



Commission for  
**Communications Regulation**

# **Proposed 3.6 GHz Band Spectrum Award**

Non-confidential responses received to  
ComReg Document 15/140

Submissions to ComReg Document 15/140

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# 1 Eir

**eir**

**Response to ComReg Consultation Paper:**

**Response to Consultation and draft Decision -  
on Proposed 3.6 GHz Band Spectrum Award**

**ComReg Document 15/140**



**12<sup>th</sup> February 2016**

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

## Response to consultation

The draft Decision proposed by ComReg sets out the high level design features of the proposed award process. eir has reviewed the Response to Consultation which informs ComReg's selection of the high level features proposed for the award process. Subject to seeing the Information Memorandum, the high level features appear to be a reasonable balance of the different interests in the band although further clarification is required in respect of the continued operation of the State Services in the band (addressed below).

However, as is referenced in the draft Decision, the proposed award process and future licences for the band will be subject to detailed rules and conditions that will be specified in an Information Memorandum and in the 3.6GHz Band Licence Regulations. Neither of these detailed and important documents has yet been made available for scrutiny. eir notes<sup>1</sup> that "*ComReg intends to publish in early 2016 a draft Information Memorandum outlining in detail the processes and procedures it currently envisages employing when implementing its spectrum release proposals as referred to in the draft decision.*" The merits of the draft Decision can only be properly assessed when the proposed processes and procedures to implement the Decision are available alongside the Regulations. As such we reserve the right to revisit the draft Decision during the subsequent phases of consultation.

Further clarification is required regarding the interaction of the proposed rules with the State Services. Paragraph 3.3 of the draft Decision states that it is ComReg's intention "*to specify a time division duplex mode of operation (i.e. band plan) in the frequency range 3400 MHz to 3600 MHz, without prejudice to the continued operation of the State Services.*" It is not clear whether the intention is that TDD is the specified mode of operation provided it does not prejudice the operation of the State Services, how potential bidders can factor in the operation of the State Services or if ComReg is intending that State Services will be exempt from operating on a TDD basis. This matter should be clarified.

eir considers it is important that interested parties are given adequate warning of key milestones in the development of the award process. We therefore repeat our request, previously made in response to ComReg 15/70, for ComReg to publish and maintain an indicative timeline for the 3.6GHz award project. ComReg and some interested parties with previous experience of the MBSA in 2012 will be aware there is a significant amount of preparation required for interested parties to effectively participate in an award process. This includes developing a clear understanding of the rules expressed in the Information Memorandum including participation in one or more mock auctions and preparatory activities such as creating a secure bidding room and customising any software needed for framing bids. Interested parties require a reasonable view of timelines in order to effectively prepare. We appreciate that ComReg cannot be definitive at this time on specific dates for the award process but interested parties do need some indication as to when to expect major milestones to occur. eir continues to request that ComReg publishes a high level project plan for the 3.6 GHz award process.

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<sup>1</sup> Paragraph 9.8, ComReg 15/140

## **2 Imagine**

Imagine

Comments on ComReg Response to  
Consultation and draft Decision -  
on Proposed 3.6 GHz Band Spectrum  
Award

12<sup>th</sup> February, 2016

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## 1 Executive summary

Uncertainty as to the continuity of current licences and the availability of spectrum for the provision of Wireless NGA services representing the primary evolution of Fixed Wireless services has sterilised investment and the competitive development of the convergent NGA market.

What is of primary importance in terms of the market, stakeholders and in the context of the Governments National Broadband Intervention Strategy is that clarity in relation to the future use and availability of spectrum for NGA services is determined as quickly as possible.

In that context and while the views of stakeholders may differ but have been well made, it is imperative that the consultation process concludes and ComReg proceed to the Award Process as soon as possible. Pending the outcome of the award, investment in upgrading existing services is significantly curtailed and the lack of certainty in relation to the continuation of licences and transition arrangements puts the continuation of the provision of services at risk.

## 2 Imagine Comments

Notwithstanding our view in relation to the State's obligations in relation to SAG, Imagine's primary issue is that in failing to recognise the NGA market as the Relevant Market in the wider and convergent fixed and wireless context, ComReg, in contravention of its remit and obligations, has failed to *ensure* effective competition in that market in terms of new entrants, infrastructure investment and innovation.

As this issue affects the approach taken by ComReg in its entirety we have limited our comments in general to the context of Section 2.1.

With regard to other issues, we believe that we have already made substantial submissions in the previous consultations in this and related processes already identified by ComReg in 15/140. We therefore have restricted further comment to the minimum necessary.

### 2.1 Alignment to NBP and Relevant Market

Imagine remain of the view that, in compliance with the Digital Agenda for Europe and the State Aid Guidelines (SAG)<sup>1</sup> governing an intervention and in advance of any Intervention it is an obligation of the State to ensure the development of the commercial market for NGA services. With regard to Wireless NGA services this imposes an obligation on the State to ensure the intervention of the National Regulatory Authority (NRA) - ComReg - to ensure the (re)allocation of spectrum required to deliver NGA services.

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<sup>1</sup> "EU Guidelines for the application of State Aid rules in relation to the rapid development of broadband networks" (2013/C 25/01)

While “ComReg observes that it is a matter of settled case law that European Commission guidelines bind the European Commission alone; they are not binding on national authorities. The SAG falls within this category, which is acknowledged in the guidelines themselves.”<sup>2</sup>

We note that the DAE and the SAG were issued in the context of and in full consideration of the Regulatory Framework.<sup>3</sup>

We further note that with regard to ComReg’s remit under the 2012 Act the Minister did not issue to ComReg an updated Policy Directive with regard to the requirement for NGA services in the context of the NBP.

As noted in the DCENRs PWC “NBP Ireland – State Aid Compliance Report”, the uncertainty over the allocation of spectrum has impeded investment in Wireless NGA infrastructure, the deployment of NGA services and the development of the commercial NGA market.

Notwithstanding the above, and with regard to ComReg’s remit, while in designing the award process ComReg has “taken into consideration” the NBP and the NGA services (using wireless access) required to be delivered under the NBP what it has not done is consider the NGA market defined by the provision of these services as a Relevant Market - let alone the primary Relevant Market - in the context of the DAE and the national importance of provision of NGA services under the NBP which justifies the Intervention by the State in the NGA market.

This must also be considered in the context of the large amount of spectrum which could also satisfy the uncertain and clearly identified low interest from mobile operators generally. Also, the limited, if not non-existent deployment of mobile services anywhere in the world in the 3.6GHz band and the practical non-availability of mobile devices in this band.<sup>4</sup>

With reference to ComReg’s remit in the context of the 3.6 GHz EC Decision you state the following:<sup>5</sup>

- *the “allocation” of radio spectrum in Ireland lies within ComReg’s remit<sup>28</sup>;*
- *as previously identified in Documents 14/101 and 15/70, the 3.6 GHz Band has been allocated across the EU, by way of the 3.6 GHz EC Decision, for the terrestrial provision of electronic communications services (ECS), an instrument with direct, binding effect on all Member States (and in contrast to the SAG<sup>29</sup>);*
- *the 3.6 GHz EC Decision:*
  - *is service-neutral as it requires that any new 3.6 GHz rights holder be permitted to provide any ECS of their choice including, but not limited to, wireless broadband services;*

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<sup>2</sup> ComReg 15/140 footnote 29

<sup>3</sup> Directive 2002/21/EC of the European Parliament and of the Council of 7 March 2002 on a common regulatory Framework for Electronic Communications Networks and Services (Framework Directive) (OJ L 108, 24.4.2002, p. 33), as amended by Directive 2009/140/EC (Better Regulation Directive) (OJ L 337, 18.12.2009, p. 37) and by Regulation (EC) No 544/2009 (OJ L 167, 29.6.2009, p. 12) and related acts.

