

Licensing of Mobile/Fixed Communications Networks in Gibraltar, including 5G Mobile Communications Services

Response to Consultation and Decision Notice

13th March 2020

C03/20

FOREWORD

On 27th August 2019, the GRA issued a public consultation entitled about the licensing of mobile/fixed communications networks in Gibraltar, including 5G mobile communications services. Interested parties were invited to comment on 6 specific questions and provided them with the opportunity to raise any general comments. By the close of the consultation period, the GRA had received responses from 4 interested parties.

Having considered all views, the GRA sets out in this Response to Consultation and Decision Notice, its conclusions regarding the Consultation and the way forward in respect to the allocation of spectrum for Mobile/Fixed Communications Network services, including 5G.

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1. INTRODUCTION

The Gibraltar Regulatory Authority (the "GRA") is responsible for the regulation of the electronic communications sector in Gibraltar in accordance with Gibraltar and European Union ("EU") legislation.

Under the Communications Act 2006 (the "Act"), the GRA manages the electromagnetic spectrum on behalf of Her Majesty's Government of Gibraltar ("HMGoG"), which includes issuing licences for telecommunications and broadcasting services in Gibraltar. The GRA's powers include:

- specifying the nature of the telecommunications systems and services which operators are permitted to operate and provide under licence; and
- setting conditions on such operation and provision.

On 27th August 2019, the GRA issued a public consultation (the "Consultation") entitled "Licensing of Mobile/Fixed Communications Networks in Gibraltar, including 5G Mobile Communications Services". Interested parties were invited to comment on 6 specific questions and provided them with the opportunity to raise any general comments. The Consultation is available on the GRA's website www.gra.gi.

By the close of the consultation period, the GRA had received responses from 4 interested parties namely:

- Clear Mobitel Ltd ("Clear Mobitel")
- Eazi Telecom Ltd ("Eazi Telecom")
- GibFibre Ltd ("GibFibre")
- Gibtelecom

The GRA thanks all respondents for their submissions. Copies of all responses have been published on the GRA's website and are referred to throughout this document.

Having considered all views, the GRA sets out in this Response to Consultation and Decision Notice, its conclusions regarding the Consultation and the way forward in respect to the allocation of spectrum for Mobile/Fixed Communications Network ("MFCN") services, including 5G.

2. SUMMARY OF QUESTIONS ASKED

The Consultation was structured into sections, as follows: -

2.1. REGULATORY FRAMEWORK

This section provided a background to 5G, and the range of frequencies that are utilised by newer technologies to deliver services and outlined a proposal for the realignment of the

spectrum by categorising it in to 3 main bands. It also set out the GRA's proposals on the made-to-measure conditions that would be included into respective licences for use of the electromagnetic spectrum ("Part VI Licences"). The questions put to consultation were:

- Question 1: Do you agree with, or have any comments on the GRA's proposed amendments in respect of the 3 spectrum ranges?
- Question 2: Do you agree with, or have any comments on the proposed introduction of made-to-measure licence conditions?

2.2. MOBILE SPECTRUM

This section examined the spectrum bands that may be made available for use by MFCN's for future mobile services, including 5G. The analysis covered the bands that are currently in use for mobile services namely 2G, 3G and 4G, as well as other bands where spectrum might also be made available for 5G usage. The questions put to consultation were:

- Question 3: Do you agree with, or have any comments on the GRA's proposed channel plan for the sub-band 3400-3600 MHz and conditions of use?
- Question 4: Do you agree with, or have any comments on the GRA's proposed plan for the sub-band 3600-3800 MHz?
- Question 5: Do you agree with, or have any comments on the GRA's proposal to consider making spectrum available for MFCN's in the bands above 6 GHz only after WRC 2019 has concluded and relevant documents are published?

2.3. INVITATION FOR INTEREST AND ALLOCATION PROCESS

This section set out the GRA's proposals for the mobile licence award process and the minimum service levels that will apply to established and new operators. The question put to consultation was:

- Question 6: Do you agree with, or have any comments on the GRA's proposal to include minimum service levels subject to the proposed usage of the spectrum?

3. SUMMARY OF CONCLUSIONS AND DECISIONS

3.1. CONCLUSIONS

The focus of the Consultation was on the process for licensing MFCN services in Gibraltar and, in this context, to set out the GRA's plans for the spectrum bands which should be allocated for the development of these services. In this regard, the GRA took into account current spectrum assignments and factors influencing potential occupancy across the bands and

considered how available spectrum could be offered effectively to established and new operators alike.

The GRA proposed to split the spectrum for MFCN's into three general categories, namely:

- Frequencies below 1GHz
- Frequencies between 1GHz and 6GHz
- Frequencies above 6 GHz

Additionally, the Consultation aimed to set up a mechanism to allocate available and future bands efficiently, with a view to allowing for faster allocation of spectrum. This would allow the market to determine what technology to deploy, within a more dynamic and forward-looking fee structure.

On the matter of awarding spectrum, the Consultation stated that the GRA will apply a methodology that takes into account the interest from new operators as well as established operators. This should open up opportunities for new operators to offer services in under-utilised bands and at the same time, allow for the removal of the requirement for operators to establish multi-band networks. The GRA proposed to define different sets of criteria based on operators' needs and spectrum being requested. Accordingly, it is the GRA's view that the most suitable way to bring forward MFCN licensing in Gibraltar, including 5G services, is by applying made-to-measure conditions including where necessary, a set of minimum service criteria in the Part VI Licences.

In respect of spectrum fees, the GRA commented that the current fee structure for mobile spectrum is technology specific, which, in light of the push for technology neutral spectrum, required revisiting. Consequently, spectrum fees would be examined and the current fees for 2G, 3G and 4G might require a re-evaluation to be brought in line with technology neutral principles and the band classifications as set out above.

The Consultation pointed out that the Minister responsible for Communications (the "Minister") sets the relevant spectrum licence fees in consultation with the GRA. Considering the factors outlined throughout the Consultation and having had reviewed the comments obtained from interested parties, spectrum fees were proposed by the GRA to the Minister after the closing date of the Consultation.

As a result, HMGoG will be publishing a Direction which will outline the new spectrum fees. These are summarised in section 7.2.2 below.

