An Coimisiún um
Rialáil Cumarsáide
Commission for
Communications Regulation

# Non-Confidential Submissions to Document 21/134 and 21/134A

**Submissions to Consultation**

**Reference:** ComReg 22/93B

**Date:** 09/11/2022

# 1 Introduction

1.1 The Commission for Communications Regulation ("ComReg") is the statutory body responsible for the regulation of the electronic communications (telecommunications, radiocommunication and broadcasting networks), postal and premium rate sectors in Ireland in accordance with European Union ("EU") and Irish Law.

1.2 ComReg also manages the radio frequency spectrum ("radio spectrum" or "spectrum") and the national numbering resource, among other responsibilities. Radio Spectrum is a valuable national resource underpinning important economic social and communications activities.

1.3 In December 2021, the Commission for Communications Regulation ('ComReg') issued a consultation regarding the review of the fixed radio links licensing regime ('ComReg Document 21/134[1] and ComReg Document 21/134A[2]).

1.4 In Document 21/134, ComReg invited submissions from interested parties on the matters discussed in the Fixed Links Bands Review. ComReg received 10 submissions to Document 21/134.

1.5 As outlined in Next Steps of Document 21/134, ComReg indicated that it would publish all non-confidential submissions received and may invite comments on same to facilitate extensive consideration on all matters raised.

1.6 All 10 non-confidential submissions to Documents 21/134 and 21/134A are now contained below in the following order:

- Eircom Limited and Meteor Mobile Communication Limited (trading as 'eir' and 'open eir') ("Eir");
- Enet Telecommunications Networks Limited ("eNet");
- ESB Networks DAC ("ESBN");
- JFK Communications Ltd;
- Orion Digital Services Ltd ("ORCS");
- Raft Technologies Ltd;

[1] ComReg Document 21/134, "*Review of the Fixed Radio Links Licensing Regime*", published 17 December 2021, available at https://www.comreg.ie/

[2] ComReg Document 21/134A, "*DotEcon Report Fixed Links Bands Review – conclusions and recommendations",* published 17 December 2021, available at https://www.comreg.ie/

- Three Ireland (Hutchison) Limited (“Three”);
- Virgin Media Ireland Ltd (“Virgin”);
- Vodafone Ireland Ltd (“Vodafone”); and
- Wireless Connect Ltd (“Wireless Connect”).

# 1 eir

# eir Response to ComReg Consultation

# Review of the Fixed Radio Links Licensing Regime

## ComReg Document 21/134

**28 January 2022**

**DOCUMENT CONTROL**

| | |
|---|---|
| **Document name** | eir response to ComReg 21/134 |
| **Document Owner** | eir |
| **Status** | Non Confidential |

The comments submitted in response to this consultation document are those of Eircom Limited and Meteor Mobile Communications Limited (trading as 'eir' and 'open eir'), collectively referred to as 'eir Group' or 'eir'.

**Response to consultation**

1. eir welcomes the opportunity to comment on ComReg's second consultation in its Fixed Links licensing review.

**Q. 1 ComReg asks respondents to clarify whether the submissions to question 6 of ComReg document 20/109 are either addressed by the Regulatory Impact Assessment in this document and accompanying DotEcon Report.**

2. In our response to ComReg 20/109 eir observed that "*there is merit in retaining the relatively straightforward approach to pricing under the current regime*." eir has reviewed the proposed new regime for setting fees as described in the Regulatory impact Assessment. eir acknowledges the rationale for the proposed regime to set the correct signals to encourage the efficient use of the spectrum.

3. Whilst the proposed regime is more complex than the existing regime and the proposed values of the parameters could be debated, eir is of a view that the resulting prices are broadly right and consistent with the objective of promoting efficiency.

**Q. 2 ComReg welcomes the views of respondents on its proposed channel spacings for the frequency bands listed in Annex 1.**

4. eir agress with the proposal.

**Q. 3 ComReg seeks views of interested parties regarding the adjustments (if any) to minimum transmit power for each of the frequency bands currently listed in Annex 1 of Document 09/89R2.**

5. eir has no strong view on this at the present time.

**Q. 4 ComReg seeks the views of interested parties regarding the inclusion of ATPC in future versions of the Guidelines.**

6. eir has no strong view on this at the present time.

**Q. 5 ComReg seeks views of interested parties regarding retaining the minimum path lengths for each of the frequency listed in Annex 1 of Document 09/89R2.**

7. eir has no strong view on this at the present time.

**Q. 6 ComReg seeks views of interested parties regarding the adjustments (if any) to the minimum transmission capacity for each of the frequency bands listed in Annex 1 of Document 09/89R2.**

8. Licences should be based on frequency and carrier bandwidth. The capacity should be determined by the licensee based on link design requirements.

**Q. 7 ComReg seeks views of interested parties regarding the adjustments (if any) to the minimum antenna requirements for each of the frequency bands listed in Annex 1 of Document 09/89R2.**

9. eir has no strong view on this at the present time.

**Q. 8 ComReg seeks views of interested parties regarding the adjustments (if any) to the mandatory equipment class values listed in Annex 1 of Document**

10. eir has no strong view on this at the present time.

**Q. 9 ComReg seeks views of interested parties regarding the radius values of the high/low search database, and in particular DotEcon's suggestion to reduce or remove the requirement for the 80 GHz band.**

11. Consideration could be given to radius reduction across all bands.

**Q. 10 ComReg seeks the views of interested parties regarding allowing the use of Multi-Band Aggregation and potential minimum link length requirements and minimum link availability targets.**

12. eir has no strong view on this at the present time.

**Q. 11 ComReg welcomes the views of interested parties regarding ComReg's proposal to: a) identify the geographic area as defined by National Grid 3122 and 3123 as a congested area, and the 13 GHz, 15 GHz, 18 GHz and 23 GHz bands within that geographic area, as being subject to a congestion surcharge as part of a future licensing framework; and b) use the Grid Method to monitor congestion.**

13. eir does not agree that the use of the Grid Method is appropriate. A more granular system should be used, e.g. post code areas or CSO work place zones. It is important that the defined congestion area is physically the minimum necessary geographic area.

**Q 12 ComReg seeks views from stakeholders on when the proposed new framework should be reviewed (within a 3 to 5 year period from any Decision)?**

14. ComReg proposes at paragraph 5.68 that the Option 2 fee regime "*would be subject to a 3 – 5 year review and ComReg also seeks views from stakeholders on an appropriate timeframe for such a review. ComReg would be minded to hold the initial review 3 years following the full implementation of this Option*."

15. ComReg states in paragraph 1.12 that "*any changes on foot of this consultation process would be introduced over a three-year period"*. eir agrees it may be appropriate to introduce the changes on a phased basis and would welcome more details on how that would be approached in respect of changes to the annual licence fees.

16. Assuming an acceptable 3 year transition period is established and taking account of ComReg's preferred position in paragraph 5.68 eir would suggest that the initial review is undertaken 6 years after the implementing Decision. i.e. allowing 3 years for the transition to the new fee regime to complete and then allow the regime to operate in full for 3 years so that sufficient time has passed to allow a proper assessment of its impact.

# 2 Enet

**Spectrum Fees- "Phasing In"**

Enet considers that ComReg's conclusion on stakeholder "Financial Impact" (section 5.3 of 21/134) is incomplete as the assessment is too narrow in taking account only of the impact of the fees themselves and not the wider implications they present for stakeholders. In particular, while elsewhere in the consultation ComReg acknowledge spectrum migration can be "*very costly*" (e.g. paragraph 3.56) it fails to give any consideration to this component in its financial impact assessment. This reveals a significant gap in ComReg's assessment and does not take adequate account of its requirement to ensure "*predictability*" and "*promote long-term investment*" in accordance with Article 45 of the European Electronic Communications Code (EECC). We acknowledge that ComReg's intent is to minimise the impact on competition by proposing a three-year phasing in of new fees in accordance with the recommendations of its consultants Dotecon but we wish to draw attention to the fact that Dotecon recommendations are based on the same narrow approach to assessing impact.

Dotecon's note their objective in making recommendations was to cater for "*unavoidable uncertainties*" by attempting to set fees that are "*largely revenue neutral*" with the expectation that for many operators these fees will largely "*net out*". However, this analysis is also informed only by reference to **actual level of fees** themselves and it is hard to envisage Dotecon could come to same conclusion with respect to 'netting out' if migration costs were added into the mix.

