



Commission for
Communications Regulation

Information Notice

GSM Liberalisation Project: Publication of non-confidential submissions to Document 11/75 and correspondence provided by respondents (and ComReg written responses to same)

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An Coimisiún um Rialáil Cumarsáide

Commission for Communications Regulation

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ANNEX A

A1. Non-confidential responses to Document 11/75

1. H3GI response (received 28 November 2011);
2. Eircom Group response (received 28 November 2011);
3. Eircom Group supplementary response (received 12 December 2011);
4. Vodafone response (received 28 November 2011);
5. Vodafone supplementary response (received 12 March 2012);
6. Telefónica response (received 28 November 2011); and
7. RTE response (received 28 November 2011).

A2. Non-confidential correspondence provided by respondents in relation to ComReg's multi-band spectrum release proposals from 7 December 2011 until 5 March 2012 (and ComReg written responses to same).

1. H3GI: email to ComReg "ComReg Doc. No. 11/75" (email dated 7 December 2011);
2. ComReg: reply to H3GI email of 7 December 2011 (email dated 3 February 2012);
3. H3GI: letter to ComReg "COMREG SPECTRUM STRATEGY STATEMENT 2011 – 2013" (letter dated 22 December 2011);
4. H3GI: letter to ComReg "ComReg Doc. No. 11/102" (letter dated 23 January 2012);
5. H3GI: letter to ComReg "ComReg Doc. No.s 11/60 and 11/102" (letter dated 24 February 2012);
6. RTE: email to ComReg "Overload problem" (email dated 4 January 2012);
7. IBEC: email to ComReg "ComReg plans re publication of information memorandum on spectrum" (email dated 15 February 2012);
8. ComReg: reply to IBEC email of 15 February 2012 (email dated 16 February 2012); and
9. Telefonica: letter to ComReg "Multi-band Spectrum Release, CCA, and Swiss Lessons" (letter dated 1 March 2012).
10. Telefonica: email to ComReg "Questions on the Proposed Multi-Band Auction" (email dated 5 March 2012).
11. eircom Group: letter to ComReg "Proposed Multi-band Spectrum Award" (letter dated 9 March 2012)
12. eircom Group: email to ComReg " Proposed Multi-Band Spectrum Release" (email dated 14 March 2012)
13. ComReg: reply to eircom Group email of 14 March 2012 (email dated 14 March 2012)

ANNEX A.1

1. H3GI response (received 28 November 2011)



Response by Hutchison 3G Ireland Limited
in respect of ComReg Document No. 11/75
“Multi-band Spectrum Release – Draft Information Memorandum”

28 November 2011



EXECUTIVE SUMMARY

- Hutchison 3G Ireland Limited (“H3GI”) welcomes the opportunity to respond to ComReg Doc. No. 11/75, “*Multi-band Spectrum Release – Draft Information Memorandum*” (the “Draft IM”). However, it is deeply concerned about ComReg’s proposed approach to the upcoming auction.
- In the Draft IM, ComReg indicates that it is possible that the proposed liberalised use licences (“Liberalised Use Licences”) may not commence until at least 2015. Notwithstanding this, it proposes that the existing GSM licensees, Vodafone, O2 and Meteor (the “Existing GSM Licensees”) propose how they should complete the transitional activities required to permit liberalised use of 900 and 1800 MHz spectrum and does not specify a deadline for completion of these transitional activities - notwithstanding the emphasis it placed on the fixed duration of the GSM interim licences and the extensive research conducted by Vilicom and Red-M in respect of transitional activities.
- The potential delay in commencement of Liberalised Use Licences creates a completely unacceptable level of uncertainty for operators and in particular, new band entrants such as H3GI. How are operators supposed to plan to buy, rollout and market equipment and handsets for a licence when the commencement date of their licences is unknown and depends on their competitors? ComReg is facilitating if not providing an incentive to delay the availability of liberalised 900 and 1800 MHz spectrum.
- ComReg needs to: (i) take the lead in relation to the design and management of the award process and specify a robust framework for transitional activities, including milestones and timetable for completion with penalties that deter non-compliance; and (ii) ensure that liberalised spectrum is available as soon as practicable after the award process, and in any event no later than 1 February 2013. Any further delay in the award process will: (i) severely damage the credibility of the proposed award; and (ii) cause significant economic harm to businesses and ultimately consumers in Ireland who will be placed at a disadvantage compared to other end-users within the EU. It is therefore imperative that ComReg addresses the issues raised in this response and acts accordingly, so as to instil confidence in the award process and to ensure that neither businesses nor consumers in Ireland are disadvantaged in terms of access to high quality data services.
- “*Liquidated damages*” of €1.2 million or €0.6 million per block per annum are not a sufficient deterrent. As highlighted previously by H3GI, Vodafone and O2 generate €43 million and €33 million per annum, respectively, in voice and handset revenues from current subscribers. ComReg’s approach does not adequately address / protect against the harm to society of delayed access to liberalised 900 and 1800 MHz spectrum. H3GI reiterates its previous submission that parties should pay exponential amounts as delays increase.
- ComReg further needs to create an incentive for Existing GSM Licensees to complete transitional activities as soon as possible. As previously proposed by H3GI, ComReg should reserve Lot A of the 900 MHz band in the first time slice for a new band entrant. However, in light of the uncertainty now created, ComReg should also reserve Lot A of the 900 MHz band in the second time slice and unassigned 1800 MHz in both time slices for a new band entrant. This would: (i) provide an incentive to the Existing GSM Licensees to promptly complete their transitional activities; (ii) ensure the prompt delivery of liberalised

services on 900 and 1800 MHz; and (iii) reduce the significant competitive harm created and exacerbated by ComReg's proposals. As a result of ComReg's proposals, a new band entrant faces an unacceptable level of uncertainty, the continued generation of unfair profits by its incumbent competitors and the loss of capital. In the absence of such a reservation, H3GI would have to seriously consider its options.

- In D03/11 (Interim Licences for the 900 MHz Band), ComReg placed great emphasis on the fixed duration of GSM interim licences and H3GI relied on this, *inter alia*, in its decision to refrain from appealing that decision. In light of ComReg's change in position and the considerable uncertainty that it has now created, H3GI reserves all rights in respect of this matter.
- H3GI re-iterates its position that ComReg should award "indefinite licences" in respect of 800, 900 and 1800 MHz and amend the 3G licences of Vodafone, O2, Meteor and H3GI to provide that they too are indefinite (so that equality of treatment is protected). In this regard, it refers to the independent report commissioned by H3GI from NERA Economic Consulting ("NERA") in relation to indefinite licences and submitted to ComReg in relation to ComReg Doc. No. 11/28, "*Review of the Period 2008 – 2010 & Proposed Strategy for Managing the Radio Spectrum: 2011 – 2013*". NERA concludes that there is a strong case for Ireland to adopt indefinite terms for mobile spectrum licences, subject to suitable conditions being imposed to protect ComReg's ability to fulfil its statutory objectives. In particular, NERA concludes that:
 - The current approach in Ireland of fixed term licences with no renewal option is inconsistent with ComReg's core objective of encouraging efficient use of spectrum. A shift to an indefinite licence regime would provide stronger incentives for investment and for spectrum trading.
 - There could be static and dynamic efficiency gains in Ireland of €250 million to €450 million over a 15 year period if a policy of indefinite terms is adopted.
 - Indefinite licence terms are better suited to meet the relevant objectives of a spectrum manager, provide incentives for efficient utilisation of scarce spectrum, and promote competition and investment which should benefit consumers as well.
 - Consumers are also likely to be better off with indefinite term licences. This is because, amongst other matters, indefinite terms may increase the scope for entry and make the market more contestable, and competitive.
 - Countries that have been at the forefront of spectrum management reforms have either implemented or are considering implementing indefinite licences. The United Kingdom has implemented indefinite licences. New Zealand and the United States have implemented similar concepts. Australia and Canada are both considering indefinite licences.

ComReg has failed to provide sufficient justification for its position that indefinite licences are not appropriate in the context of the current award process. Indeed, three and a half years of consultation in respect of this matter and the possibility of further delay until at least 2015 vindicates NERA's conclusions.



- Whilst, H3GI welcomes the reduction in the proposed minimum reserve price, it still regards the minimum reserve price as too high and that it will have a negative impact on demand and the efficient use of spectrum. The only way to determine the true, long-run economic value of spectrum access is to allow the market to determine this value. ComReg should implement a minimum reserve price in line with minimum reserve prices elsewhere.
- ComReg's proposals are contrary to, *inter alia*: (i) the principle set out in the GSM Amendment Directive, that spectrum in the 900 MHz band should be liberalised as soon as possible; and (ii) ComReg's statutory obligations and objectives set out in section 12 of the Communications Regulation Act 2002, as amended (the "Act") to promote competition and to ensure the effective management and efficient use of spectrum. ComReg has failed to carry out a proper consultation and has improperly chosen to introduce in the Draft IM fundamental issues to the award process, not previously consulted upon. The possibility that commencement of Liberalised Use Licences in the second time slice would be delayed represents an entirely new position and has not been consulted upon by ComReg to date. It is entirely inappropriate / unacceptable that ComReg should introduce / raise such a fundamental issue at such an advanced stage in the consultation process and such action does not constitute a proper discharge of ComReg's duty to carry out a thorough and transparent consultation process.

Recommendation:

H3GI recommends that ComReg:

1. Implements H3GI's proposed alternative spectrum rules;
2. Awards "indefinite licences" in respect of 800, 900 and 1800 MHz and amend the 3G licences of Vodafone, O2, Meteor and H3GI to provide that they too are indefinite (so that equality of treatment is protected);
3. Implements a minimum reserve price in line with minimum reserve prices elsewhere;
4. Specifies a robust framework for transitional activities, including milestones and timetable for completion with penalties that deter non-compliance;
5. Ensures that liberalised spectrum is available as soon as practicable after the award process, and in any event no later than 1 February 2013; and
6. Reserves Lot A of the 900 MHz band and unassigned 1800 MHz in both time slices for a new band entrant.

INTRODUCTION

The comments contained in this document are in addition and without prejudice to H3GI's previous responses to ComReg's consultations on liberalisation of the 900 MHz spectrum band. Given the limited time available to comment in respect of the significant and complex matters raised by the Draft IM, H3GI reserves the right to adduce further comments in due course.

The format of this document is as follows:

1. Part 1 contains general comments;
2. Part 2 addresses ComReg's failure to take a pro-active approach and adopt a robust framework so as to avoid further delays in the award process;
3. Part 3 addresses ComReg's failure to properly consult;
4. Part 4 addresses ComReg's failure to provide sufficient information / reasoning;
5. Part 5 addresses the Early Liberalisation Option;
6. Part 6 addresses the possibility of Advanced Commencement;
7. Part 7 addresses indefinite licences;
8. Part 8 addresses the minimum reserve price;
9. Part 9 addresses miscellaneous items;
10. Part 10 contains the conclusion;
11. Annex 1 contains a breakdown of calculations made by Value Partners Management Consulting ("Value Partners"); and
12. Annex 2 contains a copy of the report commissioned by H3GI from NERA in relation to indefinite licences.

PART 1 – GENERAL COMMENTS

H3GI welcomes the opportunity to respond to the Draft IM. However, it is deeply concerned about ComReg's proposed approach to the upcoming auction.

PART 2 – COMREG'S FAILURE TO TAKE A PRO-ACTIVE APPROACH AND TO ADOPT A ROBUST FRAMEWORK SO AS TO AVOID FURTHER DELAYS IN THE AWARD PROCESS

In the Draft IM, ComReg indicates that it is possible that Liberalised Use Licences may not commence until at least 2015. Notwithstanding this, it proposes that the Existing GSM Licensees, Vodafone, O2 and Meteor, propose how they should complete the transitional activities required to permit liberalised use of 900 and 1800 MHz spectrum and does not specify a deadline for completion of these transitional activities - notwithstanding the emphasis it placed on the fixed duration of the GSM interim licences and the extensive research conducted by Vilicom and Red-M in respect of transitional activities.

The potential delay in commencement of Liberalised Use Licences creates a completely unacceptable level of uncertainty for operators and in particular, new band entrants such as H3GI. How are operators supposed to plan to buy, rollout and market equipment and handsets for a licence when the commencement date of their licences is unknown and depend on their competitors? ComReg is facilitating if not providing an incentive to delay the availability of liberalised 900 and 1800 MHz spectrum.

ComReg's approach towards liberalisation and notably, the commencement date for the Liberalised Use Licences is contrary to the principles in the European



Commission's Spectrum Decision (the EC Decision)¹ and the principle set out in the GSM Amendment Directive² - being the earliest liberalisation of the 900 MHz band without creating distortions of competition.³ ComReg has also failed to properly discharge its own statutory obligations and objectives set out in section 12 of the Act to promote competition and to ensure the effective management and efficient use of spectrum. H3GI believes that it is imperative that, as a matter of principle, ComReg avoids facilitating delay.

ComReg has failed to take a sufficiently pro-active approach towards the design and management of the award process (including, the adoption of a robust framework) so as to avoid further delays in the process and ensure that liberalised spectrum is available as soon as practicable after the award process, and in any event no later than 1 February 2013. H3GI is particularly concerned by ComReg's apparent readiness to accept the possibility of delayed commencement of the Liberalised Use Licences. The recognition of possible delay is an entirely unacceptable starting point.

H3GI is also concerned by ComReg's approach towards the design and management of the requisite transitional activities that must be completed by the Existing GSM Licensees prior to commencement of the Liberalised Use Licences, including in particular, the setting of appropriate milestones for their completion. It is entirely inappropriate that ComReg should seek to delegate design and management of the requisite transitional activities to the Existing GSM Licensees and such action does not constitute a proper discharge of ComReg's functions.

ComReg needs to: (i) take the lead in relation to the design and management of the award process and specify a robust framework for transitional activities, including milestones and timetable for completion with penalties that deter non-compliance; and (ii) ensure that liberalised spectrum is available as soon as practicable after the award process, and in any event no later than 1 February 2013. Any further delay in the award process will: (i) severely damage the credibility of the proposed award; and (ii) cause significant economic harm to businesses and ultimately consumers in Ireland who will be placed at a disadvantage compared to other end-users within the EU. It is therefore imperative that ComReg addresses the issues raised in this response and acts accordingly, so as to instil confidence in the award process and to ensure that neither businesses nor consumers in Ireland are disadvantaged in terms of access to high quality data services.

"Liquidated damages" of €1.2 million or €0.6 million per block per annum are not a sufficient deterrent. As highlighted previously by H3GI, Vodafone and O2 generate €43 million and €33 million per annum, respectively, in voice and handset revenues from current subscribers (Described in more detail in Annex 1). ComReg's approach does not adequately address / protect against the harm to society of delayed access to liberalised 900 and 1800 MHz spectrum. H3GI reiterates its previous submission that parties should pay exponential amounts as delays increase.

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1. Decision 2009/766/EC on the harmonisation of the 900 MHz and 1800 MHz frequency bands for terrestrial systems capable of providing pan-European electronic communications services in the Community, as amended by Decision 2011/251/EC.
 2. Ibid.
 3. H3GI notes that in the past, ComReg proposed that it would liberalise the existing GSM licences in the 900 MHz and 1800 MHz bands as soon as practicable after the EC Decision entered into force - Paragraph 4.131 of ComReg's Response to Consultation.

ComReg further needs to create an incentive for Existing GSM Licensees to complete transitional activities as soon as possible. As previously proposed by H3GI, ComReg should reserve Lot A of the 900 MHz band in the first time slice for a new band entrant. However, in light of the uncertainty now created, ComReg should also reserve Lot A of the 900 MHz band in the second time slice and unassigned 1800 MHz in both time slices for a new band entrant. This would: (i) provide an incentive to the Existing GSM Licensees to promptly complete their transitional activities; (ii) ensure the prompt delivery of liberalised services on 900 and 1800 MHz; and (iii) reduce the significant competitive harm created and exacerbated by ComReg's proposals. As a result of ComReg's proposals, a new band entrant faces an unacceptable level of uncertainty, the continued generation of unfair profits by its incumbent competitors and the loss of capital. In the absence of such a reservation, H3GI would have to seriously consider its options.

In D03/11 (Interim Licences for the 900 MHz Band), ComReg placed great emphasis on the fixed duration of GSM interim licences and H3GI relied on this, *inter alia*, in its decision to refrain from appealing that decision. In light of ComReg's change in position and the considerable uncertainty that it has now created, H3GI reserves all rights in respect of this matter.

Potential for Delayed Commencement

At paragraphs 2.22 to 2.25 (inclusive) of the Draft IM, ComReg states as follows:

"2.22 It should [be] [sic] noted that circumstances outside ComReg's control could lead to ComReg being unable to make any or all Lots in the 800 MHz, 900 MHz and/or 1800 MHz Bands available for Liberalised Use by a Winning Bidder by the commencement of Time Slice 1 and/or Time Slice 2 identified above."*

2.23 Interested Parties are hereby expressly put on notice of the potential for delayed access to any and all Lots in the 800 MHz, 900 MHz and 1800 MHz Bands in Time Slice 1 and/or 2 and, in submitting an Application, Interested Parties acknowledge same.

2.24 Subsection 2.2.6 below details the refunds payable to a Winning Bidder in the event of delayed access to Lots in Time Slice 1 and 2.

2.25 To the extent permitted by law, ComReg's aggregate liability for all losses of any nature arising from delayed access to Lots in Time Slice 1 and/or 2 is expressly limited to the refunds stated to be payable by ComReg set out in this draft Information Memorandum and, by submitting an Application Interested Parties agree to same.

**Footnote: Such potential circumstances include unforeseen delays to ASO resulting in delayed access to Lots in the 800 MHz band in Time Slice 1 and/or Transitional Activities by Existing GSM Licensees in the 900 MHz and/or 1800 MHz band resulting in delayed access to Lots in Time Slice 1 and/or 2 in these bands." (emphasis added)*

The basis for the purported need to provide for delayed commencement in respect of both Time Slice 1 and/or Time Slice 2 is entirely unclear. H3GI has consistently stated and demonstrated that relocation and re-tuning should not take as long as alleged by the incumbent operators. Further, ComReg itself has previously stated that Existing GSM Licensees have sufficient time to plan and implement transitional activities between Time Slice 1 and 2. As a result, H3GI submits that licences in

Time Slice 1 should simply expire at the commencement of Time Slice 2. ComReg should not be countenancing any other situation. Otherwise and in the absence of sufficient incentives, licensees in Time Slice 2 are unfairly placed at the mercy of the licensees in Time Slice 1.

As stated above, H3GI believes that it is imperative ComReg avoids facilitating delay and as such, it is entirely inappropriate for ComReg to be intimating a willingness to entertain further delays, not least given the concerns raised by H3GI in previous responses to ComReg's consultations, including ComReg's consultations on the interim licences for Vodafone and O2⁴. H3GI specifically raised its concerns regarding ComReg's ability to renew / extend the Interim Licences beyond the proposed expiry date of 31 January 2013 and called on ComReg to provide for a fixed date of expiry of the Interim Licences, with 31 January 2013 being the drop-dead date beyond which the Interim Licences would not be extended / renewed.

Additionally, ComReg's explicit recognition that the commencement of Liberalised Use Licences in Time Slice 1 and/or Time Slice 2 may be delayed, seems entirely at odds with ComReg's previous statements made during the consultation process that "*the time period covered by the interim licence should be of the shortest duration that is possible and practical taking account of all of the relevant circumstances*"⁵, as well as more recent statements made by ComReg at page 135 of ComReg's Response to Consultation⁶ and welcomed by H3GI in H3GI's Response to ComReg Document No. 11/60.

Further, it is imperative that where ComReg does envisage the potential for delays, the reasons for / circumstances in which delays might arise should be clearly defined in advance so as to ensure transparency and regulatory predictability.

Although it is suggested in paragraph 2.22 that the potential for delay could be related to "*circumstances outside ComReg's control*", there is no clarity as to what these circumstances might be, and while the relevant footnote refers to "*unforeseen delays to ASO*" [Analogue Switch Off] in the 800 MHz band in Time Slice 1, the footnote also includes reference to "*Transitional Activities by Existing GSM Licensees in the 900 MHz and/or 1800 MHz band resulting in delayed access to Lot/s in Time Slice 1 and/or 2 in these bands*" (emphasis added).

As set out in H3GI's responses to ComReg's consultations regarding the Interim Licences granted to Vodafone and O2⁷, it is incumbent that transitional activities are completed promptly and that the Existing GSM Licensees should not be able to benefit from further foot-dragging / delay in putting in place sufficient measures to carry out the requisite transitional activities needed to migrate customers. As noted above, at the time of submitting its responses to ComReg's consultations on the Interim Licences, H3GI expressly referred to its concerns regarding possible extension of the Interim Licences, and the potential for misuse of ComReg's ability / power to extend these Licences. It is incredible that the potential for extension now

4. In particular, H3GI's responses to ComReg Document No. 11/11, ComReg Document No. 11/27, and ComReg Document No. 11/29.

5. Page 37 of ComReg's Response to Consultation.

6. Multi-Band Spectrum Release – *Release of the 800 MHz, 900 MHz and 1800 MHz radio spectrum bands*, ComReg Document No. 11/60, dated 24 August 2011.

7. Ibid.

seems a very real possibility. In fact, H3GI notes that footnote 41 in respect of paragraph 2.76 (which addresses the refund of Licence fees) states that “ComReg expressly reserves the right to vary the Commencement and/or Expiry date of Time Slice 1 and/or 2 in the Final Information Memorandum or by way of amendment to the same”.

ComReg must instil confidence in the award process, by taking a much firmer approach towards the risk of delayed commencement of the Liberalised Use Licences.

Refund of Licence Fees in event of Delayed Commencement

At section 2.2.6 (paragraph 2.75 et seq.), ComReg provides that refunds may be payable to winning bidders in the event access to Lots in Time Slice 1 and 2 is delayed:

“2.75 In the limited circumstances described in this Information Memorandum, ComReg may refund Licence Fees for delayed commencement of Liberalised Use Licences in Time Slice 1 for Lots in the 800 MHz, 900 MHz and/or 1800 MHz bands.

2.76 In the event that ComReg is unable to make any Lots or Lots in the 800 MHz, 900 MHz and/or 1800 MHz bands to which a Liberalised Use Licence relates available for use by the commencement date of Time Slice 1, then the Winning Bidders of such Lots shall be entitled to a refund from ComReg. The refund payable to a Winning Bidder for each Lot in the 800 MHz, 900 MHz and/or 1800 MHz band so delayed shall be calculated as follows:*

- *a pro-rata portion of the Upfront Fees already paid by the Winning Bidder on a daily basis for each whole day following the commencement date of Time Slice 1 that ComReg does not make the Lot available for Liberalised Use; and/or*
- *a pro-rata portion of SUFs already paid by Winning Bidder on a daily basis for each whole day following the commencement date of Time Slice 1 that ComReg does not make the Lot available for Liberalised Use.*

2.77 Refunds will be paid by ComReg by way of an offset against the following year’s SUF (or multiple years’ SUF if required).

2.78 For the avoidance of doubt:

- *no refund of Upfront Fees and/or SUFs shall be payable by ComReg to any Winning Bidder for any delay to the availability of any Lot caused, or contributed to, by acts or omissions of that Winning Bidder, its servants or agents, or any failure on behalf of its suppliers;*
- *in submitting an Application, Applicants agree that if they become Winning Bidders, a failure to obtain consents, approvals, apparatus or funding necessary to deploy a network or complete transitional activities shall be deemed to be an omission on behalf of that Winning Bidder;*
- *no interest shall be payable by ComReg on any Upfront Fee or SUF already paid by a Winning Bidder for any Lot in the 800 MHz, 900 MHz and/or 1800 MHz delayed; and*

- *to the extent permitted by law, ComReg's liability for loss of any nature arising from delayed access to Lots in Time Slice 1 and/or 2 is expressly limited to the refunds identified above and, in submitting an Application, Interested Parties agree to same.*

2.79 In the limited circumstances described in this Information Memorandum, ComReg may also refund of Licence Fees for delayed commencement of Liberalised Use Licences in Time Slice 2 for Lots in the 800 MHz, 900 MHz and/or 1800 MHz band.

2.80 Even though ComReg does not expect any transitional activities to result in delayed access to Lots in Time Slice 2 (given the substantial time before commencement of Time Slice 2 for Existing GSM Licensees and Winning Bidders to address such activities), in the event that such delays arise, then ComReg would apply the above process for any such delays.

** Footnote: ComReg reserves the right to vary the Commencement and/or Expiry date of Time Slice 1 and/or 2 in the Final Information Memorandum or by way of amendment of same.” (emphasis added)*

Notwithstanding H3GI's view that ComReg should do all it can to avoid the possibility of delayed commencement of the Liberalised Use Licences, H3GI welcomes the principle that pro-rata refunds of spectrum fees should be payable in the event of delayed commencement, including in respect of delayed commencement of the 800 MHz band (as requested by H3GI in Part 8 of H3GI's Response to ComReg Document No. 11/60). However, H3GI considers that ComReg's proposed method of payment / accounting to operators is inappropriate and unfair. H3GI considers that refunds should be payable immediately so that the relevant operator is no worse off in those circumstances, rather than ComReg retaining the capital and employing it by way of set-off against the following year's Spectrum Usage Fees ("SUFs"). ComReg has not provided any plausible / proper justification as to why it considers refunds need not include interest earned on the relevant amounts by ComReg.

It is unclear as to why ComReg deems it appropriate to retain monies paid in advance, in good faith, and to effectively penalise Winning Bidders who are non-GSM operators for the Existing GSM Licensees' failure to carry out the transitional activities expeditiously. It is suggested that ComReg's proposed approach will prefer Existing GSM Licensees over non-GSM Winning Bidders without any clear basis for doing so. This will have the effect that Existing GSM Licensees will have two benefits over Winning Bidders who are non-GSM operators i.e. it will delay their commencement and deprive them of capital. It is further suggested that ComReg's proposed approach is simply characteristic of ComReg's general approach to the award process, namely ComReg's desire to prefer revenue generation over promotion of competition, and that as such, this does not constitute proper discharge of ComReg's statutory obligations and objectives as set out in section 12 of the Act.

While ComReg's acknowledgement that refunds may be payable is to be welcomed, the actual language used by ComReg in paragraph 2.75 et seq. is somewhat ambiguous. Paragraph 2.76 states that "*In the event that ComReg is unable to make any Lot or Lots in the 800 MHz, 900 MHz and/or 1800 MHz bands to which a Liberalised Use Licence relates available for use by the commencement date of Time Slice 1, then the Winning Bidders of such Lots shall be entitled to a refund from ComReg*" (emphasis added). By way of contrast, however, the reference in the preceding paragraph to the fact that ComReg "*may*" refund Licence Fees for delayed commencement in Time Slice 1 and ComReg's purported ability to vary the

Commencement and/or Expiry date of Time Slice 1 and/or 2 (as expressed in footnote 41) creates confusion over the precise extent of a Licensees “entitlement” to a refund.⁸ In the interests of clarity and fairness, there should be a firm commitment on ComReg’s part to refund fees to Winning Bidders who are non-GSM operators such as H3GI, where the delay in commencement is caused (and/or contributed to) by failure of the Existing GSM Licensees to carry out their transitional activities promptly (i.e. refunds “will” be paid, rather than “may” be payable). The approach taken by ComReg on refund of Licence Fees is a fundamental issue and it is imperative that this is clarified prior to the award process.

Additionally, H3GI is concerned that it is unclear to what extent ComReg might seek to rely on the circumstances set out in paragraph 2.78 of the Draft IM and in particular, the reference to a delay that is “contributed to” by a winning bidder, in order to exclude liability towards a Winning Bidder who is a non-GSM operator such as H3GI, in the context of delayed transitional activities of the Existing GSM Licensees.

Transitional Issues

As indicated above, H3GI believes that it is entirely inappropriate that ComReg should seek to delegate design and management of the requisite transitional activities to the Existing GSM Licensees and that such behaviour does not constitute a proper discharge of ComReg’s functions.

H3GI is disappointed and concerned that the Draft IM makes no reference to a timetable in relation to the establishment and publication of ComReg’s proposed Project Plan for transitional activities, but instead suggests that this will be a matter for the Existing GSM Licensees to address by way of collective proposals two weeks after the announcement of the results of the award process:

“3.130 Existing GSM Licensees will be provided a 2 week period immediately following the above announcement during which to collectively formulate and submit a Relocation Project Proposal for the 900 MHz and 1800 MHz bands for consideration by ComReg (including any agents or servants) and Winning Bidders in these bands.

3.131 ComReg would envisage this Relocation Project Proposal to satisfactorily address at least the following matters:

- *identification of the relocations to be undertaken by Existing GSM Licensees and the order of each relocation in each band (or coordinated across both bands);*
- *the setting of milestones dates for each relocation activity identified. It is assumed that the Relocation Project Proposal will ensure that all relocation activities for both bands will be completed by the commencement date of Time Slice 1;*

⁸ H3GI has already drawn attention to the lack of clarity in ComReg’s approach, exacerbated by the inconsistency in language used by ComReg during the consultation process (in particular, in Part 3 of H3GI’s Response to ComReg Document No. 11/60 concerning the inconsistency in ComReg’s language and that of its economic consultants DotEcon to describe the standard of review applied).

- *where the relocation of one Existing GSM Licensee is dependent upon the relocation/s of another, this would be clearly identified such that any consequential delays to one party due to the delay of another party can be clearly attributable to the responsible party;*
- *a robust and transparent mechanism to allow ComReg (including any agents or servants), Existing GSM Licensees, Winning Bidders and other Interested Parties to monitor compliance with the relocation activity milestones and deliverable dates (subject to non-disclosure of properly confidential information); and*
- *attribution and acceptance of liability for liquidated damages payable by Existing GSM Licensee(s) to ComReg in the event of non-compliance by it/them with the relocation activity milestones identified in the plan (as further described below), where such Existing GSM Licensee(s)' actions or omissions caused the non-compliance with the relevant milestone date.*

3.132 Following receipt of a Relocation Project Proposal, ComReg will progress the matter in consultation with Winning Bidders and Existing GSM Licensees with a view to finalising a Relocation Project Plan. This may take the form of written consultation and/or via multilateral and/or bilateral meetings with same.

3.133 In the event that Existing GSM Licensees are unable or unwilling to submit a Relocation Project Proposal by the stipulated time, ComReg will formulate and implement a Relocation Project Plan, following appropriate consultation with Winning Bidders and Existing GSM Licensees.

3.134 ComReg reserves the right to make a final and binding decision on any and all matters following appropriate consultation. Existing GSM Licensees and other Interested Parties agree to be bound by the Relocation Project Plan by submitting their Applications to partake in the Award Process.

3.135 Once the Relocation Project Plan is finalised, it will be published on ComReg's website, having regard to the provisions of ComReg's Guidelines on the Treatment of Confidential Information as set out in ComReg Document 05/24. ComReg reserves and retains the discretion to vary the Relocation Project Plan as appropriate." (emphasis added)

H3GI notes that following receipt of a Relocation Project Proposal, ComReg will progress the matter in consultation with the winning bidders and Existing GSM Licensees (e.g. written consultation, multilateral and/or bilateral meetings) with a view to finalising a Relocation Project Plan. While consultation on the Proposal with Winning Bidders is to be welcomed, in principle, H3GI would be concerned that the consultation is carried out in as expeditious a manner as possible so as to avoid unnecessary / further delay to the award process. How long, at most, does ComReg expect this 'consultation' will take?

H3GI believes that it is imperative that ComReg adopts a much more hands-on approach towards management of transitional issues / relocation activities. In particular, H3GI believes that it is inappropriate for ComReg to leave the drafting of the Relocation Project Plan to the Existing GSM Licensees for ComReg's approval, with ComReg only intervening where the Existing GSM Licensees are unable to reach agreement on the Plan within the requisite timeframe i.e. two weeks from the announcement of the results of the award process.

H3GI would like to understand the reasons behind ComReg's proposed approach, and how ComReg proposes to safeguard such discussions leading to a significant distortion of competition post-the award process in the wholesale and/or retail markets for the provision of electronic communications services in breach of Article 101(1) of the Treaty on the Functioning of the European Union (the "TFEU") and/or section 4(1) of the Competition Act 2002, as amended (the "CA"). H3GI calls on ComReg to provide details of the relevant safeguards to be put in place by ComReg to avoid the risk of tacit collusion arising out of such 'collective' discussions.

In terms of the scope of the Relocation Project Proposal, H3GI notes that ComReg envisages the Relocation Project Proposal would address certain minimum items, including milestone dates for each relocation activity, that ComReg assumes that the Proposal will ensure that all relocation activities for both bands will be completed by the commencement date of Time Slice 1, as well as attribution and acceptance of liability for liquidated damages in the event of non-compliance by an Existing GSM Licensee where the Licensee's actions / omissions "caused" the non-compliance with the relevant milestones.

H3GI believes that it is incumbent that ComReg ensures that the Existing GSM Licensees are properly held to account and that all relocation activities are completed as soon as possible after the award process, and in any event, prior to 1 February 2013. The only way in which ComReg can ensure that this occurs, is for ComReg to draft and set the relevant milestones which should become binding requirements (rather than ComReg simply envisaging what would be included in the Relocation Project Proposal) and the date for their completion (rather than ComReg simply assuming that the Proposal will ensure completion prior to 1 February 2013). As such, H3GI believes that ComReg should clarify its current expectation concerning commencement of the Liberalised Use Licences in Time Slice 1.

As regards ComReg's reference to a '*robust and transparent mechanism to allow ComReg, Existing GSM Licensees, Winning Bidders and other Interested Parties to monitor compliance with the relocation activity milestones and deliverable dates*' as a minimum requirement for the Relocation Project Proposal, ComReg should specify this mechanism rather than allowing the industry to propose the same.

Why is "*attribution and acceptance of liability*" required if applicants have already agreed to this as part of the auction process?

It is difficult to understand how ComReg's proposed approach can be reconciled with its recent statements at page 135 of ComReg's Response to Consultation that:

"ComReg also sees merit in incorporating aspects of H3GI's suggested approach to transitional issues, such as:

- *the setting of milestones for specific tasks;*
- *a sufficiently robust and transparent mechanisms to monitor compliance with milestones;*
- *appropriate financial measures to dissuade non-compliance with milestones;*
and
- *that the process adopted by ComReg reasonably includes the involvement of affected third parties, having regard to the protection of commercially sensitive information."*

The above proposals assumed that ComReg would set the relevant milestones etc, rather than simply allowing the Existing GSM Licensees to effectively police themselves.

H3GI believes that in order to ensure sufficient deterrent effect / incentive to Existing GSM Licensees to complete transitional activities as soon as possible, the Existing GSM Licensees should not be liable solely where their actions / omissions have “caused” a delay, but also where such actions / omissions have “contributed” to a delay. Each day by which commencement of the Liberalised Use Licences is delayed enables the Existing GSM Licensees to generate additional profits from their Interim Licences, while Winning Bidders who are non-GSM operators, such as H3GI, will incur significant business losses, which are in addition to any SUFs paid to ComReg in advance of commencement. It is wholly wrong for Existing GSM Licensees to be preferred in this way.

Further, given ComReg’s indication in paragraph 2.31 that “*there is no implied or express right of renewal, extension or any other form of prolongation of a spectrum right of use beyond the expiry date of Time Slice 2*”, there is a concern that the duration and overall value of any Liberalised Use Licence obtained by a winning bidder, such as H3GI, could be unfairly curtailed through the actions of Existing GSM Licensees (irrespective of the possibility of payment of refunds as a result of delayed commencement). H3GI notes that ComReg itself has previously stated that Existing GSM Licensees have sufficient time to plan and implement transitional activities between Time Slice 1 and 2. As a result, H3GI submits that licences in Time Slice 1 should simply expire at the commencement of Time Slice 2. ComReg should not be countenancing any other situation. Otherwise and in the absence of sufficient incentives, licensees in Time Slice 2 are unfairly placed at the mercy of the licensees in Time Slice 1.

H3GI believes that it is wrong that the Relocation Project Proposal / Plan be driven by the Existing GSM Licensees in the 900 MHz and 1800 MHz bands who have an incentive to delay commencement of the Liberalised Use Licences. Rather than wait for a proposal, H3GI proposes that ComReg should formulate a plan and promptly consult in respect of the same. Too much time has elapsed to leave it to industry and the Existing GSM Licensees have significant incentives to delay. There is also the potential for tacit collusion arising out of the ‘collective’ discussion and drafting of the Relocation Project Proposal by the Existing GSM Licensees, and it is unclear if and how ComReg is proposing to address this risk (e.g. through imposition of appropriate safeguards). Instead, it is imperative that ComReg takes a pro-active role in managing the transitional and relocation issues, including drafting of the Relocation Project Plan and setting of appropriate milestones so as to ensure commencement by 1 February 2013. Failure to meet the relevant milestones should be subject to enhanced financial penalties, which are separate from the estimated refunds payable to operators for delayed commencement.

Payment of Liquidated Damages in event of Delayed Commencement

Section 3.8.1 of the Draft IM provides as follows:

“3.136 An essential part of ensuring that Existing GSM Licensees are appropriately incentivised to complete their respective required relocation activities in an effective and timely manner, is the identification of, and agreement to pay, liquidated damages to ComReg where an Existing GSM Licensee fails to discharge its obligations in accordance with the milestones and deadlines set out in the Relocation Project Plan.”



3.137 The total amount of liquidated damages payable by Existing GSM Licensees will be based on the refunds of Licence Fees that ComReg pre-estimates that it may have to make to Winning Bidders in the event that ComReg may be unable to make Lots in the 900 MHz and/or 1800 MHz band available for use by the commencement date of Time Slice 1 due to the transitional activities of Existing GSM Licensees to these bands.* Section 2.2.6 of this document contains details of the nature of refunds payable by ComReg and shall be used by ComReg in pre-estimating the payable liquidated damages pursuant to the Relocation Project Plan. These liquidated damages are payable immediately on request and are non-refundable.

* Footnote: A similar process and system may be adopted by ComReg for Time Slice 2 where delays may be caused by the transitional activities of Existing GSM Licensees and Winning Bidders of Lots in Time Slice 1. Depending upon the nature and extent of relocations between Time Slice 1 and Time Slice 2, ComReg reserves the right to apply the above Transitional Rules to the Existing GSM Licensees and the Winning Bidders of Lots in Time Slice 1 in the 800 MHz, 900 MHz and 1800 MHz bands. (emphasis added)

As regards the references in the footnote, ComReg needs to clarify how this “similar process and system” could happen. H3GI considers that this reinforces the need for ComReg to create incentives to complete transitional activities. Whilst the use of the concept of ‘liquidated damages’ is consistent with ComReg’s contractual language, H3GI considers that the imposition of liquidated damages alone is inconsistent with the proper discharge of ComReg’s statutory obligations in section 12 of the Act, and in particular, its obligation to promote competition. H3GI considers that it is difficult to reconcile ComReg’s statements at paragraph 135 of ComReg’s Response to Consultation with the proposals on liquidated damages in the Draft IM – how can the proposed liquidated damages be properly considered by ComReg to constitute “appropriate financial measures to dissuade non-compliance with milestones”?

PART 3 – COMREG’S FAILURE TO PROPERLY CONSULT

H3GI is most concerned by the sudden and totally unjustified inclusion of the possibility of delayed commencement not just in respect of Time Slice 1, but also in respect of Time Slice 2. H3GI believes that in adopting this approach, ComReg has failed to carry out a proper consultation and has improperly chosen to introduce fundamental issues to the award process, not previously consulted upon, into the Draft IM.

The possibility that commencement of Liberalised Use Licences in the second time slice would be delayed represents an entirely new position and has not been consulted upon by ComReg to date. It is entirely inappropriate / unacceptable that ComReg should introduce / raise such a fundamental issue at such an advanced stage in the consultation process and such action does not constitute a proper discharge of ComReg’s duty to carry out a thorough and transparent consultation process.

In particular, H3GI considers that ComReg’s proposed approach is contrary to the guiding principles to which ComReg is required to adhere - in particular, the principle of transparency - in carrying out its functions under the Act and the common regulatory framework (in particular, regulations 10(2), 11(2) and 19(2) of the Authorisation Regulations⁹, and regulation 16(2) of the Framework Regulations¹⁰). It

9. SI No. 335 of 2011 *European Communities (Electronic Communications Networks and Services) (Authorisation) Regulations 2011*.

is also inconsistent with the general principles set out in the Ministerial Policy Directions dated 21 February 2003¹¹; ComReg's Guidelines on its approach to Regulatory Impact Assessment ("RIA Guidelines")¹²; the Government's Better Regulation Programme (set out in the Government White Paper *Regulating Better* (2004)); the RIA guidelines issued by the Department of An Taoiseach in June 2009; and ComReg's Strategy Statement 2010-2012¹³.

In particular, ComReg has indicated in ComReg Document No. 07/56 that:

*"ComReg will also conduct RIAs on consultations which propose significant regulatory action, for example: changes to the use of a frequency band (including limiting access to a band or providing open access to a band);..."*¹⁴

and that in conducting a RIA, ComReg will taken into account the following six principles of Better Regulation set out in the Government White Paper *Regulating Better* (2004):

- necessity;
- effectiveness;
- proportionality;
- transparency;
- accountability;
- consistency.¹⁵ (emphasis added)

With respect to the principle of transparency, ComReg has indicated that it understands this principle to comprise the following:

*"Transparency: we strive to work within a consistent, fair certain set of parameters, and to ensure decisions are evidence-based and fully reasoned, and our decision-making process is open and accessible."*¹⁶ (emphasis added)

ComReg has also stated that in carrying out its RIA *"ComReg will consult with all stakeholders from an early stage"*¹⁷ (emphasis added) and that *"stakeholders will be*

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10. SI No. 333 of 2011 *European Communities (Electronic Communications Networks and Services) (Framework) Regulations 2011*.
 11. Policy Direction No. 3 of 21 February 2003 on Broadband Electronic Communication Networks; Policy Direction No. 4 of 21 February 2003 on Industry Sustainability; Policy Direction No. 5 of 21 February 2003 on Regulation only where Necessary; Policy Direction No. 7 of 21 February 2003 on Consistency with other Member States; and Policy Direction No. 11 on the Management of the Radio Frequency Spectrum.
 12. ComReg Document No. 07/56 *ComReg's Approach to Regulatory Impact Assessment – Response to Consultation and Guidelines*, dated 10 August 2007, and ComReg Document No. 07/56a *Guidelines on ComReg's Approach to Regulatory Impact Assessment*, dated 10 August 2007.
 13. ComReg Document No. 10/47 *Strategy Statement 2010-2012*, dated 1 July 2010.
 14. Paragraph 3.5 of ComReg Document No. 07/56.
 15. Paragraph 4.1 of ComReg Document No. 07/56.
 16. Paragraph 2.1 of ComReg Document No. 11/47.
 17. Paragraph 4.22 of ComReg Document No. 07/56.

consulted from an early stage in the process and information provided will, where necessary and appropriate be used in determining the impact of regulation on stakeholders and consumers”¹⁸ (emphasis added). Additionally, ComReg has stated that “Where a comprehensive RIA is necessary, stakeholders will be consulted in regard to any cost-benefit analysis. Impact analysis can be vital in determining the most appropriate form of regulation, and ComReg will consult with stakeholders from an early stage as they may possess information that would be useful or essential to carrying out the RIA in a comprehensive and timely manner.” (emphasis added)¹⁹

H3GI does not believe that the sudden and totally unjustified inclusion of the possibility of delayed commencement not just in respect of Time Slice 1, but also in respect of Time Slice 2 at such a late stage in the consultation process is consistent with ComReg’s obligations and/or the principles set out in the RIA Guidelines (summarised above). As such, H3GI considers that ComReg’s behaviour does not constitute a proper discharge of ComReg’s duty to carry out a thorough and transparent consultation process.