3.2. SUMMARY OF DECISIONS

Decision 1: The GRA will classify and split the spectrum for MFCN's into 3 spectrum ranges, namely:

- MFCN Low: Frequencies below 1 GHz
MFCN Mid: Frequencies between 1 GHz and 6 GHz
MFCN High: Frequencies above 6 GHz

Decision 2: GRA will introduce "made-to-measure" conditions into MFCN Part VI Licences.

Decision 3: The GRA will implement the channel plan below.

3400 MHz -3410 MHz	3410 MHz -3420 MHz	3420 MHz -3430 MHz	3430 MHz - 3440 MHz	3440 MHz -3450 MHz	3450 MHz -3460 MHz	3460 MHz -3470 MHz	3470 MHz -3480 MHz	3480 MHz -3490 MHz	3490 MHz -3500 MHz	3500 MHz -3510 MHz	3510 MHz -3520 MHz	3520 MHz -3530 MHz	3530 MHz -3540 MHz	3540 MHz -3550 MHz	3550 MHz -3560 MHz	3560 MHz -3570 MHz	3570 MHz -3580 MHz	3580 MHz -3590 MHz	3590 MHz -3600 MHz
TDD (MHz)																			
200 MHz (20 blocks of 10 MHz)																			

Decision 4: The GRA will make available 50 MHz for MFCN’s in the band 3600 – 3800 MHz as follows:

3600 MHz -3610 MHz	3610 MHz -3620 MHz	3620 MHz -3630 MHz	3630 MHz - 3640 MHz	3640 MHz -3650 MHz	3650 MHz -3660 MHz	3660 MHz -3670 MHz	3670 MHz -3680 MHz	3680 MHz -3690 MHz	3690 MHz -3700 MHz	3700 MHz -3710 MHz	3710 MHz -3720 MHz	3720 MHz -3730 MHz	3730 MHz -3740 MHz	3740 MHz -3750 MHz	3750 MHz -3760 MHz	3760 MHz -3770 MHz	3770 MHz -3780 MHz	3780 MHz -3790 MHz	3790 MHz -3800 MHz
TDD (MHz)					Guard Band					Currently Allocated Spectrum									
50 MHz (5 blocks of 10 MHz)					50MHz					100 MHz									

Decision 5: The GRA will update the Gibraltar Frequency Register and make available for MFCN’s the following bands above 6 GHz:

- 24.25–27.5 GHz
- 40–43.5 GHz
- 45.5–47 GHz
- 47.2–48.2 GHz
- 66–71 GHz

Decision 6: The GRA will not include minimum service levels conditions on the use of spectrum but will however, impose relevant conditions in respect of spectrum allocations, subject to relevant information required for the purposes of awarding spectrum.

4. RESPONSES RECEIVED AND DECISIONS TAKEN IN RESPECT OF THE REGULATORY FRAMEWORK

4.1. QUESTION 1

The GRA asked:

Do you agree with, or have any comments on the GRA's proposed amendments in respect of the 3 spectrum ranges?

4.1.1. SUMMARY OF RESPONSES TO QUESTION 1

Clear Mobitel:

"Wireless technologies have evolved over time and 5G is the latest iteration of that development. However, 5g is intended to be a facility to enable continuous and seamless connectivity to the internet and to this end requires a broad range of spectrum to best serve that purpose.

Clear Mobitel is in full agreement with the definitions and divisions of the spectrum. It is necessary for all 5G operators to have access to a comprehensive cross section of spectrum to ensure adequate coverage and consequently active competition between providers which will ensure consumer benefit."

Eazi Telecom:

"Eazy Telecoms [sic] suggest the third range be re-named from "6 GHz and above" to "Above 6 GHz" to avoid confusion and also considering the market trend that 6Ghz band could be future natural evolution for adding capacity in 5G technology, after the 3.4-3.8 Ghz band is already fully utilized. We consider 6 GHz band could have similar coverage and capacity than 3.4-3.8 GHz while above 6 GHz bands start not to be so optimal in coverage".

"Point 3.4 Available bands. Eazy Telecom [sic] is uncomfortable with the reference in this section to the binding of specific bands and usage, especially from a neutral viewpoint. From Eazy Telecom [sic] point of view, we cannot see any advantage from having bands only permitted to certain use unless this is of commercial advantage to us in the future (to limit competitive activity for a particular purpose for example)."

GibFibre:

"GibFibre essentially agrees with the classification of the three spectrum ranges. However, what GibFibre most appreciates is the approach that spectrum is being made available in each

of the three bands depending on technological requirements for future development of services and the regulatory regime at an international and EU level."

"[GibFibre] recognises the need for made to measure conditions and for service level conditions to achieve the type of services envisaged".

Gibtelecom:

"Gibtelecom generally agrees with the Authority's classification of spectrum into low; mid; and high bands (0-1 GHz; 1-6 GHz and, 6 GHz and above, respectively).

However, it does so assuming that the table at the top of page 8 of the public consultation document is only setting out illustrative examples of the services that could make use of said frequency bands. In the Company's opinion, the bands should remain agnostic to services, thereby giving operators the flexibility to acquire and implement these as the market dictates."

4.1.2. THE GRA'S DECISION IN RESPECT OF RESPONSES TO QUESTION 1

All respondents agreed with classifying spectrum for MFCN's including 5G networks, into 3 spectrum ranges.

The GRA agrees with Eazi Telecom's suggestion that the high band should be referred to as "above 6 GHz". The GRA also confirms that the table referred to by Gibtelecom is for illustrative purposes only.

Reference the matter of having bands permitted for certain uses, page 9 of the Consultation states *"a reference will be added to bind the use of the specified bands in the Licence to the permitted use, as defined in the Gibraltar Frequency Allocation Table ("GFAT"). This will provide the mechanism to make spectrum available quicker, and the invitation for future interest simpler."* For the purposes of clarification, the GFAT is designed in such a way so as to allow the GRA to manage the spectrum efficiently. Thus, allocations for bands for use with MFCN are done so for the purposes of ensuring that these are grouped together and therefore, reducing the need for more guard bands to minimise interference risks. This does not dictate what kind of equipment should be used but rather, what it can be used for. This will be reflected in Part VI Licences.