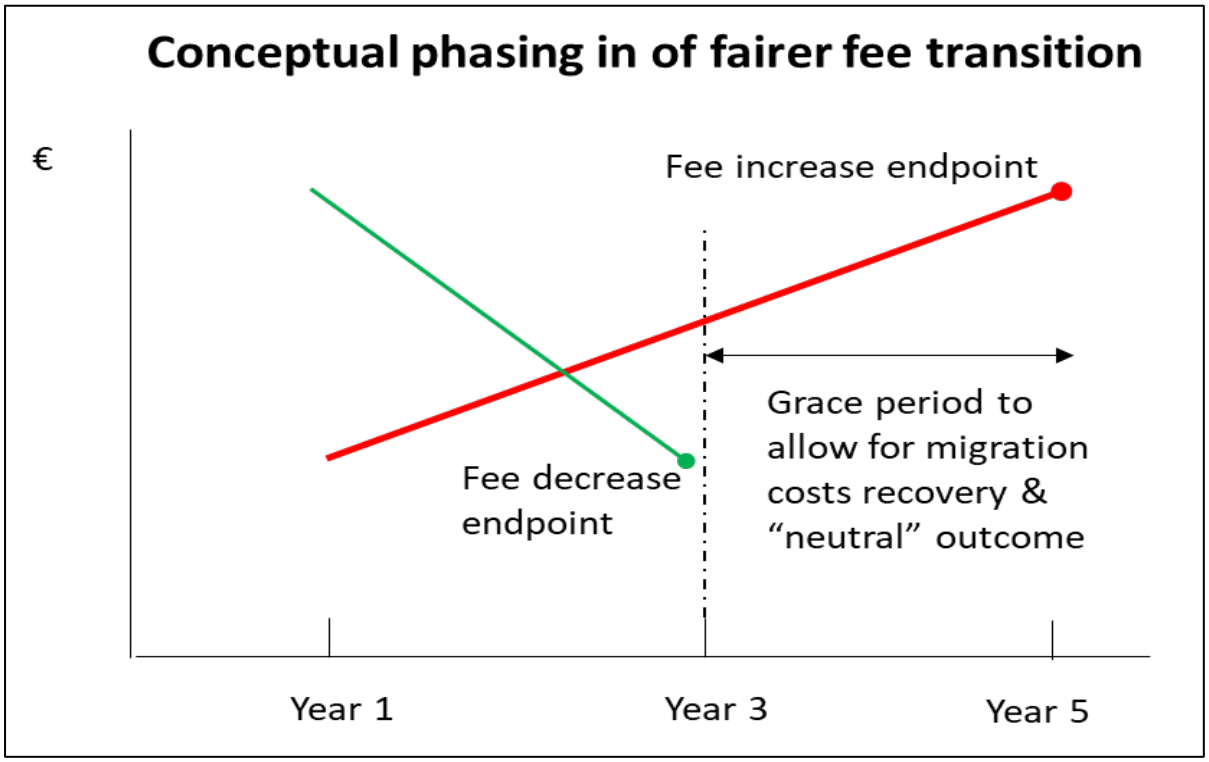
ComReg comments in *footnote 120* of the consultation that based on evidence gathered during the stakeholder engagement phase of the current process that "*the asset life of equipment is not the key driver of when equipment is replaced (i.e. replacement is driven by end user demand)"*. Enet would concur with this view but would stress that such a competitive burden (in responding to customers needs) should not be added to by facing the additional burden of early retirement of assets where that is generated by administrative (i.e. through fees) rather than competitive forces. As noted by Dotecon (paragraph 5.230 of consultation) users should be able to form "*accurate expectations on the fees they will pay* ***over the lifetime of a link*** *they are about to install*" but it is entirely reasonable that that this expectation equally applies to **existing links** whose "lifetime" has not yet expired.

Enet estimate that per link migration costs on contracts where it faces substantial spectrum fee increases will cost [✂[redacted]✂] per link between equipment and labour costs. This translates into just under [✂[redacted]✂] in migration costs alone and would render many existing contracts on those frequencies loss-making if the transition to new bands were carried out. However, many of these contracts will equally no longer be viable even through the 3 year phasing of increased fees process where no such migration is carried out.

Consequently and in accordance with the stated objectives of Dotecon to propose a regime that is "*largely revenue neutral*", but from the perspective of fees, we consider that objective should be somewhat amended to be largely revenue neutral in terms of the overall impact on operators (and by extension **consumers**). We consider such an approach would be consistent with Article 3 (EECC) and with ComReg's remit under Article 45 (EECC). As such enet are proposing that an **asymmetrical approach** to fee decreases and increases is applied by phasing fee increases over a period of 5 years and decreasing fees as currently proposed over 3 years (see **Fig 1)**

Under this approach ComReg's objective of encouraging efficient use of radio frequencies will not be compromised as the pricing signal to market (i.e. to vacate higher bandwidths on fixed links) will in the main be unaffected while ensuring predictability and encouraging long-term investment by operators. It is clear from the consultation that ComReg are eager that the phasing in process offers operators "*sufficient notice*" but when costs of migration are taken into consideration we are strongly

of the view the current proposals don't meet that objective. We would strongly urge ComReg to reconsider its position in this regard and adopt an approach as proposed by enet in this response.




Other items

3.60 – enet welcomes Comreg decision that it is not appropriate to issue block licenses within 80GHz band, and also agrees that any such licensing would be severely disruptive to operators in the Dublin area. To provide some stability in the market, enet would like to see a declaration from Comreg that such a consultation on additional block licensing will not occur again for a defined period of time, i.e. 5 years. Enet is particularly alarmed at the phrasing of the Comreg conclusion noted in 3.63 and feel this introduces an unacceptable level of uncertainty regarding the band, especially given that there are potentially significantly reduced alternatives to 80GHz in the Dublin area. Enet would request that Comreg reflect on the wording and on enets response.

3.96 – enet notes Comreg desire to publish additional data, however enet questions the rationale for doing so. It appears that the only feedback was acknowledged as anecdotal, and came from an equipment manufacturer, not an operator. Enet is concerned that the public publishing of additional data may provide commercially sensitive data to other operators. Enet maintains the view that the current information published is both suitable and enough to allow operators to manage their services, and rejects the argument that facilitating outsourced third parties access to operators information is a rational and legitimate reason for continued development and pushing of this initiative.

3.100/ 3.109 – enet notes Comreg conclusion, however enet feels that current licensing structure for BCA makes potential uses of this technology prohibitive. Enet would like to consolidate multiple backhaul links into a single link in certain areas, however the economics are very challenging, when dual license costs, tower costs, and vendor license costs are factored in. enet would like Comreg to consider innovative ways to be more supportive in helping operators develop solutions utilising BCA.

3.172 – enet notes Comreg decision regarding unlicensed links, and welcomes same.

3.176 – enet notes and welcomes Comreg comments regarding 60GHz links.

3.188 – enet notes and welcomes Comreg comments regarding unlicensed bands

4.14 – enet notes and welcomes Comreg decision regarding ATPC, and requests that Comreg provide guidance on an effective date for this decision.

# 3 ESBN

Energy for generations

Networks Telecoms, ESB Networks

# ESB Networks' response to ComReg's Consultation on its Review of the Fixed Radio Links Licensing Regime (21/134)

28/01/2022

# 1. INTRODUCTION

ESB Networks (ESBN) welcomes the opportunity to respond to the Commission for Communications Regulation (ComReg) consultation on its Review of the Fixed Radio Links Licensing Regime (ComReg Document 21/134).

# 2. ESBN Response

ESBN has engaged with ComReg and it's consultants on this matter previously. ESBN considers the strategy regarding fixed links vital to the telecommunications industry to support investment and deployment plans for the medium to long term.

**Q. 1** ComReg asks respondents to clarify whether the submissions to question 6 of ComReg document 20/109 are either addressed by the Regulatory Impact Assessment in this document and accompanying DotEcon Report.

**Answer 1:** ESB considers that all submissions to Question 6 of ComReg Document 20/109 have been addressed in the RIA in ComReg Document 21/134 and DotEcon's report.

**Q. 2** ComReg welcomes the views of respondents on its proposed channel spacings for the frequency bands listed in Annex 1. Please provide evidence and reasoning for your views.

**Answer 2**: ESB does not agree with the proposal to modify all spectrum bands to accommodate larger channels. By making such a sweeping change, ComReg would be facilitating increased pressure on spectrum bands which are already severely congested. ESB recognises the drive for higher bandwidth in higher frequency bands to support backhaul for the likes of mobile networks. However, ESB like other mission critical telecommunications networks have a requirement for long haul, highly available solutions with massive bandwidth not the key requirement. For large distances, ESB considers fibre much more suitable to deliver the large bandwidths, therefore alleviating the requirement for larger channel sizes in the lower frequency bands. ESB encourages ComReg to maintain channel spacing status quo for 11 GHz and below, whilst allowing larger channel sizes for spectrum bands above 11 GHz.

