria should be in place and agreed with the OLOs, in advance, for transparency mattes, and in conjunction with his royal Excellency the Crown Prince's four pillars for vision 2030. **In response to 7.18 - page 21 (commenting on the steps graph)** Infonas provided a diagram setting out the steps it considers may be better optimized by changing the sequence of some activities. : **In response to 7.20 - page 21** In order to reduce the risks associated and minimize any potential impact on the plan, Infonas suggests that the regulator appoints a (consultant) as a proactive measure, rather than reactive (Auditor).	

	In response to 7.23 - page 22 The TRA should look at the prioritization - Infonas suggest a top down approach, starting with connectivity products and services that meet the reasonable requirements of the operators -> mass market consumers focused products -> those products and services that are specifically operator focused. • Starting with mass market products will not have such big impact on the market, considering that the products are already available by Batelco. • The justification to start with connectivity products and services that meet the reasonable requirement of the operators has bigger impact, as it will introduce services that are not currently provided by Batelco, such as 100Gbps services. • Consider doing an impact assessment, and focus on higher economic impact (value) rather than market size (volume). **In response to 7.25 - page 23** Infonas request a clear plan on how does the Authority intends to control the flow of information between both companies and eliminate negligence. Considering that BRE will have a clear advantage over other OLOs; further clarification below: • Guarantee full separation of the systems- manage data access rights and system manipulation. • Employees moving between BRE and SE- giving BRE advantage over other OLOs, knowing the trade secrets etc. **In response to 7.26 - page 23** Infonas suggests regular audits on the portal to ensure equal treatment of all OLOs, and that services are delivered “first in first out”. Subject to fiber and connectivity availability. **In response to 7.28 - page 23** The TRA should take a proactive role in deciding whether SE should procure new systems. Procuring new systems will give the SE a cleaner start; as the project moves forward, separation of systems will get more complicated introducing unforeseen issues, which in return will impact the project timeline and the costs associated. **In response to 7.36 - page 26**	

	Infonas requests further clarification on how introducing Detailed service level and penalty framework would be a considerable burden on SE and could distract from the key objective of the 'on time' delivery? **In response to 7.40 - page 26** Infonas suggests the Regulator to appoint a committee rather than a chair person, to avoid any bias issues. Reasonable instructions and pre-determined role / responsibilities need to be defined. Since the chairperson will not overrule or replace SE's management, who will be the ultimate decision maker in the case of conflicts? Infonas suggests introducing a committee rather than a chairperson, and evidence backed voting mechanism for this committee. **In response to 7.41.1 - page 27** Infonas agrees the forum should be limited to technical and procedural matters. However, Infonas believes that this forum should follow a proven model, such as KAIZEN model, i.e. PDCA (Plan, Do, Check, Act), to ensure continuous improvement of processes and products. **In response to 7.41.4 - page 28** To ensure transparency during the project's life cycle, Infonas suggests that minutes are shared with all OLOs, and should not be limited to participants. **In response to 7.42 - page 28** Extra-ordinary meetings should be provisioned on case by case basis. **In response to 8.19 - page 37** Encouraging investments is multidimensional and should not be regarded from a "pricing" point of view only. A compensation framework should be introduced to encourage OLOs to invest in the latest technologies, rather than focusing only on MNOs. **In response to 8.24 - page 38** Allowing SE the possibility to earn a return above cost of capital in the short term should be more specific, i.e. materiality threshold must be in place, and short term must be defined in number of months/days. The above must be decided once the following has been carried out: • Many of the uncertainties could be tackled by carrying out a comprehensive risk assessment, hence a budget could be allocated to counter these risks, which will be part of the Capex.	

	• Also, budgeting studies can be carried out following widely used models.	
Nuetel		
	DWDM 1.3: Service available for holders of mobile telecommunication license while this service is required by Nuetel **WBS (General Remarks):** • RO does not include WLA. Clarification is required about running WLA circuits • The upload speeds to be reviewed due to the fact of increase of upload usage on different applications. • The Service Description does not mention if the QoS can be applied to protocol standards • The Service Description does not mention the number of VLANs per Access Seeker. • The Service Description does not mention the multicast traffic will pass through the NBN network. • The Service Description does not mention the Maximum Transmission Unit (MTU). Other General Comments: • Why do other OLOs need to have two circuits between A to B client locations whereas BTC obtain two beside the commercial related obligation? • General: Prices shows small discount however Neutel have two major points: 1. since it is same financial owners the philosophy of separation is not complete; 2. if the above point is difficult to meet then the best approach from Nuetel's prospective is reducing the prices by at least another 80% to 90% specially to lower speeds, beside no price for less than 512K speeds in-term of WDC and WBS.	On the basis of the Authority's understanding of the parties intentions concerning the division of network assets, the Authority considers that the SE is only to offer WDC Services. The BRE is best placed to supply WLA Services to existing End-Users. That said, the Authority does not consider that any new WLA Services should be supplied. The Authority will require that the SE produces a migration plan that covers the migration of remaining WLA Services from BRE to WDC Services supplied by the SE within a reasonable timeframe. The Authority notes that the revised WDC Service provides that Licensed Operators can use a WDC Service between two Points of Presence. This will be included in the final version of the Service Description.

