

## **Consultation Report on the draft Position Paper issued by the Telecommunications Regulatory Authority on the Regulation of Fixed Point to Point Links (Public)**

### **Summary and analysis of stakeholders' submissions and the Authority's final conclusions**

25 December 2017  
Ref: TOD-1217-048

Purpose: to summarize and analyse the submissions received by stakeholders during the consultation on the draft Position Paper issued by the Telecommunications Regulatory Authority on the Regulation of Fixed Point to Point Links (Public) and to set out the Authority's final conclusions.

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### 1 Introduction

1. This report presents the final conclusion of the Telecommunications Regulatory Authority of the Kingdom of Bahrain (hereinafter referred as “TRA” or “Authority”) with respect to the draft Position Paper issued by the Telecommunications Regulatory Authority on the Regulation of Fixed Point to Point Links (Public) (the “Position Paper”). Following the consultation process and consideration of all contributions received within the set timeframe, TRA has come to a final position with regard to each of the relevant questions addressed.
2. On 18 June 2017, TRA circulated a consultation document (Ref: Spect/0617/045) in which the Authority outlined its preliminary positions with regard to Authority’s position on the regulation of frequency assignment and licensing of Fixed Point to Point Links (Public), with the purpose of collecting views from interested parties on these issues. Interested parties were invited to submit written substantiated comments to TRA by 20 July 2017.
3. The consultation process was launched pursuant to Article 3(f) of the Telecommunications Law, which stipulates that except in emergency cases, the Authority shall, when determining to take measures that will have a material effect on a particular Telecommunications market, give interested parties the opportunity to share their opinions as to such measures within a reasonable period.
4. The TRA received written submissions from four (4) parties (the “Submissions”) as summarised in the table below:

<b>Responded Party</b>	<b>Date of submission</b>
<b>Bahrain Telecommunications Company B.S.C.,</b> Manama, Kingdom of Bahrain	20.07.2017
<b>INFONAS</b> Manama, Kingdom of Bahrain	23.07.2017
<b>VIVA Bahrain Closed BSC</b> Manama, Kingdom of Bahrain	20.07.2017
<b>Zain Bahrain</b> Manama, Kingdom of Bahrain	20.07.2017

5. All the received comments have been considered, summarised and addressed within this report.
6. The Authority would like to thank all the respondents for their Submissions. These inputs have been particularly useful for the Authority to finalise its position.
7. The Authority notes that some respondents have marked their Submissions as confidential without providing any justification thereto. In accordance with the Authority’s Guidance Paper on its treatment of Confidential and Non-confidential Information (Ref: LAU/0907/160), the Authority has considered the information provided and the provider’s reasoning for the confidentiality to determine if the Authority considers the information confidential.

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8. Based on the Submissions and after undertaking further analysis, the Authority has adopted a final position with regards to each substantiated comment. These final positions are presented in this report.
9. In order to elaborate on the abovementioned positions, the table entitled “Submissions and the Authority’s final Conclusions” in section 2 of this consultation report includes the following:
  - a. Summary of the comments received in the Submissions; and
  - b. The Authority’s view and conclusion in respect of each of the abovementioned comments.

## 2 Submissions and the Authority’s final conclusions with their regard

Summary of comment received	The Authority’s view and conclusion
<p><b>Draft Article 1.4:</b> <i>This paper is a TRA position paper only. It is a general statement of the TRA’s current views on this issue based upon the facts available to it. As technological innovation with regards to the deployment and utilisation of spectrum frequency bands increases, the TRA’s position may similarly change and the TRA reserves its right to amend this paper accordingly.</i></p> <p>INFONAS</p> <p>INFONAS understands that TRA reserves the right to amend this paper as the technological innovations and utilization of spectrum frequency bands increase. INFONAS fully agrees to TRA’s position in this regard.</p>	<p>Noted</p>
<p><b>Draft Article 5.4:</b> <i>In order to ensure the requisite continuity of the application process, only the contact person referred to in the application form will be authorized to follow up the status of the application with the TRA / DWLFM and only he/she will receive any updates relating to the approval/rejection of the application and/or any financial matters associated with the application.</i></p> <p>Bahrain Telecommunications Company</p> <p>Batelco understands the Authority’s rationale for such limitation to ensure continuity and efficiency in the submission and processing of an application. However, Batelco considers this far too limiting and impractical as, for various reasons, it is impossible to guarantee the availability of an employee. Batelco recommends that each licensee provide a short list of duly authorised representatives to the Authority wherein each of these listed representatives would be able to deal with the TRA/DWLFM in connection with the application process.</p>	<p>The Authority understands the concerns of respondents. Therefore, the draft article 5.4 will be amended as follows:</p> <p><b>5.4:</b> <i>In order to ensure the requisite continuity of the application process, each licensee shall appoint not more than five (5) duly authorised representatives to follow up on the status of the application with the TRA / DWLFM and receive any updates relating to the approval/rejection of</i></p>