**Q. 3** ComReg seeks views of interested parties regarding the adjustments (if any) to minimum transmit power for each of the frequency bands currently listed in Annex 1 of Document 09/89R2. Please provide evidence and reasoning for your views.

**Answer 3:** ESB agrees with ComReg that the minimum transmit power should be used to achieve the required availability. This provides for greater spectrum efficiency and assists for more usage out of the limited resource, particularly in more congested spectrum bands.

Q. 4 ComReg seeks the views of interested parties regarding the inclusion of ATPC in future versions of the Guidelines.

**Answer 4:** ATPC should be promoted and included in future versions of the Guidelines. ATPC allows for greater use of limited spectrum resources, enhancing efficiency. In the absence of ATPC, fixed links may be planned and designed to inefficiently use higher transmit power to achieve required availability at all times which creates greater pressure on spectrum bands and reduces the number of links that can be licensed. The absence of ATPC raises the potential for links to interfere with each other in certain atmospheric conditions (e.g. ducting) as the transmit power may be more than required for the link to operate to its full extent as it is a fixed transmit power at all times whereas ATPC would reduce the TX power once a

suitable fade margin is achieved. ATPC ensures that only the required power is used and creates efficiencies regarding the amount of links that can be deployed within a spectrum band.

Q. 5 ComReg seeks views of interested parties regarding retaining the minimum path lengths for each of the frequency listed in Annex 1 of Document 09/89R2. Please provide evidence and reasoning for your views where you submit that alternative minimum path lengths should be used for certain frequency bands.

**Answer 5**: ESB agrees with the principle of minimum path lengths, however believes these should be guidelines as opposed to strict criteria with adjustments to the length for each band in Annex 1 of ComReg Document 09/89R2. Having a guideline of minimum suggested path length per band ensures that there is an even distribution of fixed links across bands and not letting market dynamics (e.g. cost of equipment per band, antenna size for towers etc.) dictate bands requested. A minimum path length guideline ensures that applicants make fixed link requests based on the most appropriate spectrum band. ESB believes that ComReg should make the path lengths a guideline as opposed to strict criteria to allow for extenuating circumstances where a link lower than the guideline should be permitted.

For example, there may be spectrum bands in certain areas of the country where there is limited or no availability due to congestion and/or high/low conflicts and ComReg should facilitate use of lower spectrum bands to accommodate this, particularly where higher spectrum band alternatives will not give required availability.

Towers and masts are becoming difficult to find space for antennas on, particularly larger antennas. This is due to amount of existing antennas deployed and also due to more extreme weather events, the wind loading of towers means less antennas can be accommodated on each tower. This pressure causes great issues for fixed links, and ESB encourages ComReg to permit fixed links less than the guidelines in these scenarios. Providing such flexibility with guidelines for lengths would assist ComReg in reducing the pressure on congested spectrum bands in certain areas in the country.

ESB recommends that ComReg reduce the guideline minimum path lengths by 20% to greater facilitate the requirements for fixed links, whilst preserving the even distribution of fixed links across appropriate spectrum bands.

Q. 6 ComReg seeks views of interested parties regarding the adjustments (if any) to the minimum transmission capacity for each of the frequency bands listed in Annex 1 of Document 09/89R2. Please provide evidence and reasoning for your views.

**Answer 6**: ESB has no comment to make on this. This in practice is not an issue as bandwidth requirements have increased over the years so the vast majority (if not all) of fixed links are deployed in excess of the minimum transmission capacity. Whilst this requirement served a purpose in the past to ensure spectrum was used efficiently, it no longer serves this purpose.

Q. 7 ComReg seeks views of interested parties regarding the adjustments (if any) to the minimum antenna requirements for each of the frequency bands listed in Annex 1 of Document 09/89R2. Please provide evidence and reasoning for your views.

**Answer 7**: ESB agrees that ComReg should ensure that suitable minimum antenna standards are in place across frequency bands to promote efficient use of spectrum and enable a higher amount of links be licensed in each band. Ensuring that antennas and equipment is registered and adheres to suitable standards ensures that substandard equipment isn't installed which may be likely to cause unnecessary interference if it were to go faulty.

Q. 8 ComReg seeks views of interested parties regarding the adjustments (if any) to the mandatory equipment class values listed in Annex 1 of Document 09/89R2. Please provide evidence and reasoning for your views.

**Answer 8**: ESB agrees that ComReg should ensure that suitable mandatory equipment class are in place across frequency bands to promote efficient use of spectrum and enable a higher amount of links be licensed in each band. Ensuring that antennas and equipment is registered and adheres to suitable standards ensures that substandard equipment isn't installed which may be likely to cause unnecessary interference if it were to go faulty.

Q. 9 ComReg seeks views of interested parties regarding the radius values of the high/low search database, and in particular DotEcon's suggestion to reduce or remove the requirement for the 80 GHz band. Please provide evidence and reasoning for your views

Answer 9: High/low conflicts can create issues regarding the planning of links, however it is necessary to protect links from potential interference so it serves a valuable purpose. ESB believes that where possible, ComReg should ensure the smallest practical distance is used for each band whilst providing necessary protection and this should be evaluated on a regular basis. ESB believes that it would be a valuable exercise for ESB to engage with all fixed link users to audit and validate the coordinates for their links. ComReg (and its predecessor OTDR) have been licensing fixed links for quite some time. The accuracy of location details for older links may not have the same accuracy as more recent links. Having more accurate location information assists ComReg in licensing links in a more spectrally efficient manner and perhaps at the same time enables reductions in the high/low radius values which also increase spectrum efficient.

ESB does not use the 80 GHz band so has no strong opinion on removing the requirement for this band. ESB does believe in the principle that ComReg should ensure that the high/low radius should be as low as practical whilst providing necessary protection for fixed links.

Coordinates should be more accurate. Tool to use. Useful for checking setting of sites. Do not use 80 GHz. Lower is useful. Limitation in past, not prevented a link being developed.

Q. 10 ComReg seeks the views of interested parties regarding allowing the use of Multi-Band Aggregation and potential minimum link length requirements and Review of the Fixed Radio Links Licensing Regime ComReg 21/134 minimum link availability targets. Please provide evidence and reasoning for your views.

**Answer 10**: ESB would like to understand if this would require two separate licences and two separate payments. On a principled basis, this option would create enhanced reliability as if there was an issue with one of the spectrum bands or link equipment there would be fail over to a second link. Equally, this option enables for potential lower costs for fixed links users requiring higher bandwidth, as this could be achieved using existing equipment rather than result in an unnecessary change of equipment, antennas and associated installation costs.

Q. 11 ComReg welcomes the views of interested parties regarding ComReg's proposal to: a) identify the geographic area as defined by National Grid 3122 and 3123 as a congested area, and the 13 GHz, 15 GHz, 18 GHz and 23 GHz bands within that geographic area, as being subject to a congestion surcharge as part of a future licensing framework; and b) use the Grid Method to monitor congestion. Please provide evidence and reasoning for your views.

**Answer 11**: ESB considers the principle of a congestion charge useful to ensure that those who require the use of these spectrum bands in congested areas and spectrum bands are more likely to access them. ESB agrees that ComReg should allow the 13 GHz and 15 GHz bands become available for licensing in the congested area. In the event that licence requests continue to become unsustainable in certain bands in certain areas, ComReg should look to address this by increasing supply (releasing new comparable spectrum bands for fixed links) rather than try choke demand as this greater addresses the needs for fixed links users.

Q 12 ComReg seeks views from stakeholders on when the proposed new framework should be reviewed (within a 3 to 5 year period from any Decision)?

Answer 12: ESB believes that ComReg should carry out major reviews of the framework every 5 years, as fixed links plans and deployments are costly and decisions made on a long term basis. Therefore, greater regulatory certainty suits the investment made by fixed links users. ESB does believe that ComReg should carry out any necessary interim reviews should there be significant change in fixed link environment that requires it.

**ENDS**

# 4 JFK

Submission 21/134

From JFK Communications Ltd.

We would like to make the following submission in response to ComReg 21/134

JFK Communications Ltd operates a FWA in rural parts of Carlow and surrounding counties using a combination of license exempt and licensed spectrum.

In Response to Points 5.47 to 5.53 "II . Migration from licensed exempt"

Where possible we utilize license exempt spectrum in the 5Ghz, 17Ghz and 24Ghz band and have had very good success in interference management and mitigation in these bands however the main driving force for migrating to licensed bands (11Ghz , 13Ghz , 15Ghz, 18Ghz, 23Ghz) is capacity and distance. There is a limit in the distance which can be achieved using licensed exempts bands due to the transmit power restrictions and there is a limit on the capacity which can be achieved on a link based the existing use of the spectrum in any given area.