<sup>4</sup> ComReg 15/140 2.15

<sup>5</sup> ComReg 15/140 2.32

- *is technology-neutral as it requires that any new 3.6 GHz rights holder be permitted to use any terrestrial electronic communications networks (ECN) which comply with the parameters of the Annex to the 2014 3.6 GHz EC Decision;*
- *expressly obliges Member States to allow the use of the entire 3.6 GHz band for fixed, nomadic and mobile electronic communications networks; and*
- *in relation to the above bullet point, recital 2 of the 2008 3.6 GHz EC Decision identifies that “[T]he designation of the 3 400-3 800 MHz band for fixed, nomadic and mobile applications is an important element addressing the convergence of the mobile, fixed and broadcasting sectors and reflecting technical innovation. The services provided in this frequency band should mainly target end user access to broadband communication” (emphasis added). “*

In the context of the above and the possible use and demand for spectrum, we note that while the 3.6 GHz EC Decision obliges ComReg “to allow the use of the **entire** 3.6 GHz band for fixed, nomadic and mobile electronic communications networks” this does not prevent ComReg from allocating specific frequency blocks to facilitate clearly different uses for fixed, nomadic and mobile services which would also comply with the service-neutral and technology-neutral obligations.

The approach taken by ComReg will likely result in an inefficient use of spectrum and neither facilitate or address “**the convergence** of the mobile, **fixed** and broadcasting sectors and reflecting technical innovation” in the context of the NGA market where “The services provided in this frequency band should mainly target end user access to broadband communication”

With regard to 2.33 there is no suggestion that ComReg should ““favour” FWA or Fixed NGA over, for example, mobile services”<sup>6</sup> but that in the context of its remit and the 3.6 GHz EC Decision it should facilitate and ensure the availability of Wireless NGA services in the context of the converging fixed and wireless NGA market.

In fact, and as noted by ComReg “recital 4 of the 2014 3.6 GHz EC Decision specifically identifies that the use of the 3.6 GHz band for wireless broadband should contribute to the economic and social policy objectives of the Digital Agenda for Europe”. As specified in the DAE and SAG this is defined as the provision of NGA services and development of the NGA market.

As noted by ComReg ““Spectrum allocation” is defined in the Framework Regulations to mean the designation of a given frequency band for use **by one or more** types of radiocommunications services, **where appropriate, under specified conditions**”<sup>7</sup> (emphasis added). This specifically facilitates the designation of the frequency band for one or more services (NGA), where appropriate under specified conditions.

We also note “ComReg’s other overarching objectives are to contribute to the development of the internal market and to promote the interests of users within the Community. ComReg also notes that, in achieving its objectives, its ultimate aim is to choose regulatory measures which maximise

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<sup>6</sup> ComReg 15/140 2.33

<sup>7</sup> ComReg 15/140 Footnote 28

*the benefits for consumers in terms of price, choice and quality.”*<sup>8</sup> In the context of the DAE and NBP we do not consider that the approach by ComReg is in accordance with these overarching objectives.

While we recognise that certain measures are proposed that *could* eventually result in the provision of NGA services, in our view the proposed Auction Award Process continues to cause unnecessary uncertainty and is likely to lead to the crowding out of Wireless NGA investment resulting in distortion of the Relevant Market for NGA services.

## 2.2 Spectrum Cap

With regard to the proposed spectrum cap of 150MHz in section 5.59 of ComReg 15/140;<sup>9</sup>

5.59 *In light of the previous discussion, ComReg considers that a spectrum competition cap of 150 MHz would be a more proportionate and balanced response having regard to ComReg’s functions, objectives and duties, and to the matters raised by respondents<sup>161</sup>, because:*

- *compared to a cap of 100 MHz, it would better allow bidders to obtain sufficiently large contiguous blocks of spectrum to meet likely future requirements<sup>162</sup> and would not unduly restrict the range of demand that could be expressed in the proposed auction;*
- *compared to a cap of 160 MHz and 170 MHz, it would ensure a minimum of three winners who win at least 50 MHz each; and*
- *compared to a cap of 160 MHz, it would better ensure the efficient use of spectrum by minimising the potential for lots to be stranded and therefore unused.*

5.60 *Whilst a cap of 150 MHz is slightly below the 160 MHz that Imagine suggests is the minimum it requires to rollout NGA services, ComReg additionally observes that its proposed spectrum competition cap would apply for the competition only, meaning that bidders may be able to subsequently acquire additional spectrum through spectrum trading or through acquiring other companies that hold spectrum rights of use.*

Notwithstanding ComReg’s view that additional spectrum could be acquired post the auction process Imagine is of the view that a spectrum cap of 150MHz is likely to lead to an inefficient result given that the agreed optimal channel bandwidth for NGA type services is 20MHz and 150MHz is not a multiple of 20MHz.

## 2.3 Information Memorandum

There are many references to the “Draft Information Memorandum” in Section 8 Draft Decisions<sup>10</sup>, including the transition plan, auction process steps and price determination. In the absence of the publication of the “Draft Information Memorandum” it is not possible to comment on these topics.

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<sup>8</sup> ComReg 15-140 3.89

<sup>9</sup> ComReg 15-140: 5.59

<sup>10</sup> ComReg 15-140: Section 8

## 2.4 Licence terms and conditions

Duration of the licences for 15 years is likely to impede the inclusion of Wireless NGA services in the tender for the contract to provide services under the DCENR's NBP Intervention Strategy. Lack of clarity and uncertainty on the renewal of licences until sometime in the future is disadvantaging bidders who intend to use Wireless NGA services.

The proposed measures to curtail Spectrum Hoarding are insufficient in the context of the wider NGA market. An existing fixed operator could easily rollout sites to meet the criteria and provide minimal services. Clarity on the possible obligations on winners of liberalised 3.6 GHz rights to comply with any rules to prevent spectrum hoarding as may be laid down by ComReg under Regulation 17(10) of the Framework Regulations would be beneficial in terms of curtailing strategic bidding

## 2.5 Transition Proposals

In Section 8, Draft Decisions<sup>11</sup> ComReg propose:-

- 3.10.11 *to require all Winning Bidders and all parties applying for a Transition Unprotected License to abide by transition rules as set out in the Information Memorandum;*
- 3.10.12 *to develop and finalise a transition plan in consultation with interested parties;*
- 3.10.13 *to provide reimbursement of a pro rata proportion of spectrum access fees (as described in the Information Memorandum) and SUFs to a Winning Bidder in the event that the commencement of its 3.6 GHz Band Liberalised Use Licence is delayed as a result of delayed availability of spectrum to it because of a Transitional Licence awarded for the completion of the transition plan;*

In Section 11.3 of the response to the previous consultation<sup>12</sup> Imagine stated that:

*"Imagine agree with an obligation to notify of the termination of a technology however Imagine propose that the notice period for services on pre-existing technology that transition to new licences should be based on the existing service contracts. Imagine also propose that the notice period could be substantially reduced to 30 days if the operator is able to transition customers to an equal or better service. At most 3 months notice is the maximum that should be required"*

Imagine note that ComReg propose *"to develop and finalise a transition plan in consultation with interested parties"* and reiterate its view that:

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<sup>11</sup> ComReg 15-140: Section 8

<sup>12</sup> Imagine Response to ComReg Consultation 15-70 Final non confidential 09-10-15

- the notice period should be sufficient to ensure that any existing contractual agreements related to the infrastructure used to support existing services (e.g. Backhaul contracts, site agreements, co-location agreements etc.) can be terminated without penalty
- the notice period should facilitate the ongoing provision of services to customers that have no alternative either due to a new operator not yet having service available or not providing an equivalent service.