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	<p><i>the application and/or any financial matters associated with the application.</i></p>
<p>Zain Bahrain</p>	
<p>Zain Bahrain believes that limiting only one person from a Licensee is not operationally practical, as in certain circumstances the single contact person may not be available and will require liaison with another representative. Therefore, Zain Bahrain suggests to have five (5) pre-authorized people to be the contact points for all matters related to frequency applications forms.</p>	<p>Refer to above Authority’s conclusion on draft Article 5.4</p>
<p><b><i>Draft Article 5.6: The Authority will endeavour to process a valid application within 10 working days if it does not require international coordination. If the Authority receives multiple applications, the Authority may be unable to maintain this turnaround target but will provide applicants with an estimated delivery target.</i></b></p>	
<p>Bahrain Telecommunications Company</p>	
<p>a) The lack of a strict timeframe for processing an application opens the frequency assignment process up to inconsistency and lack of clarity. As the Authority is not bound by the 10 working days timeframe stated, there is a risk that this may not be complied with consistently and will affect Licensees in meeting their commercial and financial targets. Batelco strongly recommends that a strict timeframe be stipulated for valid applications that do not require international coordination.</p>	<p>The implementation of a strict timeframe may be extremely challenging in light of the fact that both TRA and DWLF&amp;M handle applications from multiple stakeholders (including non-licensed entities). A strict timeframe could only be introduced if there was a cap of the number of submitted applications. TRA and DWLF&amp;M believe that the introduction of such a cap would run contrary to the interests of stakeholders. Accordingly this Article will remain unchanged.</p>
<p>b) In addition, Batelco notes the lack of a fast-track/emergency procedure recommends the Authority to include a fast-track/emergency as compared to the 2011 Fixed Point to Point Licensing and Assignment Policy. It is imperative that the Authority includes exceptional occasions particularly in cases of restoring telecommunication services in cases of national emergency or disaster, which would require a significantly shorter turnaround from the Authority.</p>	<p>Such provisions exist. Kindly refer to draft Article 5.8.</p>

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**Draft Article 5.11: The Authority confirms that in order for an application to be processed, any and all outstanding amounts payable to the Authority by the applicant must have been satisfied. For the avoidance of doubt, the amounts referred to in this clause cover any amounts that the Authority charges pursuant to the Schedule of Fees and any fines or penalties that the Authority may have imposed on a Licensee.**

Zain Bahrain

- a) Zain Bahrain does not agree with the Authority on this position, as each invoice has its own due date and its settlement process. For example, in case of an invoice has two (2) weeks to be settled and for the Licensee to have its frequency application processed by the Authority, this point (5.11) will automatically change any other invoice status from due to overdue, and should to be settled with an immediate effect.
- b) The settlement of different invoices related to other services provided by the Authority should be treat separately and not to be intersection with each other. In addition, the imposed fines and penalties are subject to appeal procedure, however, this point (5.11) will also makes these fines and penalties to be paid with immediate effect, for the licensees to continue in its daily operations and to process its frequency application, although these fines and penalties can be under appeal procedure.

The Authority clarifies that the term “outstanding amount” in the articles 5.9, 5.11, 13.4 and 13.5 of the draft Position Paper refers to any amount due to the Authority which has become payable following the lapse of the payment terms stipulated in the accompanying invoice(s). In order to provide more clarity, the aforementioned articles have been amended as follows:

**5.9 Once the technical evaluation is complete, the Authority will, in so far as is possible and in compliance with the timeframes set out above:**

- (a) Request any additional and/or missing information from the applicant; and**
- (b) Request that any overdue amounts be paid by the applicant.**

**5.11 The Authority confirms that in order for an application to be processed, any and all overdue amounts payable to the Authority by the applicant must have been satisfied. For the avoidance of doubt, the “overdue amounts” referred to in this clause cover any amounts that the Authority charges pursuant to the Schedule of Fees and any fines or penalties that the Authority may have imposed on a Licensee that become**

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	<p><i>payable following the lapse of the payment terms stipulated in the accompanying invoices(s).</i></p> <p><b>13.4</b> <i>As set out above at paragraph 5.11 the Authority’s position is that in order for new applications to be approved, all overdue amounts must be paid in full by the applicant.</i></p> <p><b>13.5</b> <i>The Authority’s position in relation to new applications is that upon receiving a valid application, the applicant will be allowed 5 working days to pay any overdue amounts owing to the Authority, which is to be paid in cleared funds into the Authority’s nominated account (bearing in mind that some payments needs 3 working days to be cleared in the bank). Should the aforementioned amounts remain unpaid within that timeframe, then the new application will be rejected by the Authority.</i></p>
<p><b>Draft Article 6.1:</b> <i>All annual frequency licences will be automatically renewed for an additional annual period unless the relevant licensee requests otherwise before 30th November of each year. Annual invoices will be issued and dispatched to licensees in January of each year.</i></p>	
<p>VIVA Bahrain</p>	
<p>VIVA understands that the list of unwanted PTP MW links should be submitted to the Authority before 30<sup>th</sup> November to cease the annual frequency licenses as of 31st December.</p>	<p>The Authority confirms this point</p>
<p>INFONAS</p>	
<p>INFONAS agrees with section 6.1 for the annual frequency license to be automatically renewed for an additional annual period, and have no objections with the TRA’s proposed termination notice deadline of 30th of November of each year.</p>	<p>Noted</p>