The main factors which determine the licensed band we would utilize for a wireless link are capacity and distance. It would be our preference to have wider channels channels in the lower bands (11Ghz(80Mhz , 13Ghz(56 – 112Mhz)) as this would allow us to achieve the higher capacity (1Gbps / 2Gbps) are required by our customers, over longer distances (20-25km) which we required because of the geographically spread of customers in rural areas.

Availability of the correct spectrum is more important that just a cheaper price. Point 5.52 makes reference to users of License Exempt Spectrum might potentially migrate to the 80Ghz Band. While the 80Ghz band has certain uses espically with its ability to transmit high capacity we believe it has very little use in rural areas because of the long distance links required and its poor ability to deal with bad weather conditions. It would be our choice to have availability of wide channels in the 11Ghz and 13Ghz Bands.

Pricing

Our experience to date has shown 40mhz channels in 11Ghz, and 56Mhz channels 13Ghz bands can be difficult to obtain. We believe this is due to the geographical locations of our high sites in relation to other commercial transmission towers in the area. Resulting from this we have been forced to change our strategy to use higher bands (18Ghz and 23Ghz) with multipe hopes. In doing this we achieve wider channels (110Mhz in 18Ghz band compared to 56Mhz in 13Ghz and 15Ghz bands) and we achieve greater data throughput, which is critical for current day usage demands, but at an increased cost due to the increased number of hops, licenses and equipment required.

We have found that 56Mhz and 110Mhz channels in the 18Ghz bands are more readily available in rural areas and therefore this worked well us as a FWA operator. If ComReg introduce "Option 2"

pricing as set out, it will mean a significant increase in fees for us (a 56% increase based on the assessment tool provided). This is a significant increase in fees for a company operating in an area of low population density. And it certainly could not be considered as “modest” increase in either % or absolute terms as mentioned in 5.83 of Comreg 21/134.

In principle there are many good and valid point about the “Option 2“ Pricing proposal, however we would ask ComReg to consider some variation to this pricing scheme for rural areas specifically in relation to the 18Ghz and 23Ghz Bands and wider channels.

The following two options could be considered.

1. Maintain the current pricing for 18Ghz and 23Ghz Channels in rural areas where congestions is not a problem, or until congestions becomes a problem (for existing licenses only if nesseary). Congestion could be defined as, once a certain percentage of the spectrum becomes occupied at a given location / area for that given band
2. Extend the transition period to “Option 2” pricing from 3 years to 7 years for the 18Ghz and 23Ghz band in rural areas, effectively keeping the pricing for 18Ghz and 23Ghz Band the same as todays pricing for the next 7 years in rural areas.

We are asking for this pricing to be reviewed on the basis we have made our plans several years ago on the then pricing structure and invested according in our infrastructure in order to deliver the best possible service to our customers who live in rural Ireland. The magnitude of the price increase (56%) that would result if pricing “Option 2” were implement would have a very negative affect on how we deliver services to rural areas.

# 5 Orion

Time Constrained Submission on 21/134

We welcome the opportunity to comment on ComReg 21/134

We have requested that ComReg extend the deadline for submissions on 21/134 however this has been refused. We note ComReg are using their standardised procedure according to Section 2.3 of ComReg's Consultation Procedures (ComReg Document 11/34)

We are disappointed that ComReg chose not to make an exception at this time given the number of concurrent consultations from ComReg, the EU Commission, and DECC.

We would invite ComReg and indeed the DECC to consider the DPER Guidelines on running a consultation and to consider updating their procedure to accommodate SME operators like us. We would support ComReg if they were to request such direction from the Minister of Communications to facilitate this if necessary.

We note that some operators are facing a 5-12% increase in their license fees according to the market analysis tool, any increase in fees would be unhelpful to smaller operators considering the confluence of impact of state subsidised competition through the NBP.

We note ComReg reasoning for not increasing EIRP for the 5.8GHz band.

We applaud ComReg, Met Eireann, and the Spectrum Intelligence team for the effective approach taken to deal with interference from RLANs on the Met Rain Radar. It is a testament to the ComRegs Team and Spirit of co-operation in Wireless ISPs operating in Ireland that significant progress has been made on this issue.

We Note ComReg's Comments with Regard to NBP mapping and Analysys Masons / DECCs refusal to recognise each and every one of the Irish FWA ISPs as NGA on the basis of DECC's / Analysys Mason's exaggerated concerns about Interference in the License Exempt Frequencies. We would like to point out that the information, documents, and presentations provided to ComReg by the DECC and DECCs Advisors Analysys Mason in the final mapping exercise of September 2019 have never been published by either the DECC or ComReg. In the Interest of Transparency of the Mapping Exercise we would ask that ComReg and or the DECC fully publish the documents, presentations and assurances given to the NRA by DECC in order to secure the ComReg updated state aid opinion letter of 18th October 2019.

We will give a more complete response to the consultation once time and resources allow us to. We do appreciate the work that Martin O Donoghue, Donnacha Hennessy and Dot Econ have put into ComReg 21/134 , 20/109 and 20/109A

We would like the opportunity to more comprehensively reply to this consultation, with amendments and corrections as necessary.

# 6 Raft

RAFT Technologies

# Raft Technologies Response to Consultation (ComReg Ref: 21/134)

# 1. Raft Technologies ("Raft") overview

- Raft operates ultra-fast data links, connecting key destinations in the United States, Europe, and Asia Pacific.
- A new standard for fast intercontinental data networks has emerged and it is based on wireless HF - High Frequency radio technology in the 3-30MHz range.
- Raft data links have been operational since 2017, with current locations including Chicago, New York, Frankfurt, London, and Tokyo.
- Raft is expanding into additional locations, joined by other companies in establishing HF links around the world, as the technology has proven to win the low-latency race.
- Raft welcomes the opportunity to make a submission with ComReg on the fixed radio links licensing regime, particularly as a number of bands in Ireland operate on a co-location basis with broadcasting and satellite services.

# 2. Plans for Raft Technology in Ireland

- Raft intends to construct and operate both a transmit and receive sites near the east coast of Ireland in the outskirts of Dublin. These sites will take part in a global network of links and primarily be used to establish data transport between Ireland as an EU hub and destinations in the US and APAC.
- Raft will seek to obtain rights of use and obtain commercial licences for several frequencies in the range of 3-30MHz, with a frequency band of at least 48KHz, which is required for effective transmission of data traffic.

# 3. Comments on Consultation (21/134)

## 3.1 HF Radio links are the emerging standard for high-speed networks / transmission

- Recent technology advancements enable long distance communication via High Frequency based radio links. Transmission speeds across these links are significantly faster than fiber as they wirelessly connect locations thousands of kilometres apart. The connection can be made over land or over sea, using a single system and only two antennas – one on the transmit side and one on the receive side.
- Skywaves, especially behaving HF – High Frequency radio signals in the 3-30MHz frequency range, are propagated by the atmosphere and hence enable long-distance wireless connection.
- In Ireland, new licenses request frequencies in the 3-30MHz range are currently underutilized and unlicensed as a matter of ComReg policy.

- Licenses for these frequencies are provided in other countries including in the EU, where for example:
  - Raft has obtained a commercial license in Germany (originally in 2014 and recently extended it in 2018 for 19 bands in the HF range
  - Raft obtained a commercial license in Portugal in 2014, for 9 bands in the HF range
  - Raft obtained a commercial license in Brazil in 2016, for 12 bands in the HF range
  - Raft obtained experimental license in USA in 2019 and recently extend it in 2021 (for 20 bands in the HF band). Raft is in process of granting commercial license in the US.
- Raft is in the process to obtain licenses in: Italy, Canada, and Singapore
- Raft has had informal discussions with ComReg about opening up such bands and would like ComReg to formally recognize this as critically important.

## 3.2 The advantages of licensing HF 3-30MHz frequencies in Ireland

- Ireland as a key international technology and communications hub for Fiber and Microwave networks, would be able to strengthen its leading position and importance for global network operators, specifically following Brexit.
- Economic forces drive innovation forward and companies like Raft seek to establish presence in locations that enable HF transmission. Ireland is geographically ideal for this purpose (as can be seen in Appendix 1) and would attract network providers, as well as companies capable of developing proprietary networks to establish presence and operations there.
- The obvious advantages are more jobs, taxes and being on the forefront of innovation in communications technology, avoiding losing a leading position to other neighbouring EU and EEA countries.