Decision 1: The GRA will classify and split the spectrum for MFCN's into 3 spectrum ranges, namely:

MFCN Low: Frequencies below 1 GHz

MFCN Mid: Frequencies between 1 GHz and 6 GHz

MFCN High: Frequencies above 6 GHz

4.2. QUESTION 2

The GRA asked:

Do you agree with, or have any comments on the proposed introduction of made-to-measure licence conditions?

4.2.1. SUMMARY OF RESPONSES TO QUESTION 2

Clear Mobitel:

"Clear Mobitel understands the regulator's requirements in proposing this policy. However, it is important that all competing operators have access to enough spectrum to provide comprehensive coverage and seamless connectivity. The GSMA has published its 5G roadmap [Response references the following hyperlink: <https://www.gsma.com/futurenetworks/wp-content/uploads/2019/03/5G-Implementation-Guideline-v2.0-July-2019.pdf>] which highlights the importance of access to adequate spectrum and the possibility of network sharing to achieve that end."

Eazi Telecom:

"Eazy Telecoms [sic] agree to the proposed introduction of made-to-measure license conditions, to ensure that 5G services are launched at the earliest date possible in a way which is most effective, and which will offer optimum services for customers."

"Point 3.3 Made to Measure conditions. From a neutral point of view, this appears to be reasonable. However from the point of view of any operator other than the incumbent, the premise that the GRA will consider spectrum allocation benefiting large parts of the community over allocations benefitting only a small section of the community could be seen to only benefit the incumbent. This would also depends [sic] on what Eazy [sic] Telecom plans are in the mid term, but given its relative size against the incumbent today, this needs to be registered as a point to discuss."

GibFibre:

"Where in particular Licences are given for wire ranging robust services what Gibraltar does not need is frequency or spectrum hogging. If there are issues with frequencies then operators should use them or lose them in the view of GibFibre. The question as to whether targets be set in the licences in relation to installation of timing is not new in Gibraltar. It was made in respect of the application for the granting of Licences for 4G. What GibFibre perceives is that that the many difficulties with new operators do not seem to have led to any sanctions or the frequencies being taken back or compulsory assigned. The general principle that the conditions should be made to fit the circumstances is a good one. That licence conditions for wire ranging public

systems should be different from those on public but more esoteric uses is sensible. GibFibre, however, has struggled over the interpretation of paragraph 3(e) of the schedule to the Notice 07/2006 concerning the general criteria for the grant of licences limited in number. GibFibre finds it difficult to interpret what "the reliability of the licence is sufficient to provide a robust network" means in reality grateful and would be for the GRA's view of the practical consequences of this provision."

Gibtelecom:

"Gibtelecom believes introducing made-to-measure license conditions would be a positive development and step forward with respect to spectrum assignment in Gibraltar. However, the Company feels that this would only work if the Authority ties the proposed license conditions regime in with a corresponding transparency mechanism. The Authority making available information on each operator's spectrum assignments; fees; conditions; and services for which the spectrum is being used would be of immense societal and reputational benefit to Gibraltar as a whole.

Furthermore, it would be Gibtelecom's preference for the Authority to recommend a re-alignment of the spectrum fees that would correspond with the new proposed bands, where the innate properties and availability of a particular band would have a direct bearing on the corresponding fees. For instance, a low-band allotment, where only 60 MHz is available for assignment, should be priced differently to a high-band allotment where 2000MHz is readily available for operator assignment."

4.2.2. THE GRA'S DECISION IN RESPECT OF RESPONSES TO QUESTION 2

Considering the views above, there is general agreement between operators in adding "made-to-measure" conditions to the MFCN Part VI Licences. The GRA also notes the various comments raised by respondents and will take them into consideration at the time of issuing MFCN licences.

In the Consultation, the GRA proposed that it would "consider requests for large allocations of spectrum for the provision of mobile telephony services to Gibraltar far more significant, than a large allocation of spectrum designed only to benefit a small cross-section of the community. Therefore, requests for large allocations envisaged for the provision of a robust and effective mobile telephony network will be considered only on the basis that specific and realistic targets are accepted, and more importantly, met by the requesting operator."

The purpose of this statement was to highlight the issues that the scarcity of spectrum will present if it is not allocated with the benefits to the community in mind. Faced with competing requests for a limited spectrum allocation, for example, the GRA will have no choice but to rely on the proposed and actual benefit to the community in each case, as a determining factor. It is not simply enough that an applicant be financially stable to take up an allocation but furthermore, it is the duty of the GRA, *inter alia*, to ensure that such allocation bears a benefit to as many end users as possible. Such a *modus operandi* is not, nor should be interpreted to mean, that an incumbent will benefit over smaller operators when it comes to

awards of spectrum usage rights. Proposals for the roll out of services that will benefit the community will be considered on equal terms.

By way of clarifying what *"the reliability of the licence is sufficient to provide a robust network"* means in respect of Notice 07/2006, it must be understood that at the time of writing, a substantial risk existed that spectrum could be misused if assignments were made for networks which had little or no prospects of success. Thus, if the assignment sought by way of a licence was deemed insufficient to operate a "robust" network, (i.e. suitable for the purposes of providing end-users with the services for which the network was intended), the GRA reserved the right to deny the allocation. This was particularly true in the case of multi-frequency networks (namely 2G technologies), insofar as the absence of ample frequencies as a result of insufficient assignments would lead to an inadequate communications network. It should be noted however, that newer technologies rely on single frequency network ("SFN") platforms and so, as per page 9 of the Consultation, the GRA will deem SFNs to be robust networks.

Gibtelecom has suggested that the GRA should make available *"information on each operator's spectrum assignments; fees; conditions; and services for which the spectrum is being used..."* The GRA can confirm that it does share information relating to spectrum assignments when required which results in the better management and coordination of spectrum resources. The GRA does however, take this point on board and will assess the merits of making more information available, insofar as there is no risk of confidential information being disclosed to the detriment of operators.

Decision 2: GRA will introduce "made-to-measure" conditions into MFCN Part VI Licences.

5. RESPONSES RECEIVED AND DECISIONS TAKEN IN RESPECT OF THE MOBILE SPECTRUM

5.1. QUESTION 3

The GRA asked:

Do you agree with, or have any comments on the GRA's proposed channel plan for the sub-band 3400-3600 MHz and conditions of use?