PART 4 – COMREG’S FAILURE TO PROVIDE SUFFICIENT INFORMATION / REASONING

H3GI believes that ComReg’s failure to provide sufficient information and/or sufficient clarity on relevant matters is in breach of ComReg’s obligations and/or the principles set out above in Part 3 of this response. In particular, H3GI does not believe that ComReg’s approach is consistent with the principle of transparency nor ComReg’s statements in respect of the same:

“Transparency: we strive to work within a consistent, fair certain set of parameters, and to ensure decisions are evidence-based and fully reasoned, and our decision-making process is open and accessible.”²⁰ (emphasis added)

H3GI considers that ComReg has failed to provide sufficient information and/or sufficient clarity on a number of key aspects of the award process, including for example, the circumstances in which commencement of the Liberalised Use Licences may be delayed, and clarity as to whether a refund of Licence Fees “may” or “will” be payable in the event of delayed commencement. In addition, H3GI calls on ComReg to provide greater clarity as to the manner in which it will exercise its purported discretion e.g. to exclude information, bids etc. H3GI considers that ComReg has failed to provide sufficient reasoning for the proposed requirement on an operator to notify ComReg of any changes in its technology six months in advance and the proposed forfeiture of the entire amount of the Performance Guarantee in respect of coverage and roll-out, and QoS obligations.

ComReg’s Discretion and Duty to provide Reasons

At various places in the Draft IM, ComReg indicates that it may, in its discretion, take certain measures including suspending / delaying the bidding process for certain Lots, and/or exclusion of participation of bidders from the award process where there is a breach of the rules for the award process, including for example, where the

18. Paragraph 4.37 of ComReg Document No. 07/56.

19. Paragraph 2.14 of ComReg Document No. 07/56a.

20. Paragraph 2.1 of ComReg Document No. 11/47.

relevant bidder fails to provide requested information and/or cannot satisfy ComReg concerning its compliance with the applicable ownership rules. H3GI also notes ComReg's general reservation of rights listed in paragraph 5.27 of the Draft IM which includes ComReg's ability to reject applications, suspend the award process and ultimately terminate the award process at any time and without reason. H3GI notes ComReg indicates at paragraph 3.11 that, in exercising its discretion it shall do so in accordance with its statutory functions, objectives, obligations and duties, and at paragraph 5.27 that ComReg will act at all times to a standard expected of a public body and in line with its statutory duties and functions.

Given the severity of remedies available to ComReg (e.g. exclusion from the process), ComReg should, in the interests of clarity and fairness, provide further guidance on the exercise of its discretion in the various circumstances noted. For example, in what circumstances would it be appropriate to end the Primary Bid Rounds early (i.e. where there is still excess demand in or more Lot categories), and proceed directly to the Supplementary Bids Round (paragraph 4.21)? Likewise it is suggested at paragraph 3.21 that where a bidder's Lot application form would result in the relevant spectrum caps being exceeded, ComReg may take several courses of action, including (a) contacting the applicant to resolve the matter; (b) unilaterally reducing the number of Lots bid for; or (c) declare the application invalid. It is suggested that ComReg should indicate in which circumstances it would consider it appropriate to declare the application invalid or unilaterally reduce the number of Lots bid for (as opposed to simply contacting the applicant to resolve the matter) given the severity of such action. Specifically and given the importance of bids, H3GI does not believe that ComReg should have the power to unilaterally reduce the number of lots bid for so that the spectrum caps are not exceeded and treat the application as valid and binding with the necessary amendments (paragraph 3.21). In such circumstances, ComReg should contact the applicant and seek to resolve the issue.

H3GI does not agree that ComReg can make a decision and not provide reasons for that decision. Failure by ComReg to provide reasons for its decisions constitutes, *inter alia*, an inappropriate and unfair abrogation of H3GI's right of appeal under regulation 4 of the Framework Regulations. As a result, H3GI expects that ComReg will explain any decision it proposes to make that materially affects the auction process and provide interested parties with an opportunity to make representations in respect of any such decision within a reasonable timeframe (naturally, this may be limited due to the nature of the auction).

Performance Guarantees

H3GI notes that in section 2.2.3 of the Draft IM, ComReg proposes that operators should put in place and maintain a performance guarantee of €2 million in respect of the coverage and roll-out obligations (paragraph 2.37), and €1 million in respect of Quality of Service ("QoS") obligations (paragraph 2.39) in the Liberalised Use Licences, for the full duration of the Licences. H3GI further notes at paragraph 2.37 of the Draft IM:

"In the event that the Licensee fails to meet a coverage and roll-out obligation, the full €2 million CPG will be payable on demand to ComReg. Furthermore, the Licensee will then be obliged to submit and maintain a new CPG of €2 million to ComReg (in respect of the coverage and roll-out obligations) in line with the timelines set by ComReg at that time." (emphasis added)



Likewise at paragraph 2.39 of the Draft IM:

“In the event that the Licensee fails to meet a QoS obligation, the full €1 million QoS PG will be payable on demand to ComReg. Furthermore, the Licensee will then be obliged to submit and maintain a new QoSCPG of €1 million to ComReg (in respect of the QoS obligations) in line with the timelines set by ComReg at that time.”
(emphasis added)

H3GI objects to ComReg’s proposals to include €2 million and €1 million performance guarantees against coverage and roll-out, and quality of service obligations contained in the proposed Liberalised Use Licences. H3GI does not believe that these performance guarantees are necessary to ensure compliance. H3GI refers to its comments made in respect of the proposed forfeiture of the entire amount of the performance guarantee in Part 11 of H3GI’s Response to ComReg Document No. 11/60 with respect to the Draft Schedule to the Licence. H3GI reiterates its view that it is inappropriate and disproportionate for an operator to forfeit the entire amount of the Performance Guarantee in respect of coverage and roll-out, and QoS obligations, without any facility / mechanism for the degree of non-performance to be reflected in the amount forfeited, and ComReg has failed to provide any reasoning / justification as to its proposed approach.

Six Month Notice Requirement for Termination of the use of a Technology

H3GI notes that ComReg is still envisaging a six month prior notification requirement on Licensees intending to terminate the use of a technology used to provide services under the Liberalised Use Licence:

“2.41 In addition, it is a condition of the Liberalised Use Licence that where a Licensee intends to terminate the use of a technology (e.g. GSM) that is used to provide services under the Liberalised Use Licence, the Licensee is obliged to notify ComReg of its intention at least 6 months in advance of the proposed termination date, unless ComReg, in its discretion, exceptionally decides it will admit a notification less than 6 months in advance of any proposed termination date.”
(emphasis added)

H3GI has set out at Part 9 of H3GI’s Response to ComReg Document No. 11/60 why H3GI considers this six month requirement to be inappropriate. Companies in all sectors change technology every day. They do so without the actual or perceived need for regulation. H3GI submits that ComReg has failed to provide sufficient reasoning / justification as to why it considers a six month notice requirement to be necessary and H3GI considers ComReg’s proposal is disproportionate and contrary to regulation 10 (2) of the Authorisation Regulations.

Notwithstanding H3GI’s view that the six month notice requirement is inappropriate, H3GI notes that ComReg may in its discretion decide to allow for a notification period of less than six months, it is suggested that such discretion would be exercised only “*exceptionally*”. H3GI would call on ComReg to provide clarification as to what circumstances might be necessary for ComReg to exercise its discretion and “*exceptionally*” choose to admit a notification less than six months in advance of the proposed terminate date for the technology concerned.

Regulation 6 (12) of the Proposed Regulations provides that a licensee must:

“(a) notify the Commission, not less than 6 months prior to the proposed cessation of any technology, as listed in the Schedules to these Regulations to which the Liberalised Use Licence relates and;

(b) comply with any direction given by the Commission in relation to the extension of the timescale for the proposed cessation in subparagraph 12(a) above [Emphasis added];”

It would appear that ComReg is giving itself the power to determine how companies change technology. In the absence of any objective justification for this, regulation 6 (12) of the Proposed Regulations is *ultra vires*.

In summary, H3GI reiterates its view that it is inappropriate and disproportionate for an operator to forfeit the entire amount of the Performance Guarantee in respect of coverage and roll-out, and QoS obligations, without any facility / mechanism for the degree of non-performance to be reflected in the amount forfeited. Likewise the proposed six month notice requirement in respect of a change in technology represents an unnecessary burden on business with no clear benefit to ComReg having been identified.

PART 5 – EARLY LIBERALISATION

Section 2.4.1 notes the possibility of Early Liberalisation and Annex 4 sets out the rebate methodology applicable to GSM Licensees where, an Existing GSM Licensee (i) surrenders some / all of its GSM spectrum rights in advance of expiry of the relevant GSM Licence (i.e. Early Liberalisation Option); and/or (ii) incurs additional relocation costs that qualify for a rebate. H3GI welcomes the possibility of Early Liberalisation. However, H3GI would stress the need for ComReg to adopt a rigorous approach to verification of alleged additional relocation costs incurred by a GSM Licensee.

Paragraph A4.2 indicates that *“the calculation of the rebate is designed to place the existing GSM Licensee in a comparable situation to that it would have faced had it bought a GSM Licence of shorter duration and/or with less spectrum bandwidth with the GSM Licence commenced.”* H3GI notes that paragraph A4.4 indicates that the early release rebate is the sum of the SUF and GSM Access fee.

H3GI notes that ComReg will not provide a rebate to a Licensee in the scenario where it is required to relocate its spectrum assignments between Time Slice 1 and Time Slice 2, and would welcome the same.

H3GI also notes that according to paragraph A4.17:

“2. ComReg will examine these relocation costs to determine that:

- a. these costs have been incurred directly as a result if the Assignment Stage and these costs would not have otherwise been incurred as a result of the Award Process;*
- b. such costs are objectively justified and proportionate;*
- c. such costs are discounted in respect of any “upgrade” of equipment that was not required exclusively to accommodate the Assignment State; and*
- d. In determining such costs, ComReg reserves the right to have the relocation costs independently verified.**

* Footnote: Red-M/Vilicom have prepared two reports for ComReg which have studied the relocation activities and estimated costs in the 900 MHz band (ComReg Document 10/71c) and the 1800 MHz band (ComReg Document 10/105b). For a ‘typically’ sized network and based upon the amount of labour required, its costs and relevant equipment costs, these reports estimate that relocations costs would be of the order of:

- €500,000 in the 900 MHz band;
- €240,000 (1 relocation), €255,000 (2 relocations in quick succession) and €130,000 (the relocation activity quickly follows the 900 MHz activity) in the 1800 MHz band.

.....

A4.20 Subject to the provisions of ComReg’s guidelines on the treatment of confidential information as set out in ComReg Document 05/24, ComReg will publish on its website all relocation cost information received and the “relocation” rebate as determined by ComReg. (emphasis added)

H3GI notes that ComReg intends to publish on its website all relocation cost information and the “relocation” rebates determined by ComReg and welcome this.

PART 6 – POSSIBILITY OF ADVANCED COMMENCEMENT

H3GI notes the possibility of advanced commencement as provided for in paragraphs 2.117 to 2.120 (inclusive) of the Draft IM:

“2.117 Two methods of obtaining a commencement date for a Liberalised Use Licence before 1 February 2013 (i.e. the beginning of Time Slice 1) are being considered by ComReg. These are not mutually exclusive and ComReg may use both of these approaches.

2.118 Method 1: ComReg has identified the following two distinct scenarios where Lots in the 900 MHz band could be released in the Award Process with an advanced commencement date of Y months after the completion of the Award Process;*

- *Scenario 1 is where an Existing GSM 900 MHz Licensee is the Winning Bidder of Lots 900/1/A and 900/1/B. In this scenario both of these Specific Lots would be available with an advanced commencement date; and*
- *Scenario 2 is where a New Entrant to the 900 MHz band is the Winning Bidder of Lot 900/1/A. In this scenario, only Lot 900/1/A would be available with an advanced commencement date.*

2.119 Method 2: Once the outcome of the Award Process is known, it may be possible for other Specific Lots to be made available on an advanced commencement basis. Winners of Lots in the Award Process could apply to ComReg to have their entitlements to a Liberalised Use Licence amended to an earlier Liberalised Use Licence commencement date. In considering such a request, ComReg will take into account a number of factors, including:

- *whether the Winning Bidder has met its milestones in a timely manner as set out in the Relocation Project Plan (see subsection 3.8). For example, whether*

an Existing GSM Licensee could demonstrate that its existing GSM spectrum has been relocated to the location associated with its Liberalised Use Licence entitlements for the relevant Band; and

- *whether the Lots won by the Winning Bidder would reasonably be required for transitional activities which have yet to occur in the spectrum Band.*

2.120 ComReg will notify Winning Bidders of Lots to which Advanced Commencement could apply and that notification will outline the obligations that the Winning Bidder has to fulfil in advance of the issue of the Liberalised Use Licence including how any additional SUF payments and/or Rebates that may now apply would be calculated in the case of advanced commencement being permitted.

** Footnote: In ComReg 11/60, ComReg sought views on the advanced commencement date under Scenario 1 and 2. In accordance with its statutory objectives, ComReg will carefully consider any views received before arriving at its final decision.* (emphasis added)

As regards Method 1, H3GI notes that ComReg has indicated that Lots in the 900 MHz band could be released with an advanced commencement date of Y months after completion of the auction / award process. ComReg has already sought views in ComReg's Response to Consultation as to the figure that should be inserted in place of "Y", and indicated in that document that additional daily 900 MHz SUFs would be payable from 5 months following the proposed auction.

H3GI refers to ComReg's statement at paragraph 7.42 of ComReg's Response to Consultation "*Subject to views from interested parties on its advanced commencement proposals, ComReg intends to set out the actual proposed advanced commencement date in the forthcoming draft Information Memorandum*" (emphasis added). H3GI is disappointed that this has not occurred.

In terms of Method 2, H3GI notes that ComReg has indicated that the possibility of advanced commencement will depend, *inter alia*, on whether the winning bidder has met its milestones (e.g. whether an Existing GSM Licensee could demonstrate that its existing GSM has been relocated to the correct location) and whether the Lots won by the winning bidder would reasonably be required for transitional activities which have yet to occur in the relevant spectrum band.

It is imperative that ComReg ensures the meeting of milestones and/or the anticipated need for transitional activities to be carried out in the future is not used as a mechanism to unfairly delay advanced commencement for Winning Bidders who are non-GSM operators, particularly where the relevant action to be taken is dependant on actions / omissions by the Existing GSM Licensees.

As noted in Part 7 of H3GI's Response to ComReg Document No. 11/60, H3GI welcomes ComReg's advanced commencement proposals in principle. However, H3GI believes that in order to encourage prompt completion of transitional issues and ensure the prompt delivery of liberalised services on 900 MHz, ComReg should reserve Lot A of the 900 MHz band in the first time slice for a new band entrant. As set out above, in light of the uncertainty now created, ComReg should also reserve Lot A of the 900 MHz band in the second time slice and unassigned 1800 MHz in both time slices for a new band entrant. This would: (i) provide an incentive to the existing GSM licensees to promptly complete their transitional activities; (ii) ensure the prompt delivery of liberalised services on 900 MHz; and (iii) reduce the significant competitive harm created and exacerbated by ComReg's proposals. As a result of

ComReg's proposals, a new band entrant faces an unacceptable level of uncertainty, the continued generation of unfair profits by its incumbent competitors and the loss of capital. In the absence of such a reservation, H3GI would have to seriously consider its options.

With respect to the additional spectrum fees for advanced commencement proposed by ComReg, H3GI notes that ComReg's Response to Consultation suggested that additional daily 900 MHz SUFs would be payable *"from 5 months following the proposed auction; or earlier if the winner of the advanced commencement licence applies for and is granted advanced commencement earlier than the 5 month period."*²¹

H3GI reiterates the points made in Part 7 of H3GI's Response to ComReg Document No. 11/60 that it does not understand why a bidder would pay additional daily 900 MHz SUFs payable from 5 months following the proposed auction. This would amount to an increase in the winning bid in respect of something that had already been factored in and in respect of which there is no certainty in advance of the auction outcome.

PART 7 – INDEFINITE LICENCES

H3GI notes the proposed expiry dates for the Liberalised Use Licences as set out in Table 5 at paragraph 2.21 of the Draft IM. H3GI re-iterates its position that ComReg should award "indefinite licences" in respect of 800, 900 and 1800 MHz and amend the 3G licences of Vodafone, O2, Meteor and H3GI to provide that they too are indefinite (so that equality of treatment is protected).²² In this regard, it refers to the independent report commissioned by H3GI from NERA in relation to indefinite licences and submitted to ComReg in relation to ComReg Doc. No. 11/28, *"Review of the Period 2008 – 2010 & Proposed Strategy for Managing the Radio Spectrum: 2011 – 2013"* (Annex 2). NERA concludes that there is a strong case for Ireland to adopt indefinite terms for mobile spectrum licences, subject to suitable conditions being imposed to protect ComReg's ability to fulfil its statutory objectives. In particular, NERA concludes that:

- The current approach in Ireland of fixed term licences with no renewal option is inconsistent with ComReg's core objective of encouraging efficient use of spectrum. A shift to an indefinite licence regime would provide stronger incentives for investment and for spectrum trading.
- There could be static and dynamic efficiency gains in Ireland of €250 million to €450 million over a 15 year period if a policy of indefinite terms is adopted.
- Indefinite licence terms are better suited to meet the relevant objectives of a spectrum manager, provide incentives for efficient utilisation of scarce spectrum, and promote competition and investment which should benefit consumers as well.

²¹ Paragraphs 7.46 – 7.48 of ComReg's Response to Consultation.

²² Part 4 of H3GI's Response to ComReg Document No. 11/60 and page 12 of H3GI's response to ComReg Doc. No. 10/71, *"800MHz, 900MHz and 1800 MHz spectrum release"*.

- Consumers are also likely to be better off with indefinite term licences. This is because, amongst other matters, indefinite terms may increase the scope for entry and make the market more contestable, and competitive.
- Countries that have been at the forefront of spectrum management reforms have either implemented or are considering implementing indefinite licences. The United Kingdom has implemented indefinite licences. New Zealand and the United States have implemented similar concepts. Australia and Canada are both considering indefinite licences.

ComReg has failed to provide sufficient justification for its position that indefinite licences are not appropriate in the context of the current award process. Indeed, three and a half years of consultation in respect of this matter and the possibility of further delay until at least 2015 vindicates NERA's conclusions.

PART 8 – MINIMUM RESERVE PRICE

Whilst, H3GI welcomes the reduction in the proposed minimum reserve price, it still regards the minimum reserve price as too high and that it will have a negative impact on demand and the efficient use of spectrum. The only way to determine the true, long-run economic value of spectrum access is to allow the market to determine this value. ComReg should implement a minimum reserve price in line with minimum reserve prices elsewhere.

PART 9 - MISCELLANEOUS

Commencement Date of Lots in Time Slice 1

Footnote 7 of the Draft IM provides:

“Note the commencement date of Lots in Time Slice 1: ...

- *may be brought forward in time in line with the Advanced Commencement Procedure as discussed in subsection 2.4.2 of this Draft Information Memorandum; or alternatively,*
- *to promote the interests of users it may be necessary for ComReg to amend the duration and/or the frequency assignments associated with Liberalised Use Licences in Time Slice 1 in order to protect legacy services in a spectrum band. See subsection 2.2.6 of this document for a discussion of ComReg's treatment of any Liberalised Use Licence fees paid associated with such an amendment.”*

H3GI requests ComReg to clarify why it may be necessary for ComReg to amend the frequency assignments associated with Liberalised Use Licences in Time Slice 1 in order to protect legacy services in a spectrum band.

Fees

H3GI requests ComReg to clarify how it has calculated the reserve price and SUF's for the first time slice for 800 and 900 MHz.

Timing Generally

At paragraph 1.12 of the Draft IM, ComReg has proposed a series of publications and actions, which are to be completed by ComReg prior to the auction process.

Whilst H3GI appreciates that ComReg’s analysis is still ongoing and there is welcome clarity around the steps in the process, ComReg should provide an indicative timetable for completion of each of these steps (for example, in the format set out at paragraph 3.10 of the Draft IM), to allow businesses to plan and to avoid further delay in the auction process. The setting of an indicative timetable is necessary to demonstrate ComReg’s commitment to expeditiously conduct the award process so as to ensure availability of liberalised use spectrum as soon as possible and instil confidence in the award process.

In relation to the indicative timetable set out at paragraph 3.10 of the Draft IM, H3GI proposes the following revised timing:

Indicative Milestone	Timing
Publication of the Final Information Memorandum on ComReg’s website	X
Presentation to Interested Parties on the Award Process and the Auction Rules	X+1 weeks
Submission of questions regarding the Award Process	X+2 weeks
Responses to questions on the Award Process published on ComReg’s website	X+4 weeks
Deadline for submission of Application Forms and Deposits	X+8 weeks
Deadline for withdrawals	X+13 weeks
Confirmation of requirement for a Main Stage of the Auction and announcement of scheduled start date of the first Primary Bid Round; or Confirmation that there is no requirement for a Main Stage and announcement of Winning Bidders and start date for Assignment Stage; or Confirmation that there is no requirement for a Main Stage or an Assignment Stage and announcement of Winning Bidders and progression to Notification & Grant Stage	X+13 weeks
Return of Deposits to Applicants that have not become Qualified Bidders	X+14 weeks
Where a Main Stage is required: Circulation of Bidder materials for accessing and using the EAS Mock Auction for Qualified Bidders Start of the Auction	X+13 weeks X+14 weeks X+15 weeks
Announcement to all Bidders of number of Lots won by each Bidder	End of Main Stage



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Assignment Stage	End of Main Stage + 1 day/as scheduled
Announcement of the outcome of the Assignment Stage; and Notification in writing to Winning Bidders of their obligation to pay their Upfront Fee and entitlement to obtain a Preparatory Licence and a Liberalised Licence for the Lots won in the Award Process.	End of Assignment Round
Deadline for: Lodgement by Winning Bidders of their Upfront Fee in full less any applicable Rebate and less the Deposit already held by ComReg Return of partial Deposits by ComReg to each Winning Bidder whose Upfront Fee less any applicable Rebate is less than its Deposit already held by ComReg Return of full Deposits by ComReg to unsuccessful Bidders	End of Assignment Round + 2 weeks
Deadline for: Lodgement of relevant Spectrum Usage Fees; Performance Guarantee on Coverage; and Performance Guarantee on Quality of Service	Commencement date of Licence – Y weeks
Granting of Licences	As per the timetable set out in subsection 3.7

Deposits

At paragraph 4.114, ComReg states:

“During the Primary Bid Rounds, ComReg may give notice to one or more Bidders that they need to increase their Deposits to an amount specified by ComReg not exceeding their highest Bid made so far in the Primary Bid Rounds. ComReg will specify a deadline by which cleared funds must be received which will be not less than three Business Days from giving notice.”

With respect, three Business Days is not sufficient to organise an increase in a bidder’s deposit. An increase will require formal shareholder approval, approval by the relevant funder and transfer to ComReg’s bank account. Fourteen Business Days is required to organise an increase in a bidder’s deposit.

Information available during the Primary Bid Rounds

At paragraph 4.120, ComReg states:

“At the end of a Primary Bid Round that is the last such round and prior to the start of the Supplementary Bids Round, ComReg will provide information about the demand for the Party-specific Lots categories 7 to 10 to all Bidders. For the avoidance of doubt, this information will not be released at the end of any Primary Bid Round other than the final Primary Bid Round.”

Why does ComReg make this information available at this time? What role or function does such information disclosure serve?

Closing of the Auction

At paragraph 4.230 and 4.231, ComReg states:

“Once ComReg has determined the Winning Bids for Lots in all Lot Categories and the Additional Prices for the Assignment Stage, the results of the Auction will be announced to all Bidders.

The following information will be released to all Bidders:

- *the identity of the Winning Bidders;*
- *the frequency ranges awarded to each Winning Bidder;*
- *the frequency ranges retained as GSM spectrum rights in the first time period, where applicable; and*
- *the Upfront Fee to be paid by each Winning Bidder, including a breakdown of the Base Price and any Additional Prices for specific frequency assignments.”*

H3GI requests ComReg to publish all bids made in the auction. This is currently proposed by Ofcom in respect of the similar 800 and 2600 MHz auction in the UK. As explained by Ofcom (at paragraph 9.88): *“This is both for transparency purposes and to allow all interested parties to carry out their own verification of the results”*.²³

WACC

H3GI does not believe that it is appropriate to use the WACC of eircom as an industry standard. Eircom is a highly indebted company and not typical of the existing mobile network operators.

Assignment Stage and Relocation Project Plan

At paragraphs 2.123 and 2.126, ComReg states:

“If the Existing GSM Licensee chooses not to participate in the Assignment Stage, the Existing GSM Licensee will be deemed to have made a nominal Bid of zero for all assignment options available to it and the location of the GSM spectrum rights

²³<http://stakeholders.ofcom.org.uk/binaries/consultations/combined-award/summary/combined-award.pdf>.

associated with this GSM Licensee will be determined by process and procedures as set out in subsection 4.5 of this document. Upon completion of the Assignment Stage, ComReg will notify the results to all participants and any such nonparticipating Existing GSM Licensee and will take steps to amend its Existing GSM Licence accordingly.”

“Where an Existing GSM Licensee does not submit an Application, ComReg will write to this Existing GSM Licensee inviting it to agree to participate in the setting of the Relocation Project Plan and to be bound by the Transitional Rules of the Award Process. If this GSM Licensee chooses not to accept this invitation, ComReg will determine the Relocation Project Plan deadlines associated with this GSM Licensee. ComReg will notify the outcome of the Relocation Project Plan to this GSM Licensee once complete.”

ComReg should confirm that its draft Information Memorandum constitutes a notice to Existing GSM Licensees under regulation 15 (4) (a) of the Authorisation Regulations. ComReg should also confirm that its amendment of an existing GSM licensee’s licence to reflect the results of the Assignment Stage also includes an obligation to comply with the Relocation Project Plan.

Spectrum Trading

ComReg notes that it might be possible to assign rights and obligations under a Liberalised Use Licence (e.g. by way of transfer, lease or other form of spectrum trading), and indicates that ComReg will be consulting on this issue in the coming months. Spectrum trading can only properly be considered to be a ‘real’ possibility where operators are able to obtain sufficient spectrum rights under the auction process so as to enable them to have a minimum level of standing / bargaining power²⁴. H3GI has already set out in H3GI’s Response to ComReg Document No. 11/60, its views as to why ComReg’s proposed auction structure and spectrum caps is likely to lead to three operators obtaining 2 x 20 MHz of sub-1 GHz spectrum, and one operator obtaining only 2 x 5 MHz of sub-1 GHz spectrum, placing that operator at a much weaker position in terms of its ability to negotiate spectrum trading and/or spectrum sharing arrangements.

Spectrum Sharing

H3GI welcomes ComReg’s acknowledgement at paragraph 2.93 of the Draft IM that spectrum sharing and pooling can, in principle, bring benefits such as reduced costs and improved quality of service. H3GI also notes ComReg’s statements that it is not possible for ComReg to guarantee that individual spectrum sharing and pooling arrangements will be permitted, and that details of any such agreements would have to be assessed in the context of relevant electronic communications and competition law. H3GI reiterates its view, expressed in Part 9 of H3GI’s Response to ComReg Document No. 11/60, that it is probable that as a result of the current design of the auction (including in particular, the proposed spectrum caps) some operators may not be in a position to share spectrum by virtue of their location within the relevant

24. H3GI’s Response to ComReg Document No. 11/60 - “An operator that has a credible spectrum portfolio is more likely to be able to negotiate on equal terms as this operator could ‘go it alone’ if necessary. An operator without a credible portfolio of spectrum will enter negotiations in a weak position and will likely emerge with a less favourable deal that may lessen competitive intensity to the detriment of consumers. ComReg’s current proposals risk one operator failing to secure a credible portfolio of spectrum and therefore may be in a weak position to negotiate a spectrum sharing agreement” (Paragraph 3.4.2 of the Value Partners and RRA Report dated 22 July 2011).



800 MHz, 900 MHz and 1800 MHz bands. H3GI again urges ComReg and DotEcon to devise a solution to this problem. H3GI requests confirmation that the proposed Liberalised Use Licences permit spectrum sharing. In particular, H3GI requests ComReg to amend regulation 6 (4) of the proposed Preparatory and Liberalised Use Licences regulations (the “Proposed Regulations”) to permit the use of Apparatus on such radio frequency spectrum as specified in the Liberalised Use Licence or another Licensee’s Liberalised Use Licence with that licensee’s consent.

Spectrum Reviews and Amendments to Licence Conditions

H3GI notes ComReg’s indication at paragraph 2.91 of the Draft IM that ComReg intends to review spectrum management and use at regular intervals, and dependant upon that review, ComReg may propose amendments to the Liberalised Use Licences in accordance with the Authorisation Regulations. H3GI understands that this means any amendments proposed by ComReg will only be made following due and transparent industry consultation, and H3GI would welcome ComReg’s acknowledgement that this will be the case. Bidders bid on the basis of licences proposed. As a result, if ComReg proposes to materially amend licences and impose costs on bidders, any such proposal will have to include appropriate compensation measures.

Joint Bidding

H3GI presumes that the reference to *“Irish Communications Providers”* in paragraph 3.47 should simply be a reference to *“Communications Providers”*.

Spectrum Caps

H3GI notes ComReg’s clarification at paragraph 4.24 of the Draft IM that *“for the avoidance of doubt, any spectrum in the bands in respect of which an Existing MNO retains rights of use on an unliberalised basis after the start of Time Slice 1 will count towards the Spectrum Caps”*. H3GI welcomes such clarification. Notwithstanding this, H3GI reiterates the points made in H3GI’s Response to ComReg Document No. 11/60 regarding the appropriate level of spectrum caps.

Licence Structure

H3GI objects to the ‘annual licence’ structure of the proposed Liberalised Use Licences. It is unnecessary, adds to uncertainty and deters investment.

Preparatory Licence Terms and Conditions

At paragraph 2.95 of the Draft IM, ComReg states:

“A Preparatory Licence allows the Licensee to keep and have possession of, install and maintain WT apparatus for terrestrial systems capable of providing electronic communications services in some or all three of the 800 MHz, 900 MHz and 1800 MHz bands. It is a condition of a Preparatory Licence that the Licensee shall not work or use said apparatus.”

H3GI requests confirmation that it will grant test and trial licences in respect of the trialling of this apparatus. In the absence of such licences, Preparatory Licences will be of limited use.

Foreshortening

At paragraphs 2.85 and 2.107, ComReg implicitly states that Preparatory and Liberalised Use Licences may be foreshortened. H3GI reiterates its previously expressed position that ComReg does not have the power to foreshorten licences.

MVNOs

Regulation 6 (1) (b) of the Proposed Regulations provides that a licensee must ensure that *“Other Operators, related to it or otherwise, operating on the Licensee’s network comply with the conditions contained within Part 4 of the Liberalised Licence”*. Part 5 of Part 4 of Schedule 1 to a Liberalised Use Licence provides as follows:

“The Licensee shall ensure that the above Quality of Service obligations are met by the Licensee and any third party providing a service via contractual or another arrangements with the Licensee.”

It is unclear whether a licensee is obliged to ensure that an MVNO complies with all or just the quality of service obligations contained in Part 4 of Schedule 1 to a Liberalised Use Licence. ComReg should conduct a separate consultation in relation to the obligations of MVNOs. MVNOs differ greatly and as a result, obligations that are appropriate to one MVNO may not be appropriate to another. It is also not appropriate to make licensees responsible for the actions of MVNOs. It places too high and unfair a burden on licensees. For monitoring and compliance purposes, especially in the case of emergencies, ComReg should have a direct relationship with MVNOs.

Proposed Regulations

Regulation 2 (1) of the Proposed Regulations provides that *““Auction Rules” means the rules of conduct set out in the Information Memorandum, with which prospective and actual participants in the Auction were to comply from the date of publication of the Information Memorandum up until the Commission announced the outcome of the Auction in accordance with the Information Memorandum”*. As section 5.2.10 of the Draft IM provides for the continuance in effect of certain rules contained in the Draft IM, this definition should not be temporally restricted. H3GI proposes the following alternative definition: *““Auction Rules” means the rules set out in the Information Memorandum”*.

Regulation 2 (1) of the Proposed Regulations further provides that *““CPI Adjustment” means a negative or positive percentage of the SUF, calculated using the CPI according to the methodology as set out the by the Commission in the Information Memorandum”*. H3GI proposes that this be amended as follows: *““CPI Adjustment” means a negative or positive percentage adjustment of the SUF, calculated using the CPI according to the methodology as set out by the Commission in the Information Memorandum”*.

Regulation 6 (5) of the Proposed Regulations provides that a licensee must *“ensure that the radio frequency spectrum specified in the Liberalised Use Licence shall be used in an efficient manner”* (emphasis added). What does this mean? How does ComReg propose to measure this? In addition to fundamental concerns regarding the extent to which the proposed regulation could properly be deemed to contain obligations that are sufficiently clear and certain so as to be “enforceable” as a matter of contract law and/or public policy, H3GI considers that the proposed regulation (as



currently drafted) is contrary to the principles of proportionality and regulatory predictability as set out in Regulation 16(2) of the Framework Regulations:

“16(2) In pursuit of its objectives under paragraph (1) and under section 12 of the Act of 2002, the Regulator shall apply objective, transparent, non-discriminatory and proportionate regulatory principles by, among other things-

*(a) promoting regulatory predictability by ensuring a consistent regulatory approach over appropriate review periods.
.....” (emphasis added)*

Regulations 6 (14) of the Proposed Regulations provides that a licensee must “*comply with all obligations under relevant international agreements relating to the use of Apparatus or the frequencies to which they are assigned*”. H3GI requests ComReg to publicly consult in respect of any future international agreements relating to the use of apparatus or the frequencies to which they are assigned.

Regulations 6 (15) and (16) of the Proposed Regulations provide that a licensee must:

“(15) Only Assign the rights and obligations of a Liberalised Use Licence, including the transfer, lease or other form of trading of spectrum rights attached to a Liberalised Use Licence, subject to any procedures specified by the Commission from time to time;

(16) notify the Commission of its intention to Assign the right of use of a Liberalised Use Licence, under paragraph 15 of this Regulation and the effective transfer of the rights and obligations under these Regulations and the Licence, and this notification shall be in accordance with the procedures specified by the Commission from time to time.”

H3GI requests ComReg to amend regulation 6 (15) of the Proposed Regulations to permit the purchase and sale of licenses pending the introduction by ComReg of procedures in relation to spectrum trading, etc as follows:

“(15) Assign the rights and obligations of a Liberalised Use Licence, including the transfer, lease or other form of trading of spectrum rights attached to a Liberalised Use Licence, subject to any procedures specified by the Commission from time to time;”

H3GI proposes the following amendment to paragraph 1 of Schedule 1 to the Proposed Regulations:

*“Authorisation to keep, have possession of, install, maintain, work and **use** apparatus for wireless telegraphy as specified ...”*

Regulation 8 (Licence Fees) needs to be amended to reflect refunds.

In relation to the draft Preparatory Licence, ComReg should amend the authorisation to include installation and maintenance. In addition, the reference in the authorisation to “*Part 1*” should be a reference to “*Part 2*”. H3GI queries why ComReg has adopted a different approach to the ‘Parts’ of the proposed Preparatory and Liberalised Use Licences.



Part 4 of Schedule 1 to a Liberalised Use Licence

Part 2 provides:

“For the purpose of carrying out coverage (see Part 4) and quality of service (see Part 5) compliance checks, the Licensee shall, on request, provide to ComReg the following:

- (a) Maps showing Coverage as defined in Part 4 to this schedule;*
- (b) An up to date list of the locations of the base transceiver stations;*
- (c) A mechanism for identifying the base station that is handling a call at any given time;*
- (d) An adequate number of test numbers.”*

H3GI requests confirmation from ComReg that RAN statistics which log circuit-switched traffic are sufficient for this purpose.

Part 4 (11) provides as follows:

“The Licensee shall comply with all MoU agreed between ComReg and the national regulatory authority responsible for communications matters in the UK, Ofcom or its successor, in relation to the 900 MHz and 1800 MHz band, including ComReg Documents 11/50c, d, e and f.”

For the purposes of ensuring effective management and efficient use of spectrum, H3GI requests ComReg to publicly consult in respect of any future MoUs to be agreed between ComReg and Ofcom or its successor in relation to the 900 MHz and 1800 MHz band.

PART 10 – CONCLUSION

For the reasons set out above, H3GI believes that ComReg’s approach to liberalisation, as set out in the Draft IM is flawed. ComReg needs to: (i) take the lead in relation to the design and management of the award process and specify a robust framework for transitional activities, including milestones and timetable for completion with penalties that deter non-compliance; and (ii) ensure that liberalised spectrum is available as soon as practicable after the award process, and in any event no later than 1 February 2013. Any further delay in the award process will: (i) severely damage the credibility of the proposed award; and (ii) cause significant economic harm to businesses and ultimately consumers in Ireland who will be placed at a disadvantage compared to other end-users within the EU. In particular, H3GI recommends that ComReg reserves Lot A of the 900 MHz band and unassigned 1800 MHz in both time slices for a new band entrant.

ANNEX 1



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To Mark Hughes, Hutchison 3G Ireland

Date 02/03/2011

From Value Partners

Interim License –

Vodafone and O2 revenue benefit calculation

- Value Partners estimated the value of the interim license agreements to Vodafone and O2 based on the value that would be lost were they to lose access to 2G services on 900MHz. This was based on the assumption that, if access to 900MHz were lost, a significant proportion of those customers who were no longer covered in their homes for voice services would choose to move to another provider.

Assumptions

- Total subscriber numbers are 1.7m for O2 and 2.3m for Vodafone (end 2010)
- We assumed that only rural customers would be affected, on the basis that customers in urban areas are likely to be covered by 2.6GHz already for data and thus the loss of 900MHz would not deprive them of voice services. Based on 42% of the Irish population living in rural areas, we assumed that 42% of customers lived in rural areas.
- To work out the network coverage loss in rural areas from switching from 900MHz to 1800MHz spectrum, Value Partners used a cell area for 900MHz equal to 70km² and a cell area for 1800MHz equal to 57km² (based on our benchmarks for rural areas). This represents an 18% coverage area reduction when moving from 900MHz to 1800MHz.
- Value Partners assumed that 80% of voice customers who were previously covered by 2G services and would be left uncovered by the switch to 1800MHz spectrum would churn to another provider.
- Average mobile ARPU was taken from the World Cellular Information Service (WCIS) to be €37.03 for O2 and €35.60 for Vodafone (2010 data).
- Total subscriber numbers were also taken from WCIS to be 1.66m for O2 and 2.27m for Vodafone (end of year 2010).
- On the basis of data from ComReg regarding total Mobile Retail Revenues in Ireland, it was calculated that on average over the past reported three quarters (1Q 2010 to 3Q 2010), 75% of revenue was attributable to voice and handset revenues, with the remaining 25% attributable to data. This was used as a very conservative proxy to estimate the proportion of revenue attributable to 2G voice services rather than 3G broadband services.²⁵

²⁵

Note that this is conservative as any data revenues which come from handsets will be connected to a voice subscription / prepay account. If this subscription is terminated or the prepay handset no longer used, this data revenue will also be lost. ComReg do not split out these data revenues, so to be conservative we have excluded all data revenues



Methodology

- On the basis of these assumptions, the total potential decline in revenues was calculated by multiplying together subscribers lost and revenue per subscriber:

Subscribers lost

- total subscriber numbers for the relevant operator; times
- the percentage of those subscribers who are rural (42%); times
- the percentage (%) of customers left uncovered by the loss of access to 900MHz (18%); times
- the assumed churn rate (80%)

Revenue per subscriber

- total blended ARPU; times
 - proportion which is voice (75%)
- On the basis of these assumptions and data, it was calculated that without the interim license agreement, O2 would lose €33m and Vodafone would lose €43m in voice and handset revenues from current subscribers per year.

ANNEX 2



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04 October 2011

Indefinite Term Licences for Mobile Spectrum

A Report for Hutchison 3G Ireland Limited



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Contents

Executive Summary	i
1. Introduction	1
2. Approaches to Licence Duration and Renewal	2
3. Licence Terms and Stakeholders	5
3.1. Spectrum Manager	5
3.2. Incumbent Licensees	14
3.3. Potential New Licensees	17
3.4. Consumers	18
3.5. Conclusion	19
4. Licence Terms in Different Countries	21
4.1. Australia	21
4.2. Canada	22
4.3. New Zealand	24
4.4. United States	24
4.5. United Kingdom	25
4.6. Conclusion	26
5. Mobile Networks in Ireland	27
5.1. The Mobile Market in Ireland	27
5.2. Mobile Broadband in Ireland	28
5.3. Investment Incentives and Risks	30
5.4. Potential Benefits to Ireland from Adopting Indefinite Licence Terms	32
6. Conclusions and Recommendations	37

Executive Summary

NERA Economic Consulting has been commissioned by Hutchison 3G Ireland Limited to provide an independent review of the economic rationale for a change in approach to licence duration and renewal for spectrum used by mobile operators in Ireland. In the context of Ireland's on-going transition to a market-based spectrum management regime, a shift to indefinite licences would create better incentives for efficient use of spectrum over the long term. Currently, ComReg issues mobile licences for a fixed term of 15 or 20 years, after which licences may be reclaimed and re-auctioned. This report explores the economic rationale for a change in regime. We conclude that there is a strong case for Ireland to adopt indefinite terms for mobile spectrum licences, subject to suitable conditions being imposed to protect ComReg's ability to fulfil its statutory objectives.

Broadly speaking there are three main approaches to licence expiry: fixed-term licences with spectrum reverting to the state on expiry; fixed-term licences with provision for renewal; and indefinite licence terms which can be revoked under well-defined and specific circumstances. Historically, fixed terms have been the dominant approach in most countries, with great variation across regulators with respect to the duration of licences (from ten up to twenty years) and the extent to which procedures for renewal are defined and/or expected to be applied. In the context of a traditional command and control approach to spectrum management, regulators are typically reluctant to grant long terms and are cautious about creating expectation of renewal. Absent regulations that allow trading and change of use, reclaiming licences is the main tool available to regulators to support refarming of spectrum for new services and technologies.

However, the introduction of spectrum trading and liberalisation by the European Commission alters this picture. These reforms make it possible for the market to facilitate introduction of new services and technologies. Furthermore, fixed licence expiry dates are a potential barrier to market-driven change. As licences approach their expiry date, incentives for operators to trade spectrum in the secondary market and/or invest in networks dependent on spectrum diminish.

Licence expiry is associated with market illiquidity because the value of a licence will diminish toward the end of the licence term which is likely to hinder the development of trading markets. This will result in a lower volume of trading, and some of the benefits of a flexible and efficient market based approach to spectrum allocation will be lost. Fixed term licences also carry the risk that spectrum lies idle as reassignment by the spectrum manager normally takes significant time and resources. Indefinite licence terms which can be revoked under well-defined and specific circumstances, liberalisation and spectrum trading offer a simpler and less expensive approach to ensure that spectrum is utilised efficiently.