In terms of the timing of the Award process and the transition arrangements existing operators of wireless services need to know this as far in advance of the termination of licences in July 2017 in order to understand the implications for their existing business and customers and to assess the exposure and risk in terms of their contractual obligations in relation to sites and backhaul infrastructure much of which is renewed on an annual basis.

## **3 permaNET Ltd**





Mr Joseph Coughlan  
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permaNET Ltd. response to Comreg 15/140.

Dear Mr. Coughlan,

permaNET welcomes the fact that Comreg has taken into consideration several of the points raised by FWA respondents. We are disappointed however by the decision to allow a cap of 150Mhz. We submit that NGA technology enables the delivery of high speed services (of 30Mbps or greater) to a significant number of subscribers using 100MHz. Based on the responses received there is clearly much interest in the band and several companies with significant market presence have responded extensively. Therefore when taken in conjunction with Comreg's decision not to allocate any of the 350MHz to FWA by administrative assignment, the cap of 150Mhz reduces the probability that smaller rural ISPs will be able to acquire 3.6Ghz spectrum.

Referring to 6.37, we would like to question Comreg's consideration of the proposal to compel companies to sublet spectrum in areas where it may otherwise go unused. Comreg states that it is not *"open to Comreg to attach a license condition which mandates the transfer or lease of spectrum."* The reason given is that one part of one condition listed in Part B of Regulation 10(1) appears to preclude attaching such a condition. We would question whether it is within Comreg's remit to review and where necessary seek to modify such regulations where it is apparent that such a change would be consistent with Comreg's obligations and in the general best interests of consumers and competition.

In relation to sections 4.97 to 4.99 we would take this opportunity to acknowledge that clearly there is demand from end-users for higher speed services. In now making larger amounts of contiguous 3.6Ghz spectrum available for the provision of high speed services this may also create an opportunity to attract investment. However we would point out that it is quite apparent to many WISPs that Comreg decision 10/29 has been the single most significant factor effecting investment in 3.6Ghz FWA in the period 2010 to 2015.

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Comreg has mentioned in numerous places in the document that it is abiding by the principal of technology neutrality. Understanding that the duplex arrangement is designed to facilitate TDD equipment we would like to clarify that an operator would be permitted to operate FDD equipment provided they have acquired the necessary spectrum to do so and under the technical conditions applicable.

We welcome Comreg proposal in 2.37 to assist bidders in developing an understanding of the auction rules and process and would urge Comreg to run the proposed workshops on more than one occasion and to provide the workshop(s) by means of webcast or recording in order to facilitate maximum participation.

yours sincerely

Ray O'Leary

## **4 Ripplecom**

February 9<sup>th</sup>, 2016



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Re **Submissions to ComReg 15/140**

Email: [marketframeworkconsult@comreg.ie](mailto:marketframeworkconsult@comreg.ie)

Dear Mr Coughlan,

## 1 Introduction

I refer to your Call for Input entitled 'Response to Consultation and draft Decision – on Proposed 3.6 GHz Band Spectrum Award'.

Ripplecom understands that ComReg operates independently and is the independent Regulator of the Telecommunications marketplace. However, Ripplecom is opposed to the spectrum award process being run in parallel with the Department of Communications Energy & Natural Resources (DCENR) led National Broadband Plan (NBP) procurement process. Ripplecom would have preferred if the 3.6 GHz spectrum allocation process was completed prior to DCENR running with the NBP process. This way companies operating on wireless platforms would know if they had access to licensed spectrum in advance of the NBP procurement process.

## 2 Commitment to Smaller ISP's

The current consultation document – ComReg 15/140 clearly sets out ComReg's intentions. Ripplecom awaits the publication of the draft Information Memorandum which will outline the processes and procedures it will employ when implementing its spectrum release proposals.

Being a relatively small Internet Service Provider (ISP), with no experience of bidding for spectrum (which is probably the position of most of the smaller ISP's operating in Ireland), Ripplecom would welcome the proposals set out by ComReg in paragraph 2.37 namely, to keep the complexity to a minimum and most importantly, to assist all bidders in developing an understanding of the auction rules through the running of workshops, seminars and providing the tools necessary for bidders to simulate auction conditions.

The timing of such workshops, seminars and simulation of auction conditions needs to be known as soon as possible. The smaller ISP's in particular would require a significant notice period in relation to these seminars to ensure that it does not clash with holiday time periods and so on. Ripplecom would encourage ComReg to:



[www.ripplecom.net](http://www.ripplecom.net)

- a Set out the proposed dates for these seminars as soon as possible and to schedule (at least) two different sessions for these seminars to allow for companies to adequately plan their attendance.
- b Avoid holding such seminars during the Summer period (July & August) when smaller companies in particular are under significant pressure from a human resource viewpoint with core staff taking annual leave.

### 3 Competition in the Marketplace

While being of the view that two significant processes (spectrum award and NBP) should not have been undertaken in parallel, both ComReg and DCENR were obviously charged with running their processes independently. Ripplecom believes that this approach was a mistake from a Communications Policy perspective.

WISP companies have serviced the rural market for the past 15 years and have filled a void left by the bigger telecommunication companies. Ireland could have a vibrant competitive marketplace with smaller companies providing NGA standard service which fulfils one of the objectives of both ComReg and the State (i.e. to have active competition in the marketplace) if Administrative Assignments were at least one approved mechanism for the spectrum allocation.

As stated in previous submissions, Ripplecom is of the view that the auction process will favour the larger ISP's. However, from reading the current consultation document, the Combinatorial Clock Auction (CCA) format appears to be the sole mechanism that will be chosen for the Spectrum allocation and spectrum will not be allocated by Administrative Assignment.

Ripplecom is forced to accept that the auction process will be followed in the awarding of licences for the 3.6 GHz band.

### 4 Conclusion

Ripplecom would encourage ComReg to keep the complexity to a minimum and most importantly, to assist all bidders in developing an understanding of the auction rules through the running of workshops, seminars and providing the tools necessary for bidders to simulate auction conditions. However, the summer months should be excluded from the running of these very important seminars due to HR constraints at this time, particularly for the smaller ISP's.

The publication as quickly as possible, of the draft Information Memorandum can only benefit companies who are interested in this spectrum award and we await the publication of this document.

**Please acknowledge receipt of this submission via email.**

Yours sincerely,



John McDonnell

**Managing Director**

## **5 Three Ireland**

# **3.6 GHz Proposed Spectrum Award**

**Response to Document 15/140  
from Three Ireland**



**Three.ie**

## **Introduction**

Three Ireland is pleased to comment on ComReg's proposal to auction spectrum in the 3.6GHz band as described in document 15/140. We note that ComReg has considered the comments received in response to its previous consultation (document 15/70), and has made some modifications to its proposal. In general we welcome these changes. Some points of clarification have also been offered such that we can now understand and accept ComReg's position (e.g. geographical lots), however there remain a small number of points where we disagree with the position in the proposal. Three's comments on all of these points are given below.

We encourage ComReg to give due consideration to all comments received in response to this consultation, but to "turn around" its final decision without delay. The existing FWALA licences in the band are due to expire in July 2017, and access to spectrum in 3.6GHz band may be a prerequisite for some participants to bid in the National Broadband Plan; so it is important that ComReg proceeds with the award of 3.6GHz spectrum as soon as possible.

## **Specific Comments**

### **The Proposed Band Plan**

Three agrees with ComReg's proposal in relation to how the available spectrum should be divided into lots and the duplex arrangement; i.e. 5MHz lots using TDD for all parts of the band, with a 10 MHz guard band.