## 3.3 The use of HF frequencies has no effect on other radio-based communications

- Raft services will not cause interference with any existing use in the 3-30Mhz bands including usage by the armed forces, fixed providers or broadcasters – either in Ireland or in other countries (UK or elsewhere).
- Safe transmission:
  - The transmission is directional, due to the use of a specially designed antenna. The estimated azimuths are
    - For the Dublin–New York link, the angle of transmission is 283˚
    - For the Dublin–Tokyo link, the angle of transmission is 27˚.
  - Considering the characteristics of the access and modulation of Raft's transmission, the average power calculated is 88.54W.

- Transmission tower height including the antenna is 60m, and the antenna take-off is between 10-20˚
- Considering the free space loss and the antenna take-off, the loss of the signal at 200m is 42dB (the power of the transmission signal is like mobile transmission), which means that there is no harm to the local population. Raft can provide detailed studies / results from Field Strength Measurements than was carried out on our site in Germany in 2018 with the local regulator on request.

- Safe signal reception:
  - International signal levels (arriving from US for example) are of the order of 1nW
  - Such small signal levels have no impact on any system in Ireland or the UK. On this basis, the risk of international interference caused by the Raft transmitter overseas is very low.
  - Raft is transmitting in the last 2 years from Chicago to London and Frankfurt is safe way with no complaints about interference in either the USA or EU destinations
- Granting of HF licenses and operation of this particular use of the technology by Raft and other companies has been around for a while now with no problems detected - in the US since 2018 for both transmit and receive, in Germany since 2017 for both transmit and receive and elsewhere in EU and APAC. Raft is happy to provide further information to ComReg on its licensing arrangements and impact on local markets and providers as would be helpful to it.
- Raft is happy to present ComReg with the technical case in detail including providing a number of detailed studies and reports commissioned by 3rd party research company.

# 4. Raft view on current licensing

- We understand that, under the Radio Frequency Plan for Ireland (ComReg Document 20/58R3) there are a number of bands in the 3-30MHz range that are allocated for use by fixed providers and that ComReg is permitted to grant rights of use and issue licences in these bands pursuant to its statutory powers and functions.
- In particular, Raft notes ComReg's inherent powers in Communications Regulation Act 2002 ('CRA'), Wireless Telegraphy Acts 1926 (as amended) and other legislation including:
  - - S.I.. No 370 of 2009 which specifically provides for regulation and licensing of sub 1 GHz equipment and usage;
  - - ComReg's statutory functions and objectives to enhance competition and development of internal markets, to promote the interests of users within Ireland and to ensure efficient management of radio spectrum (Section 12 of the CRA)

- ComReg's objective to contribute to the development of the internal market by removing obstacles to the provision of ECS / ECN services and encouraging the development of trans-European networks (Section 12(2) of the CRA)
- ComReg's objectives re opening and promoting innovation and investment (Article 3(2) and 3(4) of Directive 2018/1972 which is being implemented in Ireland by way of the [currently draft] European Union (European Electronic Communications Code) Regulations 2021.
- ComReg's wide ranging powers to allocate spectrum / national resources (wide discretion provided in line with ITU / NFP).

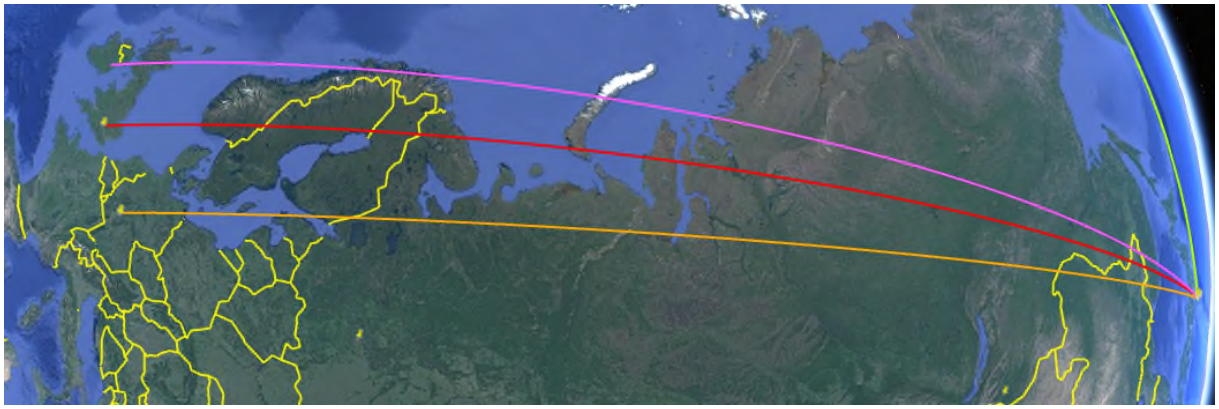
- **Conclusion:**

Raft welcomes discussion on the forgoing with the ComReg licensing team and / or Commissioners.

# Appendix 1

Ireland is geographically ideally located for HF transmissions and to take advantage of this technology for two main reasons:

- HF transmission is affected both by the atmosphere and both by the earth surface beneath it. Best HF performance is when the surface beneath is sea, then land and worst is glaciers
- Transmitting to APAC from London, Frankfurt and Ireland has the same distances (which affect the latency) but as can be seen in the picture below (the pink line from Ireland to Japan (the main location in APAC) is 50% over see while from UK is 20% and from Germany is 5%.
- This place Ireland in our 1st priority for transmit site for APAC to all EU data



Ireland is also optimally located for transmission toward USA (NY & Chicago), since it is located on the direct line both from London to NY and Frankfurt to NY, which means transfer data from these major cities by wireless microwave communication to Ireland and from Ireland by HF to NY will add **no extra** latency, as can be seen in the picture below

# 7 Three

# Fixed Links Review

## Response from Three

**28th January 2022**

## 1. Introduction

The past two years have brought home to us all how important it is to have modern high-quality communications networks nationwide. This is what has allowed us to be entertained to work and to work and study from home during recent restrictions. EU and Government policy is to facilitate roll-out of 5G networks and this will be an essential requirement for the competitiveness of our economy in future.

Three is in the process of rolling out its 5G network nationwide and currently has over [✂ ✂] sites live, covering [✂ ✂]. This roll-out will continue over coming years and will see additional bands and greater bandwidth added to the mobile service. While the measures taken to stem Covid-19 have had an impact on networks, there is an underlying overall trend of growth in demand for data. The attached graph shows the forecast and actual busy-hour throughput on three's mobile network over the last two years.

[✂

✂]

The clear trend observable is that demand for increased bandwidth is set to continue to grow for the foreseeable future.

An obvious key enabler of the rollout of 5G networks is backhaul or transmission from Base Station sites back to the core network – they can't function without this. Microwave radio links (Fixed Links) have an important role to play in providing this connectivity – they can be quicker to deploy than fibre, and in most cases are lower cost. There is also a large number of mobile sites in Ireland where fibre is simply not available and not feasible to deploy. This is more often the case in rural areas, though not exclusively so.

The topography and population density in Ireland mean that fixed links have a particularly important role to play in facilitating the roll-out of mobile networks. The spectrum that is available for fixed links should be viewed as an asset to be utilised to the maximum extent possible. Maximising use of the spectrum can bring significant economic gains nationally, while no saving is made by leaving spectrum unused.

## 2. General Comments

Three has significant concerns regarding the proposals contained in document 21/134 as it will increase the cost to us to roll-out our network to an extent that is not proportionate to objective it is trying to achieve. ComReg's own model shows an immediate annual cost increase to Three of [✂ [redacted] ✂] even if there was to be no growth in bandwidth over the coming years. In reality there will be significant and continuing growth in throughput per mobile base station, so as new links are commissioned, they will tend to use increased bandwidth and will have higher licence cost. From Three's point of view, the proposals impose an unavoidable additional cost for existing links and are a barrier to deployment of new ones.

**Recovery of Investment**

ComReg will be aware that transmission links require a significant investment by licensees in hardware purchase and installation. Like any other element of the network, this investment is considered over the lifetime of the link. Just as would be the case for other licensees, Three has an estate of hardware providing fixed links with a typical profile of varying ages. If it had been known that licence fees would suddenly increase part way through the lifetime of the link, this might have led to a different decision at the time of commissioning. As it is, with the equipment already deployed, licensees have little option but accept the increased cost or decommission the links. Either way it changes the basis on which the investment was made in the first place and could lead to stranded assets that can never give a return on investment. It introduces uncertainty into network deployment that runs counter to ComReg's general objectives.