The adverse impact of licence expiry on investment has a solid basis in economic theory, and is supported by empirical observations from other sectors like agriculture. We note that empirical evidence for decreasing investment in mobile networks as licence expiry approaches is ambiguous. However, we believe that this can be explained by other factors, such as an expectation amongst operators that their licences will be renewed, that they will be able to win back spectrum that is re-awarded, or the fact that the investment relates to networks (for example 3G) for which licences are not about to expire. Moreover, fixed expiry dates may create anti-competitive asymmetries between operators, as larger operators

enjoy greater certainty than smaller rivals that they can win back spectrum in an auction, and therefore may have greater confidence about maintaining investment levels.

In this context, it is no coincidence that the countries that have been at the forefront of spectrum management reforms, such as Australia, Canada, New Zealand, the United Kingdom and the United States, are also at the forefront of reforms to licence terms.

Particular attention has focused on the reforms made by the UK regulator Ofcom, which uniquely has characterized its licence term regime as “indefinite”. The term “indefinite” is somewhat misleading though. It does not imply, as some critics suggest, that spectrum is assigned indefinitely to an operator, with the implication that the spectrum manager surrenders its ability to reallocate the spectrum. In fact, UK mobile licences still have a fixed term of 15 or 20 years, after which licences may be revoked for defined spectrum management reasons given 5-years notice (or less in exceptional circumstances).

Although other leading reform countries have not yet introduced indefinite licences, many have similar regimes or are reviewing their approach. For example, in practice, the New Zealand approach of 20-year licences, with provision for notice of renewal at least 5 years before expiry, is not much different from the UK with respect to certainty provided to operators. Similarly, although the United States awards spectrum licences for only 10 years, the licence terms provide such a strong expectation of renewal that the regime may be characterised as similar to the United Kingdom. Both Australia and Canada have implemented market reforms while maintaining fixed term licences (10-15 years) which expire with no right of renewal. However, in recent consultations, regulators in both countries expressed concern that this approach was undermining incentives for investment, and indicated a desire to move to longer licences (possibly indefinite) that offer a strong expectation of renewal.

As these examples show, it is quite practical for the regulator to maintain powers to reclaim licences in defined circumstances, while at the same time giving operators sufficient certainty that they trade spectrum and invest in network construction. There are a variety of ways this can be achieved but the key elements are a very high (and well defined) expectation of renewal and, ideally, at least five years notice of any potential revocation for spectrum management reasons.

A further concern for any government may be the loss of future revenue streams if licences cannot be reclaimed and re-auctioned. However, this need not be a concern. In the United Kingdom, administrative incentive pricing (AIP) is applied to licences after the expiry of their initial term. AIP charges proxy the opportunity cost of the spectrum, and can provide a steady payment stream as an alternative to one-off auction revenues.

Most operators will prefer indefinite licences for the security of tenure they provide. Potential new licensees are sometimes an exception, even though they would benefit from the security of tenure of indefinite terms once they enter the market. An obvious reason why licensees may say that they prefer fixed terms over indefinite terms is that they are typically looking for an entry opportunity which may be provided by a government-run award. In practice, it is unclear a priori if the costs of acquiring spectrum are less under fixed terms or indefinite terms, but liberalised indefinite term tradable spectrum usage rights may provide more flexibility with regard to entry timing as a potential entrant can acquire spectrum from

the market. This will allow entry and exit decisions to be based on market developments and business plans and not be constrained by the timing of expiry of existing fixed term licences or new spectrum release.

There is a risk that a single operator acquires a disproportionate amount of spectrum via trading in order to preclude market entry or gain a competitive advantage. With indefinite licences, a regulator may be concerned that the situation may persist indefinitely. In such cases safeguards such as limits on the amount of spectrum that can be held by any operator at any time and ex-ante competition review of spectrum trading when such trading would lead to significantly less competition in the downstream market may be required. Spectrum caps or forced divestment of spectrum may also be required when secondary spectrum trading is not efficient. For example trading may not result in a socially optimal redistribution of strategically important mobile spectrum (for example sub-1 GHz spectrum bands). This is because, given the competitive advantage of holding such spectrum, incumbents may be reluctant to sell any spectrum they hold in these bands.

Consumers are also likely to be better off with indefinite term licences because as mentioned earlier the additional flexibility with regard to entry timing should make the market more contestable and competitive, and provide incentives for operators to invest adequately to meet growing traffic demand, to expand their network footprint and roll-out new services like mobile broadband more extensively. The importance of (high speed) broadband access for Ireland is recognised by both ComReg and DCENR which identifies high speed broadband services as being critical in attaining the Government's twin goals of becoming a 'Smart Economy' and a 'Knowledge Society'. Given the low population density in Ireland, next generation (4G) mobile networks will play an important role in providing fast broadband access to Irish consumers. Indefinite terms will mean more investment in these new networks and better internet access for Irish consumers.

Ireland is currently in the process of adopting its own market-based reforms, including trading and liberalisation of mobile spectrum, in line with EU directives. The implementation of these reforms provides a natural backdrop for complementary reforms to licence terms. We find that there would be static and dynamic efficiency benefits for Ireland if a policy of indefinite terms were to be adopted. Static efficiency gains derive from improved utilisation of spectrum by new or existing users of spectrum resulting from trades of licences that would not have occurred without a shift to indefinite licences. Dynamic efficiency gains capture increases in consumer surplus where investment, roll out and adoption of new services and technologies happens earlier than would otherwise have been the case. We estimate that these static and dynamic efficiency gains in Ireland could plausibly be of the order of €250 million to €450 million over a 15 year period.

In conclusion, we find that the current approach in Ireland of fixed term licences with no renewal option is inconsistent with ComReg's core objective of encouraging efficient use of spectrum. A shift to an indefinite licence regime would provide stronger incentives for investment and for spectrum trading. The potential benefits from reform are particularly great in relation to the mobile sector.

1. Introduction

Hutchison 3G Ireland Limited (“H3GI”) has commissioned NERA UK Limited (“NERA”) to provide an independent expert analysis of the economic rationale for introducing indefinite licence terms for mobile spectrum in Ireland. This could involve an indefinite licence extension for existing 2.1GHz 3G licences and licensing of the pending 800MHz, 900MHz, and 1800MHz licences on an indefinite basis. It should be noted at the outset that an indefinite licence term does not mean irrevocable spectrum rights. The government should continue to have the right to revoke licences and reclaim spectrum in specific and well defined circumstances.

This report sets out our analysis of the relevant issues, and is structured as follows:

- Section 2 provides definitions for different approaches to licence terms;
- Section 3 discusses possible advantages and disadvantages of different approaches in the context of spectrum trading and liberalisation from the perspective of different stakeholders – the spectrum manager, incumbent licensees, potential future licensees and consumers;
- Section 4 presents information on the approach adopted to license terms for selected countries, and summarises the trend in licensing conditions across these countries;
- Section 5 analyses the static, dynamic and competitive effects of indefinite term licences in Ireland; and
- Section 6 presents our conclusions and recommendations.

2. Approaches to Licence Duration and Renewal

Spectrum licences for mobile services may have many different terms and conditions attached to them. These can be grouped into three categories: policy conditions (such as roll-out obligations) designed to achieve specific public interest goals; technical conditions (such as frequency endowments, guard bands and block-edge masks), designed to promote efficient use of spectrum and management of interference; and non-technical conditions (such as licence duration, usage restrictions and tradability), which determine how the spectrum is used. This report focuses on the third category: non-technical conditions. Specifically, we explore the approaches available for determining licence duration (the number of years that a licence is valid for) and conditions for renewal. However, any discussion of licence duration and renewal would be impossible without considering the broader context of controls on spectrum use and trading.

Historically, the dominant approach towards licence duration in most countries has been to set fixed terms, but there is great variation across regulators with respect to the length of term. There is also variation in the extent to which procedures for renewal are defined and/or expected to be applied. Many countries require licensees to re-apply for licences on expiry, often as part of a competitive process. In the context of a traditional command and control approach to spectrum management, many regulators have tended towards a rigid approach of fixed terms with no direct renewal. Under such a regime, regulators are entirely responsible for determining how spectrum is allocated, and the ability to reclaim licences through licence expiry is the main standard tool available to them to support refarming of spectrum for new services and technologies.

In recent years, European countries have tended to move away from the command and control approach to spectrum management in favour of market-based approaches, such as auctions, trading and liberalisation. Indeed, with respect to mobile services, the European Commission has recommended that all licenses be issued on a technology and service neutral basis, and that these licenses allow for spectrum trading.¹ These reforms mean that in the future:

- Mobile spectrum will be tradable both between incumbents and entrants, and may potentially be partitioned or aggregated to form licences with different frequency, time or geographic endowments; and
- Licences will be issued or refarmed on a service and technology neutral basis, meaning that mobile operators will have great flexibility over the services that they provide to end users and the technology and equipment that they deploy to provide these services. For example, existing mobile licences at 900MHz and 1800MHz, which historically have been restricted to GSM technologies, will be available to be redeployed for new technologies, such as 3G and LTE.

These changes also have implications for the approach that governments take to licence duration and renewal. Such reforms mean that it is possible for the market to facilitate introduction of new services and technologies by existing operators or new service providers.

¹ *Commission Directive 2009/140/EC*, European Commission, 25 November 2009.

In this context, the importance of licence expiry as a tool for re-allocation of spectrum may be greatly diminished. Therefore, with the introduction of other spectrum management reforms, it is appropriate for regulators to review their approach to licence duration.

We explore the potential costs and benefits of different approaches to licence renewal in Section 3. To facilitate comparison, we define three types of approach that regulators can and have adopted for licence duration:

- Fixed term with no defined renewal provision or expectation of renewal;
- Fixed term with a renewal provision or expectation of renewal for another fixed term; and
- Indefinite term with revocation possible in specific and well defined circumstances.

In practice, of course, the particular approach taken by countries may not fit neatly into any one of these categories. For example, there is a continuum of approaches to licence renewal, from possible but not expected to guaranteed except under specific defined circumstances.

Fixed term with no renewal provision or expectation of renewal

The key characteristic of this approach is that, upon expiry of the fixed term, the licence reverts back to the spectrum manager. The existing licensee has no guarantee that it will be able to reacquire the frequencies that it was previously using. The regulator may decide to reallocate the spectrum to the same or different use, and has discretion over the assignment process. In Europe, the most common approach is to re-assign frequencies using an auction. Such auctions are typically scheduled before expiry, so as to prevent any discontinuity in licence use between terms.

This is the current mobile licensing regime in Ireland. Mobile licences are typically granted for a fixed term of 15 or 20 years, and there are no explicit renewal provisions in either the 2G or 3G licences. With respect to 2G licences, which expire between 2011 and 2015 in Ireland, ComReg proposes to reclaim and reassign these frequencies via an auction. It has not yet adopted a formal position on the 3G licences, but the de facto assumption would be that without a change of policy it would adopt the same approach again.

Fixed term with a renewal provision or expectation of renewal for another fixed term

In this case, the licensee has a degree of certainty that its licence term will be renewed for a further fixed term upon expiry of the initial fixed term. The expectation of renewal of spectrum usage rights may be based on an explicit provision dealing with renewal terms in the original licence or based on precedent i.e. past instances when the spectrum manager has renewed licences. Typically, there will also be some procedure for notifying the licensee of a decision to (or not to) renew the licence some time in advance of expiry.

Many countries have adopted renewal processes for mobile licences. For example, this is the standard approach in Canada and the United States, where terms are only ten years but renewal is usually automatic provided that licensees fulfil their policy and technical conditions. However, there is great variation with respect to the certainty and notice provided by different regulators with respect to renewal.

Indefinite term with revocation possible in specific and well defined circumstances

An indefinite term licence is defined as having the following term conditions:

- An initial fixed term (say 20 years) during which the licence can be revoked in a limited and narrowly defined set of conditions similar to revocation conditions attached to current fixed term licences (e.g. for non-payment of licence fees, a breach of the terms of the licence or national security reasons). During this initial term the licence may not be revoked for spectrum management reasons.
- Once the initial period has expired, the grounds for revocation include the right to revoke for spectrum management reasons subject to a minimum notice period of five years. Unless revoked, the licence remains in force and the licensee continues to hold the licence (i.e. it is indefinite in duration). Alternatively, this may be defined as a process of automatic, rolling renewal, with a minimum term always equal to the notice period.

Under these conditions, an indefinite licence is clearly not the same as an irrevocable licence. The spectrum regulator retains the power to intervene if it perceives that the market is no longer delivering an efficient outcome in terms of spectrum allocation.

The UK has led the way in introducing indefinite licences, as defined above, for commercially used spectrum. Most recently, following a decision on refarming of 2G spectrum, it has announced its intention to convert existing 3G licences to indefinite terms, from the previous fixed terms of 20 years.² It also plans to award new licences at 800MHz and 2.6GHz on an indefinite term basis.³

² *Statement on variation of 2100 MHz Third Generation Mobile Wireless Telegraphy Act Licences*, Ofcom, 20 June 2011.

³ *Consultation on assessment of future mobile competition and proposals for the award of 800 MHz and 2.6GHz spectrum and related issues*, Ofcom, 22 March 2011.

3. Licence Terms and Stakeholders

In this section, we consider the costs and benefits of the three approaches to licence duration and renewal from the perspective of various stakeholders:

- Spectrum manager (Section 3.1);
- Incumbent licensees (Section 3.2);
- Potential new licensees (Section 3.3); and
- Consumers (Section 3.4).

In Section 3.5 we summarise the position of these different stakeholders under different licence terms and renewal regimes.

3.1. Spectrum Manager

Spectrum is a scarce and valuable resource. ComReg estimates that in 2009 the use of radio spectrum contributed about 2 % to Irish GDP, and employed over 26,000 people.⁴ Given the scarcity value of spectrum, a spectrum manager needs to ensure that spectrum is allocated efficiently and that it is not left unused for long periods.

Although the economic efficiency of spectrum use is typically defined as the primary goal of the spectrum manager, it will also have a number of other objectives, which may or may not be consistent with the efficiency objective. In summary, a typical set of objectives for a regulator may include:

- Promoting efficient use of spectrum, meaning allocating spectrum to the most high value uses, assigning it to users that can generate the highest value, and encouraging sustainable investment by licence holders;⁵
- Ensuring that radio frequencies do not lie unused for long periods of time if there is a viable use for the spectrum;
- Meeting the country's international obligations, including management of interference at national borders and taking account of European and international harmonisation initiatives;
- Promoting competition in downstream markets, so as to ensure that a variety of services are delivered to consumers at reasonable prices;
- Supporting related public policy objectives, such as the availability of broadband services to rural areas and access by different groups within society, such as the poor and elderly; and

⁴ *ComReg Document 11/28*, 12 April 2011.

⁵ See for example *ComReg Document 11/28*, 12 April 2011.

- Generating revenues from the sale of spectrum.

In the following subsections, we analyse each of these possible objectives and explore how effectively they may be achieved under different approaches to licence duration and renewal.

3.1.1. Efficient allocation

In the absence of spectrum trading and liberalisation, a fixed term licence is a useful spectrum management tool. This is because it allows the spectrum manager to periodically reallocate and reassign spectrum in response to changing technologies and market developments. This command and control approach to spectrum assumes that the spectrum manager can:

- Identify the best use and technology for a band of spectrum at a given time;
- Predict the technology, investment and market cycles accurately to set the fixed term; and
- Allocate radio spectrum to users who will use it efficiently for the entire fixed term of the licence.

In practice, it is unlikely that the spectrum manager has the information required to make all these decisions. Technology and markets develop rapidly, continually and unpredictably. It will be difficult to set fixed terms to correspond to these developments. A more flexible market based approach is likely to allocate scarce spectrum more efficiently. Following the revisions to the Common Regulatory Framework for Electronic Communications Networks and Services at the European level,⁶ ComReg identifies the following implications for spectrum management:⁷

- *“limits on the restrictions that can be placed on the rights of use of Electronic Communications Services (ECS), with the aim of moving to a more technology-and service-neutral licensing environment; and*
- *allowing for the transfer or lease of individual usage rights for radio frequencies between undertakings.”*

The move to technology and service neutral licensing and spectrum trading recognises that market based mechanisms are better at reallocating and reassigning spectrum usage rights on a continuous basis, and able to accommodate inherently unpredictable technology and market developments.

To date spectrum auctions have been the most prominent market based mechanisms used to allocate mobile spectrum, but as Martin Cave points out in his paper on spectrum management,⁸

⁶ *Commission Directive 2009/140/EC*, European Commission, 25 November 2009.

⁷ *ComReg Document 11/28*, 12 April 2011, Pg 20.

⁸ *Cave, M., Market-Based Methods of Spectrum Management in the UK and the European Union*, Telecommunications Journal of Australia, Volume 58, Number 2-3, 2008, Monash University Epress.

“...auctions by themselves do not make a fundamental change in spectrum management, because they usually operate in a framework of command and control over the use of the licence that is being auctioned. Thus they introduce a competitive element into the assignment process, but do not necessarily introduce flexibility into spectrum use.”

What is required in order to ensure the efficient use of spectrum is that initial allocations made via auctions are combined with liberalised spectrum usage rights which are tradable. Spectrum liberalisation and trading both between incumbents and entrants will help allocate spectrum to its most valuable use and efficient user, and facilitate the introduction of new services and technologies.

A fixed term licence with no renewal will interrupt efficient allocations via spectrum trading because it will disrupt the market when licences expire, and reduce the value of spectrum when licences are close to expiry. A fixed term licence with some expectation of renewal will also impede efficient market based allocations because buyers and sellers will be unsure if spectrum usage rights will be valid beyond the fixed term. This uncertainty of licence tenure will diminish incentives to trade spectrum as it will be difficult to estimate the value of spectrum. An indefinite term licence with revocation possible in specific circumstances has well defined spectrum usage rights in the sense that there is minimal uncertainty with regard to the licence term. This will facilitate spectrum trading and the efficient allocation of spectrum, a conclusion also reached by the Australian Productivity Commission:⁹

“...There was some concern that long term or perpetual licences would lock in spectrum uses. It was presumed that spectrum licences would be limited to specified uses, and hence that a limited term might still be needed to give the regulator scope to change spectrum use when licences expire. But as explained previously, the RC Act does not require that spectrum licences be limited to a specified use. They are not linked to the spectrum plan and have considerable latitude to adopt different uses and technologies. With some attention to creating core conditions that are as technologically neutral as possible, spectrum licences would have the characteristics required for perpetual licences.”

We note that contrary to what ComReg suggests, there is no incentive for licensees to “hold out” and delay trading in the expectation that they will be able to sell spectrum at a higher price later if licences are issued for an indefinite term.¹⁰ This is because:

- Firstly, as explained above, indefinite terms make it easier to value and hence trade spectrum usage rights. All relevant information at a given point in time (for example foreseeable technological developments and new uses) will be reflected in the spectrum trading price in an efficient market. Any changes in the value of spectrum will be the result of new information such as technological breakthroughs, etc. Once revealed this information will also be incorporated in the spectrum trading price in an efficient market. Unless a licensee has private information there is unlikely to be any gain from holding out.

⁹ Productivity Commission 2002, *Radiocommunications*, Report no. 22, AusInfo, Canberra, 1 July 2002, Pg. XLV.

¹⁰ ComReg Document 11/28, 12 April 2011, Pg 24.

- Secondly, it need not be the case that the value of spectrum increases as new technologies are developed; it might decrease, and to delay selling could be a loss making strategy. For example, increasing substitutability of spectrum bands, and the development of radio technologies and devices that can operate across multiple frequencies may decrease the relative value of a particular spectrum band.

We also note that once spectrum usage rights are technology and service neutral, it no longer makes sense to set the licence term in line with future technology and investment cycles as the market will facilitate the introduction of new services and technologies. In this context the basis for setting fixed terms is unclear and the importance of licence expiry as a tool for reallocation of spectrum may be greatly diminished.

The investment incentives for licensees under fixed and indefinite licence terms are discussed in detail Section 3.2.1. In general, security of tenure associated with indefinite licences will allow mobile operators to invest in their networks continuously as markets and technologies develop without the threat of potential termination of the licence leading to unexploited stranded investments. This will result in sustainable and high levels of investment by licensees.

3.1.2. Unused spectrum

Given the scarcity value of spectrum, a spectrum manager would like to avoid situations when useful spectrum is left unused. Such a situation can arise because:

- The spectrum manager fails to reallocate spectrum in a timely fashion; and/or
- A licensee does not use its spectrum allocation.

3.1.2.1. Spectrum manager fails to reallocate spectrum

The risk that a spectrum manager fails to reallocate spectrum in a timely fashion is higher with fixed terms because in every period that the licence expires the spectrum manager needs to organize and implement a reallocation mechanism. Ofcom sees this as one of the disadvantages of fixed term licences, and states,¹¹

“...In particular, reassignment by the regulator typically takes significant time and resource. The spectrum may also lie idle for a period as the regulator prepares for reassignment. While it may be possible to reduce this problem through the use of overlay auctions, the approach of an indefinite term together with spectrum trading seems likely to offer a simpler and less costly way of ensuring the spectrum is used efficiently.”

Another problem with fixed terms is that licences may not co-terminate. This can occur either because licences are issued at the same time with different fixed terms (though this is not usually true), or because licences with the same fixed term are issued at different times – for example in the case of operators entering the market in different years. The renewal of licences is complicated because renewal decisions for expiring licences should not favour one

¹¹ Consultation on assessment of future mobile competition and proposals for the award of 800 MHz and 2.6 GHz spectrum and related issues, Ofcom, 22 March 201, Pg 74.

licensee over another, and this can delay and complicate spectrum liberalisation and renewal. For example, if expiring licences are renewed on a liberalised basis whereas existing licences continue to have technology and service restrictions then existing licensees will be disadvantaged. The problem of non co-terminating licences will not occur with indefinite terms.

3.1.2.2. Licensee fails to use spectrum

The risk that a licensee does not utilise the entire spectrum allocated to it is also lower with indefinite terms provided spectrum usage rights are liberalised and traded efficiently. ComReg recognises that indefinite term licenses will be more tradable, and says that “*as a term-limited licence approaches its end date, the market for such a licence will diminish.*”¹² The higher tradability of spectrum usage rights provides licensees an incentive to use or sell their spectrum. The Australian Productivity Commission also reached the same conclusion in its study:¹³

“...But perpetual rights would not lock in spectrum use. On the contrary, their greatly improved marketability would emphasize the opportunity cost of not using licences efficiently. Competing users, new technologies and changing market opportunities would impose a discipline on incumbents to use the spectrum efficiently or sell it or lease it to others who can.”

The incentives for mobile network operators to use spectrum efficiently or trade unused spectrum arise because they are commercial organizations which strive to minimize costs by optimising spectrum usage. For a given spectrum allocation, more capacity can be provided by increasing network investment. Conversely, for given network investment, more capacity may be provided if more spectrum is deployed. The operator’s technical valuation of marginal spectrum will be no more than the network costs that it will avoid as a result of having that spectrum. If a buyer is willing to pay more for marginal spectrum than the seller’s avoidable network costs, it will be profit maximising for an operator to sell spectrum.

In this context, there is a risk that a single operator acquires a disproportionate amount of spectrum via trading and hoards this spectrum in order to preclude market entry and/or gain a competitive advantage. It is also possible that the secondary spectrum trading market is not efficient. For example trading may not result in a socially optimal redistribution of strategically important mobile spectrum (for example sub-1 GHz spectrum bands). This is because, given the competitive advantage of holding such spectrum, incumbents may be reluctant to sell any spectrum they hold in these bands. With indefinite licences, a regulator may be concerned that the situation may persist indefinitely. In such cases other policy tools may be required to address competition concerns. For example, ex-ante competition reviews of mobile spectrum trading that might significantly lessen competition in the downstream market should prevent significant risk to competition in the downstream market arising via trading in the first place.¹⁴ Further, as a pre-emptive measure, a regulator may impose caps

¹² ComReg Document 11/28, 12 April 2011, Pg 26.

¹³ Productivity Commission 2002, *Radiocommunications*, Report no. 22, AusInfo, Canberra, 1 July 2002, Pg. XLVI.

¹⁴ For example Ofcom proposes undertake *ex-ante* competition reviews (Source: *Statement to make 900MHz, 1800MHz and 2100MHz public wireless network licences tradable*, Ofcom, 20 June 2011).

on spectrum holdings below 3 GHz and particularly sub-1 GHz, for example, as proposed by the Telecommunication and Internet Federation.¹⁵

3.1.3. International coordination and harmonisation

The allocation and use of radio spectrum needs to be coordinated internationally in order to avoid interference problems. There are also advantages for end-users, service providers, and equipment manufacturers if spectrum use is coordinated internationally as this allows operators and equipment manufacturers to exploit economies of scale.¹⁶ This means that from time to time ComReg may need to make major allocation and harmonisation changes in line with other European countries or internationally. Usually such major allocation and harmonisation changes happen infrequently and take a long time to develop and finalise. For example the reallocation of spectrum originally used for analogue television for mobile services (also known as the Digital Dividend) has taken over ten years in Europe.¹⁷ We also note that existing 2G licences in Ireland have a fixed term of 15 years, and 3G licences a fixed term of 20 years.¹⁸ This suggests that at the time these licences were issued no major allocation and harmonisation changes were foreseen for the next 15/20 years in the spectrum bands used for these services.

On expiry a fixed term licence reverts back to the spectrum manager who can take this opportunity to make major allocation and harmonisation changes if required. This reallocation will proceed smoothly if the year of expiry of the fixed term licence coincides with the year when major allocation and harmonisation changes need to be made. However, this may not always be the case. For example although the 2.6 GHz band is subject to a June 2008 Commission decision which harmonizes this band for the provision of electronic communication services,¹⁹ it has been difficult to implement these changes in Ireland where this band is licensed to UPC for MMDS TV services for a fixed term that does not expire till April 2014.²⁰

An indefinite term licence during its initial term is similar to a fixed term licence. After that an indefinite term licence can be revoked for spectrum management reasons subject to a minimum notice period of five years. Given that major allocation and harmonisation changes take place infrequently and take a long time to develop there should be sufficient time for a spectrum manager to provide five years notice before undertaking major allocation and harmonisation changes.

In fact an indefinite term licence with an initial term of 20 years and subject to revocation after the initial term for spectrum management reasons, given five years notice, will provide

¹⁵ *IBEC Telecommunications and Internet Federation*, Submission on ComReg 11/28-Review of the Period 2008-2010 and Proposed Strategy for Managing the Radio Spectrum: 2011-2013, 24 May 2011.

¹⁶ *Commission Directive 2009/140/EC*, European Commission, 25 November 2009, Para 33.

¹⁷ For example see:
http://ec.europa.eu/information_society/policy/ecom/radio_spectrum/topics/reorg/dividend/index_en.htm , and ComReg 09/15.

¹⁸ http://www.comreg.ie/radio_spectrum/search.541.874.10003.0.rslicensing.html.

¹⁹ *Commission Decision 2008/477/EC*, European Commission, 13 June 2008.

²⁰ *ComReg Document 10/38*, 14 May 2010 and *ComReg Document 10/58s*, 27 July 2010.

more flexibility than a fixed term license of 20 years which is reacquired and then reallocated for another fixed term of 20 years. This is because the latter would only permit major allocation and harmonisation changes in the year when the first fixed term expires (i.e. in the 20th year) and then when the second fixed term expires (i.e. in the 40th year). The indefinite term license on the other hand would allow for major allocation and harmonisation changes to be made in any year after the initial period has expired subject to a five year notice period i.e. in year 21 (notice given in year 16), year 22 (notice given in year 17), year 23 (notice given in year 18) and so on.

3.1.4. Promoting competition

Effective competition between operators will ensure that consumers are offered a wide variety of services at reasonable prices. Both actual entry and the potential threat of entry will promote competition.

With fixed term licences entry is only likely to occur periodically when existing licences expire and are reallocated, or new spectrum is released. This is because the closer a fixed term licence is to expiry the less attractive it will be for a potential entrant to buy the associated spectrum usage rights. This will be true even if there is an expectation of renewal, as this does not guarantee that the licence will be renewed. It will be difficult for an entrant to develop a business case given the uncertainty of tenure. Indefinite term licences will provide greater security of tenure which should facilitate entry (and exit) at any time during the term of the licence. This is because a potential entrant will be guaranteed that spectrum usage rights will not be revoked except for major allocation and harmonisation changes, and this should provide sufficient time to recover investments and make a reasonable profit. This in turn should lead to more competitive pressure as the market will be contestable to a greater degree than under fixed term licences. As the Australian Productivity Commission states:²¹

“Perpetual licences would allow market participants to choose if and when they enter or exit the industry. Instead of facing an arbitrary cut off date, licensees could match their licence holdings to their business plans.”

However, a potential concern with spectrum trading and indefinite terms as opposed to fixed terms is that one operator could acquire a disproportionate amount of spectrum, and this situation might persist and reduce competition. As ComReg says, it *“needs to ensure that spectrum rights do not become concentrated in too few hands such that competition in downstream markets would be restricted to a significant extent (or otherwise foreclosed).”*²² As mentioned earlier, in such cases additional safeguards such as trading in spectrum bands being subject to limits on the amount of spectrum that can be held by any one operator at any time, and ex-ante competition reviews of trading which might significantly lessen competition in the downstream market may be required. Ex-post competition law can be used to identify other anti-competitive practices that are not related to spectrum allocation. Once identified, these practices can be tackled directly.

²¹ Productivity Commission 2002, *Radiocommunications*, Report no. 22, AusInfo, Canberra, 1 July 2002, Pg XLVI.

²² ComReg Document 11/28, Pg 24.

The periodic re-release of spectrum through auctions is in any case unlikely to be helpful in dealing with the existing market power of operators. This is because the strength of a bidder will to some extent be based on its current position in the market. As a result the same licensees are likely to reacquire spectrum when spectrum is re-released. For example ComReg found with regard to GSM licences that the “*likelihood of O2 and Vodafone not winning spectrum in a competitive award is very low.*”²³ Fixed expiry dates may in fact favour larger operators if they enjoy greater certainty than smaller rivals that they can win back spectrum in an auction.

There is also a pan-European dimension to spectrum trading and licensing. Operators present in multiple countries will be able to realise economies of scale in production and marketing and this may also lead to more competition. It is likely to be easier to implement such a strategy by acquiring indefinite term spectrum usage rights from the market rather than waiting for fixed term licences to expire in different countries and/or wait for spectrum managers in these countries to release new spectrum. It is also unlikely that fixed term licences in different countries will expire simultaneously. The European Commission emphasizes this Community dimension in its 2009 directive:²⁴

“The undue fragmentation amongst national policies results in increased costs and lost market opportunities for spectrum users, and slows down innovation, to the detriment of the internal market, consumers and the economy as a whole. Moreover, the conditions for access to, and use of, radio frequencies may vary according to the type of operator, while electronic services provided by these operators increasingly overlap, thereby creating tensions between rights holders, discrepancies in the cost of access to spectrum, and potential distortions in the functioning of the internal market.”

Finally, we note that irrespective of whether licences are issued for fixed or indefinite terms, a spectrum manager will always be able to use primary allocations of new harmonised bands (like the 2.6 GHz band, and possibly spectrum currently being used by the military and other public bodies) to influence competition among existing operators or to promote its other policy goals.

3.1.5. Public policy goals

In relation to spectrum use, regulators often have related public policy goals. Historically, these have often been included in spectrum licences in the form of roll-out and coverage conditions. Repeated spectrum awards provide a tool for addressing new public policy issues as they arise. Therefore, a possible concern with the introduction of indefinite licences, is that regulators may be surrendering a tool to intervene in the market.

For example, in the case of mobile, spectrum managers may be mandated to:

- extend and/or improve the availability of mobile services to areas which are not covered at present; and/or

²³ ComReg Document 09/99, 21 December 2009, Pg 44.

²⁴ Directive 2009/140/EC, European Commission, 25 November 2009.

- enable internet access and use by groups within society, such as the poor and elderly, who may either lack the skills or financial means to access broadband services.

One way to extend the availability of services for users is to include service coverage obligations in the original licence conditions. Of course, coverage obligations can be included in both fixed and indefinite term licences. For example, Ofcom proposes to include broadband coverage obligations in one of the 800 MHz licences to be issued for an indefinite term.²⁵ However, with indefinite licences, changing terms later may be more difficult as licensees may raise concerns with regard to changes to existing terms and conditions.

How concerned should regulators be about this loss of flexibility? Our view is that this should not be a major concern, for three reasons:

Firstly, imposing policy conditions on licences may be a rather blunt tool. It is far from straightforward to specify various technical parameters used to measure quality and coverage obligations, especially when technologies are new and evolving. Such obligations could distort investment and roll-out decisions and result in a less valuable service than would otherwise have been the case. This might occur if regulators misjudge the value that consumers place on different services. For example, consumers might value indoor coverage more than speed but regulators might emphasize the latter in mandated coverage obligations. Alternatively, conditions designed to promote one type of service may inadvertently prevent roll-out of another type of service that emerges later which offers superior benefits to consumers.

Secondly, it is always possible to set up incentive schemes outside the initial licence terms and conditions to deal with new public policy concerns. The Rural Broadband Scheme and the National Broadband Scheme are two such examples in Ireland.²⁶

Finally, demand side interventions by governments, such as subsidies to groups who cannot afford broadband services or training to previously excluded groups within society, may be a much more effective and less distorting way of achieving public policy goals. These demand side interventions are unrelated to licence terms, and can be undertaken with both fixed and indefinite terms.

3.1.6. Revenue generation

The initial allocation of spectrum can be used to generate revenues via licence fees. These licence fees can be set to recover the costs of the licensing process and managing spectrum, to ensure that spectrum is allocated to its most valuable use, and/or to raise revenue for the government. Given the substantial benefits of mobile services to consumers and the economy, and the scarcity of mobile spectrum, the most important goal of spectrum managers should be to ensure that this spectrum is used efficiently. Revenue generation should be a secondary

²⁵ *Consultation on assessment of future mobile competition and proposals for the award of 800 MHz and 2.6GHz spectrum and related issues*, Ofcom, 22 March 2011, Pg 80.

²⁶ The Rural Broadband Scheme in Ireland aims “to enable a basic broadband service to be provided to individual rural premises which are not capable of obtaining a broadband service from existing internet service providers.” The National Broadband Scheme in Ireland aims to provide broadband in areas where these services have been found to be insufficient (Source: <http://www.dcenr.gov.ie/Communications/Communications+Development/>).

objective. As mentioned earlier, indefinite term licences should result in efficient utilisation of spectrum (Section 3.1.1 and 3.1.2), and in cost savings for the spectrum manager because there will be no need to organise a licence renewal process every time a licence expires.

However, if licences are issued for an indefinite term, then a concern for any government may be the loss of future revenue streams if licences cannot be reclaimed and re-auctioned. This need not be a concern if the spectrum manager uses administrative incentive pricing (AIP). With AIP the fee levels are set by the spectrum manager based on its estimate of the market value of spectrum. AIP can provide a steady payment stream as an alternative to one-off auction revenues, and help ensure that incumbent operators pay a fair price for the spectrum they hold. In the United Kingdom, AIP (now Annual License Fee - ALF) is applied to licences after the expiry of their initial term.

In principle, in an efficient trading market, the price for which spectrum could be sold would signal the opportunity cost of spectrum and promote its optimal use. Ofcom, the UK regulator, proposes to assess the respective roles of trading and AIP on a sector-by-sector basis.²⁷

Next we discuss the costs and benefits of the three approaches to licence duration and renewal from the perspective of incumbent licensees.

3.2. Incumbent Licensees

Incumbent licensees typically prefer indefinite term licences to fixed term licences. The main reason is that security of tenure will allow mobile operators to invest in their networks continuously as markets and technologies develop without the threat of potential termination of the licence leading to unexploited stranded investments. We discuss this further in Section 3.2.1 below. Before that we consider how licence terms might affect optimal utilisation of spectrum, raising funds for investment, and competition between fixed and mobile operators.

Optimal Utilisation

As discussed in Section 3.1.1 and 3.1.2, minimal uncertainty with regard to renewal rights associated with indefinite terms makes spectrum more marketable and this is likely to lead to a more active spectrum trading market. A more active trading market will allow operators to optimise their spectrum holdings and minimise operating costs by balancing investment in network equipment and spectrum as described in Section 3.1.2.2. The increased scope for entry and exit associated with indefinite terms also means that the market will be contestable to a greater degree which should increase the competitive pressure on incumbent operators to use their spectrum efficiently.

Raising funds for investment

With fixed terms, uncertainty related to the renewal of the licence and the cost of renewal may mean that operators will not be able to raise adequate funds for investment and/or face

²⁷ SRSP: *The revised Framework for Spectrum pricing*, Ofcom, 29 March 2010.

an increase in the cost of funds towards the end of the licence terms. This is due to the potential destruction of shareholder value and increase in costs of business which will occur if an operator:

- Fails to win any spectrum: In this case the operator will no longer be able to use its network infrastructure to provide mobile services, and it may need to exit the market.
- Wins less spectrum than it had before: In this case it will need to exploit the spectrum it wins more intensively thereby raising network costs and/or incur additional costs of non-technical measures like roaming agreements.
- Wins spectrum in a different band than before: In this case the operator may need to incur costs of retooling its network to work with new frequencies, costs of non-technical measures such as roaming, and additional costs of migrating some end users between spectrum bands.²⁸

In all three situations the operator's competitive position in the market will be adversely affected and its costs will increase. This is likely to affect its ability to raise funds. The inability to raise adequate funds or the increased cost of funds will mean that an operator may not be able to invest adequately to meet growing traffic demand, to expand its network footprint, and/or to roll-out new services like mobile broadband extensively.

Competition between fixed and mobile operators

Mobile operators increasingly compete with fixed operators to provide voice, data and video services. Fixed operator licences in Europe are usually for an indefinite term which means fixed operators can continually invest in their networks without the risk that their licences may not be renewed. Indefinite term spectrum licences will put mobile operators on an equal footing and allow them to compete better with fixed operators.

3.2.1. Licensee investment incentives

Mobile networks require continuous investment to cope with expected growth in traffic, both in terms of scale, for example deploying more backhaul and configuring more uplink capacity, and innovation, for example deploying more spectrum efficient network technology and network upgrades which also require significant investment. If licences are for fixed terms operators need to ensure that there is significant payback early – in general an operator would expect to break-even about a third of the way through a fixed term, recover investment in the first half, and generate free cash flow in the second half to be able to earn a reasonable return on its investment. This means there is unlikely to be substantial new investment in new sites or services in the second half of a fixed term licence because there might be insufficient time to recover investments, and make a reasonable profit. So, as licences approach their expiry date, incentives diminish for operators to invest in networks dependent on spectrum. Such

²⁸ These might be customers who do not have multi-band phones and/or are using a technology (for example 2G) which is not provided in the reacquired spectrum band.

behaviour has a solid basis in economic theory, and is supported by empirical observations from other sectors such as agriculture.²⁹

We note that empirical evidence for decreasing investment in mobile networks as licence expiry approaches is ambiguous. However, we believe that this can be explained by other factors, such as an expectation amongst operators that their licences will be renewed, that they will be able to win back spectrum that is re-awarded, or the fact that the investment relates to networks (for example 3G) for which licences are not about to expire. We believe that ComReg's observation that three of the mobile operators in the Irish market invested significantly towards the end of their licence terms can be explained by these factors.³⁰ For example eircom in its submission to ComReg states:³¹

“In the last two financial years (1 July 2008 to 30 June 2010) eircom Group has invested [] in its mobile network. The vast majority of this investment, [], has been in respect of our 2100MHz licence (expiry date in 2027). Limited sums have been invested in maintaining existing capabilities provided under our GSM licence given the regulatory uncertainty created by the publication of ComReg 08/57 calling into question our legitimate expectation of licence renewal.

The regulatory uncertainty resulting from ComReg's ongoing review has inhibited rather than promoted investment contrary to ComReg's objectives. It is arguable that under a more flexible licensing regime (with indefinite licences or at the very least clearly defined renewal rights) we would have adopted an investment profile generating greater societal benefits. The root of the problem is the arbitrary nature of finite licence durations and the inflexible nature of current licences. Flexible spectrum rights support continuous investment which is infinitely superior to ComReg's apparent policy approach of periodic re-release which serves to stall service development in the run-up to the re-release process.”

Telefonica and Vodafone also make similar points. Telefonica in its submission to ComReg states that it expected its licence to be renewed, and this was the reason it continued to invest in its GSM network. Without such an understanding it would not have made these investments.³² Vodafone says that it invested in its 3G network because its 3G licence is not due to expire for about 10 years, and it too expected that its 900 MHz licence would be renewed, and this was the reason for continued investment in its 2G network.³³

²⁹ See for example: Besley, T., *Property Rights and Investment Incentives: Theory and Evidence from Ghana*, Journal of Political Economy, 1995, vol. 103, no.5; and Li Guo, Rozelle S., and Brandt L., *Tenure, land rights and farmer investment incentives in China*, Agricultural Economics 19 (1998), 63-71.

³⁰ *ComReg Document 11/28*, 12 April 2011, Pg. 25.

³¹ *Response to ComReg Consultation paper Review of the Period 2008-2010 & Proposed Strategy for Managing the Radio Spectrum: 2011-2013 ComReg Document 11/28*, eircom Group, 24 May 2011.

³² *Spectrum Strategy 2011-2013 Response to Consultation 11/28 (Public Version)*, Telefonica.

³³ *Vodafone response to ComReg Consultation on Review of the Period 2008-2010 & Proposed Strategy for Managing the Radio Spectrum: 2011-2013 (Non-confidential)*, Vodafone, 24 May 2011.

We note that longer licence terms (for example 30 years) might mitigate some of the negative effects of fixed terms initially, but investment incentives will still be distorted towards the end of the licence term, and the spectrum trading market will not be as effective in allocating spectrum efficiently as it would with indefinite term licences (Sections 3.1.1 and 3.1.2). In this context the Electronic Communications Committee³⁴ writing in 2006 recommended that rolling term licences which remain in force with no fixed end date (similar to the indefinite term licence described in Section 2) balance the spectrum manager's need for flexibility and the licensee's need for security of tenure.³⁵ It is no surprise then that countries that have been at the forefront of spectrum management reforms, such as Australia, Canada, New Zealand, the United Kingdom and the United States, are also at the forefront of reforms to licence terms and are moving to indefinite terms or fixed terms with very strong expectation of renewal (as we discuss in Section 4).

3.3. Potential New Licensees

Once potential entrants enter the market, their interests typically align with existing licensees, i.e. they will prefer indefinite terms for the reasons discussed in the previous section. For example, in the case of the recent consultation in Canada on this issue (as discussed in Section 4.2), both incumbents and small recent entrants supported indefinite terms. Typically, only aspiring new licensees prefer fixed terms over indefinite terms as they may hope that it will be easier and/or cheaper for them to enter the market in the case of fixed term licences. However, in practice, it is far from clear whether shifting to indefinite licences would really constrain opportunities for entrants; in fact, it may significantly increase scope for entry.

As discussed earlier in Section 3.1.4, with fixed licence terms entry is only likely to occur at the expiry of licence terms. A potential entrant is likely to wait for the spectrum manager to reacquire and reallocate spectrum or release new spectrum before it enters the market. Liberalised indefinite term tradable spectrum usage rights provide more flexibility as a potential entrant can acquire spectrum from the market. This allows a potential entrant to base its entry decision on market developments and its business plans, and not be constrained by the timing of expiry of existing fixed term licences or new spectrum release.

The cost of acquiring spectrum under indefinite terms will be determined by the market price of spectrum, and that under fixed terms by the licence fee determined in an auction. It is unclear a priori which will be the cheaper alternative. The answer will depend on the market price of spectrum, the level of AIP, and the outcome of any auction held to allocate the spectrum. Only if a spectrum manager plans to administratively allocate spectrum at below the market price to a new entrant might it be cheaper to enter the market with fixed term licences.