The positioning within the band of the 40MHz block of this spectrum which is used by the State for airborne communications will have an impact on the availability of spectrum to other users. Under the current proposal, the use of this band by the State means that a 5-block lot is effectively separated from the other lots that are to be made available. ComReg has explained why this needs to be a single block distinct from the other blocks, and Three accepts the logic behind this decision under the current circumstances.

In response to consultation 15/70 however, Three suggested that ComReg should investigate the feasibility of re-tuning the 40MHz in use by the State to the lower end of the band (i.e. lots 3 to 11). ComReg has not clarified its position regarding this suggestion nor stated whether this has been investigated, and Three would again request that ComReg respond to this suggestion. The advantages of carrying out this adjustment would be that (i) there would be only one "interface" between the airborne State Service use and the commercial use, which reduces the likelihood of inter-service interference and the requirement for guard bands or additional filtering; and (ii) this would eliminate the stranded lot of 25MHz, giving more flexibility which should lead to a more efficient auction outcome.



In the interest of transparency, Three also requests ComReg to clarify if the State Service using this spectrum has been issued with a licence under the Wireless Telegraphy Act; the expiry date of that licence; and the licence fees applicable. It is important that all users of the spectrum are treated equally, and given an equal incentive to use spectrum efficiently. There is an opportunity cost to the use of the spectrum by State Services (as otherwise it would be available for commercial licensing in the auction). The auction should help to quantify this opportunity cost.

### **Geographic Lots**

We note that ComReg has revised the arrangement of lots into geographic areas in such a way that they can be aggregated to match the two areas in the Department's<sup>1</sup> National Broadband Plan. Three agrees with this decision. We also note ComReg's decision and explanation for keeping the 9 different geographic areas, and we can accept the reasoning behind this decision also.

### **Award Type and Format**

Three has previously expressed its views and concerns in relation to the use of Combinatorial Clock Auctions. Those concerns remain, and ComReg is aware of them. We accept that there are advantages and disadvantages to each auction type, and that the final detailed rules will have an impact on how the auction progresses. We reserve further comment until ComReg publishes the draft Information Memorandum and auction rules.

In relation to spectrum Caps, we agree with ComReg's proposal in this case.

### **Licence Duration**

Three has significant concerns in relation to ComReg's proposal for a fixed licence duration of 15 years. In the first place, this militates against the use of 3.6GHz spectrum by a bidder within the National Broadband Plan. ComReg will have been aware that the Department has extended the contract period of the NBP from 20 to 25 years. The winners/providers of the NBP will be contractually required to provide service for the duration of this contract. ComReg must be aware that some bidders are considering use of 3.6GHz spectrum as part of their solution to the NBP, and would need to minimise any uncertainty created by licence expiry. It seems inconsistent that ComReg would modify the geographic lots to match the NBP areas, however is proposing a licence term that is significantly shorter than the contract

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<sup>1</sup> Department of Communications Energy, and Natural Resources

duration. ComReg should issue licences that give NBP bidders “security of tenure” for the duration of the 25 year NBP contract.

Throughout several spectrum consultations a question has been raised as to whether fixed term or rolling renewable licences are preferable. Three is firmly of the view that rolling licences are superior because they provide security for on-going investment by the licensee. Three has explained this position most recently in response to document (15/131) and that explanation will not be repeated here. In the current consultation document, ComReg also repeats its position that it prefers to issue a licence of fixed or maximum duration because it:

ComReg Opinion	Three Response
<ul style="list-style-type: none"> <li>• <b>promotes competition, spectrum efficiency and the internal market.</b></li> </ul>	Rolling Licences can equally achieve this.
<ul style="list-style-type: none"> <li>• <b>is wholly compatible with the Common Regulatory Framework.</b></li> </ul>	Again, this can be said equally of rolling licences.
<ul style="list-style-type: none"> <li>• <b>once sufficiently long, allows licence holders sufficient time to obtain a return on investment in line with the expected life-cycle of the technology deployed.</b></li> </ul>	However this cycle of expiry and re-licensing discourages continuous investment, which is increasingly a feature of broadband networks as demand continues to grow.
<ul style="list-style-type: none"> <li>• <b>provides a sufficiently flexible approach to address future co-ordinated approaches that may be taken to particular spectrum bands at an EU-wide level.</b></li> </ul>	Rolling licences can achieve the same flexibility, provided the licence allows the licensor to serve notice of change under reasonable conditions.
<ul style="list-style-type: none"> <li>• <b>ensures that there are no long-term barriers to releasing bands in line with international harmonisation measures, which is particularly important where international harmonisation is necessary to introduce new and innovative services to a spectrum band.</b></li> </ul>	This can be achieved more just as easily in practice with rolling licences as with a series of fixed term ones. It is unlikely that the timing of changes will align correctly the timing of expiry.
<ul style="list-style-type: none"> <li>• <b>ensures that the desired change in line with international harmonisation can be brought about without perverse incentives emerging for incumbent firms to hold out strategically with a view to gaining more rents.</b></li> </ul>	Again, this can equally be achieved with rolling licences.

The reality is that it has proven impossible to execute re-licensing of spectrum sufficiently in advance of the expiry of existing fixed terms to avoid gaps in licence continuity, let alone investment troughs. ComReg should revisit its position regarding the duration of licences in this award, and should reconsider rolling licences. At the minimum ComReg should award the licences with a minimum term of 25 years to align with the contract term of the NBP.

## Licence Conditions

Three agrees with many of the proposed licence conditions, including the technical conditions and service and technology neutrality. We look forward to seeing ComReg's proposed framework for leasing of spectrum within the next year.

Three disagrees fundamentally with ComReg's proposal regarding Quality of Service. ComReg has stated itself that "*such an obligation would only apply to operators providing voice services and would therefore only likely apply to MNOs. It would not apply to voice services provided using IP over FWA links*". This is fundamentally discriminatory treatment of some services or service providers, and is contrary to the requirement of service neutrality. Regulation 10(2) of the Authorisation Regulations<sup>2</sup> requires that any:

“(a) attachment of conditions under paragraph (1), or

(b) non application under paragraph (1) of conditions to undertakings of a class or type as may be determined by the Regulator, to rights of use for radio frequencies shall be **non discriminatory**, proportionate and transparent and shall be in accordance with Regulation 17 of the Framework Regulations.”

Further, it is unclear what would happen if a licensee provided a voice service using 3.6GHz spectrum, and chose to call it a “non-managed” voice service. Whether this was fixed, nomadic, or mobile then it seems that the quality of service condition would not apply in this case.

Three believes that the proposed condition should be removed, and existing regulatory requirements for transparency should be sufficient ensure that customers are aware of the factors that might affect their service.

## Minimum Price

Three disagrees with the general approach ComReg has taken to the use of benchmarks to derive minimum prices and then apply these to the auction reserve

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<sup>2</sup> SI 335 of 2011

price. This has been explained in response to document 15/70, and some further comments are given below specifically in relation to the 3.6GHz award.

Three notes that ComReg has taken account of some comments received in relation to the split between the upfront and annual element of the spectrum fee. While Three did not object to the original proposal of a 50/50 split, we also believe this should be reviewed and decided for each award based on the relevant circumstances and comments received at the time. It is welcome that ComReg has done so on this occasion, and we agree that a 40/60 split can be applied in this case without adversely affecting the bidder incentives.

In response to document 15/70, Three disagreed with the proposed Urban/Rural adjustment in minimum price for different geographic lots. ComReg's adjustment was introduced to reflect the daily move of commuters into urban areas during working hours. The logic applied is that this would mean that greater utility was being taken from the spectrum during working hours when the number of people in urban areas is higher than would be reflected in the statistics showing home or residential address. This was based on an assumption, and Three disagreed with the proposal on the basis that the spectrum might be more heavily utilised during evenings and weekends while users were at home.