5.1.1. SUMMARY OF RESPONSES TO QUESTION 3

Clear Mobitel:

"Clear Mobitel has no objections to the proposed usage of these bands."

Eazi Telecom:

"Easy Telecom [sic] agree with the proposal of allocating 180 MHz for high data rate MFCN's, including IMT services such as 5G. It would allow for example two operators with each 90 MHz block for 5G, that is very near to the optimal market preference of 100MHz block for 5G in the 3400 – 3600MHz band.

Process required for the evidence of non-harmful interference to be developed

More information on the exact frequency and location used by SES earth station to be provided, and to restrict any future allocation of channels in the sub-band to fixed satellite space-Earth Services (FSS)."

"Point 4.4.5. Lower C-Band. Whilst Eazy Telecoms' [sic] fully agree with the principles of allowing use of this band (and incidentally have some sympathy for the satellite up/downlink suppliers with the potential interference), we have some concerns regarding the final paragraph. This states that any mobile base station, pico or nano cell near the satellite station will have to provide evidence of non-harmful interference. We accept that this is both reasonable and practical for base stations but regard the effort required for the more numerous pico/nano cells as to be onerous at the least and likely not supportable in practice."

GibFibre:

"GibFibre broadly welcomes the GRA's comments on the proposed channel plan for this sub-band."

Gibtelecom:

"Gibtelecom agrees with the proposed channel plan for the lower portion of the C-band. However, it is very concerned with the Authority's proposal to introduce a 20MHz guard band for the upper part of the channel plan. The proposed 20MHz guard band seems unreasonable and unnecessary given the known narrow-band requirements of space-to-earth applications. The Company is aware that SES operates within a very specific and isolated frequency allotment. Having a 20MHz guard band to protect this allotment therefore seems unwarranted. Additionally, perhaps the Authority having discussions with SES to better manage their existing allocations could be a way forward?"

Gibtelecom does not therefore see why there is a need to classify mobile services as a "secondary service" on this upper part of the plan given that clear separation of channels avoiding any possible interference will exist."

5.1.2. THE GRA'S DECISION IN RESPECT OF RESPONSES TO QUESTION 3

In respect to the existing use of part of the lower C-Band (3400 MHz -3600 MHz) for other services, all respondents agreed with the proposed channel plan.

In response to Gibtelecom's comments regarding the 20 MHz guard band, the GRA can confirm that this was introduced as a mechanism to allow co-existence and the immediate rollout of MFCN in the band. Unlike the 700 MHz band, there is no EU driven direction to make this band

exclusively available for MFCN. There are numerous co-existence studies recommending minimum distance criteria to protect the satellite service, which, given the size of Gibraltar would in effect make it difficult to make this band available at all. This pragmatic approach would not only allow for the introduction of mobile services but may also allow the prospect of re-farming part of the band for MFCN. For the sake of clarity, the GRA has not classified mobile services as secondary in respect of its importance to society, but only to the extent that in this particular section of the band, FSS remains the service which will receive priority and the necessary protection, until such time, if at all, changes in circumstances allow this to be treated otherwise.

Since having received the responses and the points raised by respondents regarding C-Band, the GRA has consulted directly with SES Satellites (Gibraltar) Ltd (“SES”) on this matter. SES have informed the GRA that they are currently operating in frequencies above 3700 MHz and that after having conducted various sharing studies at its Satellite Control Centre in Luxemburg, have further stated that a conservative guard band of 50 MHz is required for the co-existence of services. The GRA has therefore decided to expand the C-Band availability by an additional 70 MHz (20 MHz, between 3580 and 3600 MHz, and 50 MHz between 3600 and 3650 MHz), resulting in a total of 250 MHz newly available spectrum for MFCN.

In respect of the requirement for operators to provide evidence of non-harmful interference, the GRA expects to achieve this, as it always has, by ways of meaningful communication with operators and licensed users of the electromagnetic spectrum. Whilst this should not be interpreted to mean that evidence of non-harmful interference is to be produced upon the installation of any piece of equipment, the GRA does expect to be updated as and when new equipment which may have the potential to cause harmful interference is to be installed or put into operation. The GRA benefits from enhanced equipment which is able to monitor electromagnetic emissions and so, able to assess whether mobile apparatus is likely to cause harmful interference. Note too, that this requirement is not limited to the vicinity of the SES earth station but rather, throughout Gibraltar. It is the responsibility of the operators to ensure that they work in conjunction with the GRA to ensure the risk of harmful interference is minimised.

Decision 3: The GRA will implement the channel plan below.

3400 MHz-3410 MHz	3410 MHz-3420 MHz	3420 MHz-3430 MHz	3430 MHz - 3440 MHz	3440 MHz -3450 MHz	3450 MHz -3460 MHz	3460 MHz -3470 MHz	3470 MHz -3480 MHz	3480 MHz -3490 MHz	3490 MHz -3500 MHz	3500 MHz -3510 MHz	3510 MHz -3520 MHz	3520 MHz -3530 MHz	3530 MHz -3540 MHz	3540 MHz -3550 MHz	3550 MHz -3560 MHz	3560 MHz -3570 MHz	3570 MHz -3580 MHz	3580 MHz -3590 MHz	3590 MHz -3600 MHz
TDD (MHz)																			
200 MHz (20 blocks of 10 MHz)																			

5.2. QUESTION 4

The GRA asked:

Do you agree with, or have any comments on the GRA’s proposed plan for the sub-band 3600-

3800 MHz?

5.2.1. SUMMARY OF RESPONSES TO QUESTION 4

Clear Mobitel:

"Given the restraints identified by the regulator, the proposal appears to be sound."

Eazi Telecom:

"We have no comment on the following point, except to revisit the allocation once space-to-earth functions once operations are ceased."

GibFibre:

"GibFibre agrees with the GRA's comments for the use of this sub-band."

Gibtelecom:

*"Please see Gibtelecom's response to question 3 above. The Company believes **not** making the upper portion of the C-Band available for mobile services would be detrimental to the rollout of up-and-coming wireless technologies. Gibtelecom notes the Authority's rationale behind its proposal, but the Company feels compelled to alert it that this imposition could act as a severe restrictor to the realisation of 5G's full potential.*

Currently, the available 5G technology is predominantly centred around the C-band. When this is coupled to the fact that the GSMA recommends a minimum of 80-100MHz of mid-band spectrum per operator to realise the full potential of 5G, we have to ask whether the Authority's assessment of the available spectrum identified in the 1-6 GHz band would meet industry expectations and requirements.