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<p><b>Draft Article 7.1:</b> <i>A temporary frequency licence may be issued for a period up to 11 months. Frequency licence fees will be charged according to the relevant Schedule of Fees as may be amended from time to time.</i></p>	
INFONAS	
INFONAS agrees with section 7.1 regarding temporary Licenses.	Noted
<p><b>Draft Article 8.1:</b> <i>The Authority’s position is that the deletion of links is only applicable once an operator receives written approval from the Authority confirming the same is permitted (i.e. deletion is not automatic upon application but requires the approval of the Authority to be expressed in writing before such takes effect).</i></p>	
Zain Bahrain	
Zain Bahrain believes that deletion of an assignment should not be subject to the Authority approval, as the deletion will not cause any interference and there is no assignment fees to be paid to the Authority. Furthermore, for new frequency assignment the Authority will endeavour to process a valid application within 10 working days. However, in the deletion of assignments the draft Position Paper is not suggesting any timeframe. For that, Zain Bahrain is suggesting the deletion of an assignment should be acknowledged by the Authority within three (3) working days from the deletion request and the deletion is effective from the request date.	<p>The Authority acknowledges Zain’s concerns and has re-drafted this Article accordingly.</p> <p>The Authority’s position is that the deletion will be effective within 6 working days from date of receipt of a valid deletion request of P2P Links and all rights and obligations stemming from such an assignment will cease as of the effective date.</p>
INFONAS	
INFONAS agrees with section 8.1 regarding deletion of Assignments.	Noted
<p><b>Draft Article 9.4:</b> <i>The Authority confirms that frequency assignments in the following frequency bands will be granted only in limited circumstances: 24.5-26.5 GHz, 31.8-33.4 GHz, 37-39.5 GHz, 40.5-43.5 GHz and 74-76/84-86 GHz.</i></p>	
VIVA Bahrain	
VIVA disagrees with Para 9.4 of the Regulation: “The Authority confirms that frequency assignments in the following frequency bands will be granted only in limited circumstances: 24.5-26.5 GHz, 31.8-33.4 GHz, 37-39.5 GHz, 40.5-43.5 GHz and 74-76/84-86 GHz.”	The concerns and arguments of responded Licensees have been studied and analyzed.

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VIVA strongly believes that restricting the grant of new assignments in the listed bands above will have significant impact on licensees

a. VIVA's Dependencies on PTP Links:

As the TRA is aware, VIVA relies heavily on the PTP links to deploy its backhauling network, where it has a total of ~~---~~ out of ~~---~~ links operating in the restricted bands as illustrated below.

~~---~~

Licensees high utilization in the restricted bands is mainly driven by the following factors:

- One of the main reasons for such high utilization in the restricted bands is due to their suitability to be deployed for macro cell backhauling (2G/3G/LTE) and enterprise access particularly in urban and suburban areas requiring short to medium distance link. They are preferred by the licensees also in dense areas due to the no Minimum Path Length (the "MPL") compliance obligation for the 42 GHz band or low MPL compliance constraint between 1km and 3km for 26, 32, and 38GHz
- Licensees favor these bands due to the equipment specifications which do provide a wide variety of capacities ranging from 38 Mbps up to more than 1.5 Gbps supported by the flexible frequency bands from 7GHz to 42 GHz based on a selection of frequency modulation. Also, the cost of relevant equipment is generally much lower as compared to other bands which are underutilized and less demanded i.e. V-band (57-66GHz) or the E-band (71-86GHz)

Such high utilization in the restricted bands is in line with the international benchmark as reported by GSMA1 in its report titled "Wireless Backhaul Spectrum Policy Recommendations & Analysis" dated October 2014

As such, it is crucial to fully assess the negative impact of the proposed restriction as detailed below:

- The re-utilization of existing hardware supporting the restricted bands will be limited. This would be a major constraint and financial loss due essentially to the continuous need of relocation of PTP links, frequently happening in the Kingdom because of Line of Sight (LOS) disruptions due to the ongoing constructions, leading to shortening the life time of relevant hardware assets.

The Authority acknowledges that these bands are currently being studied by national administrations and regional telecommunication groups/unions, within the context of a preparation framework to the World Radiocommunication Conference 2019 (WRC-19), to be identified (if suitable) for the International Mobile Telecommunications (IMT). A migration plan could be established for P2P Links to vacate some of above bands based on:

- Resolutions of WRC-19;
- Regional harmonization activities and national interests;
- Technological advances.

Hence, above draft article would be changed as follows:

**9.4 The Authority confirms that in the event that one or more of the following frequency bands (namely 24.5-26.5 GHz, 31.8-33.4 GHz, 37-39.5 GHz, 40.5-43.5 GHz and 74-76/84-86 GHz) is identified for IMT, a migration plan could be established for P2P Links to vacate one or more of the afore-mentioned bands.**

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VIVA's existing equipment supporting the restricted bands would be disposed of at least up to ~~to~~ existing PTP links, which might no longer be reusable.

As such, the only economical option for licensees is to utilize existing equipment for new PTP link assignment.

b. Prohibitive Alternative Bands: The TRA's suggestions in the regulation to consider alternative bands such as 23, 31, 36 and 60 GHz instead of using the restricted bands is not feasible as detailed below:

- Insufficient Spectrum for PTP Links: The TRA's proposal to grant new assignments in the restricted bands in limited circumstances will significantly reduce the total PTP spectrum availability from 43GHz to 24GHz (-43%) assuming no new assignments is permitted even under the limited circumstances.