A potential concern for new entrants who buy indefinite spectrum usage rights after the initial period is over is that these usage rights can be revoked for spectrum management reasons subject to a minimum notice period of five years, which is unlikely to be sufficient time to

³⁴ The Electronic Communications Committee is a body that helps develop common policies for regulating spectrum in Europe and represents it at international bodies.

³⁵ *Enhancing Harmonisation and Introducing Flexibility in the Spectrum Regulatory Framework*, Electronic Communications Committee, March 2006, Pg 14.

make a reasonable return on investments. However as mentioned earlier major allocation and harmonisation changes occur infrequently and take a long time to implement – from 10 to 20 years (Section 3.1.3). Entrants should be well informed about such changes, and be able to take these into account before making their entry decision. If a major allocation and harmonisation change is imminent then entry may not be feasible till after such changes have been implemented.

Finally, a spectrum manager has other policy tools that can be used to promote entry. For example, primary allocations of new harmonized bands, limits on the amount of spectrum that could be held by any one operator, and ex-ante reviews of mobile spectrum trading which might adversely affect competition in the downstream market can be used to remove obstacles to entry.

3.4. Consumers

The impact of a shift to indefinite licences would be felt only indirectly on consumers, via the impact on the timing and quality of available services, and on price levels. Consumers will be better off if there is effective competition in the downstream market for mobile services, and if operators invest adequately to meet growing traffic demand, expand their network footprint and roll-out new services like mobile broadband extensively. As discussed in Section 3.1.4, indefinite terms should encourage entry. Entry and the threat of potential entry should make the downstream market contestable by disciplining incumbent operators, and making the market more competitive which will help ensure that consumers are offered a wide variety of services at reasonable prices.

With regard to investments by operators, the security of tenure that indefinite terms provide means that operators will be able to invest continuously as markets and technologies develop without the threat of potential termination of their licences which is likely lead to earlier availability of new services and service upgrades for consumers (Section 3.2.1). Under a fixed term, licence investments may be delayed or diminished till the licence is renewed and the benefits of immediate investment and/or more investment for consumers will be lost.

Indefinite terms will also provide incentives for optimal and efficient utilisation of spectrum by operators (Sections 3.1.1 and 3.1.2), and make it easier to raise capital for investment (Section 3.2). In a competitive market, these cost savings would be passed on to consumers in the form of lower prices. More investment will also enable mobile communication providers to compete better with their fixed network counterparts. This increase in inter-modal competition should also benefit consumers. In contrast, with fixed terms, there is potential for discontinuity of service and/or the need for operators to make costly adjustments which might be passed on to consumers in the form of higher prices or lower quality of service. It is also possible that an operator has to exit the market which will increase market concentration. Such discontinuity of service and reduction in competition are unlikely to occur with indefinite term licences.

3.5. Conclusion

The discussion above suggests that there is a strong case to adopt indefinite terms for mobile spectrum from the perspective of various stakeholders. Indefinite licence terms are better suited to meet the relevant objectives of a spectrum manager, provide incentives for efficient utilisation of scarce spectrum, and promote competition and investment which should benefit consumers as well.

The primary aim of a spectrum manager is to ensure that spectrum is used efficiently and that no viable spectrum is left unused. With the introduction of liberalisation and spectrum trading, indefinite terms are better at achieving these goals. Indefinite terms facilitate efficient allocation of spectrum via trading because security of tenure is required for effective trading markets. Uncertainty of tenure, a feature of fixed terms, diminishes incentives to trade and this impedes the efficient allocation of spectrum via trading both between incumbents and entrants. Valuable spectrum is also less likely to be left unused with indefinite terms because an efficient trading market should emphasise the opportunity cost of holding spectrum for licensees, and with indefinite terms spectrum managers do not need to organise a reallocation mechanism in every period that a licence expires which eliminates the possibility of spectrum remaining unallocated and unused.

Meanwhile, there is no evidence to suggest that other objectives of a spectrum manager, such as international coordination and harmonisation, promoting competition, and support of related public policy goals, would be adversely affected by a shift to indefinite licences. Where necessary, other tools such as ex-ante reviews of spectrum trading which might lessen competition in the downstream market, limits on the amount of spectrum that can be held by any one operator, and demand-side interventions, may be used to achieve such objectives.

For incumbent licensees, indefinite terms provide the advantage of security of tenure. This means that they can invest in their networks continually as markets and technologies develop without being constrained by potential licence expiry. This allows operators to cope with growing customer demand, introduce new services and spectrum efficient network technologies and upgrades, and compete better with fixed operators. Indefinite terms also avoid the potential destruction of business value in case an operator fails to reacquire the spectrum it previously held, and an efficient trading market should allow operators to optimise their spectrum holdings.

Potential new licensees, once they enter the market, typically have the same interests as incumbent licensees. Aspiring new licensees may prefer fixed terms over indefinite terms as they may hope that it will be easier and/or cheaper for them to enter the market in the case of fixed term licences. However, in practice, it is far from clear whether shifting to indefinite licences would really constrain opportunities for entrants; in fact, it may significantly increase scope for entry by providing more flexibility with regard to entry timing as potential entrants can acquire spectrum from the market. This allows a potential entrant to base its entry decision on market developments and its business plans, and not be constrained by the timing of expiry of existing fixed term licences or new spectrum release.

Consumers are also likely to be better off with indefinite term licences. This is because the increased scope for entry associated with indefinite terms is likely to lead to a more contestable and competitive market, and indefinite term licences provide incentives for

operators to invest adequately to meet growing traffic demand, to expand their network footprint and roll-out new services like mobile broadband more extensively. Higher investments will mean better services for consumers. Indefinite terms also avoid the potential for discontinuity of service.

4. Licence Terms in Different Countries

In this section we discuss the approach to license terms in a selected group of countries. Table 4-1 provides an overview of licensing terms in these countries. Section 4.6 concludes based on licence terms in the countries discussed below, that it is quite practical for the regulator to maintain powers to reclaim licences in defined circumstances, while at the same time giving operators the certainty they need to trade spectrum and invest in network build. Indefinite term spectrum licences which may be revoked for defined spectrum management reasons given 5-years notice (defined in Section 2) are not impractical, and similar or equivalent licensing terms have either been adopted by some countries or are under review elsewhere.

Table 4-1
Overview of Licensing Conditions in Different Countries

Country	Type of regime	Term of licences	Renewal conditions	Tradable?	Liberalised?
Australia	Fixed term, no renewal (but renewal approach under review)	15 years	Licences resold by auction, but may be bought by current user	Yes	Yes
Canada	Fixed term, with strong expectation of renewal	10 years (but likely to move to longer terms)	Presumption of renewal, but greater clarity requested by operators	Yes, but subject to constraints	Yes, but subject to constraints
New Zealand	Fixed term, with high likelihood of renewal	20 years	Renewal notice posted 5 years before licence expiry	Yes	Yes
United States	Fixed term, with strong expectation of renewal	10 years	Renewal usually automatic subject to meeting usage conditions	Yes, but subject to approval	Yes, but subject to approval
United Kingdom	Indefinite term	Remain in force until revoked	May be revoked for well defined spectrum management reasons subject to a five year notice period	Yes, proposed to be subject to ex-ante competition review	Yes

4.1. Australia

Concerns that fixed terms may be impeding trading

Australia has been a world leader in spectrum management reform, and has had a comprehensive spectrum trading regime since 1997. The ACMA considers these reforms a great success, with trading volumes of about 5% of licences, “similar to turnover in [the] housing market”³⁶. Nevertheless, following the tenth anniversary of the introduction of trading, it launched a major review with the aim of identifying further changes that could

³⁶ Richard Scheelings, February 2009, “Spectrum Trading: Improving the efficiency of the secondary market for spectrum”, an ACMA presentation.

improve the efficiency with which spectrum is used. The issue of licence renewal was identified as one of the key barriers to a fully efficient market, prompting government support for a shift to much greater certainty on renewal.

Spectrum licences are offered for terms of up to 15 years, and historically have been issued with no automatic right of renewal. Typically, expiring licences are reallocated using an auction, but may be re-acquired by the existing user. The ACMA sends expiry reminders to licensees during the last two years of their licence; for example, notices arising from allocations made in 2000 will be issued in 2013. Licences may only be reissued to the same user without a price-based contest under limited circumstances, such as special approval from the Minister or identification of a special public interest by the ACMA.

In the ACMA's Spectrum Trading paper, length of tenure was identified as an issue that *"affects the dynamism of trade in secondary markets as well as the willingness of operators to continue to invest in the network with limited remaining tenure when there is currently no certainty of licence re-issue."*³⁷ This view was widely supported by respondents to the consultation, many of whom called for measures to provide greater security of tenure for rights, so as to provide greater certainty over the timeframes for trades, investment and financial return. In particular, the security of licence tenure beyond licence expiry was identified as the most significant impediment to spectrum trading. Specifically, respondents argued that: *"[t]he consequence of uncertain tenure is sellers have weaker incentives to sell in the first half of the licence term, and aspirant buyers are discouraged from buying during the remaining half of the term."*³⁸

In its own concluding document, the ACMA accepted these arguments in principle, and announced its intention to draw up new guidelines that will favour renewal of licences. However, a full shift away from fixed terms to a framework that allows for a presumption of renewal will require primary legislation. It is unclear from our research when this will happen. However, we note that the Government has already accepted in principle that apparatus licences should be renewed unless licensees have failed to comply with their licence conditions or there are compelling spectrum management reasons for re-allocation.³⁹

4.2. Canada

Reviewing framework for licence renewal

Industry Canada is currently in the process of reviewing the licence terms applied to spectrum sold by auction, including spectrum for mobile services. In a public consultation released in April 2009, it initially proposed to maintain the current approach of 10-year licences with a high expectation of renewal.⁴⁰ However, following comments from the industry which strongly favoured longer licences and a possible switch to indefinite duration, Industry Canada revised its position. In its statement on decisions, released March 2011, it recognizes

³⁷ The ACMA, July 2009, Response to Submission of Spectrum Trading, page 4.

³⁸ Ibid, page 4.

³⁹ Ibid, page 3.

⁴⁰ Industry Canada, Consultation on Revisions to the Framework for Spectrum Auctions in Canada, April 2009, Canada Gazette notice DGRB-001-09.

the role of longer licence terms in facilitating investment, and asks for comments on its proposal to explore changes to legislation to support “*longer or indefinite licence terms.*”⁴¹

Canada’s spectrum manager cites a number of influences for its proposed change in approach. First, it states that all eight respondents on this issue “*were in agreement that a 10-year licence term is insufficient*”.⁴² In this regard, it is notable that the respondents represent a broad range of stakeholders from across Canada’s mobile industry who often disagree on other issues. They included: the three national incumbent operators (Bell Mobility, Rogers and Telus), two established regional incumbents (MTS Allstream and SaskTel – the former being also a provider of business communication solutions nationwide), one newly established regional entrant (Bragg) and the CWTA, an industry body for the wireless industry. All respondents asked for licence terms of at least 15 years and ideally 20 years in duration. Two respondents (Bell Mobility and Bragg) went further in calling for indefinite licences, and no respondents seem to have opposed this.

There was full support from industry for the concept that licences be issued with a high expectation of renewal, but a number of respondents called for greater clarity on circumstances under which renewal might not be granted, and called for this expectation to be clarified in both the text of policy documents and conditions placed on spectrum licences. Two respondents also expressed concern about the lack of clear guidance with respect to expectation of renewal for previously renewed licences.

Secondly, Industry Canada highlights “*extensive reviews*” undertaken by other countries, “*such as Australia, the United Kingdom and the United States*”. It observes, a “*common finding in these reviews is that traditional methods of spectrum management have often impeded access to spectrum and are slow to adapt to changes in technology and markets. As a result of the reviews, these countries are taking steps to evolve from a prescriptive style of spectrum management to an approach that embraces more flexibility and less regulatory intervention in the market, while retaining necessary regulatory powers to manage the spectrum effectively when required. Consequently, some countries are adopting longer licence terms, ranging from 10-year to indefinite.*”

In light of such evidence, Industry Canada concluded that licence terms in excess of ten years would provide greater incentives for the industry to invest in developing network infrastructure, technologies and related innovations. It also found that longer terms would be consistent with a modernized approach to spectrum management, and reduce administrative burden associated with licence renewal. In conclusion, it proposed to “*explore and consider changes to legislation, regulations, policies and frameworks that would confer the necessary powers to permit Industry Canada to move to longer or indefinite licence terms while maintaining the flexibility to deal with policy requirements and potential reallocation of spectrum.*” It also proposed to make terms related to expectation of renewal more explicit and to apply annual licence fees to licences once the initial terms have expired.

⁴¹ Industry Canada, Decisions on Revisions to the Framework for Spectrum Auctions in Canada and Other Related Issues, March 2011, p.5-6.

⁴² Ibid, p.5.

4.3. New Zealand

Long licence terms and five-year notice of renewals

New Zealand was the first country in the world to introduce market reforms in spectrum management, introducing trading and liberalization for many frequency bands from 1997. Licences from this period onwards were allocated for 20 years, sufficient to provide great certainty over tenure for licence holders at the point of acquisition. However, no policy was initially adopted for licences approaching expiry. As licences matured, it became obvious that incentives for investment and trading may be undermined if action was not taken to address this oversight in policy. In particular, there was concern about the status of 800MHz and 900MHz cellular rights, which were due to expire in 2011.

Accordingly, in 2003, the Cabinet agreed to a policy for the allocation of commercial spectrum rights at expiry. It describes this as follows:

“Subject to a case-by-case review, replacement rights will be offered to existing rightholders five years before expiry to provide certainty for investment and to ensure a seamless transition from one term to another. If a rightholder does not accept the renewal offer, the rights will be auctioned. The policy requires the offer price to approximate the market value of the rights and produce a fair return to the Crown. The offer price will be determined using a methodology that is transparent and simple to administer.”⁴³

The 800 MHz and 900 MHz bands were the test case for this new policy. The government ultimately approved the renewal of existing licences, for a further 20 years, subject to the reallocation of some spectrum to an entrant operator, and the introduction of a new approach for administratively assessing the market value of the spectrum bands (known as the optimised deprivation valuation [incremental ODV] approach).

4.4. United States

10 year terms with de facto automatic renewal

In the United States, licences are only granted for terms of 10 years. However, there is a strong presumption of renewal, and the requirements that a licensee must meet in order to reasonably expect renewal are well defined. In general terms, a licensee must provide "substantial service" to its license service area no later than the end of its license term. "Substantial" service is defined as service which is sound, favourable, and substantially above a level of mediocre service which might minimally warrant renewal. Licensees that fail to meet this requirement will forfeit their licence and will not be eligible to regain it.

For cellular licences, the requirements to prove substantial services are typically described in specific terms. For example, licensees in the Lower 700 MHz Band are expected to demonstrate the following:⁴⁴

⁴³ New Zealand Ministry of Economic Development website (<http://www.med.govt.nz/>).

⁴⁴ FCC website, <http://wireless.fcc.gov/services/index.htm?job=licensing&id=lower700>.

1. *“the construction of four permanent links per one million people in the licensed service area of a licensee that chooses to offer fixed, point-to-point services;*
2. *the demonstration of coverage for 20 percent of the population of the licensed service area of a licensee that chooses to offer fixed, point-to-multipoint services; and*
3. *the demonstration of coverage for 20 percent of the population of the licensed service area of a licensee that chooses to offer mobile services.”*

So although the United States awards spectrum licences for only 10 years, the licence terms provide such a strong expectation of renewal that the regime may be characterised as similar to the indefinite licence terms in the United Kingdom which we discuss next.

4.5. United Kingdom

Indefinite licence terms which may be revoked for well defined reasons subject to 5-years notice

Particular attention has focused on the reforms made by UK regulator Ofcom, which uniquely has characterized its licence term regime as “indefinite”. The term “indefinite” is somewhat misleading though. It does not imply, as some critics suggest, that spectrum is assigned indefinitely to an operator, with the implication that the spectrum manager surrenders its ability to reallocate the spectrum. In fact, UK cellular licences have a fixed term of 15 or 20 years, after which licences may be revoked for defined spectrum management reasons given 5-years notice (or less in exceptional circumstances). Ofcom states a number of reasons why it prefers indefinite terms,⁴⁵

“In particular, the award of licences with an indefinite duration reduces the need for regulatory intervention to reassign spectrum at the end of the licence term. One disadvantage of fixed term licences is that at the end of the licence term the licence expires and so the rights to use it must be returned to the regulator, unless any other action has been taken. This may result in a period during which the spectrum remains unused, as the regulator must go through a process to reassign those rights. Furthermore, incentives to invest closer to the end of a licence term are significantly reduced given that communications networks generally require continual investment. This lack of investment could result in detriment to consumers and citizens. The alternative of licences with an indefinite duration removes the requirement for return to the regulator, removes the risk of discouraging investment and creates additional opportunities for the market to secure the efficient use of the spectrum, particularly in the presence of spectrum trading.”

And further that,

“We consider that, as a matter of principle, it is preferable to look to market mechanisms to promote the efficient use of resources rather than regulatory

⁴⁵ *Consultation on assessment of future mobile competition and proposals for the award of 800 MHz and 2.6 GHz spectrum and related issues*, Ofcom, 22 March 201, Pg 74.

intervention, unless the case for such intervention is clear. In relation to our spectrum awards to date we have not identified a general need to recover spectrum at the end of the initial term.”

4.6. Conclusion

It is no coincidence that countries that have been at the forefront of spectrum management reforms, such as Australia, Canada, New Zealand, the United Kingdom and the United States, are also at the forefront of reforms to licence terms. Both Australia and Canada have implemented market reforms while maintaining fixed term licences (10-15 years) which expire with no right of renewal. However, in recent consultations, both regulators have expressed concern that this approach undermines incentives for investment, and indicate a desire to move to longer licences (possibly indefinite) that offer a strong expectation of renewal.

Particular attention has focused on the reforms made by UK regulator Ofcom, which uniquely has characterized its licence term regime as “indefinite”. UK cellular licences have a fixed term of 15 or 20 years, after which they remain in force until revoked. Licences may be revoked for defined spectrum management reasons given 5-years notice (or less in exceptional circumstances). In practice, this is not so different from the New Zealand approach of 20-year licences, with provision for notice of renewal at least 5-years before expiry. Similarly, although the United States awards spectrum licences for only 10 years, the licence terms provide such a strong expectation of renewal that the regime may be characterised as similar to the United Kingdom.

These examples show, it is quite practical for the regulator to maintain powers to reclaim licences in defined circumstances, while at the same time giving operators the certainty they need to trade spectrum and invest in network build. There are a variety of ways this can be achieved but the key elements are a very high (and well defined) expectation of renewal and, ideally, at least five years notice of any potential revocation for spectrum management reasons.

5. Mobile Networks in Ireland

Spectrum licences in Ireland are currently for fixed terms with no renewal provision or expectation of renewal. In this context we discuss the level of competition in the Irish mobile market, the role of mobile broadband in Ireland, investment risks and incentives associated with rolling out 4G networks, and the static, dynamic and competitive benefits of moving to indefinite terms.

5.1. The Mobile Market in Ireland

Ireland has four mobile network operators (MNOs) and this compares well with other Member States in the European Union which usually have three to four operators.⁴⁶ An indication of the level of competition between MNOs in Ireland is the number of subscribers switching service providers. Almost two and half million mobile numbers were ported between Irish mobile operators since mobile number portability was launched in June 2003.⁴⁷ There is also a downward trend in the HHI index⁴⁸ calculated based on revenue market shares of the four Irish MNOs (Figure 5.1). Competition for customers is stronger in the mobile broadband market with shares more evenly distributed compared to overall market shares.⁴⁹

In addition to competing with each other, MNOs also compete with mobile virtual network operators (MVNOs) like Tesco mobile and fixed network operators. There is increasing competition between fixed and mobile operators because these networks now provide similar services to end users – voice and internet access.⁵⁰ The mobile handset penetration level in Ireland is also high – as of March 2011 the mobile penetration rate in Ireland was 107.8% excluding mobile broadband.⁵¹ This suggests that most people who want to subscribe to mobile services can do so.

The high level of penetration and competition (both between mobile operators and between fixed and mobile operators) suggest that the Irish mobile market is a mature market which should supply consumers a wide range of services at reasonable prices. Spectrum management policies like indefinite terms will encourage investment in existing and new services like next generation mobile broadband, and can therefore be adopted. In any case, as discussed in Section 3.1.4, indefinite terms should also promote competition (see Section 3.1.4). Furthermore safeguards such as limits on the amount of spectrum that can be

⁴⁶ Commission staff working document accompanying the Progress report on the Single European Electronic Communications Market (15th report), European Commission, 25 May 2010.

⁴⁷ ComReg Document 11/40, 26 May 2011, Pg 62.

⁴⁸ The standard HHI is calculated as $H = \sum_{i=1}^n s_i^2$ where s_i is the market share of each individual MNO.

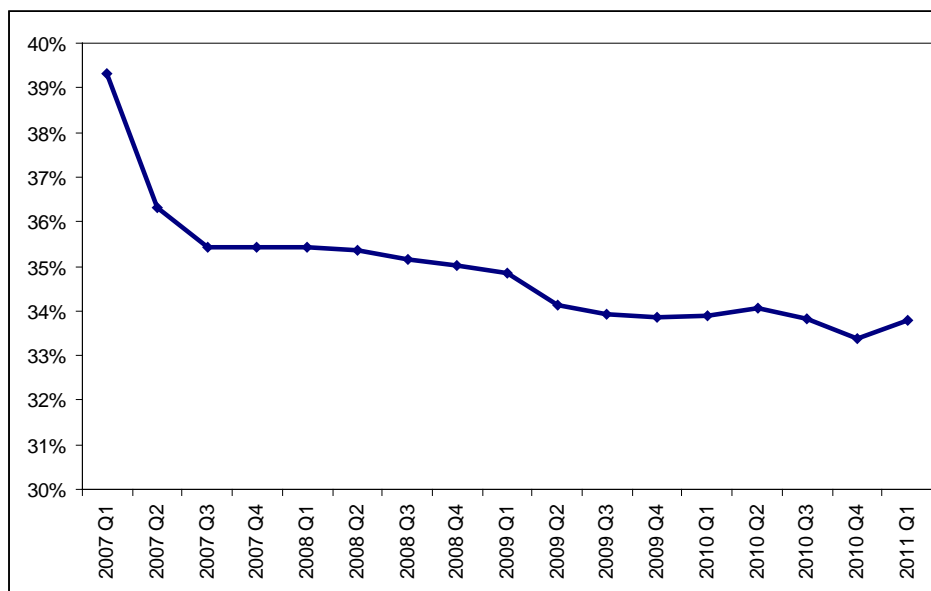
⁴⁹ The mobile broadband subscription market shares of the four MNOs in Q1 2011 were as follows: Three: 33.8%; O2: 28.8%; Vodafone: 27.2%; and Meteor: 10.2%. This compares to overall market shares in Q1 2011 of 6.5% for Three, 31.5% for O2, 42.3% for Vodafone, and 19.7% for Meteor (Source: ComReg Document 11/40, 26 May 2011).

⁵⁰ The development of faster mobile broadband networks like LTE is likely to further intensify the competition between fixed and mobile operators.

⁵¹ The penetration level was 121% including mobile broadband (Source: ComReg Document 11/44, 21 June 2011, Pg. 51).

held by any one operator and ex-ante competition reviews of spectrum trading can be used to ensure a level playing field for all operators.

Figure 5.1
Evolution of HHI Index based on the Revenue Market Share of Four Irish MNOs



Source: ComReg Quarterly Key Data Reports – ComReg Documents 11/44, 10/43, 09/71, and 09/17, and NERA calculation.

Note: We have not used subscriber market shares to calculate the HHI index because subscriber numbers were revised by ComReg in November 2010 to reflect corrections made to Three’s subscriber numbers. This means that the subscriber market share time series may not be consistent.

5.2. Mobile Broadband in Ireland

The importance of (high speed) broadband access for Ireland is recognised by both ComReg and DCENR which identifies high speed broadband services as being critical in attaining the Government’s twin goals of becoming a ‘Smart Economy’ and a ‘Knowledge Society’.^{52 53} Mobile broadband provides broadband access to many consumers in Ireland today, and it will play an important role in providing next generation broadband access to consumers.

Mobile broadband subscriptions have been growing in Ireland and accounted for 36.4% of all broadband subscriptions in Q1 2011. The contribution of mobile broadband to broadband growth is also higher than other technologies like DSL and Cable. In Q1 2011 45.2% of total broadband net additions were mobile. The relative importance of mobile broadband in Ireland compared to other EU countries is illustrated by the fact that, while Ireland’s per capita fixed broadband penetration rate of 23.2% is lower than the EU27 average of 26.6%, the Irish per capita broadband penetration rate including mobile broadband (36.1%) is higher than the EU27 average (33.8%).⁵⁴ Mobile broadband in Ireland has also been instrumental,

⁵² DCENR: The Department of Communications, Energy, and Natural Resources.

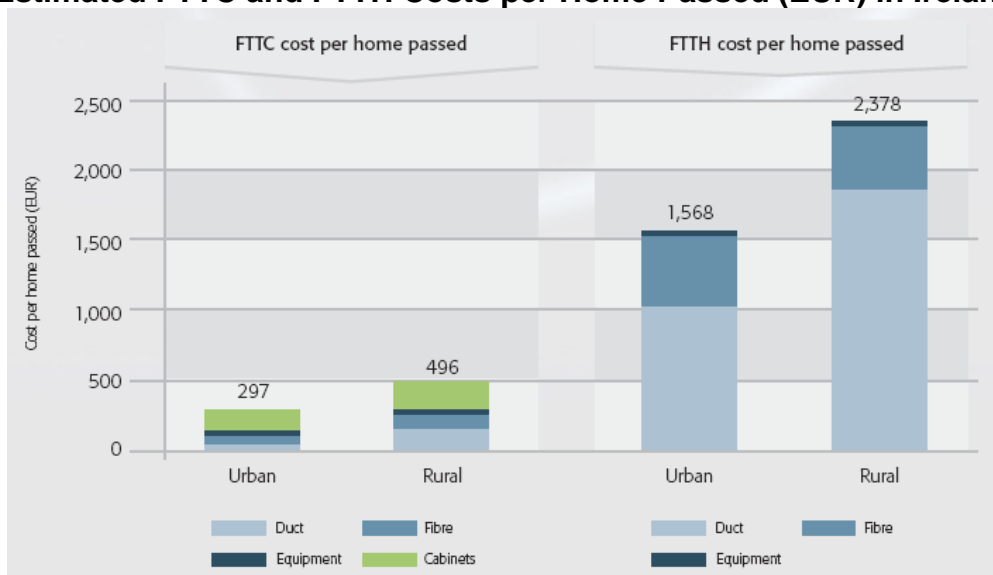
⁵³ *ComReg Document 11/40*, 26 May 2011, Pg 8.

⁵⁴ *ComReg Document 11/40*, 26 May 2011.

through the National Broadband Scheme, in providing broadband access in areas where it was previously not provided.⁵⁵ In some of these areas, in addition to providing broadband, mobile voice provides an alternative to fixed voice where no choice was available previously.

Given the low population density in Ireland,⁵⁶ next generation (4G) mobile networks will play an important role in providing fast broadband access to Irish consumers. In rural areas the business case for the rollout of next generation fixed broadband access is weak, and mobile broadband may be the more practicable solution. In urban areas it will provide an alternative to fixed networks, and this cross-platform competition will benefit consumers. Figure 5.2 presents estimated costs of rolling out next generation fixed broadband access in Ireland. For comparison the costs of rolling out BT’s super fast broadband in the UK are about 50% less expensive than the costs of rolling out FTTC (Fibre to the Cabinet) in Ireland.⁵⁷

Figure 5.2
Estimated FTTC and FTTH Costs per Home Passed (EUR) in Ireland



Source: Summary of Analysys Mason Report, TIF NGN Subgroup, February 2010.
Note: FTTC – Fibre to the Cabinet; FTTH – Fibre to the Home.

Next generation mobile broadband is cheaper to roll out than next generation fixed broadband because the latter requires extensive civil works to lay fibre in ducts to cabinets or to customer premises. Wireless networks like LTE do not require extensive civil works, and the cost of rolling out these networks is consequently lower in rural areas given the spectrum made available for mobile services through the digital dividend. Figure 5.3 presents the

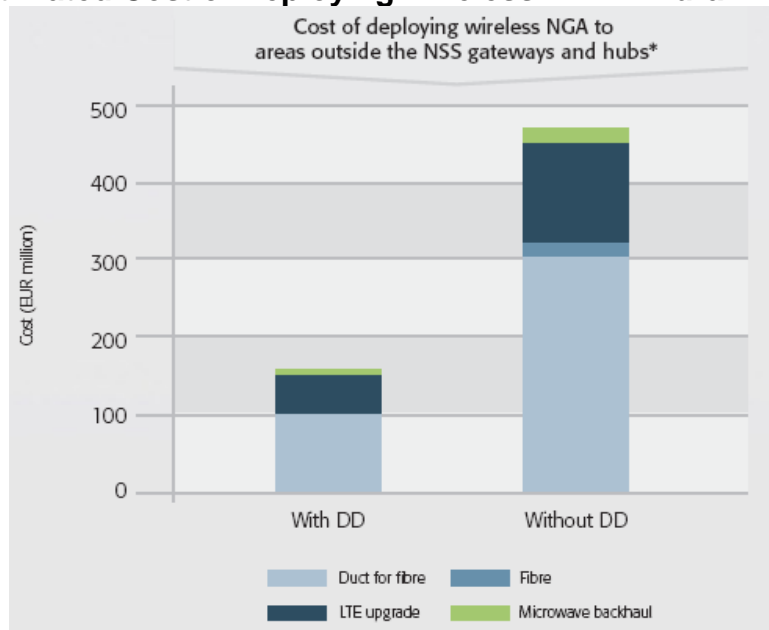
⁵⁵ <http://www.dcenr.gov.ie/Communications/>.

⁵⁶ In 2010, 38.38% of the population in Ireland lived in rural areas and the population density was less than 65 people per square kilometre. (Source: World Bank online database).

⁵⁷ *Summary of Analysys Mason Report*, TIF NGN Subgroup, February 2010 attached to *Building a Next Generation Access Network for Ireland, Issues and Options*, A Report by the Telecommunication and Internet Federation (TIF), April 2010.

estimated costs of deploying wireless LTE in rural Ireland which can be used to provide high speed broadband services like high definition video and video conferencing.^{58 59}

Figure 5.3
Estimated Cost of Deploying Wireless LTE in Rural Areas



Source: Summary of Analysys Mason Report, TIF NGN Subgroup, February 2010.

Note: With DD – With Digital Dividend Spectrum; Without DD – Without Digital Dividend Spectrum.

5.3. Investment Incentives and Risks

Given the crucial role of mobile networks in providing current and next generation broadband access in Ireland, it is important that spectrum managers adopt policies that encourage continuous and sustainable investment in these networks. These investments will depend on a number of factors such as the upcoming spectrum auction in Ireland, and the spectrum each MNO wins in this auction. In any case, security of tenure provided by indefinite terms will result in strong incentives for operators to invest in their networks as explained in Section 3.2.1. Security of tenure is especially important given uncertain market and technological developments in the context of next generation broadband networks which means there are significant risks associated with investments in these networks. The European Commission notes the following in the context of next generation fixed access networks:⁶⁰

“(i) uncertainty relating to retail and wholesale demand; (ii) uncertainty relating to the costs of deployment, civil engineering works and managerial execution; (iii) uncertainty relating to technological progress; (iv) uncertainty relating to market

⁵⁸ LTE based mobile broadband will provide download peak rates of at least 100 Mbps, and uplink rates of at least 50 Mbps (Source: *Review of the wholesale local access market*, OFCOM, 23 March 2010, Pg 21).

⁵⁹ *ComReg Document 11/28*, 12 April 2011, Pg15.

⁶⁰ *Commission Recommendation 2010/572/EU*, 20 September 2010, Annex 1.

dynamics and the evolving competitive situation, such as the degree of infrastructure-based and/or cable competition; and (v) macroeconomic uncertainty.”

Of these factors, uncertainty with regard to the level of retail demand, the willingness of consumers to pay for data access, technological progress, and the changing competitive landscape also affect MNOs investing in next generation 4G networks. These uncertainties mean that the time required to recover investments and earn a reasonable return on investments is uncertain, and there is a risk that this may take longer than expected. In addition macroeconomic uncertainty is particularly relevant to Ireland. As ComReg states⁶¹,

“At the same time, Ireland is confronting an economic recession that may impact on the ability of operators to access capital markets, constrains consumer spending and, as a result, brings uncertainty regarding the financial returns potentially available on foot of investment in communications infrastructure.”

The value that retail consumers place on broadband connections will depend on the services that are available, not on the underlying technology used to deliver these services. Consumers who primarily use their broadband for surfing and checking emails will not place additional value on faster broadband connections. In addition it is not clear if and when new content and services like IP TV will become widely available in Ireland, and it is the development of new internet based services and content that will make it worthwhile for consumers to pay for faster broadband access. BEREC in a recent survey found that the actual take-up of NGA products in most Member States of the European Union falls significantly short of the coverage already achieved, and that customers may not be willing to pay higher prices for high speed broadband services as they can access the services they want using existing broadband connections.⁶²

While consumers are not willing to pay more for data access, they are consuming increasing amounts of data, and there is a growing gap between the growth of mobile data volumes and revenues. Figure 5.4 illustrates the problem faced by UK mobile operators. Low consumer willingness-to-pay for data services means that it is likely to take longer to recoup investment made in deploying next generation mobile networks – how much longer is difficult to predict.⁶³

Mobile networks will require continuous investment to cope with expected growth in traffic. Investment will be needed both for increased scale, for example deploying more backhaul and configuring more uplink capacity, and innovation, for example deploying more spectrum efficient network technology and network upgrades. In this context it is important to note that the growth rate of traffic is uncertain,⁶⁴ and that mobile broadband is a developing technology.

⁶¹ ComReg Document 11/40, 26 May 2011, Pg3.

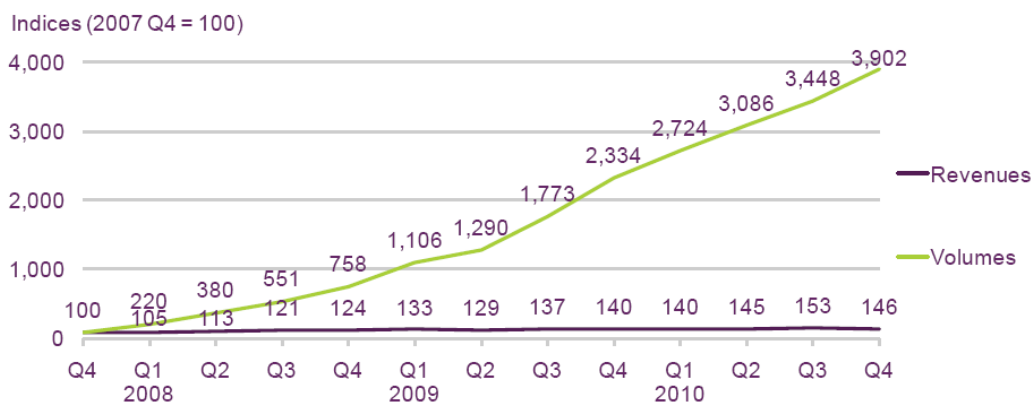
⁶² Next Generation Access – Collection of factual information and new issues of NGA roll-out, BEREC, Feb 2011.

⁶³ At the same time revenues generated from traditional voice services are also being eroded with the increasing use of SMS, email, and VoIP services like Skype by consumers.

⁶⁴ The growth rate will depend on the development of new services, the adoption of new devices like smart phones and tablets, and the changing competitive landscape – both mobile and fixed.

Indefinite terms will allow MNOs the freedom to recoup their investments over a suitable time frame and not be constrained by the need to do so before a licence expires. It will also allow them to develop business and investment plans that take into account changing markets, services and technologies as explained in Section 3.2.1. This will mean more investment in mobile networks and better internet access for Irish consumers.

Figure 5.4
Mobile Data Volume and Revenue Growth in the UK



Source: Communications Market Report: UK, Ofcom, 4 August 2011, Pg 265.

5.4. Potential Benefits to Ireland from Adopting Indefinite Licence Terms

In this section we discuss the static, dynamic and competitive effects of moving to indefinite term spectrum licences (as defined in Section 2) in Ireland. It is assumed that these licences may be revoked subject to a five year notice period following an initial fixed term. We conclude based on our high level analysis below that the potential benefits could be in the region of €250m-€450m over a 15-year period.

5.4.1. Static Effects

As discussed in Sections 3.1.1 and 3.1.2 indefinite terms facilitate efficient allocation of spectrum because security of tenure helps in the development of active trading markets by removing market illiquidity associated with licence expiry. Spectrum is also less likely to be left unused. Efficient allocation and utilisation of spectrum will lead to efficiency gains when existing or new users make better use of spectrum. One way to estimate the gains in static efficiency is to use the following formula:⁶⁵

$$\text{Static efficiency gains} = \text{No. of usage rights}$$

* (% of trades per annum with indefinite licences)

⁶⁵ Study on conditions and options in introducing secondary trading of radio spectrum in the European Community, Analysys Consulting Ltd, DotEcon Ltd., and Hogan & Hartson LLP for the European Commission, May 2004, Exhibit 15.6.

minus % of trades per annum with expiring licences)

** Value to new user minus value to previous user*

Based on this method we estimate that these static efficiency gains in Ireland could plausibly be of the order of = €23m-€41m million over a 15-year period. We explain how this estimate is derived below.

- No. of Usage Rights: We define the number of usage rights in 5MHz blocks instead of pairs of 5MHz blocks in order to include TDD spectrum in our calculations. We consider all spectrum currently available for mobile or likely to become available in the medium-term in Ireland. This amounts to 122 blocks:
 - 800MHz = 2x30MHz = 12 blocks of 5 MHz;
 - 900MHz = 2x35MHz = 14 blocks of 5 MHz;
 - 1800MHz = 2x75MHz =30 blocks of 5 MHz;
 - 2.1GHz (3G) = 2x60MHz + 20MHz TDD = 28 blocks of 5 MHz; and
 - 2.6GHz = 2x70MHz + 50MHz TDD = 38 blocks of 5 MHz.

This is arguably a conservative estimate because it does not consider potential additional bands that might be made available for mobile in the future, such as new digital dividend spectrum at 700MHz.

- Volume of trading: A 2002 study for the European Commission assumed that up to 10% of all spectrum would be traded each year if spectrum usage rights are liberalised and tradable (it also recommended a UK-type approach to licence renewal).⁶⁶ However, experience from early adopters of trading suggests that volumes are rather lower for high-value bands, such as mobile, where there are smaller numbers of licensees. We therefore conservatively assume that an average of only 2% of blocks would be traded each year with indefinite licences (roughly 37 blocks every 15 years). Without indefinite licences, there would be a diminishing incentive to trade as the licence approached expiry. For simplicity, we suppose that for the first 5 years, 80% of trades would still happen, for the middle 5 years, 50% of trades would still happen, and for the final five years only 20% of trades would still happen – which implies an average of 1% of block traded every year (roughly 18 every 15 years).⁶⁷

⁶⁶ *Study on conditions and options in introducing secondary trading of radio spectrum in the European Community*, Analysys Consulting Ltd, DotEcon Ltd., and Hogan & Hartson LLP for the European Commission, May 2004, Exhibit 15.4.

⁶⁷ With indefinite terms we assume that the trading level will be 2% per year which is 10% over a five year period. With fixed terms we assume that 80 % of trades go ahead in the first five years (80% of 10%), 50 % of trades go ahead in the middle five years (50% of 10%), and 20 % of trades go ahead in the final five years (20% of 10%). This means that with a 15 year fixed term the level of trading is 15% which is an average of 1% per year.

- Current value of spectrum: As a proxy for the value of spectrum, we adopt the minimum price recommendations proposed by DotEcon to ComReg for the forthcoming mobile spectrum auction, which were based on a benchmarking exercise for international spectrum awards. DotEcon proposed a price of €18-26m for 2x5MHz of sub-1GHz spectrum and €8-16m for 2x5MHz of 1800MHz spectrum (which provides a proxy for all mobile spectrum above 1GHz).⁶⁸
Translating this into 5MHz blocks, this implies a total value for all 122 blocks of 5MHz of €0.618bn - €1.106bn (€34m-€38m for sub-1GHz⁶⁹ + €84m-€768m for spectrum above 1GHz⁷⁰), which equals an average of approximately €5m-9m per block.
- We assume that in the case of trades, the spectrum will continue to be used to provide mobile services. An average gain in value of trade of 25% can be expected because of better and more efficient utilisation of spectrum.⁷¹

Accordingly, based on these assumptions, the gain in static efficiency can be calculated as:

$$[122 \text{ blocks}] \times [2\% \text{ minus } 1\%] \times [€5\text{m}-9\text{m range in value}] \times 25\%$$

$$= €1.53\text{m}-€2.75\text{m per annum static efficiency gains}$$

This formula can be used to calculate the static efficiency gains in Ireland over a 15 year period as follows:

$$[122 \text{ blocks}] \times [1\% \times 15 \text{ years}] \times [€5\text{m}-9\text{m range in value}] \times 25\%$$

$$= €23\text{m}-€41\text{m}.$$

5.4.2. Dynamic Effects

We would also expect substantial dynamic efficiency gains from more investment on the one hand, and earlier investment on the other leading to the rapid adoption and rollout of new services and technologies. This is because security of tenure will enable mobile operators to keep investing in their networks on a continuous basis as markets and technologies develop. So when more spectrum efficient network technology, network upgrades or new technologies become available, operators can invest in these technologies and roll out better and new services without the risk that their licence may not be renewed and that they do not have enough time to recover their investment and make a reasonable profit (see Section 3.2.1). At the same time indefinite terms should lead to an efficient spectrum trading market which should emphasize the opportunity cost of not making investments, and stimulate investment by operators. As discussed in Sections 5.2 and 5.3 this will mean better high speed

⁶⁸ Source: *ComReg Document 10/105a*, December 2010, pp.40-61.

⁶⁹ 26 blocks of sub-1GHz spectrum multiplied by €9-13m (the value of 5MHz sub-1GHz spectrum based on minimum price recommendations proposed by DotEcon to ComReg).

⁷⁰ 96 blocks of spectrum above 1GHz multiplied by €4-8m (the value of 5MHz spectrum above 1GHz based on minimum price recommendations proposed by DotEcon to ComReg).

⁷¹ 25% is the minimum difference in valuation between buyers and sellers sufficient to stimulate a trade if the buyer and seller have imperfect information about each other's true valuation (Source: Myerson R.B. and Satterthwaite M.A., *Efficient Mechanisms for Bilateral Trading*, Journal of Economic Theory, 29 (1983)).

broadband access for Irish consumers which will be critical in attaining the Government's twin goals of becoming a 'Smart Economy' and a 'Knowledge Society'.

An example of the rapid introduction of a new service via spectrum trading (through mergers) and liberalisation is the introduction of mobile broadband data networks in the US. By 2006 the US was served by three mobile broadband data networks though no 3G licences had been distributed as yet.⁷² It should be noted that in addition to liberalisation and trading, licence terms in the US provide such a strong expectation of renewal that the regime may be characterised as similar to indefinite licence terms (see Section 4.4).