The chart below (Figure 1) shows the actual weekly traffic profile on Three's network for one week in January 2016. As can be seen, a repetitive daily pattern has emerged.

[Confidential Section Removed]

Figure 1. Weekly traffic profile

The second chart below (Figure 2) shows the traffic profile for one day in more detail. The day chosen is Friday 22<sup>nd</sup> January, which is a normal working day when the usual commuter flow into urban areas would be expected. As can be clearly seen,

the traffic volume grows steadily from about 16:00 and peaks between 18:00 and midnight with the busy hour occurring between 22:00 and 23:00.

Clearly the greatest utility is being taken from existing spectrum during the hours when customers are at home and not during their working day while they are in urban areas. ComReg's and Dotecon's assumption that led to the Urban/Rural split is incorrect, and should be removed.

[Confidential Section Removed]

Figure 2. Daily traffic profile

In relation to the minimum price, we do not agree that the current approach appropriately avoids the risk of choking off demand – there is considerable uncertainty about what the value should be. As explained in response to consultation doc 15/131, frivolous bidders can be discouraged at prices above 10% of the expected market value.

In consultation documents 14/101 and 15/70, ComReg sets out its approach to setting reserve prices for spectrum at or above what it terms the “real economic value”. As it is unclear how this value would be different to that determined at auction, Three requested ComReg to clarify what this term means. ComReg did so by stating that:

“In this context, ComReg considers that the price of spectrum should be reflective of its value for an alternative user, who cannot obtain (any or additional) spectrum due to the limited availability of frequencies. Therefore, by real economic value, ComReg means the highest value that spectrum would have to potential alternative acquirers, if it were not assigned to the user actually acquiring it. For example, this value may be realised in a secondary transaction given that spectrum is tradable.

Given that we are considering the setting of a minimum price at a competitive auction, it is unclear how this could be the case. ComReg's auction is designed to

award the spectrum to the bidder who values it the most. If any other outcome emerges, then the auction model is flawed. Given that all interested bidders can enter the auction on the same basis, then there should be no bidder who is excluded and the scenario above as described by ComReg cannot arise.

ComReg needs to explain what the real economic value is, and what role it plays in the assignment of spectrum. If ComReg is suggesting that a user with a higher economic value than the licensee might emerge at some time after an auction, and that it is desirable for this user to obtain the licence, then then it should be explained how varying the minimum price at the auction could have ensured this occurred. Three now requests that ComReg explains this point, where the spectrum inefficiency occurs, and how the minimum price prevents it.

ComReg has repeatedly cited risk of “Strategic Demand Reduction” as a justification for high minimum pricing and CCA. No evidence has been produced that this has occurred in any auction in Ireland or elsewhere. Three believes this has been overstated. This needs to be weighed against the certainty that minimum prices set too high will choke demand at the auction.

As explained in response to document 15/131, Three does not believe it is appropriate to link annual spectrum fees to the Consumer Price Index.

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## **6 Vodafone**

Vodafone Response to Comreg Document:  
Response to Consultation and draft Decision -  
on Proposed 3.6 GHz Band Spectrum Award

Document No: ComReg 15/140



# Introduction

Vodafone welcome the opportunity to respond to this Consultation and Draft Decision.

ComReg's recent Consultation on Radio Management Strategy (15/131) discussed the value of Radio Spectrum to the Economy. The clear economic and social benefit arising from better communications systems must drive Ireland to have the best possible mobile networks in Ireland.

ComReg's Radio Management Strategy document also identifies the importance of following European standards in the allocation of spectrum. This is key to having effective networks in Ireland - the scale of our customer base cannot drive technology development of base-station or terminal equipment so we must make maximum use of international standards to benefit from the rapid developments that are being made in new technologies.

Vodafone strongly support the European Commission ("EC") Decision harmonising the use of this band (2008/411/EC: Commission Decision of 21 May 2008).

The key to gaining these benefits for Irish customers are :

- The assignment of spectrum in an open, transparent, timely, and repeatable process.
- Technology and service neutrality

We believe that ComReg's proposed 3.6GHz Band spectrum Award will meet these criteria and that a service and Technology neutral assignment process will, over the lifetime of the licences, bring the most benefits to Irish customers.

Our main outstanding concerns are that there is no clear timetable for the assignment of the 2.6GHz band, and this could distort demand for 3.6GHz. We also believe that the minimum price is not adequately conservative to ensure assignment through the auction process.

ComReg have tended to follow an unfortunate practice in Europe of setting auction reserve prices based on the results of auctions in other countries. This can result in a ratcheting up of prices over time, and is a departure from efficient pricing. A well-designed and well-run auction will reveal the market value of the spectrum.

We are in general agreement with the proposed band plan, technical details and auction process. In the text below we have detailed comments on relevant sections of the consultation document.

# Comments on specific sections of Comreg document

## 15/ 140

### Chapter 2

2.4 In April 2010, ComReg highlighted important issues with the FWALA licensing scheme operating in the 3.6 GHz band.<sup>5</sup> In particular, ComReg noted that the existing licensing regime does not provide for mobile wireless access services and so is not in line with the relevant European Commission (“EC”) Decision harmonising the use of this band.<sup>6</sup> Accordingly, ComReg made it clear that existing FWALA licences in the band would not be renewed or extended beyond 31 July 2017 in order to maximise the efficient use of the 3.6 GHz band, particularly in light of the 3.6 GHz EC Decision which provides for the introduction of mobility to this band.

<sup>5</sup> Document 10/29 “Fixed Wireless Access Local Area Licensing End date of the FWALA licensing scheme in the 3.6 GHz band”.

<sup>6</sup> See 2008/411/EC: Commission Decision of 21 May 2008 on the harmonisation of the 3400-3800 MHz frequency band for terrestrial systems capable of providing electronic communications services in the Community.

Vodafone believe that the Commission decisions on harmonisation point the way forward for planning assignment of this band. Harmonisation of services with those available in other EC countries will ultimately deliver access to the best infrastructure and terminal equipment and deliver the best services to customers.

Comreg have given adequate notice of the cessation of the old FWALA licences.

The harmonisation Decision must be a key driver of future use of this band in Ireland.

2.7 The responses received to Document 14/101 encompassed a wide range of issues. However, one of the more prominent issues raised by respondents related to the inclusion of the 3.6 GHz band in the proposed award process. Respondents commented on the differences between the 3.6 GHz band and the other bands being considered for inclusion. Indeed, a number of respondents strongly favoured the release of the 3.6 GHz band in a separate award process.

Because of the separate eco-system of equipment and terminal it makes sense to auction 3.6GHz separately to other bands. We agree with the other respondents in this regard.

In ComReg's document 14/101 "Spectrum Award - 2.6 GHz with possible inclusion of 700MHz, 1.4, 2.3 and 3.6GHz bands" there was an intend, implicit in the title, that the 2.6Ghz band would be auctioned at an early date. As there is still no date set for the assignment of this band – despite the expiry of previous licence in the 2.6 band, there is real danger that Comreg have generated an artificial spectrum shortage that will distort demand for 3.5GHz.

**2.13 There are currently fourteen 3.6 GHz FWALA operators providing services in the band, serving approximately 25,258 customers<sup>16</sup>.**

The number of customers being served by current FWALA is small considering the large amount of spectrum assigned, and does not justify any deviation from European standardisation. The recent roll-out of 3G and 4G services in rural areas will give many of these customers an alternative.