[chart is removed]

- Challenges with MPL Policy: The proposed restriction would leave the licensees with only 4 high capacities bands namely: 36, 56, 60 and 94 GHz (capacity of 14GHz) for the deployment of PTP links with short link hops. In comparison, currently licensees have almost 27 GHz in total for short distance link hops using 8 bands above 36 GHz.

For the alternative frequencies (23 GHz-31 GHz -36 GHz) suggested by the TRA, the MPL policy restricts utilizing them for short link hops which put significant technical challenges on licensees from RF planning perspective. For a small country like Bahrain, the deployment of long link hops increases the risk of none LOS and hence, the frequency bands below 26 GHz band with very restrictive MPL constraint would not be suitable to serve as an alternative for higher restricted bands.

In this regards, VIVA's benchmark shows that other international countries such as UK, Singapore, and Australia have more lenient and favorable MPL policies especially for higher PTP frequency bands:

[chart is removed]

In addition, OFCOM in its "[Fixed Service Unit – Fixed Link Licence Fee Algorithm](#)" states that: *"The 'MPL' for 38 GHz is actually 1 km. However, Ofcom has temporarily relaxed the 'MPL' policy until*

Refer to Authority's conclusion on comments/arguments received for draft Article 9.4 above

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*equipment in the higher bands becomes available. When equipment in higher bands is available then the 38 GHz MPLs will be reinstated in a future release of the WT (Licence Charges) fee regulations.”*

Till date, OFCOM has not reinstated the MPL for 38GHz and the decision was taken to encourage the use of 38GHz, which is the opposite direction of the TRA’s decision which we believe restricts this band unnecessarily.

- Unusable 36GHz Band: VIVA would like to point out that currently there is no vendor manufacturing equipment in such band for public use which is in line with GSMA’s report<sup>2</sup> where most countries do not assign this band for commercial or public use of PTP fixed link service as shown below:

[chart is removed]

While UK designates the 36-37GHz bands for PTP links, VIVA suspects that the assignment is limited to military use as the “responsibility for granting permissions to use frequencies in this allocation rests with the Ministry of Defense as indicated in UK’s Frequency Allocated Table<sup>3</sup>. This is supported by UK’s fee schedule<sup>4</sup> which does not define any specific fee or MPL for 36GHz band meaning that it is not meant to be for operators or public use.

- 60GHz band: Deployment of 60GHz PTP Links as an alternative band will be very challenging due to the following factors:
  - 60GHz band (V-band) ranging from 57GHz to 66 GHz has a very narrow beam width with high directional focused antenna pattern. This means that the beam width of the antenna is very sensitive to any movement leading to losing the LoS easily. As such it is very challenging to deploy PTP links in this band since not all sites would be able to provide near-to-zero vibration on the antenna dish to maintain the link effectively. Also, special construction with solid concrete is required for this type of antenna, which would increase the cost of such deployment.
  - Traditionally this band has been less attractive due to unfavorable propagation attenuation where high oxygen and rain absorption in this band is limiting the propagation distance where it has terrible availability and reliability.

With regard to 60 GHz (57-66 GHz) Band: Having reviewed the arguments and reasoning of responded Licensees, TRA and DWF&M will conduct a joint study of the best practices of utilization of this band by Fixed P2P Links. The Authority may review its position in the future based on the outcomes of above study.

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<p>- The high oxygen attenuation and narrow beam width property in 60 GHz band lowers the risk of interferences between links within the same band, and hence having the link licensing in the proposed regulation is unnecessary.</p> <p>Regulators globally have designated this band without being subject to any licensing regime or subject to light regulation (i.e. to notify/register only) and with no license fees as of the case of USA FCC5 and UK Ofcom6</p>	
<p>c. Prohibitive Alternative Solutions. VIVA has been looking into other alternative solutions including Batelco’s active products such as Wholesale Data Connection (WDC), and duct access products. However, VIVA’s analysis shows that these alternative solutions are much more prohibitive.</p> <p>In consideration of the above-mentioned challenges, VIVA requests the Authority to:</p> <ul style="list-style-type: none"><li>- Refrain from implementing the proposed restrictions for the new assignments in the bands of 26, 32, 38, 42 and 70/80 GHz.</li></ul> <p>In case the TRA would insist on enforcing the Regulation, VIVA recommends to grant licensees a grace period of both:</p> <ul style="list-style-type: none"><li>• A minimum of 7 years to implement such restrictions on the relevant bands to allow licensees amortizing the current equipment deployed in the restricted bands, and</li><li>• The establishment of more economic viable alternative options to MW.</li></ul> <ul style="list-style-type: none"><li>- Relax the MPL policy particularly for the bands above 26 GHz band to allow licensees deploying their backhauling networks in line with international best practices;</li><li>- Designate the 60 GHz band as unlicensed frequency with no licensing fees in line with international best practices to promote the use of this band for small cell backhauling in dense areas, which is a crucial backhauling requirement for 5G networks; and</li></ul> <p>Not block the assignment in the bands of 39.5 - 40.5, 48.5-50.2 and 51.4 -52.6 GHz which are still being allocated globally for fixed services which would work in coexistence with the potential 5G IMT services on sharing basis</p>	<p>Refer to Authority’s conclusion on draft Article 9.4 above</p>
<p>INFONAS</p>	