Dynamic efficiency gains, whether resulting from trading or investment from existing operators, normally substantially outweigh static efficiency gains if they realise earlier adoption of valuable services by consumers, especially if the services represent significant improvements on previous ones. For example, Hausmann estimates that the total cumulative cost of regulatory delays in making spectrum available for mobile network operators in the USA in the 1980-1990s was around USD100bn.⁷³ Further, an Analysys Mason study for the European Commission estimating Europe-wide benefits from trading and liberalisation, estimated dynamic efficiency gains to exceed static gains by a ratio of approximately 200:1.⁷⁴ Of these, approximately 20% of gains were associated with smaller scale innovations which include improvements in existing services by employing new technology rather than entirely new innovations.

We have not attempted a detailed model of the impact on consumer surplus of indefinite licences leading to earlier adoption of new mobile services for this study. However, as a simple proxy, if we use the Analysys Mason ratio of dynamic to static gains, but assume that trades only realised smaller scale innovations and that only one in four trades realised such benefits, this would still imply dynamic efficiency gains of €230-€410m over a 15-year period. This should be an underestimate of the gains because in practice we may expect even greater dynamic efficiency gains from earlier investments by existing operators, whether or not there are spectrum trades.

5.4.3. Competitive Effects

It is not clear that competition in the market will be adversely affected if indefinite term licences are issued. In fact indefinite terms accompanied by other policy tools, where necessary, may promote competition.

As discussed in Section 3.1.4, indefinite terms provide greater security of tenure which should facilitate entry at any time during the term of the licence. This should lead to more competition as the market will be contestable to a greater degree than under fixed term licences when entry is only likely to take place at the end of the licence term. There is a risk

⁷² Hazlett, Thomas W., *Spectrum policy and competition in mobile services* in Making Broadband Accessible For All, Vodafone Policy Paper Series, Number 12, May 2011.

⁷³ Hausman, JA, *Valuing the effect of regulation on new services in telecommunications* (1997), Brookings Papers on Economic Activity, Microeconomics, p.2.

⁷⁴ *Study on conditions and options in introducing secondary trading of radio spectrum in the European Community*, Analysys Consulting Ltd, DotEcon Ltd., and Hogan & Hartson LLP for the European Commission, May 2004, chap 15 Exhibit 15.7 and 15.13.

that one operator acquires a disproportionate amount of spectrum via trading and then hoards this spectrum to preclude market entry and gain a competitive advantage, and/or that the secondary spectrum trading market for strategically important mobile spectrum (for example sub-1 GHz spectrum bands) is inefficient. This may be because given the competitive advantage of holding such spectrum incumbents may be reluctant to sell any spectrum they hold in these bands. In such cases additional regulatory tools such as limits on the amount of spectrum that can be held by any operator at any time and ex-ante competition reviews of spectrum trading which might adversely affect downstream competition may be required.

There is also a pan-European dimension to spectrum trading and licensing. Potential new entrants could consider entry into multiple markets simultaneously, and realise economies of scale in production and marketing. It is likely to be easier to implement such a strategy by acquiring indefinite term spectrum usage rights from the market rather than waiting for fixed term licences to expire in different countries and/or wait for spectrum managers in these countries to release new spectrum. It is also unlikely that fixed term licences in different countries will expire simultaneously.

Finally as mentioned earlier there is increasing competition between fixed and mobile operators because these networks provide the same services to end users – voice and data. Fixed operator licences in Europe are usually for an indefinite term which means fixed operators can continually invest in their networks without the risk that their licences may not be renewed. Indefinite term spectrum licences will put mobile operators on an equal footing and allow them to compete better with fixed operators. This should increase inter-modal competition to the benefit of consumers.

6. Conclusions and Recommendations

We find that the current approach in Ireland of fixed term licences with no renewal option is inconsistent with ComReg's core objective of encouraging efficient use of spectrum. A shift to an indefinite licence regime would provide stronger incentives for investment and for spectrum trading. The potential benefits from reform are particularly great in the case of the mobile sector.

Indefinite licence terms are better suited to meet the relevant objectives of a spectrum manager, provide incentives for efficient utilisation of scarce spectrum, and promote competition and investment which should benefit consumers as well. For incumbent licensees, indefinite terms provide the advantage of security of tenure. This means that they can invest in their networks continually as markets and technologies develop without being constrained by potential licence expiry. Potential new licensees, once they enter the market, will typically have the same interests as incumbent licensees. It is far from clear whether shifting to indefinite licences would really constrain opportunities for entrants; in fact, it may significantly increase scope for entry.

Consumers are also likely to be better off with indefinite term licences. This is because indefinite terms may increase the scope for entry and make the market more contestable, and competitive. The increased contestability and competition may result from the actual new entry and/or the discipline of potential entry occurring at any time during the lifetime of a licence, as opposed to only at the end of a licence term. Increased competitive pressure and security of tenure will create incentives for operators to invest adequately to meet growing traffic demand, to expand their network footprint and roll-out new services like mobile broadband more extensively. Higher investments will mean better services for consumers.

There is a risk that one operator acquires a disproportionate amount of spectrum via trading and then hoards this spectrum to preclude market entry and gain a competitive advantage, and/or that the secondary spectrum trading market for strategically important mobile spectrum (for example sub-1 GHz spectrum bands) is inefficient. In such cases additional regulatory tools such as limits on the amount of spectrum that can be held by any one operator at any time and ex-ante competition reviews of spectrum trading which might adversely affect downstream competition may be required.

Finally, there will be static and dynamic benefits for Ireland if a policy of indefinite terms is adopted. Efficient allocation and utilisation of spectrum will lead to efficiency gains when existing or new users make better use of spectrum resulting from trades of licences that would not have occurred without a shift to indefinite licences. In addition to static efficiency gains there will also be dynamic efficiency gains from more investment on the one hand, and earlier investment on the other, leading to the rapid adoption and rollout of new services and technologies. We estimate that these static and dynamic efficiency gains in Ireland could plausibly be of the order of €250 million to €450 million over a 15 year period.

Countries that have been at the forefront of spectrum management reforms, such as Australia, Canada, New Zealand, the United Kingdom and the United States, are also at the forefront of reforms to licence terms. The experience from these countries shows that it is quite practical for the regulator to maintain powers to reclaim licences in defined circumstances, while at the same time giving operators the certainty they need to trade spectrum and invest in network

build. There are a variety of ways this can be achieved but the key elements are a very high (and well defined) expectation of renewal and, ideally, at least five years notice of any potential revocation for spectrum management reasons.

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Submissions to Document 11/75 and Correspondence with interested parties

2. Eircom Group response (received 28 November 2011)

eircom Group

**Response to ComReg Consultation Paper:
Multi-Band Spectrum Release – Draft Information Memorandum**

ComReg Document 11/75

28 November 2011

DOCUMENT CONTROL

Document name	eircom Group response to ComReg Consultation Paper 11/75
Document Owner	eircom Group
Last updated	28/11/2011
Status	Final

The comments submitted to this consultation are those of Meteor Mobile Communications Ltd. (MMC) and eircom Ltd (eircom) collectively referred to as eircom Group.

Please note that for the purposes of the Freedom of Information Acts, 1997 and 2003, and indeed generally, information supplied by eircom/MMC to you may contain commercially sensitive information consisting of financial, commercial, technical or other information whose disclosure to a third party could result in financial loss to eircom/MMC, or could prejudice the competitive position of eircom/meteor in the conduct of its business, or could otherwise prejudice the conduct or outcome of contractual or other negotiations to which eircom/MMC is a party.

Accordingly, you are requested to contact a member of eircom Group's Regulatory Operations where there is a request by any party to have access to records which may contain any of the information herein, and not to furnish any information before eircom/MMC has had an opportunity to consider the matter.

Executive Summary

- eircom Group is of the view that ComReg's proposed manner to address expiry of the existing GSM licences is disproportionate and while we offer comments on detailed elements of ComReg's proposed award process our position is reserved accordingly.
- We note the publication of ComReg's consultation on the Future of the 2.6GHz radio spectrum band (ComReg 11/80) which raises issues of direct relevance to the subject matter of this consultation. We will set out these views in our forthcoming response to ComReg 11/80.
- The Information Memorandum (IM) is fundamental to ComReg's proposed award process. Interested Parties must be able to rely on its contents and be confident there will not be sudden unexpected changes. The disclaimers set out in Chapter 5 and the right of ComReg to amend the IM are drafted so broadly that they render the IM meaningless for Interested Parties to rely upon. Chapter 5 must be grounded on a more realistic and proportionate legal basis.
- The draft IM mirrors the proposals put forth in ComReg 11/60. Unless specifically addressed in this response, in light of additional information provided in ComReg 11/75, our position in respect of the issues raised in our previous response remain as expressed in our response to ComReg 11/60 and must be considered accordingly.
- In this response we raise a number of issues in respect of auction design and other components of the draft IM that require clarification or correction. We trust that ComReg will address these in the final IM.
- While we appreciate sight of the indicative milestones for the proposed award process, we reiterate our request ComReg to establish, publish and maintain a high level project plan clearly identifying key activities and milestones towards its proposed spectrum award process, in particular the anticipated publication date of the final Information Memorandum.

Response to Consultation

eircom Group welcomes the opportunity to comment on ComReg's draft Information Memorandum (the draft IM).

It should be noted from the outset that we remain of the view, most recently expressed in our submission in respect of ComReg 11/60, that ComReg's proposed manner to address expiry of the existing GSM licences is inappropriate and disproportionate. The comments we offer on detailed elements of ComReg's proposed award process do not affect this position and should be read accordingly.

The draft IM follows closely on the consultation of ComReg's draft Decision (ComReg 11/60) which we responded to on 14th October (the 'previous submission'). As such the draft IM is based on the proposals set out in the draft Decision. Our previous submission raised a number of significant issues and concerns. We welcome ComReg's acknowledgement¹ that the IM may be subject to 'appropriate' changes following consideration of submissions in respect of ComReg 11/60. Where the same issues arise in the draft IM, unless they are specifically addressed in this response in light of additional information provided in ComReg 11/75, our position remains as expressed in our previous response and this response must be considered accordingly.

We discuss issues in the order they are raised in the draft Information Memorandum

- **Planning for start date of the Award Process**

In our response to ComReg 11/60 we requested ComReg to establish, publish and maintain a high level project plan clearly identifying key activities and milestones towards its proposed spectrum award process. In the draft IM ComReg sets out a number of publications and actions required in advance of announcing the start date of the award process² and also sets out a proposed timeline with indicative milestones for the proposed award process³. The proposed timeline is likely to commence upon publication of the Final Information Memorandum, however this date, or 'X' as it is referred to in the draft IM, remains unknown and is dependent on the previously mentioned publications and actions. Given the significance of the commencement date of the award process we remain of the view that ComReg should establish, publish and maintain a high level project plan incorporating the material presented in the draft IM and clearly indicating best estimate of date X for the commencement of the award process.

- **2600MHz band**

We note the publication of ComReg's consultation on the Future of the 2.6GHz radio spectrum band (ComReg 11/80) which raises issues of direct relevance to the subject matter of this consultation. We will set out these views in our forthcoming response to ComReg 11/80.

¹ ComReg 11/75, Para 1.4

² ComReg 11/75, Para 1.12

³ ComReg 11/75, Para 3.10

- Non-exclusive licences

The scope of the Liberalised Use Licence is described to be “non-exclusive”,⁴ that is, that “ComReg retains the right to authorise other Wireless Telegraphy apparatus in these spectrum bands which do not cause unacceptable interference to the Licensee.”⁵ We are very concerned by this statement. The possibility that other wireless telegraphy apparatus be authorised in the auctioned bands would significantly affect spectrum value and is a matter where absolute clarity is required. That ComReg would retain such a right does not appear compatible with the essence of the auction award process, unless such a right is limited to facilitating the Test and Trial Licence Regime. If this is the case, then this should clearly specified in the terms and conditions of the licences. If it is not, we do not believe that it is appropriate that ComReg retains this right. Further clarifications on the scope of the Licence are required and our position in relation to this matter is reserved accordingly.

- Performance guarantees

In the previous response we commented on the cost efficiency of performance guarantee schemes in respect of coverage and quality of service obligations. In the draft IM⁶ ComReg offers additional information in that it proposes that performance guarantees must be maintained for the duration of the Liberalised Use Licence. As noted in our previous response it is reasonable to estimate that the costs of a financial instrument could be in the region of 2% of the sum guaranteed. The proposed performance guarantees total €3m equating to a financing cost of €60k⁷ per annum (approx. €1m over the licensing period under consideration). This is a non-trivial sum that could be better invested in rolling out network services.

In the light of this, having considered the issue further since our previous response, we are of the view that a more pragmatic and cost effective approach to maintaining financial guarantees would be to establish that the Licence may be suspended or withdrawn in the event that a Licensee fails to pay sums due on demand within 30 days of the demand being issued, in the event of failing to achieve either the coverage or quality of service obligations.

We note ComReg’s proposal⁸ that both coverage and quality of service compliance should be assessed every six months. This will place a considerable administrative burden on licensees and ComReg and we would suggest that compliance assessment should be undertaken annually.

The relevant proposed licence conditions are drafted such that the Licensee shall measure the target and submit a compliance report for each assessment. In the normal course of our business we measure and monitor coverage and network quality of service using our calibrated RF planning tool in respect of coverage and our network management systems in respect of quality of service. We believe these are sufficiently robust measures for compliance reporting purposes. It is not clear to us whether ComReg is contemplating that licensees should conduct

⁴ ComReg 11/75, Para 2.19

⁵ ComReg 11/75, footnote 16, page 22

⁶ ComReg 11/75, Paras 2.37 and 2.39

⁷ Please note in our response to ComReg 11/60 in the last paragraph of page 29 we quote the annual cost of maintaining a €1m financial guarantee as €10k. This was an error as 2% of €1m is clearly €20k.

⁸ As set out in Draft Part 4 of Schedule 1 to a Liberalised Use Licence

national drive test surveys for each assessment. This would impose an unacceptable and unnecessary cost burden on licensees. ComReg itself conducts half yearly drive test surveys and we assume will continue to do so. As such we strongly believe that a proportionate scheme for assessing coverage compliance would be for licensees to submit coverage statistics from their RF planning tools and ComReg can, to the extent it believes it is necessary, compare these to the results of its own drive test surveys. We request ComReg to confirm its intentions in respect of compliance assessment requirements.

Our position in respect of the proportionality and consistency of the proposed schemes remain as per our previous response in all other respects.

- Refunds for delayed commencement

In our previous response⁹ we set out our view that eligible Bidders should be compensated for any delay in access to the spectrum. ComReg sets out its proposals in respect of refund of licence fees in section 2.2.6 of the draft IM. We agree that the relevant parties should be refunded the pro rata portion of fees already paid. We note that the draft Regulation¹⁰ is silent on the subject of refunds and should be amended accordingly and provide for the application of the refund scheme for delayed commencement.

- Relocation Plan and Transitional activities

In our previous response we set out our views on ComReg's proposals in respect of transitional activities¹¹. These views remain unaltered. In particular we continue to disagree in the context of the Draft IM with the suggestion that participation in the auction would be subject to agreeing in advance with the decision of ComReg regarding the Relocation Plan and Transitional Activities. This is not something which can be reasonably expected of applicants.

However the Draft IM raises an additional matter of concern. In the Draft IM ComReg proposes¹² that Existing GSM Licensees will be provided a two week period to collectively formulate and submit a Relocation Project Proposal. It is stated¹³ that "*In the event that Existing GSM Licensees are unable or unwilling to submit a Relocation Project Proposal by the stipulated time, ComReg will formulate and implement a Relocation Project Plan, following appropriate consultation with Winning Bidders and Existing GSM Licensees.*" This establishes a hard stop date for the formulation of a Relocation Project Proposal. A two week period does not appear to be sufficient to finalise such a proposal in tri-partite discussions, depending on the complexity of transitional activities required as determined by the award process outcome. As such we suggest ComReg retains the right to extend the time period for formulation for a short period, subject to ComReg being comfortable that good progress is being made in formulating the Relocation Project Plan.

⁹ Under the reference Section 3.3.1 of our response to ComReg 11/60

¹⁰ Annex 2 of ComReg 11/75

¹¹ Under the reference Section 3.3.14 of our response to ComReg 11/60

¹² ComReg 11/75, paragraph 3.130

¹³ ComReg 11/75, paragraph 3.133

- **Cleared Monetary Deposit**

In our previous response¹⁴ we noted that any interest accruing on Deposits should be to the benefit of the relevant applicant. In the Draft IM¹⁵ ComReg proposes that “*No interest will be paid by ComReg on funds held by it for part or all of the Award Process.*” We fundamentally object to this proposal. The funds remain assets of the Applicants until such times as the proposed award process is completed. Dependant on the outcome of the award process Applicants may be due a refund on some or all of the deposit which clearly highlights that the funds are not at ComReg’s disposal during the award process. Consequently ComReg should not deny Applicants the opportunity to earn a return from their assets during the award process.

The deposits proposed by ComReg are high by international standards. We acknowledge that ComReg will require some comfort that Applicants are serious participants. ComReg can achieve an equivalent level of comfort from Applicants through a letter of credit, a bank guarantee or funds on deposit in an escrow account. We request ComReg to amend the rules to allow Applicants flexibility to express their commitment through any of these alternative approaches.

- **Confidential Information and bidder behaviour**

It is customary in spectrum auctions around the world to include prohibited communication rules but generally these rules are effective on the date the applicant applies to participate in the auction. ComReg proposes¹⁶ that Bidders are refrained from certain activities from the publication of the Information Memorandum. We do not believe that this is workable.

Firstly Bidders are defined as entities that have qualified to participate in the auction process by ComReg. This is not expected to occur until at least twelve weeks after publication of the final IM. More significantly potential auction applicants do not know when ComReg will publish the final IM and therefore cannot plan effectively to participate in the auction process. For example, let us suppose that two entities in advance of publication of the final IM are considering forming a Bidding Group to participate in the auction as permitted in the rules. Under the proposed rules, the publication of the Information would put an abrupt end to their negotiations, as continuing discussions would exclude them as potential individual Applicants. In the United States, the Federal Communications Commission has the strictest and most enforced auction collusion rules of possibly any spectrum regulator in the world. Their rules include a bright line rule that prohibits communication among applicants from the time they submit their auction application until the payment deadline after the auction. The FCC makes the auction applications public including the ownership information so that all applicants know with whom they may not communicate during the prohibited communication period.

A rule that disallows communication with other potential bidders on the date that the regulator releases the Information Memorandum makes no sense and will be impossible to enforce since prospective bidders will not know with whom they are prohibited from communicating with.

¹⁴ At page 23 of our response to ComReg 11/60

¹⁵ ComReg 11/75, paragraph 3.26

¹⁶ Comreg 11/75, paragraph 3.62

This process should be modified and provide potential applicants with notice of a fixed start and end date for prohibited communication which is very important to the integrity of the auction process.

- **Section 4.4.4 and Annex 8 Winner Determination**

The technical description of the winner determination and pricing procedures is not complete and falls short on some very important implementation details. It is not possible to determine based on Section 4.4.4 and Annex 8 of the draft Information Memorandum how the coalition values will be determined which directly affects opportunity costs (prices). The main Section 4.4.4 provides a general description of how prices are determined and has a sentence that vaguely describes how the opportunity costs should be calculated (paragraph 4.185). A more detailed description of how prices will be determined was included in Section 10.3.2 of ComReg 11/58. Full details regarding how the winner determination and pricing procedures will be calculated should be included in Section 4.4.4 and Annex 8 of the final Information Memorandum.

- **Activity Rule Modifications**

We agree that the Final Price Cap is an important addition to the Supplementary Bids Round procedures proposed in ComReg 11/60. The Final Price Cap is designed to ensure that bidders are able to win their Final Primary Package if they place appropriate supplementary bids. We agree that this is a significant improvement to the combinatorial clock auction process. We recommend that ComReg apply a price cap in all rounds in which the bidder reduced its eligibility in addition to the Final Primary Round. This variation in the rules is consistent with the Relaxed Primary Bid rules proposed in the Primary Rounds.

We also agree that allowing eligibility-point exceptions that are consistent with revealed preference constraints is appropriate in the Primary Bid Rounds to allow bidders to bid on their most profitable package in each of the primary rounds. We recommend that ComReg implement similar rules to those proposed in the draft Information Memorandum but with modifications that address the following two points:

1. The Example provided in Annex 7 of the draft Information Memorandum ignores the bidder's activity points in the Relaxed Primary Bid round and instead carries forward the bidder's eligibility points from the previous round. This treatment of activity and eligibility points is completely inconsistent with eligibility point-based activity rules implemented in previous spectrum auctions (both SMR and CCA).
2. The proposed introduction of Binding Supplementary Bids described in the draft Information Memorandum and illustrated in the example provided in Annex 7 is arbitrary and incoherent as stated. It should be substantially modified or withdrawn in the final Information Memorandum.

Finally, Section 3 of Annex 8 does not appear to account for situations where the bidder's final primary bid is a Relaxed Primary Bid. We are concerned that a bidder who places a Relaxed Primary Bid in the Final Primary Round and is subject to a Relative Cap in the Supplementary Bids Round may not be able to place bids that guarantee it will win its Final Primary Package. It is important that this point be fully addressed in the final Information Memorandum.

For additional details see Appendix 1. Expert Advice on Proposed Activity Rules in the Ireland 800, 900 and 1800 MHz Auction prepared by Power Auctions LLC.

- Round Prices

Paragraph 4.101 of the draft IM states that for each Lot Category 1 to 6, the amount by which the Round Price is increased in the case of excess demand is set at ComReg's discretion. It goes on to say that price increments will normally be based on the level of excess demand and increments may vary across Lot Categories and across Primary Bid Rounds. Paragraph 4.102 states that in any case, the Round Price will not increase by more than 50% from one Primary round to the next. Bidders participating in the auction will need to develop and implement governance procedures and terms of reference to facilitate effective and time sensitive decision making processes during the auction. It may prove very difficult for bidders to develop and effectively implement governance procedures without ComReg identifying more specific guidelines on pricing increments that will be used during the auction. It is necessary for bidders to be able to estimate future round prices in advance for effective governance to estimate the likely timing of decision points in the auction. We request that full details regarding how the bid increments will be calculated be included in the final Information Memorandum.

- Deposit Calls During the Primary Rounds

ComReg proposes¹⁷ that “*During the Primary Bid Rounds, ComReg may give notice to one or more Bidders that they need to increase their Deposits to an amount specified by ComReg not exceeding their highest Bid made so far in the Primary Bid Rounds*”. We believe this requirement is unnecessary and could prove to be highly disruptive to the ongoing auction process. Deposit calls during an auction are administratively difficult for spectrum regulators and operationally difficult for bidders. They create a completely unnecessary distraction during the auction. They also create potential scenarios where the spectrum regulator is obliged to expel a bidder from the auction for failing to make a deposit call, even though both economic efficiency and revenue maximization would be better served by keeping the bidder in the auction.

It is better practice for spectrum regulators to set fixed upfront auction deposits that equal, in magnitude, approximately 20% of the estimated final prices of the spectrum for which the bidder is obtaining eligibility—and to deem this deposit to be adequate financial security for the duration of the auction, without deposit calls. The proposed upfront auction deposits are already extremely high as a percentage of benchmarked auction proceeds for similar spectrum and, without deposit calls, will more than adequately protect the Government from the risk of defaults. Many countries with successful spectrum auctions programmes have never relied on deposit calls. The Deposit Calls provision should be removed from the rules in the final Information Memorandum.

- Limitation on Package Bids in the Supplementary Bids Round

ComReg proposes a limitation of 2,000 packages per bid form¹⁸. While bids for 2,000 packages seem large enough to satisfy bidders in the auction, it is a concern for bidders who have spectrum that is subject to liberalisation options. eircom Group has twelve different release

¹⁷ ComReg 11/75, paragraph 4.114

¹⁸ ComReg 11/75, paragraph 4.131

scenarios. Under the proposed limit, should eircom bid to liberalise its GSM spectrum, effectively it only has 166 bids per release scenario. Bidders without any release options, or bidders with less release options are advantaged in the auction since they can take advantage of more bids per release scenario. It is important to mention that there is no additional computational burden for ComReg or its auction consultant because the winner determination and second pricing procedures only consider bids that correspond to a particular release scenario. In other words, the cap should be restated in terms of bids per release scenario per bidder, not the total number of bids per bidder.

Example:

Bidder without existing holdings in T1: 2,000 bids
eircom Group (12 release scenarios): $12 \times 2,000 = 24,000$ bids
Vodafone and O2 (3 release scenarios): $3 \times 2,000 = 6,000$ bids

- **Legal terms and conditions**

ComReg sets out various legal terms and conditions in chapter 5 of the Draft IM. The IM will be fundamental to ComReg's proposed award process. It is essential that Interested Parties are able to rely on its contents and be confident there will not be sudden unexpected changes. We do not believe that the IM in its current form is adequate. In particular, the disclaimers set out in Chapter 5 and the right of ComReg to amend the IM are drafted so broadly as to render it meaningless and incapable of being relied upon by Interested Parties. Our concerns are explained in further detail below.

Disclaimers

Paragraphs 5.4 and 5.6 seek to absolve ComReg and its agents from any responsibility for ensuring the adequacy, accuracy and completeness of the IM and associated material. Given that it is the future of the Irish mobile market that is at stake, and that ComReg's intention is that Interested Parties will be legally bound by the provisions of the IM, the breadth of the disclaimers in paragraphs 5.4 and 5.6 is simply not acceptable. They in fact deprive the IM of any purpose as, in particular, they mean that the IM will not place potential bidders in the position to establish whether they wish to proceed to participate in the Award Process and in the position to prepare for and understand fully the Award Process. The scope of these disclaimers must be reviewed so as not to deprive the IM of all meaning.

We also note in this respect that Paragraph 5.27 appears to seek to grant ComReg very broad discretion for any reason to step out of the process established by the IM. This is not acceptable. The IM will establish a set of rules and procedures that should be respected and followed by all parties, including ComReg.

In this regard, we are very concerned at Paragraph 5.15, which states that the IM "*does not impose or result or result in the imposition of any legal or contractual obligations on the part of ComReg.*" This cannot be the case. Section 5.2.1 of the draft IM clearly establishes that a contract is formed between Applicants and ComReg. It is a nonsense to suggest ComReg has no legal obligations under the IM.

We also dispute the statement at paragraph 5.15 that ComReg is under no obligation to grant any licences until a licence is granted and commenced. Again, ComReg must be bound to act in accordance with the procedures set out in the IM.

In terms of who among potential bidders is bound by the terms of the IM, paragraph 5.16 refers among others to Interested Parties who download the IM. This suggests that ComReg contemplates some form of registration and verification process before an Interested Party may download the IM. We request Comreg to clarify how access to the IM will be granted.

Disclaimers at paragraph 5.7

Paragraph 5.7 seeks to deny Interested Parties the right to rely on the contents of the IM to argue that they have certain rights or expectations in relation to a number of matters which have been the subject of consultation. We are of the view that the scope of Paragraph 5.7 calls into question the integrity of the process followed to date by ComReg. We note the following:

- Paragraph 5.7(iv) states that interested Parties may not rely on bidding in a particular manner to guarantee success. This is in direct contradiction with paragraph 3.3.3 of draft decision which states that “.....*An algorithm will be provided in the Information Memorandum, which will allow a bidder who had won lots in the combinatorial clock rounds, to calculate the minimum price that it would need to bid to be guaranteed to win those lots in the supplemental round.*” ComReg has sought to dismiss legitimate concerns regarding disruption to consumers and investment uncertainty by relying on the design of the award process as highlighted in ComReg’s draft Regulatory Impact Assessment. For example paragraph 3.97 of ComReg 11/60 clearly states:

“The CCA, as proposed, would ensure that a bidder could adopt a simple strategy in the supplementary bids round such that their position in the final primary bid round would be protected. ComReg is of the view that this would provide adequate means to avoid significant consumer disruption on the assumption that incumbent operators are willing to pay the price determined by the auction for the relevant spectrum. Under ComReg’s proposed auction design, a bidder in the auction would know by how much they would need to outbid other bidders in order to guarantee winning spectrum.”

Reneging on this statement by way of the IM fundamentally calls into question ComReg’s reasoning and justification for its proposed approach.

- Paragraph 5.7(v) denies Interested Parties of any expectation that the spectrum licences will have trading rights or that the use of any new technologies (presumably other than existing technologies, namely 2G and 3G) will be permitted. The denial of expectations in respect of trading rights is in direct contradiction with draft Regulation 6(15) of the draft Regulations which permits the assignment of the rights and obligations of a Liberalised Use Licence, including the *“transfer, lease or other form of trading of spectrum rights attached to a Liberalised Use Licence”* provided that the procedures specified by ComReg are complied with.

In respect of new technologies ComReg's disclaimer renders it impossible for Interested Parties to form a view on the technologies they may deploy to exploit the spectrum. The absence of any ability to rely on trading rights or the deployment of new technologies makes it impossible for Interested Parties to form a reasonable view on the value to them of the spectrum.

We note that these are matters that directly affect the value of spectrum. It is absolutely essential that these matters are very clear and are not subject to disclaimers that deprive ComReg's decisions of any meaning. As currently drafted, Paragraph 5.7 is unacceptable and must be deleted.

Amendments

Chapter 5 includes numerous references to the possibility that amendments be made to the IM once published. For instance, Paragraphs 5.11, 5.12 and 5.30 in particular state that ComReg may amend the IM and related documents or change any procedure. We do not dispute that it is appropriate that ComReg reserves the right to make amendments to the IM, however, this must be limited to circumstances where this is necessary. As the IM should apply for a limited period of time and has been the subject of consultation, one would expect amendments to be exceptional. However, and contrary to what paragraph 5.7(ii) appears to suggest, if an amendment clearly is required, then Interested Parties are entitled to expect that this amendment will be made.

In addition, in the interests of predictability and transparency, any amendments or changes to be valid should be required to be made in accordance with the provisions of the IM, subject to appropriate consultation as necessary, and subject to full disclosure to all Interested Parties. In this regard, given that the IM will found the basis for the rules of the award process and Interested Parties reliance thereon, we cannot envisage any circumstance where it would be appropriate for ComReg not to inform Interested Parties of a change or modification, as paragraph 5.30 as currently drafted appears to suggest.

The position in relation to variation made by ComReg orally should be clarified. In particular, if oral variations are to be permitted, then any such variation should be followed as soon as possible with the publication of a written notice to ensure all Interested Parties are made aware of the variation. Paragraph 5.5 should be amended accordingly.

Paragraph 5.25 requires Interested Parties to notify ComReg should they discover any error or omissions or lack of clarity in the IM. This requirement should be extended to ComReg and its agents such that ComReg should promptly notify Interested Parties if it discovers any error or omissions or lack of clarity in the IM.

- Draft Regulation

The following comments are in respect of the Draft Regulation set out in Annex 2 of ComReg 11/75. These comments are in addition to matters raised above that are relevant to the Draft regulation.

Regulation 5(2) sets out that licences shall be in force for a period of up to one year and unless renewed shall expire. Licensees may apply for renewal on an annual basis and licenses may be renewed by ComReg upon payment of prescribed fees. It is intended that licences shall be valid until 12th July 2030 and that is the basis upon which Interested Parties will assess the value of the spectrum in the award process. However Regulation 5(d) states that *“The granting or renewal of a Liberalised Use Licence shall not be construed as warranting, representing or otherwise holding out that the Liberalised Use Licence shall be renewed at any time in the future, or renewed for any particular period or on any particular terms.”* This does not offer any certainty of tenure to Interested Parties. As such Regulation 5(2) should be amended to clearly acknowledge that licensees have a legitimate expectation that licences will be renewed annually to 2030 provided only that the licensee is in compliance with its licence obligations.

Regulation 6(4) requires that Apparatus is used only on the specified frequencies in the Liberalised Use Licence. It is entirely feasible, practical and efficient that use of the Apparatus could be shared with other frequencies, for example frequencies specified under our 3G licence. As such Regulation 6(4) is too restrictive and should be deleted.

Regulation 6(12) sets out obligations in respect of cessation of any technology. We have no objection to the notification requirements however we take exception to the proposed obligation to *“comply with any direction given by the Commission in relation to the extension of the timescale for the proposed cessation in subparagraph 12(a) above”*. ComReg has not set out any explanation as to the justification for this obligation or the factors that ComReg may consider relevant when making a determination on timescales. It is not clear to us why ComReg is seeking to restrict a licensee’s commercial freedom in this respect. As such Regulation 6(12)(b) should be deleted.

Regulations 8(4) and 8(5) set out how the Base Price will be determined. Both Regulations refer to the outcome of the Auction as a determinant. However we believe that it is the outcome of the Qualification Stage that is the appropriate determinant and the Regulations should be amended accordingly.

We note the proposed reserve prices will be revised pursuant to an updated benchmarking exercise prior to the publication of the Statutory Instrument making these Regulations¹⁹. To date benchmarking exercises have base lined the time value of money to February 2013. The final reserve prices must also be adjusted for the time value of money to the date of publication.

In Schedule 1, in accordance with the provisions of the Wireless Telegraphy Act, 1926, the Liberalised Use Licence should authorise the Licensee to keep and have possession of the relevant wireless telegraphy apparatus subject to such apparatus being installed, maintained, worked and used in accordance with the terms and conditions set out in the Licence.

¹⁹ Foot note 74, page 170 of ComReg 11/75

Appendix 1: Expert Advice on Proposed Activity Rules in the Ireland 800, 900 and 1800 MHz Auction prepared by Power Auctions LLC on behalf of eircom Group

Expert Advice on Proposed Activity Rules in the Ireland 800, 900 and 1800 MHz Auction

PREPARED FOR METEOR

BY POWER AUCTIONS LLC

23 November 2011



Table of Contents

1. Introduction.....	1
2. Review of ComReg Modifications to Primary Bid Rounds	2
2.1 Treatment of eligibility points following a Relaxed Primary Bid round.....	2
2.2 Treatment of Binding Supplementary Bids	3
3. Review of ComReg Modifications to Supplementary Round	4
4. Power Auctions’ Alternative Recommendations	5
4.1 Proposed activity rule for the clock rounds.....	5
4.2 Proposed activity rule for the supplementary round.....	6
4.3 Advantages of the proposed activity rule	6

1 Introduction

It has long been evident that there is substantial room for improvement in the activity rules of the Combinatorial Clock Auction (CCA). The CCA rules proposed prior to this consultation (ComReg 11/75) have had at least two significant deficiencies:

- The activity rule for the clock stage prevents a bidder from placing bids on her most preferred package whenever the most preferred package exceeds her eligibility. For example, the bidder may reduce her eligibility early in the auction but then need to expand her eligibility when the price in a category she is bidding on increases much more than the price of a substitute category requiring more eligibility points. This prevents the bidder from expressing her true preferences until the supplementary round.
- The activity rule for the supplementary round (“Relative Cap”) failed to satisfy a desirable property that guarantees that the final clock package is unchanged as a result of the supplementary round when there are no unallocated items in the final clock round. Also, it is difficult for bidders to determine how to bid to guarantee winning the final clock package when items are unallocated in the final clock round.

Separate from the Ireland context, Professors Larry Ausubel and Peter Cramton have recently undertaken a substantive general review of CCA activity rules, with the intention of proposing improvements. Their resulting academic paper, “Activity Rules for the Combinatorial Clock Auction,” can be found on the authors’ academic website; see:

www.ausubel.com/auction-papers/ausubel-cramton-activity-rules-for-cca.pdf

As will be seen in what follows, many of the changes to the activity rules proposed in the Draft Information Memorandum come quite close to the general improvements proposed by Professors Ausubel and Cramton. Therefore, our general reaction is to be quite supportive of the basic changes proposed to the activities rules by ComReg, and most of the points that we raise herein are in the nature of minor modifications or improvements.

However, we have one substantive criticism: this is the treatment of Binding Supplementary Bids. We are concerned that Binding Supplementary Bids are at best applied inconsistently and are at worst applied incoherently, and they appear to be unworkable in their proposed form. We also note that the proposed inclusion of Binding Supplementary Bids is completely separable from the proposed changes in activity rules. Thus, we recommend that the changes in the activity rules should be adopted substantially as proposed, but that the proposal for Binding Supplementary Bids should be substantially modified or withdrawn in the final Information Memorandum.

2 Review of ComReg Modifications to Primary Bid Rounds

In this section, we provide our opinion on the modifications that ComReg has proposed for the Primary Bid Rounds in the Draft Information Memorandum.

It is important to note that relaxing the eligibility point activity rule to allow revealed preference exceptions is a separate issue from retroactively raising prior bids and should be analysed separately. The first subsection will address the Relaxed Primary Bids in the Primary Bid Rounds, while the second subsection will address the Binding Supplementary Bids.

The academic paper of Professors Ausubel and Cramton includes a simplified revealed preference rule that allows a bidder to bid on a larger package than would be permitted by the bidder's current eligibility, provided that the package satisfies "revealed preference" with respect to each prior round's bid in which eligibility was reduced. (However, bidding on a larger package does not increase the bidder's eligibility in subsequent rounds.) At the same time, the bidder can always place a bid for any package that is within the bidder's current eligibility: this is referred to as an "Eligibility-Point Safe Harbor". Their allowance of bidding on larger packages is analogous to the Relaxed Primary Bids proposed in the Draft Information Memorandum. However, the implementation details differ between the two approaches in two important ways:

2.1 Treatment of eligibility points following a Relaxed Primary Bid round

Clause 4.72 states that "each Bidder's Eligibility in a Time Slice is equal to that Bidder's activity in that Time Slice in the previous Primary Bid Round, with the exception that if a Bidder makes a Relaxed Primary Bid, its Eligibility in both Time Slices will be maintained at its current level". The example in Annex 7 of the Draft Information Memorandum establishes separate eligibility points for each time slice. In Round 3 the bidder places a bid on Package 2 with eligibility points of (2,6). In Round 4 the bidder wishes to substitute its demand between T1 and T2 by bidding for Package 1 with eligibility points of (4,2). The example illustrates that the bidder can place a Relaxed Primary Bid on Package 1 if she also places a Binding Supplementary Bid on Package 2. In the 5th Round, the bidder's eligibility remains (2,6), i.e. the eligibility going into Round 4. Because the bidder's Relaxed Primary Bid in Round 4 had lower activity points than its current eligibility points, it seems logical that the bidder's eligibility going into Round 5 would be reduced to (2,2). ComReg's proposed treatment of eligibility points following a Relaxed Primary Bid Round is completely inconsistent with eligibility-points-based activity rules that have been implemented in hundreds of spectrum auctions—both SMRA and CCA—over the past 17 years. The bidder in this example should be permitted to bid again on Package 2 only if the bid price in a subsequent round satisfies the revealed preference constraint from Round 4 when the bidder placed the Relaxed Primary Bid on the smaller package. To allow the bidder to switch back to the larger package in the absence of revealed preference when she has already reduced her eligibility points violates both activity rule constraints.

Therefore, Power Auctions believes that the eligibility-point component of the activity rule in the forthcoming auction should be as follows:

$$\begin{aligned} \text{Eligibility in Round } N+1 \text{ for Time Slice } J &= \\ &= \min \{ \text{Eligibility in Round } N \text{ for Time Slice } J, \text{ Activity in Round } N \text{ for Time Slice } J \}. \end{aligned}$$

In other words, as is standard, eligibility should always be the lesser of the previous round's eligibility and the previous round's activity (applied time-slice-by-time-slice).

It is also worth noting that if ComReg believes that T1 and T2 are potential substitutes, as is illustrated by the example in Annex 7, then the package eligibility should not be broken out separately for the two separate time slices but should be expressed as the sum of the two eligibility numbers. In other words, Package 1 would be assigned 6 points, Package 2 would be assigned 8 points and Package 3 would be assigned 10 points.

However, we believe that licences in T1 and T2 are not substitutes and should be assigned separate eligibility points. That is, we agree with ComReg's treatment of assigning T1 and T2 separate eligibility points, and we merely note that the example in Annex 7 is a red herring.

2.2 Binding Supplementary Bids

We recognise that the submission of supplementary bids may lead to a more accurate calculation of bidder's opportunity costs. However, we are concerned that, in the Draft Information Memorandum, the concept of Binding Supplementary Bids is at best applied inconsistently and is at worst applied incoherently. Consider the worked example in Annex 7, where in Round 4 (and in subsequent rounds in which the bidder bids on Package 1), the bidder is required to place Binding Supplementary Bids on Package 2. However, suppose that rounds 2 and 3 did not exist, i.e., suppose that prices jumped immediately from (3.34, 8.48) to (14, 20). Then bidding on Package 1 would not be a violation of the bidder's eligibility, and so would not require a Binding Supplementary Bid on Package 2. Moreover, the bidder's next bid would be a violation of the bidder's eligibility. That is, in round 5, the bid for Package 2 would violate the bidder's eligibility (which would then be (4,2)), and so the bidder would be required to place a Binding Supplementary Bid of 56 on Package 1.

This simple example illustrates that Relaxed Primary Bids and Binding Supplementary Bids are sensitive to price increments as well as to individual bidder's valuations. Relaxed Primary Bids and Binding Supplementary Bids are also sensitive to how eligibility is determined in rounds following a round in which a bidder places a Relaxed Primary Bid.

Furthermore, the way that the requirement of placing Binding Supplementary Bids is applied, it seems as though it is applied as a "penalty" whenever the bidder wishes to violate monotonicity in eligibility. Why should a bidder be subject to a "penalty" when the desired bid is derived from bidding consistently with a fixed set of valuations? (For example, the bids of Table 17 are derived from bidding consistently with respect to the valuations of Table 16.) It makes no sense that the bidder should be subject to a penalty whenever this happens.

This points to the fact that ComReg has failed in conveying to bidders any rationale for requiring Binding Supplementary Bids. Comparing the Draft Information Memorandum to the academic paper by Professors Ausubel and Cramton, it can be seen that the treatment in the academic paper also permits exceptions to eligibility-point monotonicity, but without introducing the complexity of Binding Supplementary Bids. Unless ComReg can both communicate a valid rationale for Binding Supplementary Bids and devise a consistent and coherent way to implement the concept, ComReg would do better to substantially modify or withdraw this part of the proposal in the final Information Memorandum.

3 Review of ComReg Modifications to Supplementary Round

3.1 Introduction of a Final Price Cap

The Draft Information Memorandum introduces a Final Price Cap in the supplementary round that limits the amount of any Supplementary Bid for a package to the highest Bid for the Final Primary Package plus the difference in price between the package and the Final Primary Package at the final clock round prices. We believe that this is an improvement to the CCA rules and we support it.

Indeed, in the academic paper by Professors Ausubel and Cramton, they advocate:

(Simplified RP Cap) $b^i(q) < B^i(q_t) + p_t \cdot (q - q_t)$, for all packages $q \neq q_t$ and for all $t \in E^i(q)$,

where $E^i(q)$ denotes the last clock round in which Bidder i was eligible to bid for Package q , all subsequent eligibility-reducing rounds, and the final clock round f .

Using the same notation, ComReg's proposed activity rule for the supplementary bids round may be written:

(ComReg Cap) $b^i(q) \leq B^i(q_t) + p_t \cdot (q - q_t)$, for $t = t^i(q)$ and $t = f$,

where $t^i(q)$ denotes the last clock round in which Bidder i was eligible to bid for Package q .

Thus, the only difference between the two rules is that Professors Ausubel and Cramton include the intermediate eligibility-reducing rounds between $t^i(q)$ and the final clock round f .

While we believe that the Simplified RP Cap has greater consistency with the activity rule of the clock rounds, we do not believe that there is tremendous difference between the two rules and we are happy with either.