2.14 At a European level, the band is fully harmonised for terrestrial electronic communications services (ECS), mainly targeting the provision of WBB services since 2008 with EC Decision 2008/411/EC. The recently adopted EC Decision 2014/276/EU further strengthens the harmonisation of the band in Europe and is mandatory for all Member States including Ireland. Throughout the remainder of this document, the two decisions are referenced as "3.6 GHz EC Decision". Where ComReg references the specific 2008 or 2014 EC Decision, the term "2008 3.6 GHz EC Decision" or "2014 3.6 GHz EC Decision" is used, respectively.

Agreed - standardisation is very important.

2.15 The 3.6 GHz band is considerably higher in frequency than the traditional, “core” mobile telecommunications bands assigned in Ireland (i.e. 800 MHz, 900 MHz, 1800 MHz and 2.1 GHz) giving it comparatively less favourable propagation characteristics for mobile applications. These limiting characteristics have, so far, reduced the interest from mobile operators generally and limited the deployment of mobile services in the band. In addition, the number of mobile devices available remains low relative to other bands.

The 3.6GHz band has significantly different propagation characteristics to bands use for mobile communications, (the 800,900,1800 & 2100MHz bands used in Ireland and the 2600MHz band used in most other European countries.) The differences in propagation change the number of sites required to cover areas. This is particularly significant in Ireland as we have a population more geographically spread than in other countries and also a high cost of building sites. These factors add greatly to the higher value of lower frequencies and the relatively lower demand for higher frequencies. This should be fairly reflected in both the setting of minimum prices and in the setting of spectrum caps.

## 2.1.4 ComReg’s response to submissions received in relation to the National Broadband Plan

2.33 That is, and in contrast to the suggestions that ComReg “favour” FWA or Fixed NGA over, for example, mobile services, the 3.6 GHz EC Decision expressly requires Member States to ensure that all compliant ECN (including nomadic and mobile) be permitted to be used in the entire 3.6 GHz Band, including with the stated intention of addressing the convergence of the fixed, mobile and broadcasting sectors.

Vodafone agree strongly with these statements. Assignment of these bands on a technology and service neutral basis will bring the most benefit to customers over the lifetime of the licences.

## Chapter 3

### 3 Revised draft RIAs

Comreg position in 15/70

#### 3.6 Option 2 – an award of the 3.6 GHz band alone

##### **ComReg's position and revised draft Spectrum for Award RIA**

3.10 In light of the support amongst all respondents for Option 2, and in the absence of any developments or new information to the contrary, ComReg remains of the view that, on balance, Option 2 is the preferred option in terms of its impact on stakeholders, competition and consumers.

We note ComReg's very comprehensive analysis of the possible options for the assignment of this spectrum.

We agree the 3.6GHz should be assigned using an auction, independent of other bands ( but this should not stop other bands being auctioned at the same time or in overlapping timescales).

We agree that there are more than one possible technology and service use of this band. The previous experience of beauty contest in Ireland is that the assessment of proposals is difficult and contentious, involving judgement of the relative values of different services to different group of customers. This judgement is then open to review in the courts.

A Beauty Contest also involves considerable speculation on behalf of bidders on which services customers will wish to use. As the life-cycles of new technology are becoming shorter and it is in practice impossible to detail the likely applications to be used by customers over the lifetime of the licence. This would make Governance of a beauty contest based assignment very difficult.

For all these reasons we agree that an auction is the best way of assigning this spectrum.

## Chapter 4

### 4 Key Aspects of the Proposed Award Spectrum

#### 4.31

ComReg has formed the preliminary conclusion that the entire 3.6 GHz band should be released in a TDD configuration as per Figure 1 below.

We agree with the Comreg preliminary conclusion that the 3.6 GHz band should be released on a TDD configuration.

### 4.3 National / Regional Licences

#### 4.3.1 Summary of ComReg's view in Document 15/70

4.32 In Section 4.2.2 of Document 15/70, ComReg discussed the potential for facilitating national and regional licences in the 3.6 GHz band. As part of this discussion, ComReg considered a number of issues, including the justification for national / regional licences, the appropriate number of regional areas, how to define region boundaries and the other principles upon which the regions should be established.

4.33 Following this discussion, ComReg came to the preliminary view that:

- regional areas should be established and that it is appropriate to define both urban and rural regions to take account of the potentially different uses in these areas; and
- the main urban areas should be the five main cities and suburbs (Dublin, Cork, Limerick, Galway and Waterford) and the boundaries for these should be established using their respective CSO boundaries.

4.34 In defining the regional boundaries and, in particular the larger more rural regional areas, ComReg proposed that it should be guided by the following five objective principles:

5. by extension, the potential for each regional operator to acquire both a city and surrounding rural region should be facilitated.

Vodafone do not agree that this point 5 should be a basic principle of the Auction. We do not think that this is a likely scenario. It does not appear from the submissions made that there is demand for an individual city and surrounding area. Facilitating this in the auction creates a significant number of additional lots and hence more combinations of bids and more complexity in the auction. We would favour simplifying the auction process by removing this principle 5.

- 4.60 Considering the above, ComReg remains of the view that having between 5 and 9 regions is appropriate in terms of striking the right balance between allowing bidders flexibility to obtain spectrum licences in an appropriately-sized area and limiting auction complexity.

Vodafone agree with this proposal.

### Proposal that the five cities should form one lot in the award

View of respondent

- 4.61 One respondent (3IHL) suggested that the cities could form one lot in the award process because it would reduce the regional areas from nine to five, thereby reducing auction complexity, and, in 3IHL's view, any bidder that is interested in obtaining spectrum rights for an urban service would want to cover all five cities rather than just one.

ComReg's assessment

- 4.62 Whilst 3IHL's proposal could reduce auction complexity, it would, however, be inconsistent with ComReg's fifth principle for establishing regional boundaries, being to facilitate the potential for each regional operator to acquire both a city and surrounding rural region. In ComReg's view, regional bidders should be given the opportunity to compete for a single city region adjacent to a desired region without having to bid for all five city regions if they do not wish to. Otherwise, this could effectively preclude most, or all, regional bidders from competing for city regions.



4.64 In light of the above, ComReg considers that the benefits to facilitating flexibility in the award process through having separate city regions would outweigh any additional complexities that might be caused by this approach.

Vodafone believe that 3IHL's suggestion is reasonable and the gain from simplifying the auction would exceed the limitation created by running the cities as a single lot.

We would favour dropping the fifth principle ( paragraph 4.34) and have the cities form a single lot.

4.81 In light of this and also having regard to (a) the potential benefits arising from the alignment of ComReg's rural 3.6 GHz regions with the NBP lots and (b) that the possibility for modifying the 3.6 GHz regions subsequent to the proposed award is remote, ComReg therefore proposes that the regional boundaries of its 3.6 GHz award would be adjusted to facilitate alignment with the lots of the NBP.

We agree with the new proposed regions, ComReg should have regard for any amendment to NBP proposals happening before the auction.

#### 4.4 Licence duration

4.147 However, the precise particulars of this "gap" (such as in terms of the geographic areas in which those rights of use were actually deployed for NBP-related purposes and the quantum of spectrum used for same) and the appropriate regulatory measure/s (if any) would need to be determined much closer towards the expiry of such rights of use. In that context, ComReg observes that much could affect the extent to which such spectrum rights that may be used in the short-term for the delivery of the NBP would still be required beyond the expiry of those rights. For instance, alternative spectrum rights could be available to the successful NBP tenderer/s, and the NBP services could be delivered via alternative technologies (e.g. fixed line) etc.

Licence duration.

Vodafone supports the RSPG view that licences terms should be lengthened and consideration given to creating perpetual licences (as already exist in the UK) in order to promote ongoing investment and upgrades in mobile broadband networks.

Given this, and the likely NBP duration of 25 years we believe that there are good reason to make the licence duration 25 years in this case.