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<p>INFONAS has 2 links operating in 24.5-26.5GHz band and 1 link in 37-39.5GHz and we confirm that there will be no new frequency assignments in these bands in the future.</p>	<p>Refer to Authority's conclusion on comments/arguments received for draft Article 9.4 above</p>
<p>Zain Bahrain</p>	
<p>The draft Position Paper is proposing: "The Authority confirms that frequency assignments in the following bands will be granted only in limited circumstances: 24.5-26.5 GHz, 31.8-33.4 GHz, 37-39.5 GHz, 40.5-43.5 GHz and 74-76/84-86 GHz", an indication to its current direction in limiting the use of the 42 GHz band, alternatively the 36 GHz was proposed as a substitute in the follow up meeting held on 21 st June 2017. Zain Bahrain would like to bring to the Authority's attention:</p> <ul style="list-style-type: none"><li>a) The use of the 36 GHz will not be applicable as a substitute to the 42 GHz due to the MPL restriction imposed on this band. ANNEX 2 of the Current Position Paper imposes a minimum path length restriction of 1Km on the 36 GHz band. --X-- of Zain Bahrain network has a link distance of less than 1Km and therefore will not be accommodated by the proposed alternative.</li><li>b) Zain Bahrain had recently made an investment in expansions and optimization projects. Part of which includes acquiring hardware in the bands the Authority has indicated their plan to limit its use. Currently, Zain Bahrain still attains --X-- fixed point-to-point hardware in the bands 42GHz, 38GHz and 32GHz after obtaining the required no objection certificate from the Authority and are kept in its warehouse for its on-going project. Limiting approvals in these bands will render this hardware useless and a loss of investment.</li><li>c) The proposed bands 36GHz, L31 and U31GHz are not commercially available by two of the major microwave vendors, Ericsson and Huawei. Responses from these vendors regarding the availability of these point-to-point links are enclosed (Annex-1). The next not restricted band for use will be the 23GHz that has MPL of 2Km and 4Km based on the minimum bit rate, hence there are no bands with no restriction available to use for distances less than 2Km.</li><li>d) The movement towards the 80GHz band is to offer fiber-like capacities due to the vast spectrum available in this band. Due to the lack of fiber offering in the Kingdom, Zain Bahrain movement toward this band is to expand on its backhaul network capacity and to continue serving its customers with high speed services. Zain Bahrain's strategy is to remain investing</li></ul>	<p>Refer to Authority's conclusion on comments/arguments received for draft Article 9.4 above</p>

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in this technology to support its future network expansions with the imminent launch of higher speed services such as 4G+ and TDD-LTE CAT12. Zain Bahrain will not be able to offer such services across the Kingdom unless a fit-to-purpose alternative is available and commercially feasible. The Authority has recommended a movement towards the 60GHz band as an alternative to the 80GHz, unfortunately due to the nature of the 60 GHz spectrum it cannot technically offer the same capacities of the E-Band (80GHz), in addition the high attenuation due to the oxygen absorption, effectively limits the achievable path length and interference level of the 60GHz spectrum, as described in the ITU document with reference: ITU-R F.1497-2.

Below is a comparison between the two bands in terms of spectrum and maximum capacity achievable, Ericsson document related to the 60GHz is enclosed (Annex-2):

[table is removed]

Following on the draft Position Paper, Zain Bahrain highly recommends maintaining the assignments in the following bands (42, 38, 32 and 80GHz) as they are crucial to the operations of Zain Bahrain backhaul network. Furthermore, there are no technically feasible alternatives in the common band for the 42GHz, 38GHz and 32GHz, both the proposed alternatives (36 and U31/L31GHz) are not commercially available whilst the 60 GHz suffers from severe distance limitation due to the physical nature of the band.

In the event that the assignments become limited, Zain Bahrain is in favour of maintaining no restriction on assignments in the 80GHz band (71-76/81-86 GHz), given the fact that it can cater for the distances up to 2Km, no MPL restriction and can provide much higher future options to support capacities up to 10 Gbps. These high capacities are currently not achievable through any other microwave platform.

Zain Bahrain would like also to suggest maintaining a similar quantity for the links that are currently used in these bands. For example, any reallocation request can be treated as a normal modification and can be approved in the same band.

***Draft Article 9.5: In addition, the Authority states that no new assignments will be permitted in the following frequency bands: 39.5 - 40.5 GHz, 48.5-50.2 GHz and 51.4 -52.6 GHz.***

VIVA Bahrain

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Although currently there are no assignments in the bands of 40, 49 and 52 GHz, VIVA strongly believes that the proposed restrictions in these bands should be avoided as they might cater for future development to support the upcoming backhauling requirement of 5G networks with gigabit speed capacities.

VIVA notes that the TRA has decided to restrict the above bands as they are a primary candidate for IMT to be studied in the upcoming WRC-19. However, VIVA believes that the TRA should not restrict these bands from being used by licensees considering that PTP fixed services could be deployed in these spectrums.