3.2 Section 3 of Annex 8 does not appear to account for Relaxed Primary Bids

While we agree that the Final Price Cap is a vital constraint to add to the supplementary round to ensure that bidders can guarantee that they win their Final Primary Package, we believe that the Draft Information Memorandum does not fully account for the case where a bidder's Final Primary Package is a Relaxed Primary Bid. As stated in Clause 4.171: "The fact that the associated packages X_k and X_{k-1} are subject to both floors and ceilings relative to the Bid for the Final Primary Package means that Bids for these packages may all need to be increased together if any of these packages are subject to Supplementary Bids."

Meanwhile, Section 3.2 of Annex 8 attempts to provide a recipe for "knockout" bids. It states: "Now suppose that some particular bidder j adopts the strategy of increasing its final primary bid by an amount equal to the value of the unallocated lots in the final primary round plus some smallest possible increment ε Suppose that for any other package $x \neq x_j^f$, bidder j does not increase any existing primary bid in the supplementary bids round."

It should be observed that these two thoughts are inconsistent: the strategy that Section 3.2 suggests for bidder j has the possibility of being contrary to the rule stated in Clause 4.171 of the Draft Information Memorandum, when a bidder's Final Primary Package is a Relaxed Primary Bid. The bidder may be unable to increase its final primary bid by an amount equal to the value of the unallocated lots, without also raising other primary bids. Hence, the alleged proof on p. 227 is not applicable.

4 Power Auctions' Alternative Recommendations

Alternatively, Power Auctions suggests that each of the two recommendations outlined in the Ausubel-Cramton academic paper be adopted in Ireland for the upcoming auction of 800, 900 and 1800 MHz bands since they address the deficiencies in the previously proposed rules, and are much simpler to implement and understand.

4.1 Proposed activity rule for the clock rounds

Short name: Simplified RP/Eligibility-Point Hybrid

Long name: Simplified Revealed Preference with an Eligibility-Point Safe Harbor

Informal description: In any round, the bidder can bid on a larger package than would be permitted by the bidder's current eligibility, provided that the package satisfies "revealed preference" with respect to each prior round's bid in which eligibility was reduced. (However, bidding on a larger package does not increase the bidder's eligibility in subsequent rounds.) At the same time, the bidder can always place a bid for any package that is within the bidder's current eligibility.

Revealed preference does not consider package size, but rather considers how prices have changed and allows the bidder to shift toward packages that have become relatively less expensive. The motivation for revealed preference is that a bidder seeking to maximize profits will shift to packages that result in a higher profit as prices change; that is shift to packages that have gone up less in price if the revenue associated with the packages is similar.

For example, suppose a bidder desires either a smaller package, X, or a larger package, Y, but not both. At the current prices, X is preferred, but in subsequent rounds, the prices for the lots in X go up much faster than the prices for the lots in Y. As a result, at the new prices the bidder prefers Y to X. Revealed preference allows the switch from X to Y, because Y is now the better value. In contrast, eligibility point monotonicity would not allow the switch since Y is larger than X. This example illustrates the problem with the eligibility point rule and the advantage of revealed preference.

More generally, in the clock stage, bidding on package Y in round t satisfies revealed preference with respect to round s, if the price of package Y in round t has increased less than the price of the package X that the bidder bid on in round s. That is, package Y has become relatively less expensive than package X, so bidding on Y in round t is consistent with the bidder's expressed preference for X in round s.

4.2 Proposed activity rule for the supplementary round

Name: Simplified Revealed-Preference Cap

Informal description: All supplementary bids must satisfy revealed preference with respect to the bidder's final clock package. In addition, supplementary bids for packages that are larger than the final clock package must satisfy revealed preference with respect to each clock round that resulted in a reduction of eligibility, beginning with the last round in which the bidder had sufficient eligibility to bid on the package.

Effectively, our proposed activity rule for the supplementary round strengthens the so-called Relative Cap by applying a revealed-preference constraint relative to more rounds. Under the Relative Cap, supplementary bids for packages that are larger than the final clock package must satisfy revealed preference with respect to the last round in which the bidder had sufficient eligibility to bid on the package. Under the Simplified Revealed-Preference Cap, supplementary bids for packages that are larger than the final clock package must also satisfy revealed preference with respect to each eligibility-reducing clock round, beginning with the last round in which the bidder had sufficient eligibility to bid on the package, as well as with respect to the final clock round.

4.3 Advantages of the proposed activity rule

The proposed rule has many advantages, including:

- The rule enables the bidder to bid on her most preferred package throughout the clock stage, thereby improving price discovery (more revelation of relevant marginal value information) and making the final clock allocation a better predictor of the auction outcome.

-
- The rule guarantees that the final clock allocation will not change if there are no unallocated items—each winner is guaranteed to win her final clock package without making any supplementary bids.
 - The rule prevents a competitor from placing supplementary bids that have no chance of winning that would increase the payments of rivals.
 - The emphasis on revealed preference with respect to the final clock package motivates the bidder to bid on her most preferred package in the final clock round to improve her chances of winning her most preferred package. Since the bidder does not know which round will be the final clock round, there is a persistent motivation to bid on the most preferred package throughout the clock stage. This behaviour is exactly what reveals the bidders' tradeoffs among relevant packages and promotes efficient outcomes.
 - Revealed preference constraints that are not needed to prevent undesirable behavior are not included. This simplifies the activity rule and gives the bidders greater flexibility throughout the auction. Supplementary bids are only constrained by revealed preference with respect to the final round and relevant rounds in which the bidder reduced eligibility.
 - In the supplementary round, revealed preference puts a cap on the amount a bidder can bid for a particular package. For example, *revealed preference with respect to the final primary package* says that the bid for the package must be less than the bid for the final primary package plus the price difference between the package and the final primary package evaluated at the final clock prices. That is, the supplementary bid amount for the specified package and the final primary package needs to be consistent with the fact that the bidder preferred the final primary package to the specified package at the final clock prices.

The proposed rule does this without introducing Binding Supplementary Bids which, without question, are the hardest part of ComReg's modifications to understand or to implement.

3. Eircom Group supplementary response (received 12 December 2011)

12th December 2011

Patrick Mulvey
Commission for Communications Regulation
Irish Life Centre
Abbey Street
Dublin 1

By email

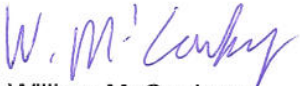
Dear Patrick,

Supplemental Submission re ComReg 11/75

With reference to our submission to ComReg 11/75 submitted on 28th November we request that the following additional comments be taken into consideration by ComReg.

The proposed timeline for the Award Process set out in Table 9 of ComReg 11/75 sets out various preparatory activities that will be undertaken in advance of the proposed auction. The proposed timeline envisages that a mock auction is undertaken one week prior to commencement of the start of the auction. The auction design being developed by ComReg and its consultants is extremely complex and the unique design for the Irish circumstances has never been used before. We believe that Interested Parties should be afforded an early opportunity to familiarise themselves with the auction software in order to ensure that their understanding of the auction mechanism, gleaned from the written material matches, the actual mechanism. Interested Parties will also need to develop governance processes in order to effectively participate in the proposed award process. As such we request that additional mock auctions be scheduled to take place for Interested Parties very soon after publication of the final Information Memorandum. We further request that the software to be used for the electronic auction system be released to Interested Parties at the earliest opportunity in order that they may adequately prepare for the proposed process.

Yours sincerely,



William McCoubrey
Head of Regulatory Affairs

4. Vodafone response (received 28 November 2011)



Vodafone Response to the ComReg Consultation on the Multi-band Spectrum Release
Draft Information Memorandum

Disclaimer

It should be noted that while Vodafone's previous responses to the series of consultations dealing with this topic set out Vodafone's then position on various issues and principles, some considerable time has elapsed since the process commenced and there has been significant change in the market environment. In this regard Vodafone's position on some issues may be different in the light of current market conditions or additional information. One significant change in the market conditions is that due to the delays in the timelines originally envisaged for the award process for 900MHz spectrum both Vodafone and Telefonica O2 are operating under interim licenses with hard end-dates.

In addition the draft Information Memorandum sets out the actual auction rules as well as the proposed draft Regulations. In this regard Vodafone's comments relate to the specific proposals and their practical implementation and impact.

Silence or the absence of comment on a particular element of the ComReg proposals does not indicate agreement or acceptance of ComReg's proposals and Vodafone reserves its right to submit further comments on ComReg's proposals.

Executive Summary

A final Information Memorandum which conforms to the draft would not be sufficiently detailed to allow operational planning for the proposed auction process.

There has been a protracted and detailed process to arrive at this point. Vodafone has significant concerns therefore that neither the Memorandum, the Draft Regulations nor the draft Licence set out unambiguously that a winning bidder will be awarded an exclusive right of use to the spectrum lots they have acquired, and that the exclusive right of use would apply for the full duration of the multi-year licence(s) for the relevant lot(s). The Regulations appear only to be a right to initially apply for a licence to have and use equipment in particular frequency bands. This initial equipment licence expires after one year and is subject to renewal on application and at ComReg's discretion. This does not provide sufficient certainty to enable operators to execute their business plans until 2030.

The draft Regulations and Licence appear to have elements which bypass the provisions of the Communications Act and the Authorisation and Framework Regulations as they relate to amendment of the Regulations and enforcement of non compliance. Some of these may not be compatible with the Irish legal framework.

We believe the current auction design is becoming increasingly and unnecessarily complex. This would make it difficult for operators to develop and communicate their bidding strategies. We offer a number of suggestions which would simplify the process.

Vodafone believes that the minimum licence prices are set at an excessively high level and therefore pose a significant risk of an inefficient auction outcome. In addition the proposed 1800MHz minimum price (at 50% of the proposed 800MHz and 900 MHz minimum prices) is based on a flawed valuation methodology and must be revisited.

We believe the timeline is optimistic and in particular recommend a longer consultation period than two weeks for questions on the Information Memorandum.

Introduction

Vodafone welcomes the opportunity to comment on the Multi-band Spectrum Release Draft Information Memorandum.

Subject to the caveats set out below this response should be read in conjunction with the previous Vodafone submissions on the licensing of the 1800 MHz and sub- 1 GHz bands.

As previously indicated in our responses to previous consultations, Vodafone is in favour, in principle, of the inclusion of 1800 MHz spectrum in a joint award process with spectrum in the sub-1 GHz bands given the potential for this approach to maximise the economic efficiency of the spectrum allocation outcome across these bands that are to a significant extent substitutable and/or complementary to one another in the delivery of communications services to retail customers. However we must reiterate our view, as previously expressed in response to ComReg document 10/105, that including 1800 MHz spectrum for award in the proposed auction, together with a temporal lots approach, introduces extreme complexity into a competitive allocation process that would be notably complex even if its scope were limited only to the assignment of spectrum in the sub-1 GHz bands. Complexity imposes costs and risks in an award process that militate against the realisation of an efficient spectrum allocation outcome.

The award process as currently proposed by ComReg permits a particularly wide range of possible outcomes from the auction process but consequently also increases the potential for sub-optimal outcomes that would not ensure continuous seamless access to spectrum by existing licensees across the multiple bands required to provide effective communications services to their customers. Moreover the much larger range of potential bid options arising from this design poses a considerable challenge for effective bid management by applicants in the award process, and substantially increases the risk of bidding errors.

Given the need to complete the spectrum award process for the 1800 MHz and sub-1 GHz bands without further significant delay, the scope for significant amendments to reduce the complexity of the auction format now appears to be very limited. However it is essential that ComReg ensure that there is a full understanding by all Interested Parties of how the auction format will operate, and the issues for bid management that could arise, significantly in advance of the commencement of the auction, and ideally in advance of the publication of ComReg's Final Information Memorandum. We recommend an adjustment to ComReg's proposed process steps to seek to address this issue in this submission.

We generally support the approach to auctioning these bands together, and not delaying the auction in order to include the 2.6GHz band

Reserve price for both time slots is ~€12m for 2x5MHz (800 & 900Mz) and 50% for this for 1800MHz – we still believe this is high, as we have outlined before and believe the methodology used to come to these numbers is flawed. We now believe that there should be a differential between the 800 & 900 spectrum minimum prices. This was shown in recent auctions in Spain, where the final auction price of 900 MHz spectrum was only 78% of the 800MHz spectrum.

Detailed Comments on ComReg Licensing Proposals

As there are no specific questions the Vodafone is response is structured as comments against each section of the Draft Information Memorandum.

Chapter 1 Introduction

We note that paragraph 1.4 provides that this Draft Information Memorandum has been prepared while awaiting submissions to document 11/60. Whilst we appreciate that any delay in spectrum release would not be acceptable we feel that the piecemeal approach is creating a duplication which could have been avoided by delaying the publication of this Information Memorandum. In particular given the number of consultations which have been issued by ComReg of late we would ask that going forward a more measured and structured approach is adopted regarding the issuing of consultations of this nature.

1.3 Indication of Process to the Start of the Auction

Vodafone welcomes the information provided by ComReg on indicative timelines for the steps in the process to the start of the proposed spectrum auction. We also acknowledge that ComReg is not in a position to give specific dates in relation to each of the process steps at this time due to the need to complete its analysis and consideration of the submissions of respondents to ComReg's consultations on ComReg document 11/60 and the present Draft Information Memorandum and Draft Statutory Instrument.

In relation to the actions outlined in paragraph 1.12 of the consultation document, Vodafone notes ComReg's position that if the start date of the Award Process is not announced in the final Information Memorandum then it will be announced in a subsequent Information Notice. We also observe that the milestones set out for the Award Process in Table 9 in section 3.2 of the present consultation document are only indicative and subject to change by ComReg at its discretion. However Vodafone considers that the timelines set out for the process steps are unrealistically short and unlikely to be met. If these demanding timelines are adhered to then Vodafone considers that they are unlikely to provide sufficient time for prospective licence applicants to provide effective feedback, obtain necessary clarification, or make optimal preparations to participate in the auction stages if these are required.

Vodafone considers that, irrespective of any subsequent changes that may occur to the steps and timelines for the Award Process that may arise, ComReg must ensure that there is public notification of the specific start dates of the Main Stage and Assignment Stage at least 14 weeks in advance of the date for which they are scheduled. This is in our view the minimum time necessary for Interested Parties to prepare adequately for the various process steps, including the auction stages, if these are required.

With regard to the indicative times allotted for completion of specific process steps, Vodafone considers the 2 week period envisaged by ComReg for the Q+A on the Award Process, following the publication of the Final Information Memorandum, is too short and should be extended to **4** weeks.

Vodafone propose that ComReg Schedule at least one mock auction session **well** in advance of the actual auction. The optimum time would be **before** the final Information Memorandum is published to allow for amendments to final draft.

ComReg should also make clear the timeframe that will be given for examination of bidding materials and access to the EAS. In Vodafone's experience, bidders typically require at least a week for this process.

However, due to the high level of auction complexity proposed here, we believe there is a requirement for considerably more time – up to three weeks is required.

2.2.1 Scope of the Liberalised Use Licence

Paragraph 2.19 describes the Liberalised Use Licence as being non-exclusive in nature and the footnote provides that ComReg retains the right to authorise other Wireless Telegraphy apparatus in these spectrum bands which do not cause unacceptable interference to the Licensee. The Draft Statutory Instrument furnished is silent on this point so any Liberalised Use Licence issued under the Statutory Instrument would therefore be non-exclusive however the qualification contained in the footnote would not apply to such Liberalised Use Licence. The Statutory Instrument should explicitly set out that a further Licence can not be granted if it would cause unacceptable interference with existing Licences on the same spectrum bands. The basis on which unacceptable interference is to be determined should also be set out in the Statutory Instrument as what is unacceptable to one party might be perfectly acceptable to another. This goes to the core of value of the Liberalised Use Licence as any bidders will require adequate comfort that their rights will not be interfered with and it is also likely to impact upon any successful bidder's ability to trade such spectrum rights.

2.2.2 Liberalised Use Licence Duration and Renewal

Paragraph 2.21 provides that the duration of any Liberalised Use Licences shall be as follows:

- In Time Slot 1 – 2 years and 5 months and 12 days from 1 February 2013; and
- In Time Slot 2 – 15 years from 13 July 2015.

Notwithstanding Paragraph 2.21 referenced above the draft Information Memorandum goes on to provide in Paragraphs 2.26 to 2.30 that Liberalised Use Licences must be renewed on an annual basis year on year and that the annual renewal shall be subject, amongst other things, to the following:

- providing ComReg with specified information; and
- paying the Spectrum Usage Fees associated with the renewal period.

Paragraphs 2.21 and paragraphs 2.26 to 2.29 contradict each other. We would make the following observations in relation to same and respectively suggest that a Licence in accordance with Paragraph 2.21 with no renewals required is the appropriate position to adopt:

- In circumstances where Licence holders are required to reapply for an extension each year it devalues the licence and makes it difficult if not impossible to trade the licences.
- The requirement to extend licences on an annual basis does not give operators the comfort they require for investment in network roll out. It creates uncertainty for operators and their Group companies may be reluctant to commit spend on capital expenditure if there is uncertainty over the licence period.
- Annual renewals serve as a means for ComReg to circumvent the procedures set out in the Authorisation Regulations for breach of Licence conditions. The Authorisation Regulations provide for the procedures which must be applied when there is a breach of Licence conditions. In circumstances where ComReg can refuse to renew a Licence for unspecified reasons this merely serves as a means to get around the Licence procedures.

2.2.3 Licence Conditions applicable to all Liberalised Use Licences

Paragraph 2.37 proposes to require the putting in place of a performance guarantee. However the only conditions that may be attached to a right of use are those specified in Part B of the Schedule attached to the Authorisation Regulations. ComReg may argue that Part B (1) allows it to attach Rollout requirements to the spectrum right of use as a coverage requirement. However the proposed performance guarantee relates to the enforcement of these requirements rather than being coverage requirements in their own right. Vodafone cannot identify any provision within the Schedule which would permit ComReg to impose the proposed performance guarantee. Where the coverage requirements are imposed as part of the grant of Rights of Use then the means of enforcement of these conditions by ComReg is set out in Regulations 16 and 17 of the Authorisation Regulations. ComReg cannot enforce such conditions other than in conformance with the Authorisation Regulations. The proposed performance guarantee, both in its nature and proposed application, amounts to an alternative enforcement mechanism which seeks to circumvent the requirements of the Authorisation Regulations. Further the quantum of the performance guarantee is such that it amounts to a fine. Fines of this quantum could, in the normal course, only be imposed by a Court of competent jurisdiction. Vodafone cannot identify any legislative basis which would allow ComReg specify a regime for administrative fines which circumvents this requirement.

Even in circumstances where ComReg demonstrates its ability to impose such a fine we are of the view that the conditions under which the fine can be imposed and the appeal process must be more clearly defined. We are also of the view that there must be some degree of proportionality in the penalty.

Paragraph 2.38 – MVNOs and National Roaming partners can only be controlled to a certain extent. We cannot be held accountable for the quality of service of third parties using our network. In circumstances where it does apply it should only apply to the extent that any quality of service is caused as a result of the Licence holder's default. For example there are other operators that roam on our network in certain parts of the country. If they fail to meet their Quality of Service requirements elsewhere in the country then as worded this could impact upon our bond and we could lose the bond.

As for Paragraph 2.37, Paragraph 2.39 proposes to require the putting in place of a performance guarantee. However the only conditions that may be attached to a right of use are those specified in Part B of the Schedule attached to the Authorisation Regulations. ComReg may argue that Part B (1) allows it to attach Quality of Service requirements to the spectrum right of use as a quality requirement. However the proposed performance guarantee relates to the enforcement of these requirements rather than being quality requirements in their own right. Vodafone cannot identify any provision within the Schedule which would permit ComReg to impose the proposed performance guarantee. Where the Quality of Service requirements are imposed as part of the grant of Rights of Use then the means of enforcement of these conditions by ComReg is set out in Regulations 16 and 17 of the Authorisation Regulations. ComReg cannot enforce such conditions other than in conformance with the Authorisation Regulations. The proposed performance guarantee, both in its nature and proposed application, amounts to an alternative enforcement mechanism which seeks to circumvent the requirements of the Authorisation Regulations. Further the quantum of the performance guarantee is such that it amounts to a fine. Fines of this quantum could, in the normal course, only be imposed by a Court of competent jurisdiction. Vodafone cannot identify any legislative basis which would allow ComReg specify a regime for administrative fines which circumvents this requirement.

Even in circumstances where ComReg demonstrates its ability to impose such a fine we are of the view that the conditions under which the fine can be imposed and the appeal process must be more clearly defined. We are also of the view that there must be some degree of proportionality in the penalty.

Vodafone notes that in previous consultations ComReg proposed to exclude IP based calls from the Quality of Service conditions. Vodafone notes that this exclusion is not explicit in the proposed Regulations as the term “voice calls” is not defined. ComReg is requested to clarify whether this amounts to a change to the proposal previously consulted on (which may have valuation implications) or a simple editorial matter which is capable of straightforward remediation.

Vodafone notes that in Paragraph 2.41 ComReg has proposed that a Licensee must inform it of the proposed discontinuation of use of a particular technology with a Liberalised Use band. However the Draft Regulations go much further than this and reserve the right to ComReg to issue directions requiring a Licensee to continue to use of a particular technology within a Liberalised use band. Vodafone believes that there is no objective justification for this measure as it is potentially discriminatory and it fails to take account of the provisions of the General Authorisation in respect of withdrawal of service

For example consider two Licensees, one who initially supports GSM services and another whose “lowest” technology level is UMTS. The second Licensee can decide to implement a combined UMTS/LTE network without ComReg’s approval. However in order for the first Licensee to move from a combine GSM/UMTS network to an equivalent UMTA/LTE network they find themselves subject to ComReg’s veto on this.

Vodafone notes that the QoS and coverage conditions in the Licence mean that if the technologies mix in a Licensee’s network changes the effective service mix perceived by end users remains equivalent.

Further, even where a Licensee intends to withdraw certain services on foot of the technology change then it will be subject to the General Authorisation.

It is an underlying principle of using an auction to allocate spectrum that market forces will decide what the appropriate technology is to maximise efficiency. Where a Licensee decides that a particular technology no longer yields efficient outcomes then any requirement to continue to use it beyond a market dictated timeline is in effect the imposition of an inefficiency on that Licensee by ComReg. A significant question arises as to whether any such intervention by ComReg would require ComReg to compensate the Licensee in question.

Spectrum Trading Rules

General –The ostensible high level aim for this assignment process is to assign spectrum rights of use until 2030 on foot of an auction which is in conformance with the Authorisation Regulations. However when the detail of ComReg’s proposal is examined what is specified is a process whereby winning bidders obtain the right to apply for the renewal of a non-exclusive license on an annual basis until 2030. The terms of this license are subject to change without ministerial consent and enforcement of the license conditions are by way of administrative fines or potentially the refusal of renewal. This creates very significant uncertainty as to the value that might be ascribed to the spectrum and in the longer term the extent to which there is any right of use capable of being traded going forward.

2.2.4 Liberalised Use Licence Technical Conditions

In our response to question 13 of ComReg 0999, (Do you agree with ComReg’s proposal to define a distinct field strength level for each type of technology deployed in the liberalised 900 MHz band ?), Vodafone stated we were “not opposed to ComReg’s proposal to retain the existing field strength levels in

existing licences for GSM and 3G technologies for new licences in the 900 MHz band, and to add objectively justified and proportionate field strength conditions for additional types of technologies that can co-exist with GSM and UMTS if and when they are deployed in the future”. Vodafone notes that although the relevant metrics were then included in Annex 3 of ComReg 10105, no specified question was asked in relation to the new metrics proposed for liberalised spectrum at that time.

Having reviewed the metrics included in the Information Memorandum, Vodafone is of a preliminary view that they may constitute a significantly higher standard that that required in order to offer a reasonable and commercially attractive service from both a consumer and supplier perspective. Vodafone is undertaking some internal modelling using the proposed metrics and will submit further views on this matter in the near future.

2.2.5 Fees for a Liberalised Use Licence

Winning bidders will have to make very substantial long term investments both to meet the conditions of the licence and to recover the cost of the spectrum. That ComReg proposes to caveat the actual award in the manner it has runs the risk that the valuation of the licence by potential bidders will be far lower than if the actual award was aligned with the ostensible purpose of the assignment process.

Further the limitations and reservations that ComReg has placed on the licence undermine the basis for its benchmarking exercise in setting reserve prices. There has simply not been a like for like comparison. Based on the proposed wording of the Draft Regulations the correct comparators are for 1 year licence awards not multi-year licence awards. The use of inappropriate comparators is a material error of fact, potentially invalidating the benchmarking process.

2.2.6 Refund of Licence Fees

Vodafone considers that the text setting out the process for calculating the refund of Licence Fees in the event of delayed commencement of Liberalised Use Licences should be amended. As currently formulated, paragraph 2.76 of the Draft Information Memorandum the inclusion of the term ‘and/or’ in the text appears to allow for Winning Bidders to potentially only be refunded either a pro-rata portion of their Up-Front Fees, or only be refunded the relevant portion of SUFs already paid, but not both. Vodafone considers that it is the justified intent of ComReg that in the event of delayed commencement of Liberalised Use Licences, Winning Bidders would be granted refunds on the pro-rata portion of both their Up-Front Fees and their SUFs. Accordingly Vodafone believes that a minor amendment whereby the term ‘and/or’ is replaced by ‘and’ in paragraph 2.76 is warranted.

2.2.7 Enforcement Actions – Compliance with Licence Conditions, Licence Suspension, Licence Withdrawal

As set out previously Vodafone is of the view that the annual licensing regime proposed by ComReg together with the unbounded reservation of rights of renewal to ComReg appear to circumvent procedures under Authorisation Regulations for enforcement, suspension and withdrawal.

It is Vodafone’s view that the performance guarantees amount to a process for imposing an administrative fine other than in accordance with the Authorisation Regulations.

2.2.8 Amendment of a Liberalised Use Licence

Vodafone notes that ComReg may make the proposed Regulations (including the Schedules) only with the consent of the Minister. Paragraph 2.91 provides that ComReg may amend the rights, obligations and procedures under the Liberalised Use Licence in accordance with the Authorisation Regulations. The mechanism suggested by ComReg is by way of an amendment to the Regulations once they are effective. As this would require an amendment to the Statutory Instrument we would suggest that any such amendment can only take place with the consent of the Minister. ComReg should confirm its view of whether this is in fact the case.

2.2.9 The Draft Regulations and an indicative Liberalised Use Licence

Please see previous responses to previous sections

2.2.10 Other Considerations

In respect of Paragraph 2.93 we believe that this is more appropriately worded as follows: 'spectrum sharing and pooling are allowed in principle, subject to a competition assessment finding that they would not significantly harm competition'

3.7 Notification & Grant Stage

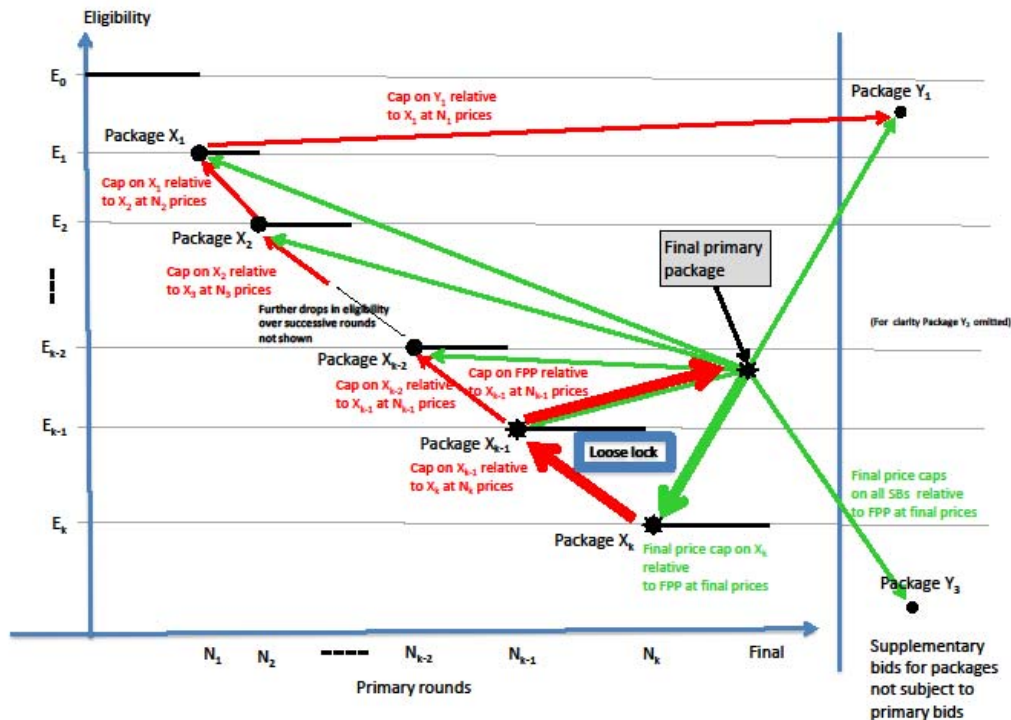
Paragraph 3.8 provides that Winning Bidders will be entitled to licences subject to paying the Upfront Fees. However the draft Statutory Instrument is not as explicit and provides that ComReg "may" issue a licence. The conditions that can be imposed at this stage are not clear. Winning Bidders should be entitled to a Licence if they have met the conditions and paid the fees. There should be no ambiguity of flexibility for ComReg to impose further conditions at this stage prior to providing a licence.

3.8.1 Liquidated Damages

Paragraph 3.136 – Liquidated Damages – Given the potential exposure for Existing GSM Licence Holders this process needs to be much more explicit. It is simply not acceptable to base this on ambiguous paragraphs where the stakes are so high. We have limited control over the process and what we are going to be asked to do so and yet are expected to agree to such broad language around liquidated damages.

Chapter 4 The Auction Rules

Vodafone are very concerned about the increasing complexity of this design, with its strange new activity rules ("Relaxed Primary Bids" in 4.33; "Binding Supplementary Bids" *before* the supplementary round in 4.37, the "Final Price Cap" in 4.45 on top of the "Relative Cap" in 4.44). These are in addition to already-strange eligibility rules, in which a bidder has two separate eligibility levels for the different time-slices. Our big concern is that such rules have never been used in any serious real-world auction (previous CCAs had much simpler activity rules), so their impact or risk of unintended consequences is quite unknown. Bidders may struggle enormously to cope with (and explain to their management teams) the implications of Figure 6 (copied below):



These new rules seem to be motivated by novel academic research which has not yet been formally published or peer reviewed. (See Activity Rules for the Combinatorial Clock Auction. Lawrence M. Ausubel and Peter Cramton, November 2011). Further, since the research does not consider multiple time slices or eligibility levels, and the proposals have not been adopted in their entirety by ComReg, we are unsure whether the theory even applies properly.

Bid teams cannot be expected to have understood all this recent theory, let alone to form an opinion on whether or how it applies. There is a serious risk that bidders will tie themselves in knots with unwanted constraints, and become unable to express their preferences properly, leading to an outcome which is very inefficient. "Inefficient" not just in the economic sense, but with socially undesirable outcomes e.g. an operator covering rural regions may lose spectrum for two years, have to leave the market and then re-enter; or there may be two full reshuffles and re-tunes of spectrum two years apart. Alternatively, bidders may just adopt a very conservative "canned" strategy (bid to maximize profit under pre-assigned values), so defeating the "price discovery" purpose of the primary rounds.

As a final comment, we note that part of the motivation of the new rules is to make the CCA more like an SMRA. The "Relaxed Primary Bids" give some of the flexibility of a % activity rule typically used in SMRAs, and the "Final Round Cap" ensures that if supply exactly matches demand in the final primary round, then that final round split of spectrum is the auction outcome. If ComReg really want to reproduce the results of an SMRA, then they could do so by just running an SMRA, as many other countries in Europe have done recently.

Vodafone notes that the following adjustments have been made to the bidding rules. Vodafone would ask ComReg to confirm that the rationale for the changes is understood by Vodafone in the following comments.

Primary Rounds

- The very first round will be run on paper, as part of the application process. So the primary rounds actually start with the second round (sort of), and they might not be run at all if not needed. If they are run, then the prices have to be announced, as they won't just be reserve price. Presumably this is to avoid the situation where the bidders must bid electronically at the reserve price more than once?
- There are new options for "Relaxed Primary Bids" which in some cases *exceed* the number of eligibility points that a bidder has in a given primary round. The purpose of this seems (roughly) to retain the sort of flexibility you have with a % activity rule in an SMRA, and allow you to bid for a slightly larger package again after having bid for a smaller one. Can ComReg confirm?
- When making a "Relaxed Primary Bid" the bidder is sometimes deemed to have *already* made a Supplementary Bid, what ComReg call a "Binding Supplementary Bid". Can ComReg confirm?
- The bidder has two levels of eligibility anyway, corresponding to the two time-slices, and eligibility points are not transferable between the slices. So a bid may be relaxed with respect to one time-slice but not another. Can ComReg confirm?
- In addition, the variable deposit rules have returned in this iteration. ComReg reserve the right to ask any bidder to increase its deposit up to the level of its highest bid (presumably including one of its "Binding Supplementary Bids") and with three days notice. They can suspend the primary rounds while a bidder is doing that. Can ComReg clarify please?

Supplementary Round

- As well as the "Relative Cap" ComReg are proposing a new "Final Cap" in which the final primary round package binds **all other** packages (whereas in the relative cap, the final round package only binds packages that are the same size or smaller). Can ComReg confirm?
- It would appear that a bidder also has the option to increase some of their "Binding Supplementary Bids" that they probably didn't realize they were making in the first place. Can ComReg confirm that such a scenario is possible under the auction rules?
- There appears to be added complexities if the final primary round bid was itself a "Relaxed" bid in one or both time-slices. In that case, **all** packages will have some sort of cap in the supplementary round, and a bidder will be left struggling to work out which one to raise first (without triggering a validation error). Can ComReg clarify please?

In light of the above, adequate time is needed to practice with the auction software. We strongly urge ComReg to follow Ofcom practice here, and schedule at least one mock auction session **well** in advance of the actual auction. In fact, the best time would be **before** the final Information Memorandum is published, since if there are any problems or difficulties arising out of the mock auction, then this will give ComReg a chance to address them, before setting everything in stone.

5. Vodafone supplementary response (received 12 March 2012)



Vodafone Supplementary Response to the ComReg Consultation on the Multi-Band Spectrum Release Draft Information Memorandum

Introduction

In Vodafone's previous response to ComReg's consultation on the Multi-band Spectrum Release Draft Information Memorandum (ComReg document 11/75) we reserved the right to submit further comments on ComReg's proposals as appropriate. Following further detailed review, this supplementary response contains a number of observations and requests for clarification on the auction rules currently proposed for the auction of the 800MHz, 900MHz and 1800MHz spectrum in the Draft Information Memorandum.

Given the time sensitive nature of many of these comments, and their relevance to an efficient operation of the proposed spectrum award process, Vodafone urges ComReg to address these at the earliest practicable opportunity, and in any event not later than the time of publication of its Final Licence Information Memorandum.

Comments

1. Apparent error in the wording of the price cap rules

Paragraph 4.146 of ComReg document 11/75 states:

"Supplementary Bids for all packages whose eligibility exceeds that of Final Primary Package are subject to a Relative Cap."

We believe that this wording does not capture the intended price cap if the final round bid was a Relaxed Primary Bid. For instance consider paragraph 4.167; there you expect that package X_{k-1} will be subject to a Relative Cap. But the eligibility of X_{k-1} may not exceed that of the Final Primary Package; it is smaller in at least one time slice (because the Final Primary Package was a Relaxed Primary Bid), and it may be smaller in both time slices. In that case, X_{k-1} will not be subject to a Relative Price Cap according to the current wording of paragraph 4.146.

Accordingly Vodafone believes that 4.146 should be worded differently to reflect what we believe is the intended meaning as follows:

"Supplementary Bids for all packages whose eligibility exceeds the bidder's eligibility at the end of the final primary round are subject to a Relative Cap."

2. Additional Lots for Sale can lead to lower value outcome

We note a surprising property of the auction design, which arises because of the opportunity for incumbent operators to bid to liberalise existing holdings. We illustrate with a greatly simplified example, considering only one spectrum band and one time slice.

Suppose that three bids are received: Meteor bids 20 for one liberalised lot; Andrew bids 60 for 2 generic lots; Ben bids 50 for 2 generic lots (Generic lots are the ones that anyone can bid on.)

First, suppose that only two generic lots were available. The winning bids are those from Andrew and Meteor. This Notional Release Scenario (NRS) is feasible – when Meteor’s lot is added to the available supply Meteor is indeed one of the winners. The total value of the winning bids is $20 + 60 = 80$.

But suppose instead that three generic lots were available. Then, in the NRS in which Meteor’s lot is added to the available supply, the winners would be Andrew and Ben, not Meteor – so this NRS is not feasible. As a result, the only winner is Andrew, with a value of 60. Although more lots were available for sale we end up with a lower value outcome.

Can ComReg confirm if it was previously aware of this feature of the auction design, which has the potential to lead to what could be regarded as counter-intuitive and unsatisfactory outcomes from the perspective of total amount of spectrum awarded and total revenue raised from the auction process?

3. Adding Liberalised Lots To The Spectrum Supply When Calculating Opportunity Costs

This observation is closely related to the preceding one. There appears to be a subtle difference between the way that prices are determined between the August 2011 consultation (ComReg document 11/58) and the November 2011 consultation (ComReg document 11/75). The change is to the way that the minimum total price is computed for each subset of winning bidders.

Section 10.3.2, paragraph 375(c), of ComReg document 11/58 states:

“The supply of lots available for award is incremented by the lots released by bidders C in the winning scenario. This ensures that the opportunity cost of existing spectrum holdings liberalised is defined by the counterfactual that the existing licensee releases spectrum and does not win it back;”

In other words, this clause is included to make sure that bidders winning liberalised lots pay enough to justify them. But there appears to be no equivalent statement in ComReg document 11/75; in these new rules the supply of lots is apparently not increased by the number of liberalised lots when computing the opportunity cost for a subset of winning bidders. At least, there is no text explicitly saying that it is.

This apparent change has been introduced without comment. Vodafone can only speculate that a possible reason for making the change would relate to the property identified in point 2. Let us consider a simplified opportunity cost example, based on the example from point 2.

Suppose that two generic lots are available and that four bids are received. Vodafone bids 100 for one liberalised lot; Meteor bids 20 for one liberalised lot; Andrew bids 60 for 2 generic lots; Ben bids 50 for 2 generic lots. The winning bids are those from Andrew, Vodafone and Meteor (and this NRS is feasible – when the two liberalised lots are added to the available supply, Vodafone and Meteor are indeed amongst the winners). The total value of the winning bids is $100 + 20 + 60 = 180$.

Now consider the opportunity cost for Vodafone. Under the old ComReg 11/58 rules, we add Vodafone's lot to the pool of spectrum before determining who would have won if Vodafone's bids were excluded. So there are three generic lots in the pool in this counterfactual auction; and as explained under point 2, only Andrew would have won, with a winning value of 60. So Vodafone's opportunity cost / Vickrey price ($100 - 180 + 60 = -20$) is negative.

Under the apparent new auction rules set out in ComReg document 11/75, Vodafone's lot is not added to the pool in the counterfactual auction. There are two generic lots in the pool, and as explained under point 2, Meteor and Andrew would have won, with a total winning value of 80. So now Vodafone's opportunity cost / Vickrey price is $100 - 180 + 80 = 0$.

Can ComReg explicitly confirm that, under the new rules, the supply of generic lots is not increased by the number of liberalised lots when computing the opportunity cost for a subset of winning bidders? If so, is the reason for this change as we have described – to avoid the possibility of negative opportunity costs?

4. Algorithms for Winner and Price Determination

The winner determination algorithm described in the auction rules works, briefly, as follows:

- For each NRS (up to 192 of them)
 - Determine the highest-value combination(s) of bids (ignoring bids from incumbents that aren't compatible with the NRS)
 - Check whether any of these combinations are compatible with the NRS. If at least one is compatible, then the NRS is feasible, and the compatible combinations are candidate winning combinations.
- Across all NRSs, find the candidate winning combination with the highest total value of bids (or if there's a tie, choose randomly from amongst them).

We don't know, of course, whether ComReg's software design follows this structure, but we note that the following equivalent algorithm is in general much faster. We mention this in case it is useful to ComReg and we are not asking for any information or action on this specific issue.

- Determine the highest-value combination(s) from *all* bids – call them potential winning combinations, and let the total value of bids be V
- For each potential winning combination:
 - Determine the NRS associated with that combination
 - Check whether the NRS is feasible (i.e. find out the highest total value combination if the liberalised spectrum is added to the available spectrum, and only NRS-compatible bids are included; if this highest total value is greater than V , the NRS is not feasible)
- If any potential winning combination comes from a feasible NRS, then it is the overall winner (or if there's a tie, choose randomly)
- If none of the potential winning combinations comes from a feasible NRS then go back to the start and try again, but excluding all the NRSs that have been checked (If we have to go through this loop multiple times before finding a winner, we keep adding more NRSs to the list of excluded ones).

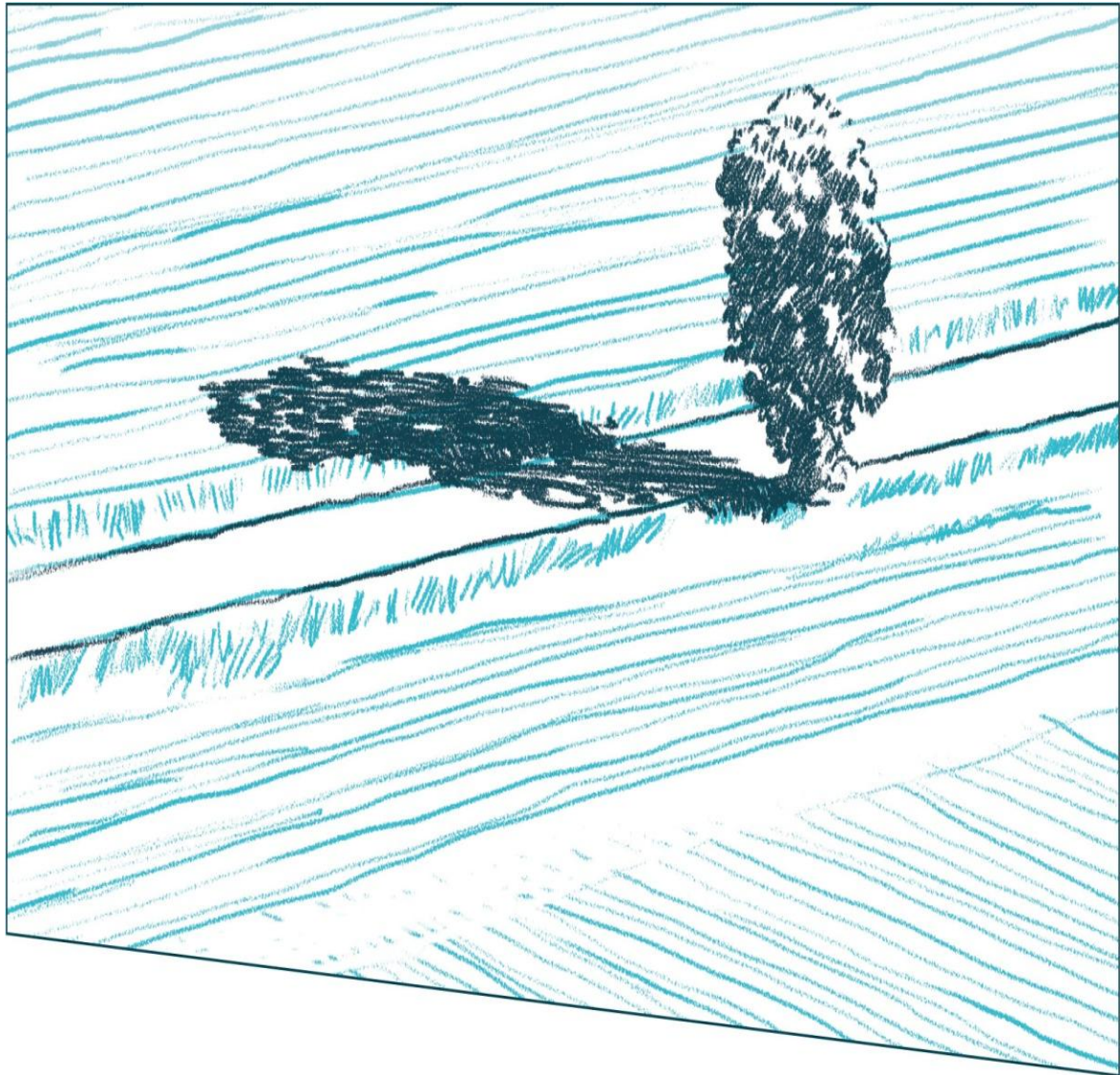
The same approach can be used not just for the actual winner determination, but for each of the “what if only a subset of bidders are considered” calculations that are used to determine the lower bound on the price paid by a subset of winners.