## Chapter 5

### 5 Award Type and Format

#### 5.1.6 Fees

5.10 ComReg was firstly of the view that a minimum price is warranted where there is an opportunity for bidders to obtain access to valuable spectrum at a price below its real economic value.

Vodafone do not believe that Comreg have justified the setting of minimum prices. A properly designed auction will by definition reveal the real value of the spectrum being offered.

5.18 Vodafone expressed three main concerns:

1. price setting is becoming more of a risk as operators become more experienced with CCAs, driving up the cost of spectrum;
2. the auction should be less complex than the previous MBSA and, if a CCA is selected, it needs to keep to a more standard design; and
3. ARPUs are not, in its view, increasing in line with increasing usage and as spectrum volumes increase, the value of additional spectrum will be reduced.

These remain concerns. See point 5.31 for further comment on our point 3

5.31 In relation to Vodafone's submission that as spectrum volumes increase, the value of additional spectrum will be reduced, ComReg notes that there are various demand and supply factors that might affect spectrum value, including increasing demand for bandwidth and increasing supply of spectrum for mobile applications. ComReg is mindful of these uncertainties when setting minimum prices. However, it is for the auction to determine market value through competition between bidders. The extent to which additional spectrum may be more or less valuable in light of increasing data usage is a matter for individual bidders and can be reflected in their bids for lots in the award process.

Comreg have not commented on the artificially high value that can be placed on spectrum by the creation of a spectrum shortage. The spectrum assigned to ECS in Ireland is lower than in other European countries. In particular the 2.6GHz band has not been assigned in Ireland and this creates a risk of distorting the market for other bands.

In a properly functioning market we would expect that the cost of spectrum will fall as more spectrum becomes available and users pay a lower price per Mb carried. Comreg, and all NRA, must resist the temptation to maintain the cost of spectrum by holding back unused or underused spectrum from the market in order to maintain price.

This point is also relevant in the development of benchmark based minimum prices where a scarcity of spectrum in one country used in building a benchmark can affect prices in other countries.

## 5.2.2 Spectrum Competition Caps

### ComReg's Response and Position

- 5.59 In light of the previous discussion, ComReg considers that a spectrum competition cap of 150 MHz would be a more proportionate and balanced response having regard to ComReg's functions, objectives and duties, and to the matters raised by respondents<sup>161</sup>, because:
- compared to a cap of 100 MHz, it would better allow bidders to obtain sufficiently large contiguous blocks of spectrum to meet likely future requirements and would not unduly restrict the range of demand that could be expressed in the proposed auction;
  - compared to a cap of 160 MHz and 170 MHz, it would ensure a minimum of three winners who win at least 50 MHz each; and
  - compared to a cap of 160 MHz, it would better ensure the efficient use of spectrum by minimising the potential for lots to be stranded and therefore unused.

Vodafone agrees with the proposed spectrum cap of 150MHz.

We note again the significant propagation differences between 3.6 and 2.6GHz and the different equipment infrastructure available. A possible future cap on 2.6 GHz assignment would be a serious disincentive to operators bidding for 3.6Ghz spectrum which may have a lower and less valuable target market.

## Other issues

### 5.2.3 Packaging of available spectrum

#### ComReg's response and position

5.74 In relation to submissions suggesting larger lot sizes be adopted, ComReg firstly observes that no specific reasoning was presented as to why this would be required or would result in the more efficient assignment or use of spectrum. In any event, and as noted by ComReg in Documents 14/101 and 15/70 a CCA auction format allows for aggregation of lots by bidders into packages of spectrum rights that would constitute larger blocks in line with their own demand. Therefore, a lot size of 5 MHz would offer all potential bidders full flexibility and would accommodate all types of potential users including those suggesting that larger lot sizes be adopted.

Vodafone agree broadly with the proposed packaging of available spectrum. We note however that there is some difference in equipment availability between the spectrum 3400-3600MHz and 3600-3800MHz. It is possible that bidders may want part of their spectrum assigned in each of these two segments. The assignment process should allow for this possibility.

### 5.2.4 Unsold lots

5.79 No respondents commented on ComReg's proposals in relation to unsold lots.

#### ComReg's response and position

5.80 ComReg considers that it should not incentivise a 'wait and see' approach from interested parties and should retain its discretion regarding how it might treat any unsold lots depending on the factual circumstances arising from the award process, save that unsold lots should not be considered for assignment for a reasonable period after the process (and, in any event, would not be considered for a minimum period of 2 years).

We agree that unsold spectrum should not be assigned for a period of 2 years and then only after a consultation process. We would also propose that any operators taking part in the auction would be allowed to compete for spectrum in any new process.

## 5.2.5 Fees

### Minimum Price Structure and Split

5.91 Having considered the views of respondents and the recommendation of DotEcon, ComReg believes it appropriate to revise its position on the split between the minimum SAF and SUFs from 50/50 to 40/60 so as to better encourage participation by smaller bidders without creating significant additional risk of speculative entry.

Vodafone have no issue with this proposed SAF/SUF split.

## Benchmarking

5.95 ComReg received a number of responses relating to its proposed use of benchmarking to set a conservative estimate of the market values of the 3.6 GHz band and these are outlined below.

5.104 Benchmarking offers the advantage of revealing information about the actual willingness to pay for spectrum. The advantage of the benchmarking approach for this award is that the value of the 2.3 GHz and 2.6 GHz bands, given their better propagation characteristics, likely higher value, and more numerous data points, allow for a ceiling above which demand would likely be choked off. Additionally, the value of non-harmonised 3.6 GHz spectrum provides a floor below which the spectrum rights would be under-valued. DotEcon's updated benchmarking report, published in parallel with this document, acknowledges that there may be some uncertainty<sup>170</sup> within the Irish market regarding the value of 3.6GHz spectrum but notably recommends a benchmark estimated conservatively to address any uncertainty.

We do not agree with the analysis. . This is equivalent to saying that the price of a Rolls-Royce gives a ceiling at which demand for a Fiesta would be choked-off. Prices paid for 2.6GHz spectrum should not be part of a Benchmark process.

5.106 ComReg observes that spectrum rights will only be released at a value below its real economic value where bidders collude to keep the price artificially low. That is, a price lower than what would have been the case under normal competitive conditions. As noted by DotEcon, the aim of the benchmarking exercise is not to estimate final prices likely to be established in the auction, but rather to choose a starting point that is likely to be below final prices, yet high enough to discourage speculative bidding and reduce gaming incentives. Therefore, ComReg remains of the view that the minimum price should be set using a benchmark approach by reference to a conservative estimate of the market value of the spectrum that is likely to be below final prices.

Comreg have not offered any evidence of why they believe that ‘normal competitive conditions’ do not exist in Ireland. We do not believe the proposed benchmark is adequately conservative.

5.107 In relation to Ripplecom’s claim that international benchmarking does not apply to the Irish market, ComReg notes that Ripplecom has not provided any specific evidence that would support its claim that the Irish market is a particular exception to the countries benchmarked. As outlined by DotEcon there are a number of reasons why Ripplecom’s claims do not withstand scrutiny:

- The minimum price proposal already takes into account urban and rural regions;
- The use of PPP exchange rates provides a correction for local economic conditions (Income and Consumer spending); and
- It is appropriate to include non-European benchmarks provided they are properly interpreted<sup>172</sup>.