In this regard, the ITU in its WRC-15 Resolution 2387, states in page(s) 2 and 3 respectively that:

*“(c) That any identification of frequency bands for IMT should take into account the use of the bands by other services; (d) That there should be no additional regulatory or technical constraints imposed to services to which the band is currently allocated on a primary basis”*

*“(1) to conduct and complete in time for WRC-19 the appropriate studies to determine the spectrum needs for the terrestrial component of IMT in the frequency range between 24.25 GHz and 86 GHz.....*

*(2) To conduct and complete in time for WRC-19 the appropriate sharing and compatibility studies, taking into account the protection of services to which the band is allocated on a primary basis, for the frequency bands:*

*- 24.25-27.5 GHz, 37-40.5 GHz, 42.5-43.5 GHz, 45.5-47 GHz, 47.2-50.2 GHz, 50.4-52.6 GHz, 66-76 GHz and 81-86 GHz, which have allocations to the mobile service on a primary basis;”*

Also, GSMA in its report<sup>8</sup> (Section 5) on 5G Spectrum’s Public Policy Position states: *“There is significant potential for the coexistence of 5G and other wireless services (e.g. satellite and fixed links) in higher frequency bands (e.g. above 24 GHz).....*

*The potential for spectrum sharing will be explored through sharing studies, especially for WRC-19. Adopting viable sharing methods is especially important as many of the bands above 24 GHz that are being considered for 5G access are, or will be, used for mobile backhaul”*

As such it is proven that the bands of 39.5-40.5, 48.5-50.2 and 51.4-52.6 GHz are not restricted from being used for fixed services despite their potential usage for IMT.

Having reviewed the comments and arguments of the respondent, the position of the Authority has not changed with regard to this draft Article.

Although these frequency bands have been made available for Fixed P2P Links for many years, the Authority did not receive any request for frequency assignment. Results of sharing and co-existence studies within ITU have not been finalized yet. If any of these frequency bands become identified for IMT by the World Radiocommunication Conference in 2019, and the frequency sharing with IMT systems is not possible within limited geographical area (like Bahrain), then this creates unnecessary burden to incumbent systems during the migration and vacation.

The Authority may review this position in the future in line with:

- Results of sharing and co-existence studies;
- Resolutions of WRC-19;
- Regional harmonization activities and national interests;
- Technological advances.

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<p>INFONAS</p>	
<p>INFONAS have no objections with the frequency assignments no longer permitted in sections 9.5 and 9.6.</p>	<p>Kindly refer to the Authority’s position on draft Article 9.5 above</p>
<p><b><i>Draft Article 9.3: The Authority is of the current opinion that the restrictions set out below should remain in place until at least 2020 (although the Authority reserves its right to review the situation with regards to frequency assignments and to update the below in accordance with the powers conferred on it by the Telecommunications Law).</i></b></p> <p><b><i>Draft Article 9.4: The Authority confirms that frequency assignments in the following frequency bands will be granted only in limited circumstances: 24.5-26.5 GHz, 31.8-33.4 GHz, 37-39.5 GHz, 40.5-43.5 GHz and 74-76/84-86 GHz.</i></b></p> <p><b><i>Draft Article 9.5: In addition, the Authority states that no new assignments will be permitted in the following frequency bands: 39.5 - 40.5 GHz, 48.5-50.2 GHz and 51.4 -52.6 GHz.</i></b></p>	
<p>Bahrain Telecommunications Company</p>	
<p>Batelco notes the proposed approach in the draft position paper to re-farm spectrum in specified bands and apply strict frequency management controls.</p> <p>This approach should also align with the aim in the Fourth National Telecommunications Plan to deliver ubiquitous ultrafast broadband infrastructure in the Kingdom. This is stated to be a fibre-based national broadband network, using a single NBN infrastructure. In order for the performance roll out targets to be achieved and for this investment to be sustainable, policy should encourage increased adoption of fibre based links rather than using scarce spectrum resources for microwave links. Applicants (and licensee) should first try and see whether a fixed fibre based link would be available from the single NBN infrastructure provider and only then apply for a microwave link in exceptional circumstances where no other equivalent alternative is available.</p> <p>The current draft position paper should take this important consideration into account by implementing such a priority policy moving away from the widespread use of fixed microwave links.</p> <p>In relation to the specific frequency management proposals, the Authority is under an obligation of transparency while exercising its powers pursuant to Article 3 of the Telecommunications Law. In addition, with regards to its frequency assigning powers under Article 42 of the Telecommunications</p>	<p>The Authority does not consider that Batelco’s position is, with respect, pertinent to Articles 9.3, 9.4 and 9.5 the Position Paper and as such will not be taken into account for the purposes of finalising the paper.</p>