5. BIDDER INTERFACE FOR SUPPLEMENTARY BID ENTRY

When a bidder tries to enter a set of supplementary bid values, one or more caps may be violated. Somehow the bidding software will tell the bidder that her set of bids is not allowed, and (we hope) it will give the bidder some indication of what caps are violated and how the bids could be adjusted to make the set of bids permissible. Vodafone believes that it is important that prospective spectrum auction participants understand what this will look like to the bidder as far in advance of the date of the award process as possible. This would maximise the scope for prospective bidders to prepare effectively.

Can ComReg now confirm what the bidder interface will look like for supplementary bid entry and validation? In particular, can ComReg specify what information will be presented to a bidder if she enters a set of bid values that violate one or more caps? If this design work has not yet been done, when does ComReg anticipate that it will be completed? Can ComReg publish a description of this, or make an early version of the software available, without delay?

6. Telefónica response (received 28 November 2011)



**Multi-band Spectrum Release
Comments on Document 11/75, Draft
Information Memorandum**

Telefonica

Table of Contents

- 1. Introduction**
- 2. Executive Summary**
- 3. Licence and Sale Terms**
- 4. Auction Mechanism and Conduct**
- 5. Other Comments**

1 Introduction

- 1.1. This document is submitted on behalf of Telefonica Ireland Limited (Telefonica). It provides Telefonica's comments on ComReg document 11/75 which is a Draft Information Memorandum for ComReg's proposed multi-band spectrum auction. We (Telefonica) warmly welcome the publication of this document. Several consultations and proposals have been published on this issue during the last three years; however the Draft Information Memorandum (DIM) is the first time that we have been given a detailed document setting out ComReg's proposal for the licence terms, details of the award process including relative timings, and also the full mechanics of the proposed auction. This has been very helpful for us and has given us an opportunity for the first time to understand and comment on the detail of ComReg's proposal.
- 1.2. The publication of this DIM marks a degree of progress within the consultation process, as ComReg has developed a view on the terms of licences and on the method for assignment. It also gives us the opportunity to highlight the aspects of the proposal where modifications are needed or conflicts arise. We have done so in the remainder of this document and have highlighted a number of concerns and issues that need to be addressed. Some of these are refinements of general points already made by Telefonica during the previous consultations, and some are new based on information made available for the first time in this DIM.
- 1.3. We recently submitted a response to ComReg's Draft Decision (11/60), and as this DIM has been published shortly thereafter we know that ComReg did not have an opportunity to take those comments into account before this document was published (ComReg stated so in document 11/75). We can accept that ComReg's intention was to progress towards a conclusion and auction/assignment as quickly as possible, however we fully expect that all of our comments will be fully taken into account before any final decision is taken. On this basis, we have decided to "spare you the repetition" by not repeating many of the concerns and comments contained in that earlier response document, except to the extent necessary to explain a point in this document. Naturally, we fully reserve our right to revisit these issues in future if we find that ComReg has not given proper consideration to them.
- 1.4. We would acknowledge that ComReg and its advisors have put considerable work into devising an auction mechanism that can solve multiple different requirements. In this document we have seen for the first time that novel activity rules are proposed to be included in ComReg's auction, and it is the first proposed implementation of these rules that we are aware of. While we believe we know the issues that ComReg is attempting to address with these new rules, and support ComReg in trying to do so, unfortunately this has meant the introduction of un-tested rules into what is already an overly complicated auction. We believe the auction is already too complicated to be readily understood, and that this might lead to

erroneous outcomes. From our initial examination of the rules, we believe there to be a flaw in the auction mechanism which will certainly require a modification. We will explain the issue later in this document, however we will have to reserve our right to make further comment on this point upon more careful examination.

- 1.5. There remains a considerable amount of work to be done in order to assign the spectrum now under consideration. Telefonica is currently operating on an Interim Licence that is set to expire in January 2013 at the latest, and we are concerned that already all signs are that the assignment process will not have concluded in time for us to make whatever modifications are necessary by that time. We want ComReg to proceed to a decision as quickly as is possible taking due account of the multiplicity of different considerations in this process, however it is clear now that the structuring of licences into time-slices and associated dates is no longer practical, and that this must be reviewed.
- 1.6. In the proposed auction it is anticipated that existing and/or new operators will pay extremely high fees, and in return they will expect to have bought something for that fee, albeit it might be an intangible item like the rights of use certain spectrum. There are many uncertainties and restrictions that can be placed on this right of use that would introduce risk and otherwise undermine its value. There are many aspects within the DIM that have the effect to make it impossible to state exactly what rights will have been bought at the end of the proposed auction. It certainly seems that ComReg has significant work to do yet in order to clarify exactly what is being sold, and to eliminate uncertainties and risks that undermine bidders ability to value licences or even to know with confidence what they are being asked to buy.
- 1.7. ComReg is aware that anyone who wishes to operate a mobile network in this country must obtain access to the appropriate spectrum in order to do so, whether this is to continue existing services or to roll-out new ones. ComReg, being the only source of this spectrum on behalf of the State has specific objectives that govern how this spectrum is provided to operators – there is no need to repeat them here, however included in these objectives is a requirement to behave reasonably. There are a number of aspects of the proposal outlined in the DIM where ComReg is unfairly requiring bidders to waive rights in return for entry to the auction. This is inappropriate use of ComReg's unique position as sole spectrum licensor in order to force bidders to relinquish rights where they would not otherwise do so.
- 1.8. As stated above, we welcome the opportunity to comment the DIM in this document. The comments are largely divided into three general topic areas; i) the terms under which licences are being sold; ii) the proposed auction; and finally iii) other more general comments. We look forward to engaging further with ComReg on this and offer to meet with ComReg to discuss any aspect of this document, our other documents, or any aspect of the proposed licence assignment.

- 1.9. Telefonica repeats its general reservation of rights, as set out in detail in previous submissions, in particular section 5 of its response to document 10/71, and paragraph 1.21 of the response to 11/60. In particular, given the complexity of ComReg's proposed auction mechanism, and the novel activity rules, Telefonica must fully reserve its position with regard to the limited amount of time that has been allowed for consideration and comment on the document. We reserve the right to supplement this response with further comments.

2. Executive Summary

- 2.1. In an extremely challenging investment environment, ComReg proposes to hold an auction that will require bidders to commit to pay extremely large amounts of money at auction. It is unclear what the successful bidders will have obtained at the end of this process as there are significant uncertainties as to what rights are to be granted. This uncertainty and risk serves to undermine bidders' ability to value clearly the licences, possibly leading to an inefficient auction outcome, reduced bidding, less lots being sold, and reduced auction revenue. As the sole source of spectrum in the State, ComReg has an obligation to make the spectrum available on clear and fair terms.

- 2.2. We welcome ComReg's provision of a schedule showing the sequence of events and expected timetable from when the final decision is made. The DIM has also provided clarity on several aspects of the award process and detailed auction rules for the first time. Having reviewed these we have a number of items that will require modification before the final rules are decided upon by ComReg as described below. The most significant issue stems from the complexity created by having multiple bands, different time-slices, and party specific lots, all with different requirements to be solved through the auction mechanism. Unfortunately, the integration of these elements appears to have introduced a flaw in the winner and price determination, which threatens to undermine incentives for straightforward bidding, could lead to liberalisation options being rejected unfairly, and may even result in there being no solution to the price determination. Fortunately, such flaws and general concerns about complexity could easily be eliminated if ComReg reverted to a single time slice approach and addressed the liberalisation issue outside the auction mechanism.

Licence and Sale Terms

Spectrum Availability

- 2.3. There remains significant risk regarding the availability of 800MHz, which is contingent on analogue TV switch-off. The availability of 900MHz is a growing concern also, as network reconfiguration will be required post-auction, and the time available already seems inadequate. ComReg's proposed compensation measures are inadequate as they do not reflect the loss to a bidder who chose a particular band in good faith and planned network and service availability accordingly. Additionally, within the auction, they may have foregone an alternative option but subsequently find that their market position is detrimentally effected. Telefonica believes it is an unfair term contrary to ComReg's obligations that in entering the auction, bidders agree to limit any compensatory claim or liability of ComReg to a limited refund of spectrum fees.

Non-Exclusivity

- 2.4. Nowhere in the Information Memorandum does ComReg state exactly what rights are to be granted following the auction. The licences themselves are said to be “non-exclusive” which suggests that ComReg may grant licenses for other users operate on the same spectrum or permit them to operate without a licence. Unless ComReg can provide clarity, this statement makes it impossible for a bidder to define what rights are to be sold in the auction.

Annual Renewal

- 2.5. Following the auction, a successful bidder must apply to obtain a licence, which may be granted for one year, following which they must again apply for an annual renewal. No guarantee whatsoever is given that such renewal will be granted or granted on time. The process should be reversed so that winning bidders are guaranteed to be granted an initial licence and renewal for the duration of their licence term (e.g. to 2030) unless the licence is withdrawn or fees are unpaid.

Spectrum Hoarding

- 2.6. ComReg has created significant uncertainty by building in a requirement to comply with a future requirement that is as yet undefined, but could potentially require the surrender of spectrum. Regulation 17(10) of the Framework Regulations provides no clarity on the matter. Telefonica would need to reserve its position on this point unless clarification can be provided.

Spectrum Trading

- 2.7. ComReg has moved in the right direction by accepting that the transfer, assignment, or trading of licences “will be permitted”¹. This position, however, is immediately undermined by the qualification that it will be subject to rules and regulations that are as yet unknown. Again, this is an uncertainty that undermines the licence valuations, and one that ComReg can eliminate. The rules or restrictions that will apply to spectrum trading should be provided by ComReg together with the final Information Memorandum.

Spectrum Pooling / Sharing

- 2.8. Again this is a case where ComReg has accepted that there are benefits, and that pooling or

¹ Paragraph 2.43

sharing of spectrum should be permitted, however the DIM introduces uncertainty in relation to whether, how, or under what conditions it would be permitted (Paragraph 2.93). ComReg needs to confirm for example that (subject to competition law) the licence will allow licensee A to have their apparatus transmit on the spectrum assigned to operator B without a requirement for any kind of prior permission.

Fees and Refunds

- 2.9. There is an inconsistency in ComReg's approach to refunds when compared to the treatment of upfront and annual fees. In the former, ComReg propose that there be no interest, inflation or time-based adjustment of the amount of a refund. In fact rather than pay refunds directly, in some cases ComReg propose to apply credit against future licence fees. This is in stark contrast to the proposed imposition all of the above on payments to be made by licensees.

End of Licence

- 2.10. We have already explained the existence of the investment gap that naturally emerges where the end of term for a licence approaches. Telefonica's view is that the optimum means to remove this gap is to issue indefinite licences; however, at a minimum the regulations should provide that the re-assignment process will be completed at least five years before the end of the licence term.

Auction Mechanism and Conduct

Incentive to Liberalise and Efficiency

- 2.11. The current proposal does not provide a sufficient incentive to liberalise existing GSM licences. Taking as an example the 900MHz band, if Meteor decides not to liberalise its GSM licence in Time Slice 1, this will mean that more than half of one lot must remain unusable until 2015. There is an inherent and significant inefficiency in this scenario, particularly as there are only five category 3 (900/1) lots available in the auction, and this could influence bidder behaviour. ComReg must find a means to liberalise or recover this impaired block prior to the auction.

Bidder Exclusion

- 2.12. Where a bidder is excluded from the auction when bids have already been made, it would be fundamentally wrong to continue without removing their bids. This would cause the winner

and price determination process to deliver the wrong result, and would undermine the whole auction process.

Licence Gap

- 2.13. We have addressed the problem created by the six-month licence gap in response to 11/60. It remains to be resolved.

Forced Participation in the Assignment Stage

- 2.14. The DIM proposes that all licensees will be entered in the Assignment Stage, even in circumstances where they have chosen not to modify their existing licenses. We can understand that, in the interest of orderly and efficient post-auction assignments, it might be necessary for existing networks to undertake re-tuning. However it must be recognised that this might take some time, and impose cost upon an existing licensee. In such circumstances, the licensee must be appropriately compensated. The current proposal is not adequate in all circumstances (see response to 11/60), and ComReg must amend the proposal. ComReg has an obligation to act reasonably, proportionately, and in a manner that causes least disruption to licensees.

Minimum Price Might Prevent Liberalisation

- 2.15. Throughout the numerous responses to consultation leading to this current DIM, we have highlighted the view that ComReg has set an excessive Minimum Price (most recently in response to 11/60). Without repeating here, we believe the current proposed minimum prices could serve to prevent operators from liberalising existing GSM licences.

Transparency

- 2.16. Unlike other examples of where the CCA has been run, ComReg proposes to withhold the identity of bidders at the application stage. This means that applicants cannot conduct the self-checks necessary to ensure that they have no association with another applicant – it will fall entirely on ComReg to do this. We also understand that the application will in fact count as the first round in the main stage of the auction; however ComReg does not propose to notify bidders of the level of demand. This introduces an information gap regarding the first round that inhibits bidders consideration of subsequent bids. ComReg should notify all applicants of the identity of applicants, and the aggregate demand in each band before the

Main Stage bidding rounds begin.

Contact Between Bidders

- 2.17. The current proposal would see the “Award Process” start on the day the final Information Memorandum is published, and without any delay the process would run for up to 4 months according to the timetable provided in paragraph 3.10. We are concerned that there will be delay between final publication of rules and the start of the auction (e.g. with a legal challenge). This would leave the operators bound by these severe rules for a considerable period. In extreme cases, this could create a situation where the auction was subject a significant and undefined delay, but during that period it would be unclear whether operators could enter into discussions on subjects that are not directly related to the auction. We suggest that the rules on contacts only apply for a defined period before applications are submitted (e.g. 4 weeks), rather than from the date the final Rules are published.

Novel Activity Rules

- 2.18. ComReg has introduced new rules that would allow bidders to make “relaxed primary bids” and as a consequence “binding supplementary bids”. While we believe we understand the reason for introducing these new activity rules, we are not aware of such rules being tested or used elsewhere. ComReg’s auction is already very complex and difficult to “digest”. Given the relatively short period of consultation which we have had to evaluate the impact of these changes, we must reserve our right to comment further on this matter in subsequent documents.

Deposit Rule and “Walk-Away”

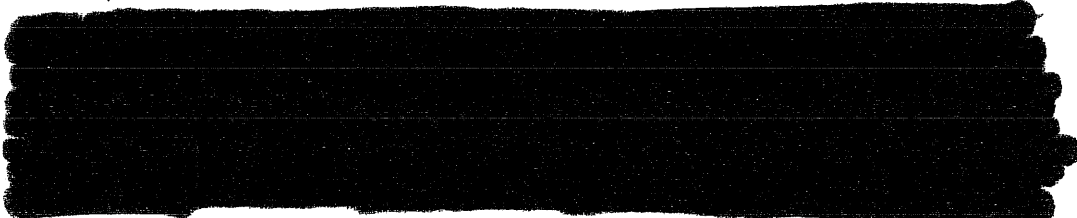
- 2.19. We note that ComReg has introduced an option for a further deposit call during the auction. We recognise that this could be used to significantly reduce the likelihood of bidder “walk away”, a concern that has been highlighted by Telefonica in several previous response documents, including 11/60. This is a welcome proposal, and we suggest that ComReg can provide greater clarity by pre-defining the thresholds at which this deposit call will be made. We recommend as a minimum, that there is a deposit review point at the conclusion of the main stage, and before the commencement of the supplementary round. Deposit calls should be triggered in the event that any bidder’s highest bid exceeds 200% of their deposit, and bidders should be prevented from placing any bid in the supplementary round which in aggregate exceeds 200% of their standing deposit.

Unnecessary Complexity

2.20. While ComReg has set-out to solve many different problems in the auction mechanism, this has had the effect of increasing the complexity of what was not a simple mechanism to begin with. Bidders need to be fluent and confident in the auction rules and their implications; however, this is in serious doubt under the current proposal. This could lead to asymmetries between bidders and their ability to logically pursue their objectives in the auction, leading to an inefficient outcome.

Flaw in auction rules

2.21. We have identified a potential flaw in the winner and price determination mechanism, linked to the complex rules for determining whether party-specific lots may be liberalised and at what



Obviously the auction cannot proceed until these flaws have been eliminated.

The 2.6 GHz Band

2.22. We note that ComReg has issued a separate parallel consultation on the 2.6GHz band (document 11/80). We will respond separately to this consultation, however would briefly note that ComReg's own consultants have recommended that the spectrum in the 2.6GHz band should be auctioned. The 1800MHz and 2.6GHz bands contain substitutable spectrum, and current MMDS licences all expire in 2014 at the latest, while 1800MHz licences expire at end 2014 or mid 2015. In these circumstances, the logical course of action would be to auction both the 2.6GHz and 1800MHz bands together.

Telefonica Proposal

2.23. ComReg needs to amend the proposed auction mechanism in a manner that reduces its complexity; allows substitutable spectrum to be auctioned together (1.8 GHz and 2.6 GHz); and eliminates errors. In order to do this, we recommend that ComReg separates the issue of liberalisation from that of long term spectrum assignment; eliminate the two-time-slice approach; and eliminate the party specific lots from the auction. In addition, ComReg needs

to recognise that the uncertainty regarding the availability of 800MHz remains, while at the same time it now seems very unlikely that the assignments can be made on time for an orderly rearrangement of the 900MHz and 1800MHz bands by January 2013.

- 2.24. We appreciate that there may be more than one means to achieve the above; however we believe the options presented in our response to 11/60 remain valid. These options all provide for the elimination of time-slicing; party-specific lots; liberalisation within the auction; and the inadequacy of post-auction time.

3. Licence and Sale Terms

- 3.1. In an extremely challenging investment environment, ComReg proposes to hold an auction that will require bidders to commit to pay large amounts of money at auction. It is extremely unclear what the successful bidders will have obtained at the end of this process as there are significant uncertainties as to what rights are to be granted. This uncertainty and risk serves to undermine bidders' ability to clearly value the licences possibly leading to an incorrect auction outcome, reduced bidding, less lots being sold, and reduced auction revenue. As the sole source of spectrum in the State, ComReg has an obligation to make the spectrum available on clear and fair terms. A number of aspects of the proposal must be changed to remedy these shortcomings.

Spectrum Availability

- 3.2. This point has been raised by Telefonica to ComReg in several previous consultation responses, including 11/60. Without repeating, ComReg simply must ensure that the spectrum to which it is about to sell access will be available on the promised date. There is an ongoing risk associated with analogue switch-off for the 800MHz band, and the delayed completion of the auction process means there is growing uncertainty around the 900MHz band. The risk associated with 800MHz availability in particular will distort valuations and bidding behaviour. It will likely bias valuations in favour of other bands, thereby distorting competition and undermining the auction process. It is simply not good enough for ComReg to state that "ASO is expected to be completed in advance of Time Slice 1".
- 3.3. We do not believe that ComReg's proposal that licensees should be compensated is an adequate solution to this problem. ComReg must do what is necessary, and ensure the availability of what it is selling. ComReg's proposed compensation in the event of delayed availability fails to recognise that an operator who would choose a particular band in good faith would suffer losses that are significantly greater than the fee refunds proposed by ComReg in the event that the spectrum was not available on the due date. ComReg proposes that in entering the auction, bidders agree to limit any compensatory claim or liability of ComReg to a limited refund of spectrum fees. Telefonica believes this to be an unfair term and would need to reserve its rights in this regard.

Non-Exclusivity

- 3.4. Nowhere in the Information Memorandum does ComReg state exactly what rights are to be granted following the auction. The licences themselves are said to be "non-exclusive" which suggests that ComReg may either grant licenses for other users to operate on the same

spectrum or permit them to operate without a licence. For example, we would ask ComReg to clarify whether it would be possible that other licenses could be issued for operation in a geographical area where the licensee does not have a service at any particular point in time. This is a significant limitation to the licence, one which cannot be easily quantified, and one which is specified in no other mobile licence issued by ComReg to date. Neither is Telefonica aware of such a condition being included in any other licence for mobile services issued in Europe. Unless ComReg can provide clarity, this statement makes it impossible for a bidder to define what rights are to be sold in the auction. If ComReg's intention is that the licences will be exclusive within certain boundaries, then this needs to be clearly stated, with the boundaries defined.

Annual Renewal

- 3.5. Following the auction, a successful bidder must apply to obtain a licence, which may be granted for one year, following which they must again apply for an annual renewal. No guarantee whatsoever is given that such renewal will be granted or granted on time. The process should be reversed so that winning bidders are guaranteed to be granted an initial licence and renewal for the duration of their licence term (e.g. to 2030) unless the licence is withdrawn or fees are unpaid. Licensees will have paid substantial up-front fees in the expectation that they would be entitled to a licence for a defined minimum period in return. It would seem impossible to justify such upfront payment if an annual renewal is required, which may be granted or not at ComReg's discretion.
- 3.6. In paragraph 2.30 (and draft Regulation 10), ComReg specifically states that "the granting or renewal of an annual Licence by ComReg shall not be construed as warranting, representing or otherwise holding out that the Licence will necessarily be renewed at any time in the future, or renewed for any particular period or on any particular terms, in the normal course ComReg expects it will grant an annual renewal on each 13 July anniversary". Surely it is plain that this is not good enough. Bidders simply must know that if they buy lots in the auction, then they will have the right to a licence for the relevant duration, subject to whatever conditions as are required. We note that the Preparatory Licence does not require annual renewal and see no reason why the same can't apply to the operational licence, with a requirement to pay the annual fee.

Spectrum Hoarding

- 3.7. ComReg has created significant uncertainty by building in a requirement to comply with a future requirement that is as yet undefined, but could potentially require the surrender of spectrum. Regulation 17(10) of the Framework Regulations provides no clarity on the matter.

Telefonica would need to reserve its position on this point unless clarification can be provided. ComReg must clarify any future obligations it intends to impose on operators and to consult fully on such future requirements/obligations in order to promote regulatory certainty and predictability for the industry - it is essential that operators are afforded an opportunity to be adequately appraised in advance of future obligations to which they will be obliged to comply with.

Spectrum Trading

- 3.8. We acknowledge that ComReg has moved in the right direction by accepting that the transfer, assignment, or trading of licences “will be permitted”². This position however is immediately undermined by the qualification that it will be subject to rules and regulations that are as yet unknown. Again, this is an uncertainty that undermines the licence valuations, and one that ComReg can eliminate. The rules or restrictions that will apply to spectrum trading should be provided by ComReg together with the final Information Memorandum.

Spectrum Pooling / Sharing

- 3.9. Again this is a case where ComReg has accepted that there are benefits, and that pooling or sharing of spectrum should be permitted, however the DIM introduces uncertainty in relation to whether, how, or under what conditions it would be permitted (Paragraph 2.93). ComReg needs to confirm for example that (subject to competition law) the licence will allow licensee A to have their apparatus transmit on the spectrum assigned to operator B without a requirement for any kind of prior permission.

Fees and Refunds

- 3.10. There is an inconsistency in ComReg’s approach to refunds when compared to the treatment of upfront and annual fees. In the former, ComReg propose to apply no interest, inflation or time-based adjustment of the amount of a refund. In fact rather than pay refunds directly, in some cases ComReg propose to apply credit against future licence fees. This is in stark contrast to the proposed imposition all of the above on payments to be made by licensees. The contrasting positions are inconsistent and unfair and demonstrate a significant disregard for the impact of licence fees on operators’ financial requirements. The contrast in treatment is clearly evident by comparison of paragraphs 2.73 and 2.78 of the DIM.

- 3.11. We note that ComReg proposes to link the spectrum fee to CPI, and have already stated at

² Paragraph 2.43

length why we disagree with ComReg's approach here. Further, in document 11/75 ComReg state that this will apply from the date of the final decision to hold the auction. This ignores the fact that operator valuations (and ComReg's derivation of the NPV of the minimum price) would be modelled from either commencement of service, or licence grant at the earliest. There is a risk of substantial delay between the final decision and the grant of licences, e.g. in the case of legal challenge. Such delay in turn delays service commencement and it would be wrong to impose a cost on operators in this case.

- 3.12. For the avoidance of doubt, can ComReg clarify that if a licence is terminated mid-term, for whatever reason, that there will be no requirement to pay future SUFs, e.g. to 2030.

End of Licence

- 3.13. We have already explained the existence of the investment gap that naturally emerges where the end of term for a licence approaches. Telefonica's view is that the optimum means to remove this gap is to issue indefinite licences, however at a minimum the regulations should provide that the re-assignment process will be completed at least five years before the end of the licence term.

Clarity and Uncertainty

- 3.14. As a general point, we would note that there is a large number of cases where ComReg has introduced uncertainty regarding the licence terms. Each one of these is important individually, however cumulatively they have the effect to undermine a bidder's ability to assess exactly what rights will have been obtained during the proposed auction, and this in turn impacts valuations. We would highlight the following areas that serve to undermine clarity on licence terms:

- Annual renewal (emphasis on fact that licence is renewed annually, without comfort on exactly what conditions will have to meet in order to be assured of renewal)
- Non-exclusivity of licences
- Spectrum Hoarding
- Spectrum pooling ("it is not possible to guarantee that individual spectrum and pooling agreements will be permitted")
- Spectrum trading ("yet to set out its procedures...will be consulting on same in the coming months")
- Coverage Compliance programme ("shall be in such form as may be specified by ComReg")

- Quality of Service Compliance programme (“shall be in such form as may be specified”)
- General rights to amend the licence terms

3.15. In addition, we note that the DIM is structured in a very one-sided way, whereby applicants are asked to accept ComReg denying that guarantees or warranties are given in several circumstances, but they also waive several of their own rights in order to participate in the auction. This leads to an impression that ComReg wants to have full flexibility while giving little commitment, and serves to undermine bidders ability to be precise about exactly what is being sold at the proposed auction.

4. Auction Mechanism and Conduct

- 4.1. It is welcome that ComReg has provided a schedule showing the sequence of events and expected timetable from when the final decision is made. The DIM has also provided clarity on several aspects of the award process and detailed auction rules for the first time. Having reviewed these we have identified a number of items that will require modification before the final rules are decided upon by ComReg, as described below. The most significant issue stems from the complexity created by having multiple bands; different time-slices; and party specific lots, all with different requirements to be solved from the auction mechanism. Unfortunately, the integration of these elements appears to have introduced a flaw in the winner and price determination, which threatens to undermine incentives for straightforward bidding, could lead to liberalisation options being rejected unfairly, and may even result in there being no solution to the price determination. Fortunately, such flaws and general concerns about complexity could easily be eliminated if ComReg reverted to a single time slice approach and addressed the liberalisation issue outside the auction mechanism.

Incentive to Liberalise and Spectrum Efficiency

- 4.2. The current proposal does not provide a sufficient incentive to liberalise existing GSM licences, and contrary to optimum spectrum assignments, it would seem likely to produce an outcome in the 900MHz band whereby one of the 7 lots remains only partially used during the first time slice. This is significant in a band where there are only seven lots available in total, and would have a disproportionate impact on the auction dynamic. The first time-slice is disproportionately important because of the high penetration of GSM 900MHz services, and because 800MHz will be an LTE only band. There is only a relatively small number of lots available to be sold in total, and the loss of one lot from the number available for auction would have a significant impact.
- 4.3. One of the lots of 900MHz is partially occupied by Meteor's current GSM licence. If Meteor decides not to liberalise this lot, then there will be only 5 available to meet the demand (over Meteor's own demand), which could artificially increase contention during the auction, and leave unsatisfied demand at the conclusion of auction. In addition, this lot would remain under-utilised throughout Time Slice 1, when it is likely to be of greatest value. One of ComReg's primary objectives in this assignment process is to ensure the efficient use of spectrum. ComReg must find a means to liberalise or recover this impaired block prior to the auction (see our further proposal below).

Licence Gap – 1800MHz

- 4.4. We have highlighted the problem created by the six-month licence gap in response to 11/60. ComReg has not had the opportunity to respond our submission on that point yet; however it remains as fundamental shortcoming in ComReg's proposal, and must be resolved.

Bidder Exclusion

- 4.5. In the event that a bidder is excluded from the auction when bids have already been made it will be necessary to remove their bids entirely from the auction. It would be fundamentally erroneous to continue the auction without removing their bids. There might be a limited set of circumstances where the removal of a bidder does not affect progress of the auction, for example if it were to occur at the beginning of the auction, and the removal of bids meant that there remained an excess demand for all lots in all rounds up to that point. Otherwise the auction simply could not determine the correct winner and price, which is in stark contrast to ComReg's stated objectives for the auction. To continue while leaving these "ghost bids" present would also corrupt the round by round price discovery.
- 4.6. In most cases, the removal of a bidder would require the auctioneer to "step back" perhaps to the first round of the auction and to re-run each round that might have been impacted by their presence. ComReg should notify all continuing bidders immediately on exclusion of a bidder, and of the action ComReg intends to take in order to ensure their presence does not influence the auction outcome. If ComReg was to attempt to continue the auction without taking steps to cleanse the bidding record, this would likely lead to a legal challenge either during or after the process and would ultimately lead to greater overall delay.

Participation in the Assignment Stage

- 4.7. The DIM proposes that all licensees will be entered in the Assignment Stage, even in circumstances where they have chosen not to modify their existing licenses. We can understand that in the interest of orderly and efficient post-auction assignments, it might be necessary for existing networks to undertake re-tuning. However it must be recognised that the practical implementation may take some time to plan and implement. The impact on an affected operator will vary depending on the precise extent of the move. Any such forced move within a band must take due account of the impact and practical implementation considerations of such a move. It might take some time and impose cost upon an existing licensee. In this circumstance, the licensee must be appropriately compensated. The current proposal is not adequate in all circumstances (see response to 11/60), and ComReg must amend it appropriately.

Unnecessary Complexity

- 4.8. While ComReg has set-out to solve many different problems in the auction mechanism, this has had the effect of increasing the complexity of what was not a simple mechanism to begin with. There are multiple unique factors in this auction that serve to increase this complexity, including the liberalisation of existing GSM licences, existing licences that extend into the licence period for some lots, two time-slices, licensee specific categories, and multiple bands. In addition to this, ComReg has proposed some novel activity rules that are untested at this time.
- 4.9. The proposed auction rules are exceptionally complex. We appreciate that an underlying rationale for the CCA format is that complexity should fall primarily on the auction designer, and that strategy for bidders is supposed to be relatively straightforward; however, ComReg must also recognise that bidders still need to be confident that the auction rules will deliver the correct result. They must also understand and feel comfortable with the detail and implications of the rules so that they can develop their own bid strategy.
- 4.10. Unfortunately, the additional complexity introduced by ComReg's unusual lot structure and associated rule changes have taken this format to the point where comprehensibility is in serious doubt. In particular, many of the changes concern the two most complex elements of the CCA format, namely the activity rules, and the winner and price determination. To our knowledge, the rules proposed by ComReg are novel, and have never been used before, nor been subject to experimental testing – it is not even clear if ComReg has itself tested the rules internally. This puts a huge burden on bidders to interpret the implication of the rule changes for themselves.
- 4.11. More generally, the complexity of the process could introduce asymmetries between bidders. Bidders face a dilemma in deciding how much effort to invest in researching and understanding the proposed format. To a much greater extent than with a simpler auction format, real differences could emerge between bidders in terms of their ability to develop a bid strategy consistent with their objectives. This is inconsistent with ComReg's goal of promoting fair competition and efficient outcomes.
- 4.12. Though we believe we understand the rationale leading to the current proposal, ComReg does not provide sufficient rationale for its choice of rules so it is difficult for bidders to discern whether specific changes are proposed as an "enhancement" to the general format or to address issues specific to this award (such as time slicing and devising a price for liberalising spectrum). Accordingly, it is unrealistic to expect bidders to submit a fully considered judgement on these rules within the five weeks allowed for response to the DIM. We reserve the right to make further additional comment on the rules, and recommend that ComReg reconsider the complexity of the proposal. We have proposed an alternative approach below in paragraph 4.48.

- 4.13. Such complexity may still be acceptable if it were the only feasible approach to managing liberalisation, but this is not the case for this award. Most of the increase in complexity appears to stem directly from the multiple time slice and party specific lots approach. However, as we have previously argued, the benefits of having the first time slice are negligible given its short duration and the need to allow adequate time in the 900 MHz band for replanning. If ComReg switched to a single time slice, in line with any of our alternative approaches, presented below, then the category and lot structure would be greatly simplified, and it could revert to orthodox winner and price determination rules. The proposed changes to the activity rules may still be considered, and would be much easier to interpret in an auction with a simplified lot structure.

Minimum Price Might Prevent Liberalisation

- 4.14. Throughout the numerous responses to consultation leading to this current DIM, we have highlighted the view that ComReg has set an excessive Minimum Price (most recently in response to 11/60). **[Redacted]** This further embeds the inefficiency of a half-used lot in the 900MHz band described above in 4.2.

Transparency

- 4.15. Unlike other examples where CCA has been run, ComReg proposes to withhold the identity (and even the number) of bidders at the application stage. This means that applicants cannot conduct the self-checks necessary to ensure that they have no association with another applicant – it will fall entirely on ComReg to do this. We also understand that the application will in fact count as the first round in the main stage of the auction; however ComReg does not propose to notify bidders of the level of demand. This introduces an information gap regarding the first round that inhibits bidders consideration of subsequent bids.
- 4.16. We recognize that previous CCA auctions have been run with limited information revelation; however the typical approach has been to reveal the number and identity of bidders before the auction, and to reveal aggregate demand by category at the end of each primary round, but not to reveal any information about individual bids. We believe ComReg's proposal is misguided and should be revised. Not revealing bidder identities creates unnecessary complications for the qualification process and, most importantly, could jeopardise an efficient auction outcome by limiting the scope for bidders to benefit from price discovery during the auction.
- 4.17. As a general point, we are not convinced that restricting information during the primary rounds is beneficial - we think that revealing more complete information about bids in each primary

round could make it easier for bidders to refine their views on the value of lots during the auction. We understand that auctioneers often favour only revealing aggregate demand data as a way to prevent tacit collusion across bidders. Given ComReg's stated (but unsubstantiated) concern about tacit collusion, we view restrictions on transparency of bids as a much more effective and less distorting measure to tackle this issue than setting high reserve prices. Put differently, placing restrictions on round-by-round bid revelation may be an acceptable compromise between bidder's needs for price discovery and regulator concerns about tacit collusion; however, ComReg's proposal is excessively restrictive and undermines this balance.

4.18. The proposal to restrict bidder identities offers no obvious benefits not already achieved through restrictions on bid data revelation. However, it does introduce real costs:

- *Reduced scope for price discovery.* Without knowing the number and identity of bidders, it becomes much harder to interpret information about prices and aggregate demand revealed in the auction. As a result, bidders may be deprived of information they would otherwise have used to confirm or revise their valuations and bid strategy. In a common value setting, such as a spectrum auction, this makes it more likely that bidders submit mis-guided bids resulting in outcomes that are inefficient, both for bidders and ultimately for Irish society.
- *Information asymmetries between bidders.* Participation in the award by some bidders is more predictable than others. This is uniquely the case for the proposed auction where existing operators must participate in order to maintain spectrum for existing networks – everybody knows that the three existing GSM operators must participate. Bidders whose participation is uncertain may gain an advantage over those who will be predictably present, because they can more easily interpret demand data. The impact and extent of such asymmetries are difficult to predict, but their existence reduces the likelihood of a level playing field across bidders.
- *Undue burden on ComReg.* Without the list of qualified bidders, it is impossible for participants to play any role in self-policing the risk of association with other bidders. Instead, the obligation to identify associations and connections will rest with ComReg, even though it may lack access to the information needed to complete this task. Further, in the event that ComReg identified an association and contacted a subset of bidders to resolve this, those bidders would in the process gain access to information about participation not available to other bidders. This would offer them an unfair advantage with respect to interpreting price information during the auction.
- *Unreasonable restrictions on bidders.* As part of the information restrictions, ComReg has proposed that bidders be forbidden from disclosing publically their

participation in the auction. However, for an award of this importance to the industry and national economy, it is simply untenable to expect bidders to hide their involvement in an event of public interest. While we support measures to prevent bidders disclosing information germane to their bid strategy, this restriction is a step too far. For some bidders, this restriction may even be inconsistent with their stakeholder disclosure obligations. Telefonica, for example, might be required to reveal its participation in the auction under stock-exchange rules.

- 4.19. ComReg should notify all applicants of the identity of applicants, and the aggregate demand in each band before the Main Stage bidding rounds begin. At a minimum, ComReg should follow the established approach of revealing bidder identities, as practiced in similar CCA auctions such as those in Denmark and the UK.

Contact Between Bidders

- 4.20. The current proposal would see the “Award Process” start on the day the final Information Memorandum is published, and without any delay the process would run for up to 4 months according to the timetable provided in paragraph 3.10. We are concerned that there will be delay between final publication of rules and the start of the auction (e.g. with a legal challenge). This would leave the operators bound by these severe rules for a considerable period. In extreme cases, this could create a situation where the auction was subject a significant and undefined delay, but during that period it would be unclear whether operators could enter into discussions on subjects that are not directly related to the auction. We suggest that the rules on contacts only apply for a defined period before applications are submitted (e.g. 4 weeks), rather than from the date the final Rules are published. ComReg must also accept that normal day-to-day business contact between bidders must continue throughout the auction process, so long as it does not compromise the auction process.

Deposit Rule and “Walk-Away”

- 4.21. We note that ComReg has introduced an option for a further deposit call during the auction. We recognise that this could be used to significantly reduce the likelihood of bidder “walk away”, a concern that has been highlighted by Telefonica in several previous response documents, including 11/60. This is a welcome proposal, and we suggest that ComReg can provide greater clarity by pre-defining the thresholds at which this deposit call will be made. We recommend as a minimum, that there is a deposit review point at the conclusion of the main stage, before the commencement of the supplementary round

- 4.22. Deposits throughout the auction for each bidder should be sufficiently high to ensure an adequate penalty for default. Deposit calls should be triggered in the event that any bidder's highest bid exceeds 200% of their deposit, and bidders should be prevented from placing any bid in the supplementary round which in aggregate exceeds 200% of their standing deposit. We understand that this might delay progress of the auction somewhat, and believe that bidders should be given a reasonable time within which to deliver their deposits. If the trigger points are defined in advance, then bidders will know their selves as the auction progresses whether they are approaching a trigger and can be prepared.
- 4.23. In the event that a bidder fails to make a deposit call they should be excluded from the auction and all their bids made void. ComReg should then follow the procedure for bidder exclusion, see our comments in paragraph 4.5 above.

Novel Activity Rules

- 4.24. In our response to document 11/60, we gave support to the use of a 'relative price activity rule', as used in the Danish 2.6GHz auction, for this auction. Further, given that the activity rule is one of the more complex aspects of the CCA, we urged ComReg not to deviate from rules used elsewhere without very clear explanation. As proposed in the DIM, ComReg has decided to introduce new activity rules not previously used elsewhere for this auction. While these new rules are related to the relative price activity rule, they feature major changes which may have implications for bid strategy. While we believe we understand the general reasoning for introducing these new activity rules, we are not aware of their being tested or used elsewhere. ComReg's auction is already very complex and difficult to "digest". Given the relatively short period of consultation which we have had to evaluate the impact of these changes, we must reserve our right to comment further on this matter in subsequent documents.
- 4.25. The new activity rule is described in detail in the DIM, and we welcome the clarity provided over their proposed implementation. Nevertheless, we question whether it is sensible to pioneer a new activity rule in what is already a complex and unnecessary lot structure. Of course, the solution to this may not be to remove the new activity rule, but rather to strip away the unnecessary complexity in the lot structure created by the inclusion of time slicing and party-specific lots.

Potential Flaws in Proposed Mechanism

- 4.26. As previously stated in this document, we recognise that ComReg and its advisors have attempted to create an auction mechanism that can address a number of different issues

together. Unfortunately, this has led to an extremely complex auction mechanism, and we believe there to be a potentially fatal flaw in the auction as proposed. There are circumstances where the auction mechanism can produce an incorrect result, failing to liberalise bidder specific lots, or where the winner and price determination might have no solution. This is caused by the inclusion of distinct lot categories to allow liberalisation of GSM licences at so called 'fair market prices'. Telefonica is willing to discuss this issue further with ComReg.

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- 4.34. Although our illustrative example is specific to one band, the logic may be extended to the whole auction. We do recognise that such potential problems may only emerge under certain demand conditions and are more likely to arise in situations where competition is limited. For this reason, the 900MHz band may be particularly vulnerable to problems owing to the imposition of the 2x10MHz cap which, depending on bidder demands, may introduce an artificial constraint on competition. Moreover, regardless of how likely such problems are, ComReg must recognise that it is essential that the auction mechanism work under all possible conditions. We would caution against any potential 'quick fixes' to the problem that solve the problem of there being no price solution, but do not address the broader problems of efficient liberalisation being blocked and/or bidders having incentives to distort their bids. Our preliminary view is that the best way these problems can be completely eliminated is to abandon the entire time slicing and party-specific lot approach.
- 4.35. We believe this apparent error has occurred because of the complexity of what ComReg is trying to achieve within the auction mechanism, and that in attempting to determine both whether liberalisation is allowed and the prices for liberalisation based on bids for non-specific lots, ComReg has introduced invalid constraints. We note that there is no precedent for such rules in the academic literature. For example, we observe that in Chapter 1 of *Combinatorial Auctions*³, it is explained that it is possible to constrain winner determination in many different ways, so long as the constraints involve the lot allocation only (not the bids). If the constraints involve the lot allocation only, then prices can be determined using the standard method, i.e. repeatedly solving winner determination problems for all possible coalitions of bidders, each time imposing the same constraints on lot allocations. However, ComReg's constraint is not a constraint on lot allocations only; ComReg is proposing to discard potential solutions if the liberalised lots would not have been part of the winning combination in an auction where liberalised lots were not separated out in bidder specific categories. This is new ground in combinatorial auctions. Unfortunately, it appears that this approach may be flawed for the reasons we describe above.

Strategic Manipulation of the Auction

4.36. 