**Transition Period**

For the above reason, Three is of the view that ComReg should retain the existing pricing structure that is already in place "Option 1". If however ComReg decides to go with "Option 2" then at a minimum, any change to the licence fee should apply to newly licenced links that are issued after the Decision only. This will allow licensees to recover the investment on their existing hardware while also allowing ComReg to introduce incentive pricing in congestion areas. If there is a reason why ComReg cannot introduce the price changes in this way then there should be a delay between the date of the Decision and its taking effect. This would allow licensees to remove some of their existing links in an orderly way. The phase-in period proposed by ComReg is inadequate. Three proposes that instead, ComReg should consider a 3-year run-in period when no price increase is imposed followed by a simpler phase-in as follows:

- Years 1 to 3 (inclusive) = no change to existing fee
- Years 4 and 5 = simple 50% application of all price changes
- From year 6 on new pricing applies in full.

**Barrier to Network Deployment**

Notwithstanding the points above, it should be recognised that the licence fee increases proposed by ComReg would act as a barrier to network deployment. If this is not justified and proportionate then it runs counter to the objectives of ComReg, the State, and the EU in encouraging the roll-out of high-speed mobile networks.

**ComReg's Objectives**

We note that ComReg does not have an objective to use spectrum licensing fees for any revenue raising purpose. ComReg's objectives are limited to ensuring efficient use of the spectrum. So long as the licence fee covers ComReg's cost of administration then the only other purpose for which it can be used is to ensure efficient assignment and use. While it is accepted that licence fees that reflect opportunity cost can help to ensure efficiency in congested areas ComReg must be careful to ensure that its proposals do not increase cost unnecessarily or increase cost in areas where this is not required to ensure efficiency. This requires that (outside of congested bands) ComReg can only apply the administration fee of €67 per link. We do not agree that rounding up to €100 is justified.

**Blunt Instruments**

Three is of the view that the method proposed by ComReg to determine where these congestion charges will apply (Grid Method) is not precise enough and that it will result in some areas unnecessarily incurring higher charges. We also note that opportunity cost cannot be uniform but will actually vary from link to link. ComReg's proposal is to impose set congestion charges, which means that in some cases the licence fee will be below opportunity cost and will have no effect, while in other cases it will be above opportunity cost so will be an unnecessary cost leading to inefficiency.

When put together, the proposal to use the Grid Method together with a simple increase of licence fee by a factor of 3 will simply increase the cost of providing connectivity where it is not necessary. It is a simple fact that no opportunity cost consideration can arise where no applicant is being prevented from deploying links because there is insufficient supply. That is currently the case for the 18GHz band, and so no congestion charge can be levied on the basis of opportunity cost. Instead, ComReg should simply charge the administration fee of €67 per link.

**Impact of ComReg's Proposals**

Three notes that ComReg's own model shows that the proposed revised fee structure would immediately impose an unavoidable cost increase of [✂ [redacted] ✂]. This is without taking into account the growth in demand for higher bandwidth links. If introduced, this kind of unpredictable cost increase would be a barrier to network rollout.

We note ComReg's assessment that "any increase or decrease is modest (either in % or absolute terms)" however this is impossible to reconcile with the overall cost increase of [✂ [redacted] ✂]. This kind of change to the cost of licensing an existing fixed link simply cannot be dismissed as being modest. It is significant and will have an impact on Three's network rollout. Further, once deployed fixed links cannot be switched to lower cost or less congested bands without loss of investment – the licensee must continue to pay the increased fee for the lifetime of the equipment.

**Cost per MHz**

It should also be noted that the general value per MHz of a fixed link has declined in a mirror image of the way in which demand for higher throughput has increased. Operators need to

provide ever-increasing throughput to their customers without increasing revenues. Likewise the incremental value of higher bandwidth fixed links also reduces. If ComReg wishes to introduce higher charges for higher bandwidth links then the fee for existing links should be reduced rather than simply increasing the cost of the higher bandwidth ones.

## 3. Response to Specific Questions

*Q. 2 ComReg welcomes the views of respondents on its proposed channel spacings for the frequency bands listed in Annex 1. Please provide evidence and reasoning for your views*.

Three would welcome the adoption of larger channel bandwidths as outlined in Annex 1. The larger channel arrangements will help mobile operators to meet the current trend of increased traffic and demands of mobile customers.

*Q. 3 ComReg seeks views of interested parties regarding the adjustments (if any) to minimum transmit power for each of the frequency bands currently listed in Annex 1 of Document 09/89R2. Please provide evidence and reasoning for your views.*

Three is in agreement with DotEcon's recommendation that ComReg maintains the requirement for operators to use the minimum power necessary for the link to operate to the specified radio availability criteria and to only consider setting up specific power limits if stakeholders specifically request it.

*Q. 4 ComReg seeks the views of interested parties regarding the inclusion of ATPC in future versions of the Guidelines.*

Three is of the view that the inclusion of ATPC in future guidelines is not warranted. The current approach of setting maximum permissible EIRP values means that operators are protected from 3rd party interference as the interference calculations are conducted under the assumption that links are operating at EIRP values defined on the licence. Hence, the use of ATPC does not facilitate any efficiencies in spectrum management given that channel assignments will still be based on links operating at their maximum permissible EIRP.

Furthermore, ATPC may not be an available feature on some older legacy hardware presently installed. A blanket requirement then for ATPC may not be achievable.

*Q. 5 ComReg seeks views of interested parties regarding retaining the minimum path lengths for each of the frequency listed in Annex 1 of Document 09/89R2. Please provide evidence and reasoning for your views where you submit that alternative minimum path lengths should be used for certain frequency bands.*

Three agrees that there is no justification to amend the existing minimum path length policy.

*Q. 6 ComReg seeks views of interested parties regarding the adjustments (if any) to the minimum transmission capacity for each of the frequency bands listed in*

*Annex 1 of Document 09/89R2. Please provide evidence and reasoning for your views.*

Three agrees that there is no justification to amend the existing minimum transmission capacity for each of the frequency bands listed.

*Q. 7 ComReg seeks views of interested parties regarding the adjustments (if any) to the minimum antenna requirements for each of the frequency bands listed in Annex 1 of Document 09/89R2. Please provide evidence and reasoning for your views*

Three agrees that there is no requirement to amend the existing minimum antenna requirements for each of the frequency bands listed.

*Q. 8 ComReg seeks views of interested parties regarding the adjustments (if any) to the mandatory equipment class values listed in Annex 1 of Document 09/89R2. Please provide evidence and reasoning for your views.*

Three agrees that there is no requirement to amend the existing mandatory equipment class values.

*Q. 9 ComReg seeks views of interested parties regarding the radius values of the high/low search database, and in particular DotEcon's suggestion to reduce or remove the requirement for the 80 GHz band. Please provide evidence and reasoning for your views.*

Three is of the view that given the site densities in dense urban environments, that existing radius value of the high/low search database in the 80 GHz band should be removed entirely. ComReg has already confirmed that it unknowingly licenced E-Band links with conflicting designations on certain sites. There is no evidence to suggest that this has caused any performance issues on the links in question. The presence of a 100m exclusion zone prevents operators from deploying E-Band links and forces them to use lower frequency bands which in turn contributes to avoidable spectrum congestion.

The high/low database is a blunt instrument that doesn't consider the possibility that transmitters within a certain radius may not even have line of site to each other. It assumes flat earth which is not representative of the urban environment where E-Band links are typically deployed.

*Q. 10 ComReg seeks the views of interested parties regarding allowing the use of Multi-Band Aggregation and potential minimum link length requirements and minimum link availability targets. Please provide evidence and reasoning for your views.*

Three agrees with DotEcon's suggestion that an appropriate alternative approach might be to impose the availability requirement only on the lower band, while the higher band availability could be planned from an interference perspective. The very nature of MBA dictates that the

higher band link will typically fail to meet ComReg availability requirements given that it is designed to provide additional capacity on a best effort basis.

Three agrees with all of ComReg's conclusions in Section 4.46 of their consultation document.

*Q. 11 ComReg welcomes the views of interested parties regarding ComReg's proposal to:*
*a) identify the geographic area, as defined by National Grid 3122 and 3123, as a congested area, and the 13 GHz, 15 GHz, 18 GHz and 23 GHz bands within that geographic area, as being subject to a congestion surcharge as part of a future licensing framework; and*
*b) use the Grid Method to monitor congestion.*
*Please provide evidence and reasoning for your views.*

Subject to our introductory comments in section 1 above, we note the following:

a). Three is concerned that ComReg is considering a significant increase in the congestion charge in the congestion area defined by National Grid 3122 and 3123. If ComReg decides to increase the charge from a factor of 1.2 to 3 then it is immaterial as to whether ComReg decides to re-open the 13 and 15 GHz bands in the congestion zone. The reality is that operators will chose not to take new licences in these bands due to the prohibitive costs of the licence fees. Increasing the congestion charge to a factor of 3, is equivalent of sterilising the congestion area entirely to 13, 15, 18 and 23 GHz links. Three is surprised to hear that congestion in the 18 and 23 GHz bands remains a concern. Given the deployment of fibre and the move to higher frequency bands, one would expect a reduction in congestion at 13, 15, 18 and 23 GHz within the congestion zone.