Gibtelecom would additionally like to make the Authority aware that 180 MHz of C-band spectrum would only be able to serve two operators. If any operator is awarded less than 80MHz of C-band spectrum for the purposes of 5G services, the Authority must assume that the overall 5G experience for those customers subscribing to that particular operator would be severely weakened."

5.2.2. THE GRA'S DECISION IN RESPECT OF RESPONSES TO QUESTION 4

The GRA has taken note of the concerns and issues raised by Eazi Telecom and Gibtelecom and has reviewed any potential frequency re-farming in this band, in line with Gibraltar's needs and changes in circumstances. In accordance with the explanation provided for in 5.1.2 above ("The GRA's Decision in respect of Responses to Question 3"), the GRA has made available 50 MHz in the 3600 – 3800 MHz band.

Decision 4: The GRA will make available 50 MHz for MFCN’s in the band 3600 – 3800 MHz as follows:

3600 MHz-3610 MHz	3610 MHz-3620 MHz	3620 MHz-3630 MHz	3630 MHz - 3640 MHz	3640 MHz -3650 MHz	3650 MHz -3660 MHz	3660 MHz -3670 MHz	3670 MHz -3680 MHz	3680 MHz -3690 MHz	3690 MHz -3700 MHz	3700 MHz -3710 MHz	3710 MHz -3720 MHz	3720 MHz -3730 MHz	3730 MHz -3740 MHz	3740 MHz -3750 MHz	3750 MHz -3760 MHz	3760 MHz -3770 MHz	3770 MHz -3780 MHz	3780 MHz -3790 MHz	3790 MHz -3800 MHz
TDD (MHz)					Guard Band					Currently Allocated Spectrum									
50 MHz (5 blocks of 10 MHz)					50MHz					100 MHz									

5.3. QUESTION 5

The GRA asked:

Do you agree with, or have any comments, on the GRA’s proposal to consider making spectrum available for MFCN’s in the bands above 6 GHz only after WRC 2019 has concluded and relevant documents are published?

5.3.1. SUMMARY OF RESPONSES TO QUESTION 5

Clear Mobitel:

“Clear Mobitel considers this to be a pragmatic policy.”

Eazi Telecom:

“We agreed on aiming on spectrum usage harmonization based on WRC 2019 outputs. We support 6 GHz to be considered as IMT band for future 5G use (As complement to 3400-3800 MHz band). Ans this is even more important in Gibraltar, if finally 3600-3800 MHz band is not available for IMT, but kept for FSS usage as currently.”

GibFibre:

“GibFibre can see the sense in waiting until the international elements of allocation are finalised before making rules concerning Gibraltar.”

Gibtelecom:

“Whilst the World Radiocommunication Conference (WRC) 2019 is scheduled for this coming November, the subsequent ratification process, documentation preparation and circulation

may take substantial additional time. There are certain 5G applications that are predicated on having significant amounts of spectrum available within the high-band channels. The Authority must therefore be made aware of potential delays in the rollout of service-specific 5G applications.

As a means of mitigating protracted hold-ups, Gibtelecom would welcome the assignment of the 26GHz spectrum band for use by mobile services, on an "at risk" basis. This would align with the European Commission's Implementing Decision to harmonise the radio spectrum in the 24.25-27.5 GHz (or 26 GHz) band. By virtue of such decision, member states now have the ability to authorise the use of the same at national level."

5.3.2. THE GRA'S DECISION IN RESPECT OF RESPONSES TO QUESTION 5

In reference to Gibtelecom's response in relation to "*Commission Implementing Decision (EU) 2019/784 of 14 May 2019 on harmonisation of the 24,25-27,5 GHz frequency band for terrestrial systems capable of providing wireless broadband electronic communications services in the Union*", the GRA would highlight that recital 2 of the Decision provides:

"According to the ITU Radio Regulations (4), the 25,25-27,5 GHz frequency band is allocated worldwide to the mobile service on a co-primary basis. The 24,25-25,25 GHz frequency band is not allocated to the mobile service in Region 1 of the ITU, which includes the European Union. That does not prevent the Union from using this frequency band for wireless broadband electronic communications services as long as it complies with international and cross-border obligations under the ITU Radio Regulations at its external borders."

Furthermore, Article 6 provides:

"Member States shall facilitate cross-border coordination agreements to enable operation of the terrestrial systems referred to in Article 1, taking into account existing regulatory procedures and rights, as well as relevant international agreements."

Given the geographical location and size of Gibraltar, coordination with Morocco and indeed Spain could be required before allowing the use of part of this band. Furthermore, this particular band was discussed at length at the World Radiocommunications Conference 2019 ("WRC-19") with a potential detrimental outcome for MFCN. Therefore, taking in due consideration the issues discussed above, it is the GRA's view that there is too much uncertainty at this time to consider this band even on an "at risk basis" which could potentially lead to breaches of the Radio Regulations.

However, ITU Member States agreed on additional radio-frequency bands for International Mobile Telecommunications (IMT) during the WRC-19. Consequently, the following bands have been identified to enable 5G deployment¹:

¹"Key outcomes of the World Radiocommunications Conference 2019", ITU News Magazine, page 21 <https://www.itu.int/en/itu-news/Documents/2019/2019-06/2019_ITUNews06-en.pdf> (accessed 6th March 2020)

- 24.25–27.5 GHz
- 37–43.5 GHz
- 45.5–47 GHz
- 47.2–48.2 GHz
- 66–71 GHz

Furthermore, the WRC-19 Provisional Final Acts² have now been published and the GRA can confirm that the bands listed below are currently not registered or in use in Gibraltar, and can be made available for MFCNs subject to the constraints detailed in the Radio Regulations.