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<p>Law, the Authority is required to act in a timely, objective, non-discriminating and transparent manner.</p> <p>Batelco requests the Authority to clarify the restrictions for the assignment in the aforementioned frequency bands. Batelco currently has approximately 2 hops in the 26 GHz and 38 GHz with average cost of BD 10 per hop (excluding depreciation). Restriction in these bands is likely to financially affect Batelco as well as a re-planning of its upcoming projects. The Authority will also be aware that equipment are pre-configured on order from the equipment vendor and it will be extremely difficult for Batelco to re assign the existing hardware.</p>	<p>Authority’s final position with regard to Draft Article 9.4 is provided above.</p>
<p>Furthermore, Batelco requests the Authority to define or clarify what may constitute the ‘limited circumstances’ referred to in Article 9.4 to ensure certainty and clarity in the frequency assignment process. Batelco also strongly recommends that any review or changes the Authority may contemplate concerning the restrictions and/or the frequency assignment covered in Articles 9.4 and 9.5 of the Position Paper should be communicated and notified to all interested stakeholders in a timely and transparent manner. As the Authority is aware, any such changes is likely to affect any Licensed Operator, whether from an operational or financial perspective.</p>	<p>Authority’s final position with regard to Draft Article 9.4 is provided above. The necessity for detailed definition of ‘limited circumstances’ fell out.</p> <p>Authority’s final position with regard to Draft Article 9.5 is provided above.</p>
<p><b><i>Draft Article 10.1: All equipment that is planned to be deployed must be type approved in accordance with the Type Approval regulations of the Kingdom. Users are encouraged to use equipment supporting spectrally efficient high order digital modulation techniques, especially for higher capacity systems.</i></b></p>	
<p>INFONAS</p>	
<p>Question-1: Equipment type approval should be acquired along with frequency license application? Or before?</p> <p>Question-2: Once frequency license is issued by TRA, does that mean the equipment to be used is type approved? Or it must be type approved separately.</p>	<p>Before</p> <p>Type approval is separate process; kindly refer to ‘type approval regulation’ of the Authority along with the application for Type Approval Process found on the Authority’s website</p>

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<p><b>Draft Article 11.1:</b>      <i>The choice of frequency bands for Fixed Point to Point Links (Public) depends principally on path length and traffic capacity. To preserve spectrum in the lower frequency bands for longer path length, high-capacity links (which can be accommodated only in these bands), the Kingdom operates a Minimum Path Length (“MPL”) within the Kingdom to select the appropriate frequency band for a given link.</i></p>	
INFONAS	
INFONAS follows TRA’s MPL policy.	Noted
<p><b>Draft section 12:</b>      <b>OTHER MEASURES TO FACILITATE SPECTRUM EFFICIENCY</b></p>	
INFONAS	
INFONAS agrees with all points mentioned in Section 12.	Noted
<p><b>Draft Article 13.1:</b>      <i>Invoices issued with regards to new applications will be calculated in accordance with the Schedule of Fees in force at the time of the application. The Authority clarifies that at this time once any link is assigned in the 70/80GHz bands, it will charge BD 1000 regardless of the period it is requested for and if it is deleted, no credit note will be issued (this statement is only valid for the current in force Schedule of Fees and the position may be amended in due course).</i></p>	
Bahrain Telecommunications Company	
<p>Batelco requests the Authority to clarify its position with regards the charge of BD 1,000. Batelco is of the view that the restriction imposed, namely the absence of a credit note in the event the requested link is deleted, is likely to lead in an inefficient use of the resource. In particular, the 70/80 GHz is being increasingly used for innovative technologies as it allows high capacity provisioning. Key to this is the ability to quickly and efficiently re-use the frequencies. Batelco recommends that the Authority’s approach towards the 70/80GHz be geared towards an efficient use and re-use of the resource and a first step would be a flexibility in the charge per link imposed.</p>	<p>The Authority wishes to clarify that this position reflects the current practice adopted by the current Schedule of Fees. It may however change in line with any future revision to the Schedule of Fees. Article 13.1 has been modified accordingly.</p> <p><b>13.1 Invoices issued with regards to new applications will be calculated in accordance with the Schedule of Fees in force at the time of the application. The Authority clarifies that, in accordance with the current Schedule of Fees, upon the assignment of a frequency(ies) in the 70/80GHz bands, a fee of BD 1,000 is payable. No</b></p>

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	<p><i>credit note will be issued if the link is deleted (this statement is only valid for the current in force Schedule of Fees and the position may be amended in due course).</i></p>
<p>INFONAS</p>	
<p>INFONAS understands this might not be within the scope of this draft document, however, INFONAS wishes to highlight that annual charges is not in line with the way telecoms services are charges; usually customers are charged for the period they are taking the service (per month charge) and not the years the services are activated at; for example, it is unfair to expect a customer to pay an annual charge for a service turned up in December. The same applies for services terminated in January.</p>	<p>Kindly refer to above Authority’s clarification</p>
<p><b><i>Draft Article 13.3: Licence fees associated with Fixed Point to Point Links (Public) are payable in advance prior to issuing the licence. Once the invoice is issued, the applicant has 15 working days to make the payment. If payment is not made, any new application made by the applicant will be subject to the provisions of paragraph 13.5 below.</i></b></p>	
<p>Zain Bahrain</p>	
<p>Zain Bahrain believes that the payment terms of the invoices (15 working days) are not adequate to fulfil the payment term. Zain Bahrain recommends a payment term of one month in line with the industry practice.</p>	<p>The 15-day payment term is and has been the Authority’s current practice.</p>
<p>INFONAS</p>	
<p>INFONAS recommends increasing the invoice settlement time from 15 working days to 30 working days which is the standard practice for invoice due period.</p>	<p>Refer to above clarification of the Authority</p>
<p><b><i>Draft Article 13.2: Upon receipt of an application, the Authority will prepare and process the required invoice, whereupon the Fixed Point to Point Link(s) (Public) invoice will be sent to the applicant for payment thereof.</i></b></p>	
<p><b><i>Draft Article 13.4: As set out above at paragraph 5.11 the Authority’s position is that in order for new applications to be approved, all outstanding amounts must be paid in full by the applicant.</i></b></p>	