Three believes that ComReg should consider removal of congestion zones altogether given the predominance of E-Band and higher frequency bands which relieves pressure on other bands.

b). Three would have concerns around the Grid Method proposed to monitor congestion. Additional details would be needed before meaningful feedback could be provided. For example, does the method consider how transmitters and potential interfered receivers may not have direct line of site between them. If not, then the method could be overly conservative by over-estimating the degree of congestion and assuming interference to exist when it does not. It would be useful to have more detailed information around this method and quantitative evidence to demonstrate that it is in fact reliable. Three is of the view that a more reliable method would indeed be based on the regularity of application refusals in certain areas due to unavailability of interference free channels.

Three is also interested to understand the purpose of using the Grid Method. Is it's Comreg's intention to introduce additional congestion zones and to further increase uncertainty around future pricing of fixed links? We do not believe this can be justified.

*Q. 12 ComReg seeks views from stakeholders on when the proposed new framework should be reviewed (within a 3 to 5 year period from any Decision).*

Three takes this opportunity to provide feedback on ComReg's proposal to revise the charging structure for fixed radio links. As stated above, we have significant concerns around ComReg's proposal to move from the existing charging structure "Option 1" to a revised charging model "Option 2" based on formula-based pricing.

Three has deployed approximately [✂ ✂] across its network to date. Based on current traffic requirements, we understand that all fixed links serving a mobile site must have a minimum channel bandwidth of 112 MHz to support current traffic demand on 4G and 5G sites.

Our current transmission performance monitoring clearly shows that 56 MHz channels are unsuitable for 5G sites resulting in excessively high packet delay variation and poor customer experience. Three therefore deploys all fixed links with a 112 MHz XPIC configuration or alternatively when possible, in the 80 GHz band. ComReg mistakenly believes that changing the pricing structure will encourage operators to revise how they plan their networks. There is no evidence to support this. Band selection is not discretionary. At present, operators have no choice but to deploy on 18 GHz or 23 GHz due to lack of suitable channel spacing being made available in the other bands. This renders ComReg's congestion pricing ineffective and means the increased cost imposed in disproportionate to the outcome achieved.

Three's present policy is to deploy radio links in either the 80 GHz band or alternatively in the 26 GHz band. When this is not possible, either the 18 GHz band and to a lesser extent the 23 GHz band are used instead. The 23 GHz band is primarily used when the 26 GHz band is not an option due to internal interference or because of high-low conflicts.

ComReg has not made 112 MHz channels available in the 13 or 15 GHz band so the increase in fixed links in the 18 GHz band across all operators is due to the lack of an available alternative band that can meet the growing capacity demand of mobile subscribers.

Additionally, it is Three's view that there is little evidence to suggest that the 18 GHz band is congested or that there is any significant risk of future congestion. Three Ireland presently has [✂ ✂]. The 18 GHz radio links are primarily distributed outside of any congestion areas in rural areas with low site density. Dense Urban and Urban sites are typically deployed on either fibre or E-Band microwave. Therefore, the risk of congestion in the 18 GHz and 23 GHz bands are grossly exaggerated. It is therefore contradictory to isolate these specific bands for price increases on the grounds of future congestion.

[✂ ✂]. Can ComReg please explain how this is a desirable outcome and whether ComReg believes this to be a proportionate measure?

Whilst it is reasonable to say that there is a large increase in the number of 18 GHz links deployed across Ireland it does not follow to state that this increase is contributing in any major way to spectrum congestion. The reality is that mobile operators are intensifying fibre rollout specifically so that they can shorten site distances to fibre and in turn deploy microwave in the highest possible frequency band to support higher throughput. ComReg is of the view that operators will default to the lowest frequency band once sufficient bandwidth is available. The reality however is very different. Three would prefer to move to the highest available bands possible due to the availability of spectrum afforded in the higher bands so long as our availability targets can be met. Therefore, it is fibre strategy and location of fibre that dictates more than anything else which bands will become dominant in the future.

It is Three's view, that the proposed percentage increases in these bands are totally disproportionate. Many operators now have recently deployed large quantities of fixed links in these bands. Much of this equipment is relatively new with an expectation of a useful life of up to 7 to 8 additional years. When deploying in these bands, operators could not have anticipated that ComReg would consider an average increase of 44% in the 18 GHz band and potentially a 124% increase for links deployed on 112 MHz channels. It is unreasonable, even with a 3-year phase-in period to suddenly apply a significant and unreasonable step increase in licencing fees on mobile operators who have deployed equipment in good faith based on the cost structures in place at the time of deployment.

Three believes that ComReg should reproduce Table 3 in its report using 112 MHz channels as the typical bandwidth in all bands. The report suggests the overall price paid for fixed licences will remain similar under Option 1 and Option 2. However, Three would like to understand if ComReg has taken into account future traffic growth and the move to larger channels in particular by mobile operators. It would be useful to understand how the overall costs under Option 2 will evolve with the demand for higher bandwidth based on projected increases in demand for larger channel arrangements.

# 8 Virgin

# Virgin Media response to:

Consultation on the review of the 'Fixed Radio Links Licencing Regime'.

ComReg 12/134

28 January 2022

## Introduction

Virgin Media Ireland Limited ('Virgin Media') welcomes the opportunity to respond to the further consultation ('the Consultation') on the review of 'Fixed Radio Links Licencing Regime'

Virgin Media participated and contributed to ComReg's Consultation ('the Consultation') on the Fixed Links Bands Review ('ComReg 20/109).

Please find our responses to ComReg's questions in the below section.

Virgin Media Response to Consultation Questions

***1. ComReg asks respondents to clarify whether the submissions to question 6 of ComReg document 20/109 are either addressed by the Regulatory Impact Assessment in this document and accompanying DotEcon Report.***

Virgin Media agrees that the submissions have been adequately addressed by the Regulatory Impact Assessment and the accompanying DotEcon Report.

***2. ComReg welcomes the views of respondents on its proposed channel spacings for the frequency bands listed in Annex 1. Please provide evidence and reasoning for your view***

Virgin Media welcomes the proposed channel spacings and channel merging as the technology can better utilise the increased channel spacings, that will become available as the demand for greater throughputs is increasing and this will make more efficient use of the spectrum available to Fixed Links.

***3. ComReg seeks views of interested parties regarding the adjustments (if any) to minimum transmit power for each of the frequency bands currently listed in Annex 1 of Document 09/89R2. Please provide evidence and reasoning for your views.***

Virgin Medica agrees with DotEcon recommendations and is satisfied with the current requirement regarding minimum transit power and seek no change here.

***4. ComReg seeks the views of interested parties regarding the inclusion of ATPC in future versions of the Guidelines.***

Virgin Media agree that ATPC should be included in future guidelines as it is a feature of our P2P links. As outlined in the report, it reduces stress on the microwave power amplifiers, which reduces power consumption, heat generation and increases equipment lifetime.

***5. ComReg seeks views of interested parties regarding retaining the minimum path lengths for each of the frequency listed in Annex 1 of Document 09/89R2. Please provide evidence and reasoning for your views where you submit that alternative minimum path lengths should be used for certain frequency bands.***

Virgin Media agree with DotEcon's report and ComReg's considerations finding the current policy suitable for our needs.

***6. ComReg seeks views of interested parties regarding the adjustments (if any) to the minimum transmission capacity for each of the frequency bands listed in Annex 1 of Document 09/89R2. Please provide evidence and reasoning for your views.***

Virgin Media agree with DotEcon's report and ComReg's considerations finding the current minimum throughputs adequate as they encourage the efficient use of the Fixed Link bands.

***7. ComReg seeks views of interested parties regarding the adjustments (if any) to the minimum antenna requirements for each of the frequency bands listed in Annex 1 of Document 09/89R2. Please provide evidence and reasoning for your views.***

Virgin Media agree with the minimum antenna requirement as it maintains the standards across the industry at a good base, discouraging the use of lower quality antennas which could have the potential to cause issues for other operators.

***8. ComReg seeks views of interested parties regarding the adjustments (if any) to the mandatory equipment class values listed in Annex 1 of Document 09/89R2. Please provide evidence and reasoning for your views.***

Virgin Media support the mandatory equipment class values and do not seek any adjustments here.

***9. ComReg seeks views of interested parties regarding the radius values of the high/low search database, and in particular DotEcon's suggestion to reduce or remove the requirement for the 80 GHz band. Please provide evidence and reasoning for your views.***

Virgin Media agree with the findings of the DotEcon report and would have the view that the H/L radius search should be removed for the 80GHz band, due to the very narrow bandwidth and the characteristics of the antenna remove the risk of interference even with a high low conflict.