- 24.25–27.5 GHz
- 40–43.5 GHz³
- 45.5–47 GHz
- 47.2–48.2 GHz
- 66–71 GHz

Decision 5: The GRA will update the Gibraltar Frequency Register and make available for MFCN's the following bands above 6 GHz:

- **24.25–27.5 GHz**
- **40–43.5 GHz**
- **45.5–47 GHz**
- **47.2–48.2 GHz**
- **66–71 GHz**

6. RESPONSES RECEIVED AND DECISIONS TAKEN IN RESPECT OF THE INVITATION FOR INTEREST AND ALLOCATION PROCESS

6.1. QUESTION 6

The GRA asked:

² "World Radiocommunication Conference 2019 (WRC-19) Provisional Final Acts", ITU Publications
<<https://www.itu.int/en/ITU-R/conferences/wrc/2019/Documents/PFA-WRC19-E.pdf>> (accessed 6th March 2020)

³ The band 37 – 39.5 GHz is extensively used in Gibraltar for fixed links and will not be made available for MFCN use

Do you agree with, or have any comments on the GRA's proposal to include minimum service levels subject to the proposed usage of the spectrum?

6.1.1. SUMMARY OF RESPONSE TO QUESTION 6

Clear Mobitel:

"In order to establish credibility all new operators must have a minimum coverage level in their business plans. It is not therefore unreasonable for the regulator to include such conditions in its policies.

New entrants should however be assured that spectrum is available from all the groups identified by the regulator, to do otherwise would inhibit the ability of a new entrant to meet its coverage targets."

Eazi Telecom:

"We agree on the GRA's proposal to include minimum service levels subject to the proposed usage of the spectrum, and we consider achievable the deadlines for achieving the population targets defined by the GRA, specifically for the 2G/3G/4G networks. Yet it should be noted that currently the use cases for 5G technology is still in its infancy stages and there might need [sic] to have a different approach on the coverage requirements. We understand that this is what is meant by the target requirements for "instances where services are not aimed at the general public, but rather aimed at specific markets or services"

"Point 5.3. Minimum Service Levels. Eazy [sic] Telecom sense is that these are aggressive timescales and will probably favour the incumbent with their existing infrastructure over its own. Similar comments apply to the specific market licences, although we assume there is some room to negotiate the service levels on an individual operator level."

GibFibre:

"GibFibre thinks that Gibraltar has to some extent suffered from frequencies effectively in some cases being "banked" by Part VI Licenced Operators.

Service levels proposed by the GRA must in some ways be exacting and are necessary to try and encourage operators to launch and cover the population with services. What is equally important, however, is enforcement of those conditions. The conditions by themselves will not solve any problems. The enforcement of the conditions will solve problems and should give Gibraltar residents and businesses the quick timetable they need for the uptake of new services including 5G. The timetables and the ability to move quickly is relevant, however, to some of the points made below in respect of infrastructure sharing and short range technologies. Generally, the minimum service levels suggested do not appear to GibFibre to be overly ambitious."

Gibtelecom

"Gibtelecom agrees with the Authority's proposal to include minimum service levels subject to the proposed usage of the spectrum. The Company nevertheless believes that the proposals

for established and new operators aiming to rollout services to the general public are too ambitious.

Given the relative size of Gibraltar and the disadvantages that size brings to operators in terms of reduced buying power, it is highly improbable that suppliers and vendors will prioritise fabrication and shipment for Gibtelecom. Furthermore, a considerable amount of infrastructure will need to be replaced, both from a core and access perspective once the 5G authorisation is granted by the Authority. It is therefore Gibtelecom's opinion that launching a service within nine months of having been awarded a license is unrealistic. The Company would recommend extending the rollout period to eighteen months for established operators.

Gibtelecom is also of the belief that new operators have an inherent advantage over established operators given that a green field deployment does not require maintaining extant service levels whilst the new technology is rolled out. Rollout periods for established operators are, thus, prolonged as work is frequently constrained to the silent hours. Taking the rollout of 5G infrastructure and technology as an example: the 4G network will need to be physically upgraded in order to support 5G services. This will involve swapping out hardware, configuring and reoptimizing the 4G radio service prior to commencing on the 5G rollout. It is therefore the Company's stance that the timelines for new operators should be more stringent.

A further point that Gibtelecom would like to make is that it is unclear what the due process would be, or indeed how the Authority would keep track of, obligations that are linked to services that are not intended to be rolled-out to the general public and aimed at specific markets or services. For example, under the "Launch Date" proposed conditions under these instances, the Authority mentions that the operators "...will be obliged to launch services as per the approved business plan timescales." How would the Authority ensure that this process is equitable and transparent?"

6.1.2. THE GRA'S DECISION IN RESPECT OF RESPONSES TO QUESTION 6

All respondents agree that minimum service levels should be included as obligations within a Part VI MFCN Licence.

However, there are different views on what these should be, and how such obligations should be enforced. The GRA is of the view that it would be reasonable, fair and transparent for operators with comparable business models to have similar obligations.

The GRA appreciates that operators may take different approaches to MFCN and 5G deployment. This said, the GRA will be mindful of the operators' comments above when reviewing applications for spectrum, and operators may be provided with the opportunity of participating in regulatory dialogue to discuss respective development paths and conditions for deployment.

In the circumstances, the GRA is mindful that standard minimum service levels may not be realistic in some circumstances and so, and as a general response to all of the above, is instead of the belief that these have the potential to cause negative effects in respect of the imposition of equitable conditions for all applicants. The GRA has assessed the matter and has instead

opted to not impose minimum service levels as conditions to licences or awards of spectrum usage rights.

As an alternative, the GRA has opted to correlate the made to measure conditions referred to in section 3.2 above, into its Decision to do away with standardised minimum service levels, and, will use the made to measure mechanisms as a means to ensure that spectrum is awarded with conditions of use. These may involve an element of service levels however, these will be derived subject to applicants' spectrum requirements, roll-out plans, predicted population coverage over fixed periods of time and any such factors as the GRA considers necessary for the purposes of imposing such conditions.

More importantly however, in light of the interest for spectrum usage rights being generated as a result of the Consultation, as well as other factors such as requests for Test and Development Licences for 5G networks, the GRA has concluded that it will invariably be required to tighten its control of the spectrum, in particular to make sure that it is being effectively and efficiently used. The GRA would highlight that spectrum hoarding must and will be increasingly monitored, should it deem that actual or predicted demand for spectrum allocations exceed what can be awarded.

Decision 6: The GRA will not include minimum service levels conditions on the use of spectrum but will however, impose relevant conditions in respect of spectrum allocations, subject to relevant information required for the purposes of awarding spectrum.