172 ComReg considers the use of an objective criteria to determine outliers as important in this respect.

We do not agree that the proposed criterion to identify outliers in the benchmark process is adequate. The sample size available is too small to use a purely statistical process. In some countries an artificial spectrum shortage, or a lack of competing fixed network, can cause an increase in spectrum prices. This is more common in countries outside Europe. Countries where this happens should not be included in a benchmark. Comreg need to make some judgement of whether the market structures in these countries are reasonably similar to Ireland before including them in the benchmark

5.108 DotEcon also considers Imagine's claim that the justification for comparing the value of 3.6GHz spectrum to mobile bands to not be convincing given uncertainty about mobile broadband use in the 3.6GHz band. DotEcon notes that, in the long run, all three bands (2.3 GHz, 2.6 GHz and 3.6 GHz) are likely to become similarly effective in delivering mobile data as equipment availability differences lessen. Furthermore, anticipated data growth may mean that the 2.3 GHz and 2.6 GHz bands may become insufficient to meet capacity needs in the future especially for urban areas.

We do not agree with the statement the "all three bands (2.3 GHz, 2.6 GHz and 3.6 GHz) are likely to become similarly effective in delivering mobile data. This ignores the very significant difference in propagation between 3.6Ghz and other bands" Comreg should have higher regard for the difference in propagation in the benchmark setting process.

5.115 Vodafone believes that the minimum price is too high by a factor of about 2, and should be €0.007 to €0.015 as the band, in its view, will be principally used for FWA type services. According to Vodafone, the high minimum price is likely to lead to unassigned spectrum even though there may be demand for it. Vodafone states that in order to maximise use and hence support the government objectives of supplying services to these areas at minimum cost it is imperative that this spectrum is effectively utilised. .

We note the new reduced proposed minimum price, but believe that further reduction is justified. .

5.137 Notwithstanding, DotEcon accepts that there is a high level of uncertainty associated with the benchmark estimates and concerns about the valuation placed on 3.6 GHz spectrum in the past adds to this uncertainty. DotEcon is therefore of the view that such factors should be further reflected in the minimum price. DotEcon recommends lowering the proposed minimum price range to reflect the uncertainty around the value of 3.6GHz spectrum. DotEcon now recommends lowering the minimum price on a price per MHz per capita basis from €0.015 to €0.01 in rural areas and €0.025 to €0.015 in urban areas; a reduction of €0.05 and €0.01, respectively.

5.138 ComReg agrees with DotEcon that while no compelling evidence was presented to show that the minimum prices would choke off demand, there is sufficient uncertainty surrounding the value of the 3.6 GHz spectrum to warrant a lower minimum price for this award. ComReg does not consider that minimum prices set at this level would encourage gaming or speculative bidding and emphasises

that the final price for spectrum rights would be determined by the interaction of bidders in the proposed auction.

5.139 Finally, ComReg agrees with DotEcon’s recommendation that the benchmarking analysis should be updated in light of the latest available data and minimum prices should be kept under review until the finalisation of the award process.

Vodafone re-states the input we gave to Comregs recent Spectrum strategy document. ComReg have tended to follow an unfortunate practice in Europe of setting auction reserve prices based on the results of auctions in other countries. This can result in a ratcheting up of prices over time, and is a departure from efficient pricing. A well-designed and well-run auction will reveal the market value of the spectrum.

Vodafone agree that the minimum prices should be reduced at least to the figures now proposed in 5.137 but disagree that this figure are now a conservative figure. There remains significant uncertainty in the value of the 3.6GHz band and the figures used in the input to the benchmarking process are statistically very weak. Comreg should ensure assignment of all of the spectrum in the auction process by further lowering the minimum price.

## Chapter 6

### 6 Licence Conditions

#### 6.6 Coverage and rollout conditions

6.82 Having considered the views of respondents to Document 15/70, Plum’s expert advice, ComReg is minded to impose the rollout obligations set out in the table below.

Table 2: Proposed base station rollout obligation by region

Region Type*	Licensee holding up to and including 100 MHz	Licensee holding over 100 MHz
Non-urban	15	25
Urban (other than Dublin)	2	4
Dublin	10	15

Vodafone are in agreement with this proposal



## Geographic deployment of base stations in non-urban regions

6.84 ComReg notes that no significant concerns were raised in relation to its proposal that base stations would be required to be deployed in between 3 to 5 counties in each non-urban region. Accordingly, ComReg's position is that base stations should be required to be deployed in at least 4 counties in each non-urban region.

Agreed

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## 6.8 Technical conditions

ComReg's position

6.130 The technical conditions set out in 3.6 GHz EC Decision and as proposed in Document 15/70 therefore remain unchanged.

Agreed.

### 6.8.2 TDD inter-network synchronisation

Summary of ComReg's position in Document 15/70

6.154 In addition ComReg recognises that default technical parameters for synchronisation should not represent a significant constraint for any one operator. Therefore, based on its analysis above, ComReg considers TD-LTE configuration 2 (3:1) with special sub frame (SSF) option 6 to be the optimal default frame structure for use with permissive masks. Alternative frame structures whose transmit and receive periods are aligned with this configuration would also be permitted to use the permissive mask.

Vodafone agree that the use of synchronisation would improve the efficiency of spectrum usage by all operators.

Vodafone's research into configuration and special sub-frame option has also identified Configuration 2 and special sub-frame option 6 as the most used and most useful frame structures.

## Chapter 7

### 7 Transitional issues and Preparatory Licences

#### 7.10 ComReg's updated Transition proposals

7.72 Following consideration of respondents' views as outlined above, ComReg remains of the view that transitional arrangements will be needed. Similar to its considerations in Document 15/70, ComReg does not believe that market mechanisms alone would be likely or sufficient to address all of the potential transitional issues.

7.73 ComReg therefore remains of the view that all of the tools that it proposed to address transitional issues in 15/70 remain appropriate, namely:

- Transition Proposal 1: the setting of transition rules and the formulation and implementation of a transition plan.
- Transition Proposal 2: the Transition Protected Licence.
- Transition Proposal 3: the Transition Unprotected Licence.

7.74 ComReg acknowledges that, depending on the outcome of the proposed award process and the difficulties faced by existing licensees and winning bidders, some, or all of these tools may not be required. The following sets out ComReg's updated transition proposals in light of the above consideration of responses received to Document 15/70.

Vodafone broadly agrees with ComReg's updated Transition proposals. A number of the concerns that Vodafone expressed in the last consultation, principally around fear of delays to roll-out of new consultation have been addressed.

Due regard will have to be given throughout the process to the 2008 3.6GHz EC decision and its statement that alternative parameters should not "prevent use of the band according to the Annex." Article2(1)

Some further comments below.

## 7.11 Transition Proposal 1: The setting of transition rules and the formulation and implementation of the transition plan

The elements of a transition plan 7.83

The process to determine a 3.6 GHz transition plan 7.84

Vodafone agree with these proposals

## 7.12 Transition Proposal 2: The Transition Protected Licence

7.87 Where an Existing Licensee is a winning bidder of new rights of use in a region that contains the service area of its existing licence, and the transition activities associated with this existing licence are likely to occur after the end date of the FWALA licensing scheme on 31 July 2017, ComReg proposes to allow such Existing Licensees to apply for a Transition Protected Licence in order to facilitate the timely and orderly completion of its transition activities in line with the transition plan.

7.88 While ComReg does not know the extent of the transition plan activities at this point in time, ComReg remains of the view that any Transition Protected Licence would be of a short-term nature in order to avoid unnecessary delay to the introduction of new licences.

We would like more clarity around Comreg's thinking on what time limit there would be to short-term TPLs.

## 7.13 Transition Proposal 3: Transition Unprotected Licence

7.96 Following the completion of the transition plan for a particular spectrum block and region, it is ComReg's intention to issue spectrum rights for that spectrum block and region to the new licensee. Should a TUL also encompass that same spectrum block and geographic area, then following a reasonable notification period, which ComReg believes to be of a short-term nature, the TUL licensee would be required to cease using the spectrum assigned to the new licensee. Should no other suitable spectrum be available for the TUL licensee, the TUL would then expire.

Vodafone are satisfied with this proposal.