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<p><b><i>Draft Article 13.5: The Authority’s position in relation to new applications is that upon receiving a valid application, the applicant will be allowed 5 working days to pay any outstanding amounts owing to the Authority, which is to be paid in cleared funds into the Authority’s nominated account (bearing in mind that some payments needs 3 working days to be cleared in the bank). Should the aforementioned amounts remain unpaid within that timeframe, then the new application will be rejected by the Authority.</i></b></p>	
Zain Bahrain	<p>The Authority would like to clarify that the invoice or credit note will only be issued after the approval of the application, i.e. the Authority will continue current process</p>
<p>It is suggested in the draft Position Paper that the Licensee should pay the associated fee prior to issuing of the license. Zain Bahrain believe that this process in impractical for the Licensees to make payment for a license prior confirmation of the approval for the application submitted. Zain Bahrain suggest the that the current process of payment remain in place in which the Licensee makes the payment after receiving the approval for the assignment.</p>	
INFONAS	<p>Noted</p>
<p>INFONAS agrees with Section 13.5.</p>	
<p><b><i>Draft Article 14.1: It is also important that regulatory authorities (be that the DWLFM or the Authority) have access to all Radiocommunications Equipment (in the case of the Authority in accordance with the provisions set out at Article 77 of the Telecommunications Law).</i></b></p> <p><b><i>Draft Article 14.2: It is the licensee’s responsibility to provide access to Radiocommunications Stations or Radiocommunications Equipment in case of an emergency immediately or without any delay if access is required for inspection or other related aspects.</i></b></p>	
INFONAS	<p>Noted</p>
<p>INFONAS agrees to TRA’s position in Sections 14.1 and 14.2.</p>	
<p><b><i>Draft Article 14.3: It is the licensee’s responsibility to keep a copy of the frequency licence with all technical details at the Radiocommunications Stations.</i></b></p>	
Zain Bahrain	<p>The Authority and DWLF&amp;M understand the complications in keeping the copies of licences.</p>
<p>Zain Bahrain believe that it is impractical to maintain an updated copy of the approved frequency license with all technical details at the Radiocommunications Stations. Any personnel required to</p>	

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<p>maintain the operations of the fixed link network in Zain Bahrain holds an updated soft copy of the approved frequency license which can provided to the Authority whenever required. Therefore, Zain Bahrain recommends that each Licensee is responsible of maintaining their own database.</p>	<p>Therefore, the following amendment is made to Draft Article 14.3:</p> <p><b>14.3 It is the licensee’s responsibility to provide, upon request, a copy of the frequency licence(s) with all technical details for the Radiocommunications Station(s).</b></p>
<p>INFONAS</p> <p>Question-1: INFONAS doesn’t own any dedicated Radio sites. Most of the microwave links are used to provide service to customers directly or using customer’s building as a hop, where INFONAS does not have dedicated offices or on-site personnel. Therefore, how does the TRA propose such documents are kept in such cases?</p>	<p>Kindly refer to above Authority’s position</p>
<p><b>Draft Article 14.4: In order to facilitate the identification of frequencies deployed at Radiocommunications Stations, the site identity number provided by the licensee shall be clearly visible at all stations. In the case of a shared installation, the site identity numbers of all licensees shall be clearly visible.</b></p>	
<p>Bahrain Telecommunications Company</p> <p>Batelco is of the view that such information is commercially sensitive and should not be visible publicly. However, Batelco confirms that site identity numbers are currently found on equipment within the shelter at Radiocommunications Stations and Batelco will provide such information upon request from the Authority.</p>	<p>During interference solving and tracing the signals, the involved team of the Authority and DWLF&amp;M could find it difficult to identify the owner of any particular tower/site where one or multiple radiocommunication stations operate. The case is further exacerbated when a site is shared. The Authority is simply requesting Licensees to make the site identity numbers clearly visible but no other commercially sensitive information.</p>
<p><b>Draft Article 15.1: The Authority wishes to ensure that the Kingdom’s policy with regards to frequency assignments is held to the highest standards of international best practice. As such and when necessary, the Authority and/or DWLFM notify and register its Fixed Point to Point Links (Public) assignments into the Master International Frequency Register (“MIFR”) of the ITU. Licensees may be required to assist the Authority in this process.</b></p>	

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Batelco requests the Authority to clarify the nature of assistance Licensees are required to provide. The Authority would have or ought to have records of all assignments made in the Kingdom of Bahrain to register into the MIFR. Batelco recognises licensee's obligations under the Telecommunications Law and applicable licenses to assist the Authority but recommends the delimitation of such assistance to ensure that Licensees do not step into the Authority's obligations.

Both TRA and DWLF&M request Licensees to provide adequate technical information to approve Fixed Point-to-Point Links. In case of this information is not enough to notify the frequency assignments to International Telecommunication Union (ITU) for registration in the MIFR, the Authority might request Licensees to provide additional technical and administrative information when required.

**END**