7. ADDITIONAL COMMENTS RECEIVED

In addition to the responses to the questions sought, the respondents provided additional comments which are laid out below. The GRA has grouped comments into specific categories with a view to addressing these globally and above all, make operators' concerns and requests public. Whilst this serves to enhance the transparency elements of the Consultation, it is also hoped that the airing of operator's concerns in this manner may serve as a means for operators to understand and appreciate each other's views. Whether it further serves to formulate a means whereby operators can harvest better relationships amongst themselves is a matter for operators however, the GRA would encourage the fostering of such relationships. It is therefore hoped that by collating operators' concerns, as presented via the process provided for in the Consultation, the GRA will have assisted in the betterment of working relationships between operators. It must be pointed out however, that this was not the primary intention of the Consultation, but rather, serves as a means for the GRA to learn and understand operators' concerns and viewpoints.

The GRA has broadly categorised the additional comments into three main topics as follows:

- Infrastructure and Roll-out Matters
- Fees
- Clarification Points

7.1. INFRASTRUCTURE AND ROLL-OUT MATTERS

7.1.1. SUMMARY OF COMMENTS IN RESPECT OF INFRASTRUCTURE AND ROLL-OUT MATTERS

GibFibre:

"1. In an area as compact as Gibraltar and given clear environmental priorities and the need for efficient roll out of equipment by other than incumbent operators it will in the view of GibFibre require the GRA to consider using its powers under Section 52(1) of the Communications Act 2006 in respect of co-location and sharing of network elements and associated facilities. Where there is no possibility of harmful interference which would seem in the majority of cases to be unlikely the easiest thing to do so as to minimise environmental disruption would be to start to authorise on a case by case or general basis the sharing of mast and transceiver sites. If the GRA's aim truly is to achieve a quick and effective rollout this would seem to GibFibre to be just about the only way in which it is achievable.

2. It may well be that any direction in respect of infrastructure sharing may need to be attached to fairly draconian conditions to encourage existing incumbents not to prevaricate and it may be necessary even to suspend the use of incumbents apparatus on masts where sharing is refused.

3. Generally, the GRA may need to examine given Gibraltar's unique density in terms of households increased use low powered devices. For example, Notice CO4/17 is part of a general strategy of usage of wireless technologies. Use of low powered devices, however, would require the removal of the restriction on business use in the coda [sic] to Section 3(2) of that Notice. That might enable the use of small cell equipment like femtocells to provide services."

4. GibFibre would like to return to the question of enforcement and frequencies. Paying for frequency use and application of licences needs to be enforced. It is no use having use it or lose it provisions if you do not actually lose it if you do not use it. The GRA has to make it clear that conditions will be enforced."

"It could be that the GRA's ambitions could be thwarted without the use of equipment infrastructure sharing provisions and the GRA should not forget the possible use of low range frequency equipment as an adjunct given the particular geographic nature of Gibraltar."

Eazi Telecom:

"General Comment 1:

Regarding the Award of additional Mobile Licenses:

It is our understanding that 2 network operators for a small market like Gibraltar is more than enough to cover the market needs and to create competition for the benefit of the public. Opening up the market for more entrants would expose the operators to share very small portion of subscriber base and consequently this will definitely have its negative effect on the sustainability of all the operators and on the long-term investments in the telecom sector."

"GRA should consider all prerequisites for 5G as part of their process - technical, regulatory, operational and commercial. Full deployment of 5G doesn't just depend on obvious things like

spectrum, but also others like fibre availability and SDN/NFV, both of which will take huge investments of time and resources in their own right.

GRA should not underestimate the value and speed of other wireless technologies - 4G, Wi-Fi, satellite networks. LoRa, Bluetooth, ZigBee and others will all be much larger contributors to economic growth and social welfare for at least the next five years, and in Wi-Fi's case, for decades to come.

As the market is small, GRA should consider regulating that Operators should share some of the setup costs. The challenging economics of implementing 5G should be driving such a strategy. Three key questions to be answered are 1) who to share with, 2) where to share and 3) what to share. Body of European Regulators for Electronic Communications (BEREC) published a document that indicates that OPEX savings in the case of passive sharing of infrastructure harbors savings of 16-35% in CAPEX and 16-35% in OPEX. Besides cost savings, there are environmental benefits such as reduced energy consumption and mitigation of citizen concerns over radiation. Additionally, it was reported that customer experience would also be enhanced quality, better coverage as well as higher data speeds.

GRA should work closely together with the licensed operators and maintain a positive working relationship. This ensures that a complete view of what is best for the Gibraltar is maintained.

Eazi Telecoms would encourage GRA to provide harmonization, predictability and consistency of its spectrum policy which would encourage the necessary investment needed for 5G. The timing of the re-purposing of the existing spectrum, the duration of the licenses as well as the fees charged for the spectrum should be well considered."

7.1.2. THE GRA'S POSITION IN RESPECT OF INFRASTRUCTURE AND ROLL-OUT MATTERS

The GRA recognises the concerns raised by the respondents. These will have to be evaluated as part of the allocation of spectrum and, where applicable, Gibraltar legislation will be considered to mandate compulsory co-location and access to site sharing including swift action in the case of refusal for cooperation. As a result of the concerns raised above in relation to sharing of infrastructure, as well as the likelihood that the interest being generated for spectrum is likely to mean the requirement for additional equipment to facilitate mobile networks, the GRA undertook a public consultation process at the end of February 2020 designed to obtain feedback on specific concerns⁴. This process will allow the GRA to better understand what operators are hoping to establish in respect of equipment plans for MFCNs, and better evaluate the extent to which it is able to assist the development of this market, insofar as it can implement infrastructure and/or co-location mechanisms for MFCNs.

The GRA is also conscious of the environmental impact that MFCNs may have and believes that any mechanisms which encourage or mandate the sharing of specific infrastructure will be ultimately beneficial to Gibraltar. Whether such measures are able to go as far as to accomplish any meaningful impact remains to be seen however, this will not be achieved

⁴ See "Public Consultation on Mobile Infrastructure Sharing", GRA, 24th February 2020
<<https://www.gra.gi/communications/public-consultations/c02-20-mobile-infrastructure-sharing>>

without the full cooperation among operators. The GRA trusts that this matter is taken onboard by all concerned, as the ultimate beneficiary of such cooperation will be Gibraltar as a whole.