	• Forecasting is very important for the planning, but into dynamic market like Bahrain and with the Batelco approaches of 5 years contracts that started from 2017 makes the market is not clear, TRA properly may fetch the market and analyze the situation in this matter. • Due to short period given to Nuetel for such an important subject Nuetel prefer the new RO but feel it should involve greater input from all parties.	
Huawei		
	General Comment on the CR: Huawei is looking forward to keep serving the Kingdom of Bahrain by providing the state-of-the-art 5G industrial collaboration and ICT talent development in line with Kingdom's Economic Vision 2030. Huawei believes that the arrival of 5G and ICT will unlock Huawei's vision of bring digital to every person, home and organization for a fully connected, intelligent world.	Huawei's comments are noted.
BRE (Batelco)		
	General • Prices in RO generally should be including VAT to be in line with the Bahrain VAT Regulation. • The SE product Service Description mandates the Minimum Service Period charge for some products. This also needs to be a review to cater for short term and Special Events requirements. • BRE has requirement for 40G for POP to POP connectivity. • For service termination, there will be cases that the three (3) months' notice is not sufficient for BRE to provide the customer with an alternative service if SE decided to terminate the service. There should be a mutual agreement between SE and BRE for any service termination. • It is not clearly stated that BRE and OLOs can aggregate multiple services through the same aggregation link. This should be permitted and made clear.	The Authority notes BRE's comments and provides the following responses: • The prices are exclusive of VAT. The Authority will monitor SE compliance with the application of VAT to the SE product set. • BRE has not provided sufficient information on what "Special Event" requirements may be and therefore the Authority cannot consider BRE's proposal at this time • The OWS Service provides for 40Gb/s POP to POP connectivity • For any general termination of a Service, NBNetco will be required to notify the Authority at the same time as notifying the Access Seeker (clause 13 of the Supply Terms). • Termination of specific Connections is, at least initially, a matter between the parties

	• Similarly it is not clearly stated that there should be no limitations on the number/type of connections per aggregation link. This should be permitted and made clear. • Generally it is not apparent that the assets of OLOs deploying or maintaining fixed telecoms infrastructure (including ducts and fibres) will be transferred to the SE on the same basis or at the same time as BRE's assets. This is a very important point that should be clarified for all parties and conducted in accordance with the updated Telecommunications Law. • There are a number of Batelco legacy services that will need to continue to be offered by BRE, meaning that there should be a number of special products made available exclusively to BRE which might otherwise breach the principle of non-discrimination, for example ISDN, Payphone, PSTN, TDM, G.SHDSL, hot-line services, extension, etc. • It is not apparent whether the BRE will be obliged to provide Universal Services for fixed line services, although it is noted that the draft National Fixed License appears to be drafted in that manner (clause 5.1 of that draft NFL states that "For as long as the licensee is a public telecommunication operator with significant market power…" whereas it is noted that the equivalent provision in the draft OLO NFL states "If the Licensee is a public telecommunications operator with significant market power…). Assuming that the draft BRE's NFL maintains the language at clause 5.1, AND BRE is considered to be obliged to provide this Universal Service, then there will need to be adequate wholesale products in the SE RO, provisioned in a time and cost regulated manner, to allow BRE to comply with this obligation. More generally, BRE requests that the TRA review the on-going requirement for BRE to provide Universal Services for fixed line services, with a view to removing this requirement from BRE. *<u>WBS - Further comments</u>* • There is a need for a process to where OLOs can request WBS where fiber is not readily available. This covers new areas and also expansions of already developed areas. Putting such a process in place will also guide the SE to where the customer demand is for future development plan purposes. BRE suggests that the online portal can be developed to include a section for such feasibility requests where	• The Authority has considered industry comments concerning the need for a generic aggregation product, and will revisit these comments in any subsequent review of the RO. • The Authority notes that there is no immediate requirement for OLOs to transfer assets at the same time as BRE and notes that the transfer of assets from BRE to NBNetco arises from its unique position in the separation process. Section 3.4 and 3.6 of the amended OLO National Fixed Licences deal with the process for the potential transfer and decommissioning of OLO assets. • BRE's comments concerning legacy products are noted. The Authority expects that the NBNetco will prepare and submit a roadmap and plan for the migration of existing services to the SE Fibre network within 2 months of the effective date of the SE Order. The Authority will review such document with a view to maximising continuity of service. • BRE's comments on universal service are noted. The amended licences clarify the position in this regard. The Authority considers that BRE's specific technical comments are addressed elsewhere in this report. As stated in the Authority's response in the First Consultation Report, in respect of SLAs, the Authority considers this is a commercial matter. It does not require amendment to the draft RO. The basic principle should be that the SLAs provided by the SE should be sufficient to support SLAs offered by the OLO. However, if the OLO wishes to offer much better SLAs then, unless it can negotiate a better SLA with the SE, the OLO would be required to take the risk itself.