***10. ComReg seeks the views of interested parties regarding allowing the use of Multi-Band Aggregation and potential minimum link length requirements and Review of the Fixed Radio Links Licensing Regime ComReg 21/134 Page 188 of 188 minimum link availability targets. Please provide evidence and reasoning for your views.***

Virgin Media are currently reviewing this technology, as it brings another dimension to the use 80GHz band and would welcome ComReg accommodating the use of Multi-Band Aggregation. As networks become denser and performance needs grow new efficient technologies, such as the multiband booster will dramatically increase the use of the 70/80GHz band, as well as the bands in the 18-42GHz range. To support evolving technology, and ensure good backhaul performance, it promotes the efficient and holistic use of backhaul spectrum.

***11.ComReg welcomes the views of interested parties regarding ComReg's proposal to: a) identify the geographic area as defined by National Grid 3122 and 3123 as a congested area, and the 13 GHz, 15 GHz, 18 GHz and 23 GHz bands within that geographic area, as being subject to a congestion surcharge as part of a future licensing framework; and b) use the Grid Method to monitor congestion. Please provide evidence and reasoning for your views.***

Virgin Media agree with the surcharge being implemented in the congested area helping to free up valuable spectrum that is possibly being hoarded due to the current pricing structure and welcome the reopening of the 13GHz and 15GHz bands. The use of the Grid Method although not perfect seems an adequate method to monitor congestion and we agree with its implementation.

***12. ComReg seeks views from stakeholders on when the proposed new framework should be reviewed (within a 3 to 5 year period from any Decision)?***

Virgin Media considers a 3 year review would be appropriate. As the preferred pricing option is being implemented over a 3 year period, this will allow for an assessment to be carried out to discern if it will have the desired effect of promoting efficacies in the use of Fixed Link spectrum and if there has been any negative impact on congestion zones or the creation of unnecessary zones.

# 9 Vodafone

# Vodafone Response to Consultation

## Review of Fixed Radio Links Licensing Regime (ComReg Doc 21/134)

Version: [Non-Confidential]

Date: 28/01/22

# Introduction

Vodafone welcome the opportunity to respond to ComReg document 21/134 reviewing the fixed links licensing regime. Use of fixed links is a critical component to the delivery of telecommunications services in Ireland especially in relation to backhaul for mobile networks.

The licensing regime for fixed links must adapt to meet every growing demand for data and the ability of an operator to be responsive to dynamically changing usage patters and traffic conditions is underpinned by the licensing regime.

In the latest evolution of mobile networks with the large-scale rollout of 5G Vodafone anticipate more radio links and higher bandwidth links will be required in the next 5 years.

# Questions

**Question 1:** ComReg asks respondents to clarify whether the submissions to question 6 of ComReg document 20/109 are either addressed by the Regulatory Impact Assessment in this document and accompanying DotEcon Report.?

In the consultation Vodafone suggested that ComReg should consider the pricing relating to Nodal solutions, a form of deployment which allows for innovative technologies such as interference and beamforming increasing spectrum reuse.

In responding ComReg is of the view that implementing a pricing structure to incentivise nodal solutions may be more appropriate for block licensing rather than individual fixed licensing and noted they may be opening o considering nodal solution pricing as part of any future consultation on opening frequency bands for block licensing. Vodafone would welcome clarification when his consultation may take place.

**Question 2:** ComReg welcomes the views of respondents on its proposed channel spacings for the frequency bands listed in Annex 1. Please provide evidence and reasoning for your views

Vodafone are fine with the proposals in Annex 1 and will support and encourage any increase in channel bandwidths in line with the ITU and CEPT recommendations.

**Question 3:** ComReg seeks views of interested parties regarding the adjustments (if any) to minimum transmit power for each of the frequency bands currently listed in Annex 1 of Document 09/89R2. Please provide evidence and reasoning for your views.

Vodafone are not proposing any adjustments to bands listed in Annex 1.

**Question 4:** ComReg seeks the views of interested parties regarding the inclusion of ATPC in future versions of the Guidelines.

Vodafone agree with inclusion of ATPC

**Question 5:** ComReg seeks views of interested parties regarding retaining the minimum path lengths for each of the frequency listed in Annex 1 of Document 09/89R2. Please provide evidence and reasoning for your views where you submit that alternative minimum path lengths should be used for certain frequency bands.

Vodafone are not proposing any changes to the guideline

**Question 6:** ComReg seeks views of interested parties regarding the adjustments (if any) to the minimum transmission capacity for each of the frequency bands listed in Annex 1 of Document 09/89R2. Please provide evidence and reasoning for your views.

Vodafone are not proposing any changes to the guideline.

**Question 7:** ComReg seeks views of interested parties regarding the adjustments (if any) to the minimum antenna requirements for each of the frequency bands listed in Annex 1 of Document 09/89R2. Please provide evidence and reasoning for your views

Vodafone are not proposing any changes to the guideline.

**Question 8:** ComReg seeks views of interested parties regarding the adjustments (if any) to the mandatory equipment class values listed in Annex 1 of Document 09/89R2. Please provide evidence and reasoning for your views.

Vodafone are not proposing any changes to the guideline.

**Question 9:** ComReg seeks views of interested parties regarding the radius values of the high/low search database, and in particular DotEcon's suggestion to reduce or remove the requirement for the 80 GHz band. Please provide evidence and reasoning for your views

Vodafone are not proposing any changes to the current Hi/Lo radius guideline.

**Question 10:** ComReg seeks the views of interested parties regarding allowing the use of Multi-Band Aggregation and potential minimum link length requirements and minimum link availability targets. Please provide evidence and reasoning for your views.

This is an acceptable response at this time, subject to 3 year review period requested in answer to question 12.

**Question 11:** ComReg welcomes the views of interested parties regarding ComReg's proposal to: a) identify the geographic area as defined by National Grid 3122 and 3123 as a congested area, and the 13 GHz, 15 GHz, 18 GHz and 23 GHz bands within that geographic area, as being subject to a congestion surcharge as part of a future licensing framework; and b) use the Grid Method to monitor congestion. Please provide evidence and reasoning for your views..

Vodafone have no comment on the defined congestion area.

**Question 12:** ComReg seeks views from stakeholders on when the proposed new framework should be reviewed (within a 3 to 5 year period from any Decision)?

Vodafone would welcome review in 3 years rather than an extended 5-year period.

ENDS

# 10 Wireless Connect

Time Constrained Submission on 21/134

We welcome the opportunity to comment on ComReg 21/134

We have requested that ComReg extend the deadline for submissions on 21/134 however this has been refused. We note ComReg are using their standardised procedure according to Section 2.3 of ComReg's Consultation Procedures (ComReg Document 11/34)

We are disappointed that ComReg chose not to make an exception at this time given the number of concurrent consultations from ComReg, the EU Commission, and DECC.

We would invite ComReg and indeed the DECC to consider the DPER Guidelines on running a consultation and to consider updating their procedure to accommodate SME operators like us. We would support ComReg if they were to request such direction from the Minister of Communications to facilitate this if necessary.

We note that some operators are facing a 5-12% increase in their license fees according to the market analysis tool, any increase in fees would be unhelpful to smaller operators considering the confluence of impact of state subsidised competition through the NBP.

We note ComReg reasoning for not increasing EIRP for the 5.8GHz band.

We applaud ComReg, Met Eireann, and the Spectrum Intelligence team for the effective approach taken to deal with interference from RLANs on the Met Rain Radar. It is a testament to the ComRegs Team and Spirit of co-operation in Wireless ISPs operating in Ireland that significant progress has been made on this issue.

We Note ComReg's Comments with Regard to NBP mapping and Analysys Masons / DECCs refusal to recognise each and every one of the Irish FWA ISPs as NGA on the basis of DECC's / Analysys Mason's exaggerated concerns about Interference in the License Exempt Frequencies. We would like to point out that the information, documents, and presentations provided to ComReg by the DECC and DECCs Advisors Analysys Mason in the final mapping exercise of September 2019 have never been published by either the DECC or ComReg. In the Interest of Transparency of the Mapping Exercise we would ask that ComReg and or the DECC fully publish the documents, presentations and assurances given to the NRA by DECC in order to secure the ComReg updated state aid opinion letter of 18th October 2019.

We will give a more complete response to the consultation once time and resources allow us to. We do appreciate the work that Martin O Donoghue, Donnacha Hennessy and Dot Econ have put into ComReg 21/134 , 20/109 and 20/109A

We would like the opportunity to more comprehensively reply to this consultation, with amendments and corrections as necessary.