In respect of Notice 04/17 as mentioned above, the GRA remains unclear as to what is being conveyed by the respondent and so, would invite it to clarify its point.

As to enforcement of frequency usage, the GRA would direct the reader to its "Decision in respect of Responses to Question 6" above. The GRA takes its duties in respect of spectrum hoarding very seriously since (based on interest being generated), the likelihood of demand exceeding supply in certain spectrum ranges may become an issue in the near future. The GRA will continually monitor allocations and will ensure, in accordance with made to measure conditions imposed on operators, that targets and service levels are being met, so as to avoid inefficient use of the spectrum.

The GRA will also take into account the fact that MFCN roll-outs are not only dependant on spectrum availability and therefore intends to assist in as much as it is competent to do so, within the scope of its powers. Indeed, the GRA recognises that rolling out any network is not without its difficulties, not only in respect of the limited availability of spectrum but also in regard to other issues encountered by operators when the installation of equipment is required. As such, the GRA does recognise its limitations and wishes to convey to all operators that the barriers being faced should be overcome with innovative solutions, albeit as actioned by operators wishing to succeed in a limited market such as Gibraltar. The GRA remains open to dialogue and will consider assisting in any way it can, however, in many cases, the initiative to pursue a specific course of action must be initiated by the operator. Once again, the GRA would highlight the benefits that the betterment of working relationships between operators would confer on Gibraltar, not only because of the potential savings in costs, but because of the technological benefits which end users would benefit from.

7.2. FEES

7.2.1. SUMMARY OF COMMENTS IN RESPECT OF FEES

Gibtelecom:

"As a general comment, Gibtelecom finds it difficult to provide more meaningful views or make substantial contributions to certain aspects of the public consultation without knowing what the charging (Part VI Fees) mechanism would look like. Many of the questions being asked, such as those related to the spectrum bands (Q1); imposition of made-to-measure license conditions (Q2); and service levels (Q6), require responses from stakeholders that are inextricably linked or heavily dependant on what the fees would be. Not having any visibility of the charging mechanism or indeed fees is particularly significant since the licenses are proposed to be technology agnostic. This would lead to a "re-set" of the existing pricing model for all mobile services."

Eazi Telecom:

"General Comment 2

We understand that the spectrum price will be reviewed following the above study. Yet we suggest that the effective date of the change of the spectrum prices for existing operator be the date when they commercially launch the 5G services."

7.2.2. THE GRA'S POSITION IN RESPECT OF FEES

The GRA agrees with the general points raised that fees should be re-assessed especially taking into consideration the potential bandwidth needs in multiple bands required for 5G technology and beyond. Furthermore, the current structure could potentially make it prohibitively expensive to develop any future multi-band network.

The GRA considered the responses received and evaluated the spectrum properties and potential demands of each frequency band. These included taking into consideration the demand for spectrum, availability of the required bands and the interoperability of technology allowed in the bands, due to sharing constraints and/or international sharing agreements.

From an operator perspective, the GRA advised of a fee structure that would benefit current operators and new operators equally with the underlying benefit that this be conferred on their consumers and end-users. Furthermore, the GRA advised the Minister that licence fees be increased by 1.5% per annum, as opposed to the current 4%. This would reduce the financial burden on operators, with a view that additional benefits are derived by Gibraltar as a whole.

Consequently, and in accordance with the Consultation, the GRA advised the Minister on a revised fee structure with the aim of harmonising such fees for mobile services and in keeping with a technology neutral approach.

HMGoG will be publishing a Direction in due course which will outline the new spectrum fees. The Direction will set out the revised fee structure which in summary, are as follows:

Band	Fee per 1 MHz Channel
700 Band	£ 4,000.00
800 Band	£ 4,000.00
900 Band	£ 4,000.00
1400 Band	£ 4,000.00
1800 Band	£ 4,000.00
UMTS 2100	£ 4,000.00
2400 Band	£ 4,000.00
LTE 2600	£ 4,000.00
Lower C-Band	£ 4,000.00

The intention is for the new fee structure to apply with effect as from 1st January 2021. Spectrum fees for frequencies above 6 GHz are being considered and will be published in due course.

The above spectrum fees increase by 1.5% per annum with effect as from 1st April 2022.

In addition, it should be noted that although some above 6 GHz bands have been identified as being suitable for MFCN and will be added to the GFAT, fees for these bands have not been

published at present. The GRA, in consultation with HMGoG, will be considering these in future and making recommendations based on industry feedback and developing trends.

7.3. CLARIFICATION POINTS

Gibtelecom asked for clarification on the following:

"Gibtelecom would also like to receive clarification on the definition of the "business plans" as mentioned across the consultation document, as well as the process that would be involved in the exchange of this, and related information, as well as the criteria that would be adopted to obtain its 'approval'".

The GRA is unable to specify with detail, what exactly will be required for the submission of applicants' business plans or any other information it may require. However, at the very least, the following should be submitted:

- Description of services to be provided
- Estimated population/geographical coverage
- Spectrum requirements
- Location and number of new radio sites
- Radio network design, including equipment

Upon receipt of an application, the GRA will respond to interested parties and will consult with successful applicants in order to establish achievable made to measure conditions, any relevant service levels and targets.

GibFibre asked for clarification on the following:

"It is not clear which Duplexing Mode will be used by the amalgamated L-Band and extended L-Band. It would be useful to know as soon as possible which Duplexing Mode (TDT or FDD) will be utilised. When would a decision on this be forthcoming?"

This is being considered and to date, a decision on this has not been made. It is likely that the GRA will decide on this point, subject to the demands for spectrum in the L and extended-L bands. Subject to demand and proposed usage, the GRA may see it fit to designate only one mode in accordance with requirements. In contrast however, if demand is minimal, and provisions can be made to allow for both modes, the GRA will accommodate insofar as it is able to.

Eazi Telecom pointed out an error in the table under section 4.4.3 on page 13 of the Consultation as follows: *"1st channel in the table to be adjusted from 2503 to 2505"*. This error has been noted and rectified as necessary. The GRA thanks Eazi Telecom for pointing this out.

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