	requests are logged with indication of the required speed for SE's assessment. • BRE requires clarity on how services provided by OLOs like Nuetel on Amwaj Island and Rapid Telecom within the Bahrain Investment Wharf will be treated after the issuance of the SE RO. Specifically, when will the Authority be seeking to require those networks to provide access to wholesale services on a regulated basis in those developments. • SE should offer a managed service to deliver OLO End User Equipment on the OLO's behalf to End Users. This is to cover VAS services like WiFi Access Points and IPTV STBs, for example. *Service Requests* • Service Requests and Change Requests should be done using a fully automated system. Sending requests and receiving correspondence via email is not practical. BRE is currently using a fully automated and integrated CRM system. • The submission of requests in batches format is not acceptable. Requests should be automatically sent to the SE once raised. Furthermore 10 batches of 10 per day limits orders to a maximum of 100 per day. This limit should also be removed. BRE is currently using a fully automated and integrated CRM system. • At Paragraphs 8.18 and 8.22 of the WBS Service Description there should be some form of evidence of customer acceptance with each confirmation of a Service Request completion. This is required to ensure end user customer experience is maintained at acceptable levels. *Maintenance* • The WBS Service Description maintenance section at Paragraph 5 needs to be outlined in more detail. This section is very vague and doesn't explicitly outline the maintenance scope of SE viz the Access Seekers. BRE would expect to see maintenance obligations on the SE for WBS to be at least as detailed as other SE RP service descriptions and in other ROs. The following maintenance and assurance related charges are missing and need to be included: o ONT replacement; o Fiber patch cord replacement; o Additional point within customer premises; and	

	○ Relocation of the main fibre distribution point within customer premises. • For restoration of the WBS service, BRE should be in a position to commercially agree with the SE better SLAs for specific cases that require immediate fast tracked restoration.	
Viva		
	First update of the RO • The TRA has stated in Annex 3 that it does not have to update the Reference Offer every 6 months, as required by Article 57(e) and the Access Regulations because the SE has not been declared dominant. Viva oppose this (as set out above). However, seeking a compromise, Viva propose that the first review be conducted in 12 months. *Offering of non-regulated products and services* • Viva would like to stress that the SE should not be permitted to offer any new products and services other than those regulated and listed in the Final SE Reference Offer. As such, delivering customized solutions to Access Seekers by the SE should not be an option.	The Authority notes these comments however, there is need to amend. The Reference Offer Order indicates that the first review is to be within 18 months which could accommodate 12 months. The NBNetco can still provide services/ products that do not require a license – but if anything is licensable then it is governed under terms of SE Licence and the Reference Offer Order.
Netco		
	• NBNetco's position is ensuring that objectives of NTP4 are met. • It is crucial that uptake of fiber based products designed to meet such objectives is encouraged. Therefore, NBNetco's products and services should reflect this design objective and depart from legacy technology such as copper. • The TRA's proposed product set implies that NBNetco will continue to maintain and invest in legacy infrastructure and this is not NBNetco's view of NTP4's vision for the single network in the Kingdom of Bahrain. • NBNetco is aligned with the pricing and methodology set out in Schedule 3 and Annex 4 of this Consultation. The Authority has focused on factors in the interim business case that influence the pricing for 2019 and NBNetco agrees with this approach. The interim	The Authority notes NBNetco's comments. The Authority refers NBNetco to Annex 4 to the SE Order which clearly sets out the Authority's approach to pricing. The Authority agrees that a key aspect of NTP4 is the delivery of a ubiquitous fibre network for the delivery of high speed connectivity services to residential and business customers. However, the Authority notes that NBNetco's suggestion that the extent of fibre deployment is based on May 2016 address figures raises the prospect that there may be certain areas yet to be covered by fibre The SE Order does not require NBNetco to make new investments in copper. However, NBNetco must ensure that there is a suitable migration plan in place for transitioning existing services away from copper based

	business case should only be used for the setting of RO prices for 2019.	assets to fibre, in line with roll-out targets in NTP4 and any subsequent targets in place from time to time.
Zain		
	Previous comments re: WBS, WDC and DS Service Description are repeated.	
Kalaam		
	-	