³ *Combinatorial Auctions*
Edited by [Peter Cramton](#), [Yoav Shoham](#) and [Richard Steinberg](#)

Winner and price determination

- 4.37. We support the approach to winner and price determination for non-party specific lots. We also strongly support ComReg's decision not to include any 'set aside' measures, as proposed for the UK 800 MHz auction, in these auction rules. However, as previously discussed, we have serious concerns about the process for determining winners and prices for party specific lots, which under plausible scenarios, may fail to support efficient outcomes and fair market prices. More generally, an already complicated process has been made much more difficult by the need to run the algorithm for up to 192 release scenarios. Such complexity could be easily resolved by eliminating time slicing and party specific lots.
- 4.38. We urge ComReg to provide all bidders with access to its software at the earliest opportunity and at least 3 months before the start of the auction. By way of example, we understand that Ofcom – also supported by DotEcon – provides standalone software for winner and price determination to all prospective bidders that can be used by bidders to test the process. Early access to software is essential under any approach, but is even more important given the greater complexity of the proposed process. We would also appreciate a worked numerical example of the winner and price determination. We note that ComReg has provided such examples for other aspects of the auction, such as the activity rule, but has not done so for winner and price determination, even though it is the most complex part of the auction.

Supplementary Bids Cap

- 4.39. We observe that, owing to the inclusion of party specific lots, the number of theoretical package bid options varies by bidder, with the implication that the cap affects bidders differently. However, we support ComReg's proposal for a common cap of 2,000 bids on the basis that this should give all bidders sufficient flexibility.

Round scheduling and bid increments

- 4.40. For bidders, one of the most significant sources of uncertainty is the rate at which prices may increase, both by round and on each business day. For this reason, bidders typically value clear rules or guidelines for the approach that the Auctioneer will adopt on round scheduling and bid increments. At the same time, we recognise that ComReg will wish to maintain some flexibility over these parameters, so it can respond to developments in the auction. Accordingly, O2 welcomes the information provided in the IM on auction round scheduling, however we believe this section requires further review by ComReg. Telefonica made specific proposals on this issue in response to document 11/60, however we accept that ComReg might not have had time to review this before publication of the DIM.

- 4.41. We are very disappointed with the proposal regarding bid increments, which we believe exposes bidders to excessive uncertainty over price movements. This is the case from the beginning of the auction, as ComReg proposes to start with very high reserve prices. We describe below an alternative proposal for caps on absolute price increments which would strike a better balance between the needs of bidders for certainty and the auctioneer for flexibility.
- 4.42. On round scheduling, we agree with ComReg's proposal that round lengths should not normally be less than 30 minutes or more than 2 hours. We ask for some additional hard rules or guidance to provide certainty over the process:
- A hard cap on the maximum number of rounds per day (e.g. 10 rounds)
 - A minimum duration between rounds – we propose 30 minutes
 - An indicative timetable to be published at the end of each auction day providing a round schedule for the next day of bidding, with the understanding that scheduled times may slip and that the number of rounds may be reduced in case of use of extensions or other reasons
- 4.43. We support ComReg's proposals for the supplementary and assignment rounds, in particular the proposals to:
- Schedule at least one clear business day between the final primary round and start of the supplementary round, and between the supplementary round and the assignment round. It should be noted that this time might need to be extended in the event of a deposit call.
 - Schedule the supplementary round with a minimum duration of 3 hours, and the assignment round with a minimum duration of 2 hours.
- 4.44. ComReg should clarify when the bid options for the assignment round will be released. It should be at the same time as the results from the main stage, so that bidders can use the gap to prepare their bids.
- 4.45. On bid increments, a cap of 50% of current prices is excessively lax, especially given ComReg's proposal to set reserve prices at levels which reflect the potential market value of the spectrum. We urge ComReg not to fall into the approach taken by some auctioneers of basing bid increments on simple percentages of current prices, without due consideration to the absolute price increases faced by bidders, which may escalate rapidly as current round prices increase. ComReg should take into consideration that all bidders are likely to be required to follow internal approvals processes and will need the auction progress to be predictable in order to do so. ComReg should set clear bounds within which it will make decisions on bid increments, and in particular focus on absolute bid increases not just percentage increases. Our proposal is that:

- Price increases per round are limited to 250,000 euro per lot
 - Price increases per day are limited to 2,000,000 euro per lot
- 4.46. Ideally, we would like hard rules on maximum absolute increments, but if ComReg is concerned about loss of flexibility, guidance on its intended approach barring exceptional circumstances may be sufficient for firms to plan how prices may evolve. Subject to these upper bounds, we would support ComReg having flexibility on determining the level of increments, subject to reasonable notice of any change in approach.

The 2.6 GHz Band

- 4.47. We note that ComReg has issued a separate parallel consultation on the 2.6GHz band (document 11/80). We will respond separately to this consultation, however would briefly note that ComReg's own consultants have recommended that the spectrum in the 2.6GHz band should be auctioned. The 1800MHz and 2.6GHz bands contain substitutable spectrum, and current MMDS licences all expire in 2014 latest while 1800MHz licences expire in at end 2014 or mid 2015. In these circumstances it seems ComReg's only logical course of action would be to auction both the 2.6GHz and 1800MHz bands together. The logic for this course of action has already been given by ComReg's own advisors (DotEcon), who have recommended that spectrum that is substitutable should be auctioned together.

Telefonica Proposal

- 4.48. ComReg needs to amend the proposed auction mechanism in a manner that reduces its complexity; allows substitutable spectrum to be auctioned together (1.8 GHz and 2.6 GHz); and eliminates errors. In order to do this, we recommend that ComReg separates the issue of liberalisation from that of long term spectrum assignment; eliminate the two-time-slice approach; and eliminate the party specific lots from the auction. In addition, ComReg needs to accept that the uncertainty regarding the availability of 800MHz remains, while at the same time it now seems very unlikely that the assignments can be made on time for an orderly rearrangement of the 900MHz and 1800MHz bands by January 2013.
- 4.49. We believe there may be more than one means to achieve the above; however we believe the options presented in response to 11/60 remain valid. These options are reproduced in summary below, however all include the elimination of time-slicing; party-specific lots; liberalisation within the auction; and address the inadequacy of post-auction time. The options include:-

- Option 1 - 1 temporal lot with all blocks starting 12 months post auction except for 3 900 MHz blocks starting in 2015
 - Option 2 - 1 temporal lot with licences starting from 2014, & licence buy out
 - Option 3 - 1 temporal lot with licences starting from 2015
- 4.50. Option 1 above eliminates the difficulty of trying to solve liberalisation within the auction mechanism and simplifies the lot structure. It does require agreement in advance of the auction that the three existing GSM 900MHz licensees would release 2x2.2MHz of spectrum. For Vodafone and Telefonica, this would be in return for a licence extension to 2015, and there may need to be a partial buy-back of Meteor's GSM spectrum.
- 4.51. Option 2 also eliminates the difficulty of trying to solve liberalisation within the auction mechanism and simplifies the lot structure. It requires the buy-back of Meteor's entire GSM 900MHz licence though, which ComReg has stated might be difficult to agree.
- 4.52. Option 3 which would also eliminate the difficulty of trying to solve liberalisation within the auction mechanism and simplifies the lot structure, though would require the grant of an extension of existing GSM licences so that they all co-terminate.
- 4.53. Since we submitted our response to document 11/60, ComReg has published document 11/80. We note that ComReg's own consultants have recommended that the spectrum in the 2.6GHz band should be auctioned. ComReg's auction consultants have previously stated that substitutable spectrum should be auctioned together. The 1800MHz and 2.6GHz bands contain substitutable spectrum, and current MMDS licences all expire in 2014 latest while 1800MHz licences expire in at end 2014 or mid 2015. In these circumstances the only logical option available to ComReg would seem to be to extend some of the MMDS licences to 2014, and include the 2.6GHz band in the multiband auction. While this adds marginally to the complexity the benefits far outweigh this small increase in cost. We believe the three options above are compatible with the inclusion of 2.6GHz (available from 2014) in the auction.

5. Other Comments

5.1 We request clarification regarding the following text:

Paragraphs 4.142 and 4.150

These paragraphs appear to contradict each other. Should clause 4.142 be amended to distinguish that a final round primary bid is not uncapped if it is a relaxed primary bid?

Paragraphs 4.182 – Tie breaks

In a tie-break situation, paragraph 4.180 prioritises between notional release scenarios according to the greatest number of released lots. However, according to paragraph 4.182, within a winning release scenario, a purely random process is used to identify the winning combination from amongst those combinations with equal highest value. Please clarify that only winning combinations in which bidders win the requisite number of party-specific lots will be included in this random selection. Put differently, please clarify that combinations that include zero bids (by a releaser) within the winning scenario will be discarded, even if they have equal value to potential winning combinations in which there are no such zero bids (from a releaser).

Paragraph 4.82

Which round does “current round” and “previous round” refer to? Does current round refer to round M1?

What does “no Bid is required in this round” mean? Does it mean no further Binding Supplementary Bids (in addition to Z1), or does it mean no Binding Supplementary Bid for Z1?

Annex 8, section 1.3

The variable “s” is referred to as a “notional release scenario” and as a “supply scenario”. Is this the same thing?

Annex 8, section 3.3, last paragraph:

Should “final” be deleted in “at the end of each final primary bid round”?

7. RTE response (received 28 November 2011)

**RTÉ and RTÉNL Comments on
ComReg Draft Information Memorandum 11/75
Multi-Band Spectrum Release**

28th November 2011

RTÉ and RTÉNL consider that the ComReg Draft Information Memorandum (Document 11/75) is incomplete. As detailed in the RTÉ and RTÉNL response to ComReg Consultation 11/60, we would be grateful if ComReg would include satisfactory licence conditions to deal with interference from new services in the 800MHz band into existing digital broadcasting services in the adjacent band (i.e. below 790MHz).

A2. Non-confidential correspondence provided by respondents in relation to ComReg's multi-band spectrum release proposals from 7 December 2011 until 5 March 2012 (and ComReg written responses to same).

1. H3GI: email to ComReg "ComReg Doc. No. 11/75" (email dated 7 December 2011)

From: Mark Hughes
Sent: 07 December 2011 16:25
To: Patrick Mulvey
Subject: ComReg Doc. No. 11/75

Dear Paddy,

I refer to the following question contained in our submission re: ComReg 11/75: *"H3GI requests ComReg to clarify how it has calculated the reserve price and SUF's for the first time slice for 800 and 900 MHz"*. We would appreciate if ComReg could respond to this question in advance of responding to submissions received by way of its final decision and Information Memorandum.

With kind regards.

Mark.

Submissions to Document 11/75 and Correspondence with interested parties

-
2. ComReg: reply to H3GI email of 7 December 2011 (email dated 3 February 2012)

From: Patrick Mulvey
Sent: 03 February 2012 16:14
To: 'Mark Hughes'
Subject: RE: ComReg Doc. No. 11/75

Dear Mark,

In response to your query, it has come to our attention that an amendment is necessary to the way in which the minimum price (and hence reserve price and spectrum usage fees) for the first time slice was calculated. This will be addressed in the Final Decision.

Kind Regards,

Paddy

-
-
3. H3GI: letter to ComReg "COMREG SPECTRUM STRATEGY STATEMENT 2011 – 2013" (letter dated 22 December 2011)

Hutchison 3G Ireland Limited
Registered office

3rd Floor
One Clarendon Row,
Dublin 2, Ireland

Registered Number: 316982
Place of Registration: Republic of Ireland



Mr George Merrigan, Director Framework Division
Commission for Communications Regulation
Abbey Court
Irish Life Centre
Lower Abbey Street
Dublin 1
BY REGISTERED POST AND EMAIL: george.merrigan@comreg.ie

22 December 2011

Dear George

COMREG SPECTRUM STRATEGY STATEMENT 2011 – 2013

I refer to: (i) ComReg Doc. No. 11/28, "*Consultation Paper - Review of the Period 2008 – 2010 & Proposed Strategy for Managing the Radio Spectrum: 2011 – 2013*" ("ComReg's Consultation Paper"); (ii) ComReg Doc. No. 11/88, "*Response to Consultation – Review of the Period 2008 – 2010 & Proposed Strategy for Managing the Radio Spectrum: 2011 – 2013*" ("ComReg's Response to Consultation"); and (iii) ComReg Doc. No. 11/89, "*Strategy Statement – Strategy for Managing the Radio Spectrum: 2011 – 2013*" ("ComReg's Spectrum Strategy Statement").

Hutchison 3G Ireland Limited ("H3GI") is deeply disappointed and concerned that ComReg has failed to take proper account of: (i) responses to ComReg's Consultation Paper; and (ii) the research, analysis and recommendations contained in the report commissioned by H3GI from NERA Economic Consulting ("NERA") in relation to indefinite licences and mobile spectrum and provided to ComReg by H3GI on 7 October 2011 (the "NERA Report"). There is broad industry consensus in favour of indefinite licences (ComReg is aware of this by virtue of its participation, as an observer, in the Government Next Generation Broadband Taskforce). In addition, NERA, a reputable and independent global economic consultancy firm, has thoroughly researched and analysed the introduction of indefinite licences to mobile spectrum in Ireland and has concluded that there is a strong case for Ireland to adopt indefinite terms for mobile spectrum licences, subject to suitable conditions being imposed to protect ComReg's ability to fulfil its statutory objectives. Notwithstanding this, ComReg has decided to maintain its current position in favour of fixed term licences. In particular, ComReg appears to be influenced by the perceived uncertainty, delay and risk of litigation in respect of an indefinite licence regime.

For the reasons set out below (in addition and without prejudice to the contents of the NERA Report), H3GI believes that ComReg's decision to maintain its current position in favour of fixed term licences is flawed. In particular, it submits that certainty, delay and the risk of litigation in respect of an indefinite licence regime are all matters under ComReg's control. ComReg can prescribe a clear and comprehensive indefinite licence regime. As a result, it can reduce or eliminate the risk of delay and/or litigation. The introduction of indefinite licences in Ireland and the circumstances surrounding their introduction in the UK are distinguishable. The UK regulator, Ofcom, has subsequently introduced indefinite licences in respect of the 2.1 GHz frequency band. H3GI refers to the implementation of similar concepts to indefinite licences in New Zealand and the US. It notes and is dismayed by the complete

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absence of any discussion of their implementation in ComReg's Response to Consultation and Spectrum Strategy Statement. Finally, the electronic communications regulatory framework already specifically provides for the withdrawal of spectrum for compliance purposes.¹ As a result, ComReg can draft legislation and licences that provide for indefinite licences including, the withdrawal of spectrum on the provision of appropriate notice that are enforceable without undue delay or risk of litigation.

H3GI also has concerns in respect of ComReg's position regarding spectrum trading and the 2.6 GHz frequency band. These are set out below.

H3GI requests ComReg to: (i) re-consider its position regarding the introduction of indefinite licences in mobile spectrum bands; and (ii) address its concerns in respect of spectrum trading and the 2.6 GHz frequency band. In relation to (i), H3GI repeats its offer to ComReg of a presentation by NERA in respect of its report.

Indefinite Licences

At page 22 of ComReg's Response to Consultation, ComReg states as follows:

"Before addressing the specific views identified above, it is important to re-state some important points on how radio spectrum is managed at an EU wide level.

Background – radio spectrum management at EU-wide level

Unlike as presented in the NERA report and by some interested parties, radio spectrum at an EU level for some harmonised, important bands is not, in fact, entirely service- and/or technology-neutral. The present regime can be seen as "liberalised" when compared to previous regimes which specified a service and/or a technology for each band (e.g GSM technologies for the 900 MHz and 1800 MHz bands). For instance, in the EC's 900 MHz and 1800 MHz decision, only technologies compatible with existing technologies in terms of non-interference may be introduced. Similarly, service-neutrality is somewhat overstated in that what has actually occurred is that mobile services that were previously delivered over separate spectrum bands can now be delivered over a combination of the same bands.

At a fundamental level, radio spectrum in important bands requires a harmonised approach at an EU level. This is to ensure that both within and between Member States these bands are co-ordinated to eliminate the risk of interference so that they produce the best outcome in terms of value added for EU citizens. A co-ordinated approach at an EU level also contributes to the development of the internal market by, amongst other things, allowing equipment manufacturers to develop for a market of over 450 million people as opposed to the much smaller populations of individual Member States, such as Ireland.

*In this context, it can be seen that finite licence durations allow a spectrum manager to seamlessly maintain the co-ordination of the most important bands.**

¹ Regulation 17 of the European Communities (Electronic Communications Networks and Services)(Authorisation) Regulations, 2011 (the "Authorisation Regulations").

In contrast, a move to indefinite licences, within a spectrum trading regime, would mean that these important co-ordination decisions would be delegated to the market.

However, in ComReg's view, such a move is inconsistent with what is actually happening and this inconsistency explains why trading in the important bands is unlikely to occur. In that regard, in Consultation 11/28, ComReg identified a primary concern, being that indefinite licences (or licences that are automatically renewed) could potentially lead to strategic behaviour whereby one or more firms resist the bands being co-ordinated in perhaps different manner with a view to obtaining some of the higher rents from a new potential use. For instance, if a broadcaster could have maintained a claim of a property right in a substantial part of the digital dividend spectrum it could have extracted much of the rents due to that spectrum from the new mobile broadband users.

For this reason, ComReg considers that the periodic re-release of spectrum:

- promotes competition, spectrum efficiency and the internal market;
- is wholly compatible with the Common Regulatory Framework;
- allows licence holders sufficient time to obtain a return on its investment in line with the expected life-cycle of the technology deployed;
- provides a sufficiently flexible approach to address future co-ordinated approaches that may be taken to particular spectrum bands at an EU-wide level;
- ensures that there are no long-term barriers to a co-ordinated approach to the bands. This is particularly important where a co-ordinated approach is necessary to introduce new and innovative services to a band; and
- ensures that there can be a co-ordinated approach to bringing about the desired change without perverse incentives emerging for incumbent firms to hold out strategically with a view to gaining more rents.

**For example the future use of the 2.6 GHz band is currently under consultation. As discussed in section 2.4.5, a number of views submitted in relation to this band proposed that the current licences should not be renewed and the band should be released for other uses as soon as possible." (Emphasis added)*

Firstly, ComReg did not previously state the points made in this section. As a result, it is not appropriate to state that it is re-stating these points (with the necessary implication that industry was not aware of or ignored these points).

Secondly, H3GI rejects the implication that NERA or H3GI has misled or sought to mislead either ComReg or third parties in relation to the liberalised nature of radio spectrum at an EU level for some harmonised, important bands. The European Commission Decision on the harmonisation of the 900 MHz and 1800 MHz frequency bands for terrestrial systems capable of providing pan-European electronic communications services in the Community (Decision 2009/766/EC) provides: (a) for the use of the 900 MHz and 1800 MHz frequency bands for



UMTS, LTE and WiMAX; and (b) that Member States may designate and make available the 900 MHz and 1800 MHz bands for other terrestrial systems provided that they ensure that such systems can: (i) coexist with GSM systems; (ii) coexist with other systems listed in the Annex to the Decision, both on their own territory and in neighbouring Member States; and (iii) give appropriate protection to systems in adjacent bands.² As a result, the 900 MHz and 1800 MHz frequency bands have been liberalised. They are no longer restricted to a specific service or technology and it is appropriate to describe them as such. Indeed, ComReg refers to the 'full liberalisation' of these bands in two places in its spectrum strategy statement.³

Thirdly, H3GI disagrees that indefinite licences prevent the seamless maintenance of the co-ordination of the most important bands. In the event of further harmonisation eg a development similar to Analogue Switchover (ASO) and the resulting Digital Dividend, ComReg can withdraw spectrum on giving appropriate notice. In contrast with its position in respect of spectrum rights of use, ComReg is at pains to point out and appears comfortable pointing out in ComReg Doc. No. 11/17, "*National Numbering Conventions v7.0*" ("ComReg's Numbering Conventions") that rights of use in respect of numbers confer no ownership rights on recipients. As a result, H3GI finds it difficult to understand why ComReg cannot provide for indefinite licences that clearly provide it with the ability to withdraw spectrum on a minimum of five years notice. In relation to the 2.6 GHz frequency band, neither H3GI nor NERA propose that indefinite licences be introduced prior to re-release. The decision to introduce indefinite licences to frequency bands must be taken on a case by case basis.

ComReg states: "*a move to indefinite licences, within a spectrum trading regime, would mean that these important co-ordination decisions would be delegated to the market.*" H3GI does not agree with this statement. With liberalised licences, there may be changes of use eg a change between UMTS and LTE. However, harmonisation and how it is implemented is a matter for the European Union and Member States. With indefinite licences, there is no presumption that liberalised licensees will automatically benefit from future harmonisation.

Finally, ComReg states:

"For this reason, ComReg considers that the periodic re-release of spectrum:

- promotes competition, spectrum efficiency and the internal market;*
- is wholly compatible with the Common Regulatory Framework;*
- allows licence holders sufficient time to obtain a return on its investment in line with the expected life-cycle of the technology deployed;*
- provides a sufficiently flexible approach to address future co-ordinated approaches that may be taken to particular spectrum bands at an EU-wide level;*

² Article 5.

³ At pages 3 and 5.

- *ensures that there are no long-term barriers to a co-ordinated approach to the bands. This is particularly important where a co-ordinated approach is necessary to introduce new and innovative services to a band; and*
- *ensures that there can be a co-ordinated approach to bringing about the desired change without perverse incentives emerging for incumbent firms to hold out strategically with a view to gaining more rents.”*

For the reasons set out in the NERA Report and in this letter, H3GI disagrees with this conclusion.

At page 23 of ComReg’s Response to Consultation, ComReg further states:

“In relation to bullet points 1, 2, 9 and 11, ComReg considers the arguments regarding the uncertainty associated with periodic re-release of spectrum to be overstated and not to accord with the likely economic incentives of incumbent operators facing such a situation. In this regard, ComReg observes that:

- *reducing investment may actually encourage outside firms to enter on the basis that the incumbent firms appear to believe that their substantial advantages of incumbency are not sufficient to allow them to outbid their likely competitors in an auction;*
- *moreover, incumbent firms are competing with each other on the retail market and any loss in network quality (arising from non-investment) could translate to worse outcomes on the retail market. Hence, they will be strongly motivated to maintain their network quality or risk losing valuable customers (and customer groups that value network quality highly);*
- *these factors may explain the considerable network investment by incumbent 900 MHz licensees in recent times. Indeed, and notwithstanding claims that such investment was made on the assumption that licences would be renewed or otherwise extended to prevent widespread disruption to consumers, ComReg notes NERA’s view that empirical evidence for decreasing investment in mobile networks as licence expiry approaches is ambiguous;*
- *with indefinite licences there would not be the same incentive to fear new entry and hence investment rates would likely fall, once a stable market equilibrium emerges*;* and
- *in relation to the view regarding the potential for spectrum to lie idle, ComReg notes that this can be addressed by considering, and where appropriate, consulting on decisions in relation to the future use of spectrum bands with fixed term licences significantly in advance of expiry of same.”*

** Trading would not undermine this market situation as in the most valuable bands trading (or even leasing) would likely not occur. ComReg is currently of the view that, absent a distress sale, within a market trading may well not occur for strategic reasons. Even if a firm has*

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valuable spectrum that it is currently not using intensively it may well choose to maintain this position in order to be able to react to growth in demand etc. that it had not previously predicted. Selling such spectrum to a rival is a probably irreversible decision that the seller may come to regret later. Similar concerns also surround leasing to a rival even if there comes a time when the spectrum reverts to the original licence holder."

ComReg states that *"reducing investment may actually encourage outside firms to enter on the basis that the incumbent firms appear to believe that their substantial advantages of incumbency are not sufficient to allow them to outbid their likely competitors in an auction".* H3GI does not agree. Reduction of investment as licence expiry approaches reflects uncertainty regarding the likelihood of success in re-acquiring spectrum and the terms and conditions of such acquisition. It does not reflect ability or willingness to acquire spectrum on new terms and conditions – this is determined in light of the proposed new licence and the circumstances surrounding the award process eg access to capital markets. H3GI refers ComReg to the following comment at page 12 of the NERA Report:

"The periodic re-release of spectrum through auctions is in any case unlikely to be helpful in dealing with the existing market power of operators. This is because the strength of a bidder will to some extent be based on its current position in the market. As a result the same licensees are likely to reacquire spectrum when spectrum is re-released. For example ComReg found with regard to GSM licences that the "likelihood of O2 and Vodafone not winning spectrum in a competitive award is very low." Fixed expiry dates may in fact favour larger operators if they enjoy greater certainty than smaller rivals that they can win back spectrum in an auction."

ComReg's position threatens new and smaller operators to the disadvantage of competition.

ComReg further states: *"moreover, incumbent firms are competing with each other on the retail market and any loss in network quality (arising from non-investment) could translate to worse outcomes on the retail market. Hence, they will be strongly motivated to maintain their network quality or risk losing valuable customers (and customer groups that value network quality highly)".* Again with respect, ComReg misses the point. Firstly, incumbent firms will not cease to invest. However, their investment will reduce in line with the uncertainty they face and they will not make significant/risky investments eg Next Generation Broadband (NGB). Secondly, on the basis that incumbent firms have co-terminous licences, reduction of investment will occur across the industry at roughly the same time. As a result, no particular operator should be at a competitive disadvantage. It is the consumer and society that suffers. In relation to licences that are not co-terminous, eg Meteor's 900, 1800 and 2.1 GHz licences, arguably, a company in Meteor's position will mirror the position of its competitors as it does not know what will happen as its competitors' licences expire eg notwithstanding ComReg's early liberalisation option, the advanced receipt by its competitors of liberalised licences. Given the uncertainty regarding technological development, harmonisation, spectrum availability and demand, ComReg should be doing all that it can to reduce uncertainty and promote NGB. This it can do by the introduction of indefinite licences in mobile spectrum bands.

ComReg notes *"NERA's view that empirical evidence for decreasing investment in mobile networks as licence expiry approaches is ambiguous"*. ComReg's reference to NERA's report

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is misleading and wrong. Whilst NERA notes that empirical evidence for decreasing investment in mobile networks as licence expiry approaches is ambiguous, it states "... we believe that this can be explained by other factors, such as an expectation amongst operators that their licences will be renewed, that they will be able to win back spectrum that is re-awarded, or the fact that the investment relates to networks (for example 3G) for which licences are not about to expire. Moreover, fixed expiry dates may create anti-competitive asymmetries between operators, as larger operators enjoy greater certainty than smaller rivals that they can win back spectrum in an auction, and therefore may have greater confidence about maintaining investment levels."⁴

ComReg states: "with indefinite licences there would not be the same incentive to fear new entry and hence investment rates would likely fall, once a stable market equilibrium emerges". H3GI submits that given the maturity of the mobile communications market in Ireland, the considerable and risky investment required in respect of NGB and the greater certainty that larger operators enjoy that they can win back spectrum in an auction, larger operators do not fear new entry by means of a competitive award process. ComReg needs to promote competition by introducing indefinite licences.

Finally, ComReg states: "in relation to the view regarding the potential for spectrum to lie idle, ComReg notes that this can be addressed by considering, and where appropriate, consulting on decisions in relation to the future use of spectrum bands with fixed term licences significantly in advance of expiry of same". With respect, it has taken ComReg in excess of three years to consult in respect of the re-award of the 900 and 1800 MHz frequency bands and the award of the 800 MHz frequency band, the singular feature of its consultation regarding the draft Information Memorandum regarding this re-award and award is the prospect of delay up to and possibly beyond 2015 in respect of the availability of liberalised spectrum and this process has significantly impacted on all of ComReg's other spectrum-related activities, including the review of the 2.6 GHz frequency band. H3GI does not believe that ComReg can ensure the timely re-award of spectrum under its fixed term licence regime. In respect of mobile spectrum, this has a significant and adverse impact on Irish society and the Irish economy. In the current climate, this is not something that Ireland can afford.

At page 24 of ComReg's Response to Consultation, ComReg states:

"In relation to bullet point 3 and NERA's view that ComReg cannot know in advance the optimal licence length to coincide with the investment cycle or action to co-ordinate at an EU wide level, ComReg would make the following observations:

- *it would refer to its view regarding service and technology-neutrality in respect of some harmonised bands set out in the above background;*
- *when determining the appropriate duration for finite spectrum rights of use, actual and potential spectrum users (and other interested parties) are, through ComReg's consultation procedures, given ample opportunity to make their views known. This is*

⁴ Page i.

an important input that ComReg takes into account when making a decision in this regard;

- *ComReg's usual duration of 15 years for the most important bands is similar in length to the duration of licences issued by other spectrum managers within the EU. To ComReg's knowledge, there is only one country in Europe, the UK, which has issued licences of indefinite duration; and*
- *it is always open to ComReg to propose adjustments (without compromising on the notion of fixed termination dates) if very unexpected developments occur.* [Emphasis added]

Whilst ComReg's consultation processes provide interested parties with an opportunity to make their views known in respect of the appropriate duration for finite spectrum rights of use, ComReg fails to address the point that it will become increasingly difficult, if not impossible, for interested parties and ComReg to determine an appropriate duration in light of liberalisation, technological developments and NGB. Whilst ComReg's usual duration of 15 years for the most important bands is similar in length to the duration of licences issued by other spectrum managers within the EU, H3GI submits that ComReg is at a turning point and that if ComReg wants to lead in respect of spectrum management, promote competition and ensure continuous investment in NGB, it should emulate the approach adopted by the UK, New Zealand and the US and being considered by Australia and Canada (leading spectrum reform countries). What does ComReg mean by: *"it is always open to ComReg to propose adjustments (without compromising on the notion of fixed termination dates) if very unexpected developments occur"*? What does it mean by *"adjustments"*? Does it mean withdrawals, extensions or something else? If withdrawals, why does ComReg have the ability to withdraw a fixed term licence but not an indefinite licence without giving rise to undue uncertainty, delay and litigation? What constitutes *"very unexpected developments"*? It is exactly this kind of uncertainty that would be avoided by indefinite licences.

At page 19 of ComReg's Spectrum Strategy Statement, ComReg states: *"Notwithstanding, and as demonstrated previously, ComReg would not ignore evidence if it emerged that what was at one time looked like an optimal licence duration was affected by an unexpected development"* [Emphasis added]. H3GI finds the differing use of language in ComReg's Response to Consultation and ComReg's Spectrum Strategy Statement unhelpful. It refers ComReg to its comments in response to ComReg's multi-band spectrum release proposals (ComReg Doc. No.s 11/60 and 11/75) highlighting ComReg's inconsistent and unclear use of language.

At page 24 of ComReg's Response to Consultation, ComReg further states:

"In relation to bullet points 4, 5 and 12, ComReg is, of course, aware of the difference between indefinite and irrevocable licences and further notes that indefinite licences could also include provisions under which a licence can be revoked (for instance, in specific circumstances and/or with a minimum notice period as suggested by some interested parties). Nevertheless, ComReg believes that this view overlooks the uncertainty, delay and potential litigation that

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*could well be associated with a spectrum manager seeking to recover spectrum rights via such measures. *. ***

** In that regard, one could usefully explore the proposed implementation of the GSM Amendment Directive in the context of the 900 MHz band in the UK and note, amongst other things, that:*

- Hutchison, which commissioned the NERA analysis and supports the implementation of indefinite licences for mobile spectrum licences in Ireland, argued that the spectrum associated with the indefinite licences of Vodafone and O2 in the UK should be released via a full-band auction; and*
- the various claims and arguments made by Vodafone and O2 in response to such a proposal.*

***In 2009, the UK spectrum regulator, Ofcom, issued a consultation titled the "Application of spectrum liberalisation and trading to the mobile sector – A further consultation" (See <http://stakeholders.ofcom.org.uk/binaries/consultations/spectrumlib/summary/spectrumlib.pdf>).*

In this document, it was proposed that the current holders of the 900 MHz spectrum in the UK (Vodafone and O2) would each surrender a proportion of their respective 900 MHz spectrum holdings (2 x 2.5MHz out of a current total of 2 x 17.4MHz for each operator) to allow a third operator to have access to this particularly important spectrum.

Considerable comment and debate was received on this proposal. One operator, O2, took a case to the Competition Appeals Tribunal and, ultimately, the Secretary of State of the UK government issued a direction to Ofcom in relation to a number of matters relating to mobile spectrum. (See <http://www.legislation.gov.uk/ukxi/2010/3024/introduction/made>)

Following this direction, in January 2011 Ofcom released a Regulatory Statement varying the licences in the 900 MHz and 1800 MHz bands to permit the use of these bands on a liberalised basis. No spectrum in the 900 MHz band was surrendered by Vodafone or O2 in this process."

H3GI submits that certainty, delay and the risk of litigation in respect of an indefinite licence regime are all matters under ComReg's control. ComReg can prescribe a clear and comprehensive indefinite licence regime. As a result, it can reduce or eliminate the risk of delay and/or litigation. H3GI further submits that the introduction of indefinite licences in Ireland and the circumstances surrounding their introduction in the UK are distinguishable. In the UK, the regulator acknowledged the indefinite nature of the 900 MHz licences of Vodafone and O2 without providing Hutchison 3G UK Limited ("H3GUK") with an opportunity to bid for and acquire 900 MHz (key sub-1 GHz spectrum). In contrast, pursuant to ComReg's multi-band spectrum release proposals, H3GI and any other interested party will have an opportunity to bid for 800, 900 and 1800 MHz in Ireland before the introduction of indefinite licences. The UK regulator, Ofcom, has subsequently introduced indefinite licences in respect of the 2.1 GHz frequency band. H3GI refers to the implementation of similar concepts to indefinite licences in New Zealand and the US. It notes and is dismayed by the complete

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absence of any discussion of their implementation in ComReg's Response to Consultation and Spectrum Strategy Statement. Finally, the electronic communications regulatory framework already specifically provides for the withdrawal of spectrum for compliance purposes.⁵ As a result, ComReg can draft legislation and licences that provide for indefinite licences including, the withdrawal of spectrum on the provision of appropriate notice that are enforceable without undue delay or risk of litigation.

At page 16 of ComReg's Spectrum Strategy Statement, ComReg states: *"there may be little incentive for rights holders of spectrum in harmonised bands to trade with competitor firms and initial experience to date in other jurisdictions bears this out."* H3GI queries the robustness of ComReg's analysis in light of the following statement by it at page 19 of its Response to Consultation: *"... [ComReg] has not drawn, or sought to draw, conclusions from the limited examples of spectrum trading, adverse or otherwise"*.

At page 17 of ComReg's Spectrum Strategy Statement, ComReg states:

"ComReg believes that experience abroad in relation to spectrum usage rights shows that allowing for automatic rights of renewal or indefinite licences with long notice periods for revocation change the balance of property rights and could lead to a situation where the spectrum manager finds it very difficult to impose a harmonised approach to the important EU wide bands."

What experience abroad? In relation to ComReg's comments in respect of indefinite licences in the UK, H3GI refers to its comments above. H3GI re-highlights the complete absence of any discussion of the implementation of similar concepts to indefinite licences in New Zealand and the US in both ComReg's Response to Consultation and Spectrum Strategy Statement. In light thereof, H3GI queries how ComReg can conclude that a fixed term licence regime is appropriate for mobile spectrum bands.

Spectrum Trading

H3GI welcomes the establishment of a project team tasked with establishing the procedures and measures required to implement spectrum trading in Ireland and ComReg's intention to facilitate trading in the bands listed in the RSPP. However, it is concerned that ComReg may not implement and facilitate trading until after 2013. At page 16 of ComReg's Spectrum Strategy Statement, ComReg states: *"ComReg has initiated a project team tasked with establishing the procedures and measures required to implement spectrum trading in Ireland and ComReg will issue a consultation on such matters during the time period of this Strategy Statement in due course."* [Emphasis added] For the purposes of the efficient use and management of spectrum, H3GI urges ComReg to implement and facilitate trading by the end of the second quarter in 2012.

At page 19 of ComReg's Response to Consultation, ComReg states:

"In relation to the first sub-bullet [of bullet point 4] point, ComReg does not consider that indefinite licence durations are required to substantially realise the claimed potential benefits

⁵ Regulation 17 of the Authorisation Regulations.

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of spectrum trading, notwithstanding the efforts of certain interested parties to continue to conflate these distinct issues. ComReg further considers the issue of licence duration in the following section of this response to consultation.” [Emphasis added]

H3GI rejects the implication made by ComReg that it, or some other interested party, has acted improperly in continuing to hold and advocate the view that indefinite licences are required to substantially realise the potential benefits of spectrum trading. This view has been confirmed by an independent report commissioned by H3GI from NERA (referred to above). Whilst spectrum trading and indefinite licences can be introduced separately, there is a clear and rational economic link between the two concepts.

At page 19 of ComReg’s Response to Consultation, ComReg further states:

“[T]he view expressed that ComReg should not overstate the “hold out” issue as the market value of spectrum usage rights have been on a general downward trend does not deal with the main concern identified by ComReg. In particular, whatever the level of spectrum rights of use values in a number of years, an incumbent firm in a co-ordinated band has the potential to act as a hold out on the next round of co-ordination and, in that regard, the relative expected payoff at that date between the two courses of action will likely determine its behaviour.”

With respect, ComReg did not clearly identify its “main concern” in ComReg’s Consultation Paper. It is only clear now, as a result of ComReg’s Response to Consultation, that ComReg’s concern is that spectrum right holders might hold out for a “payoff” as a result of co-ordination or harmonisation. This is a point related to indefinite licences rather than spectrum trading. In this regard, H3GI refers to the NERA Report and H3GI’s comments above. If ComReg properly creates a spectrum trading and indefinite licence regime, it will have the ability to withdraw spectrum in the event of co-ordination or harmonisation (other than that envisaged as part of liberalisation) without undue delay or risk of litigation.

2.6 GHz

H3GI re-iterates its request that ComReg issues its detailed proposals in relation to the release of spectrum in the 2.6 GHz band asap.

Yours sincerely


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Submissions to Document 11/75 and Correspondence with interested parties

4. H3GI: letter to ComReg "ComReg Doc. No. 11/102" (letter dated 23 January 2012)

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Mr George Merrigan, Director Framework Division
Commission for Communications Regulation
Abbey Court
Irish Life Centre
Lower Abbey Street
Dublin 1
BY REGISTERED POST AND EMAIL: george.merrigan@comreg.ie

23 January 2012

Dear George

COMREG DOC. NO. 11/102

I refer to: (i) ComReg Doc. No. 11/60, "*Multi-Band Spectrum Release – Release of the 800 MHz, 900 MHz and 1800 MHz radio spectrum bands*" ("ComReg's General Auction Consultation"); (ii) ComReg Doc. No. 11/102, "*Spectrum Liberalisation – Publication of non-confidential responses to ComReg Document 11/60 and recent correspondence*" (the "Responses to ComReg's General Auction Consultation"); (iii) the response of Hutchison 3G Ireland Limited ("H3GI") to ComReg's General Auction Consultation dated 14 October 2011; and (iv) H3GI's response to ComReg Doc. No. 11/75, "*Multi-band Spectrum Release – Draft Information Memorandum*" dated 28 November 2011 ("H3GI's Response to ComReg's Consultation re: Draft Auction Rules"). The comments contained in this document are in addition and without prejudice to H3GI's previous responses to ComReg's consultations on liberalisation of the 900 MHz spectrum band.

H3GI is concerned by the comments made by the other mobile network operators regarding transitional activities, advanced commencement and ComReg's proposed 2 x 10 900 MHz spectrum cap in the first time slice in their responses to ComReg's General Auction Consultation (set out below). In particular, H3GI is concerned by the view expressed by the eircom Group that:

"The threat of liquidated damages would incentivise existing GSM licensees to build headroom into their estimated project milestones in order to reduce the risk of being penalised ... [and] ... could lead to protracted debates over the reasonableness or otherwise of project milestones".

These comments by the other mobile network operators are not well-founded and this view evidences a belief that the incumbent operators can control the transition process without fear of any adverse consequences for themselves and contempt for the regulator and the fulfilment of its objectives.

As a result, H3GI reiterates its request to ComReg to: (i) specify a robust framework for transitional activities, including milestones and timetable for completion with penalties that deter non-compliance; (ii) ensure that liberalised spectrum is available as soon as practicable after the award process, and in any event no later than 1 February 2013; and (iii) reserve Lot A of the 900 MHz band and unassigned 1800 MHz in both time slices for a new band entrant.

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Transitional Activities and Advanced Commencement

At page 5 of its response to ComReg's General Auction Consultation, Vodafone states as follows:

"Vodafone is extremely concerned regarding advance commencement of new licences, should ComReg contemplate a timeframe of as little as 5 months for a spectrum relocation process (and other activities required to provide continuity of service for the maximum number of customers) in the case of an existing operator being reduced to a single 5 MHz block of 900 MHz spectrum after the auction (the Scenario 2 outcome) ... on the basis of ComReg's new proposal in relation to Scenario 2, Vodafone reiterate our views that the Red-M/Vilicom report is inappropriate and insufficiently robust as a basis for determining the impact on customers in the event of a forced and premature vacating of spectrum. ... Before obliging any forced spectrum vacating under a Scenario 2 occurrence, it would be incumbent on ComReg to conduct a rigorous analysis as to the scope and extent of consumer disruption. For the avoidance of doubt ... ComReg would be entirely liable for any service disruption/degradation experienced by consumers that would directly result." [Emphasis added]

At pages 3, 7, 58 and 60 of its response to ComReg's General Auction Consultation, O2 states:

"ComReg's proposal in 2010 was made on the basis of an auction taking place in early 2011, allowing two years before licence commencement in 2013 for any unsuccessful operators to make alternative arrangements. ... While Document 11/60 does not contain any time-line or date for the proposed auction, Telefonica believes that the earliest such an auction could now be completed is Quarter 3 of 2012, significantly reducing the lead time post-auction and pre-licence commencement to 6 months or less. This is not sufficient time (a) for the technical changes required in re-tuning and re-locating within the 900 MHz band and (b) to allow any GSM operators who are unsuccessful in obtaining spectrum, or who obtain less than bid for, to arrange an orderly transition out of the band without causing huge customer disruption. ... All of these factors have serious and adverse knock-on effects on the feasible start date of the T1 licence, pushing the date forward to at least early 2014 and shortening the T1 licence to a maximum of only 12-18 months in duration. ... In the circumstances, Telefonica contends that ComReg must now urgently reconsider its proposal (a) to start new licences in January 2013 and (b) to split the proposed licences into two temporal lots with a potential 6.5 month licence gap. ..." [Emphasis added]

"Telefonica appreciates ComReg's intention, in making the Advanced Commencement Proposal, to facilitate an early start in the use of 900 MHz for liberalised services by a new entrant to the band. However, as demonstrated in the diagram set out at section 9, it is not technically feasible to make the spectrum in question available as proposed, as the full band will likely be required to physically facilitate the relocation and re-tuning of 900 MHz lots prior to licence commencement required by ComReg's Full Assignment Round approach." [Emphasis added]

"ComReg's proposal that prospective bidders seeking to participate in the proposed auction must first agree to comply with the terms of a project plan identifying project milestones and related deliverables to be achieved and the imposition of a regime of liquidated damages for

non-compliance with such milestones, is contrary to ComReg's obligation as a Regulator to promote regulatory predictability and certainty. This is particularly the case in circumstances where the details and obligations arising from such a project plan will not become clear until after completion of the auction. Such a proposal is clearly in breach of the principles of natural justice, by seeking to impose penalties on successful bidders for non-compliance with obligations yet to be determined. ComReg has a statutory obligation under section 10 of the Communications Regulations Act 2002 to promote the provision of clear information. ... The Framework Directive (2002\21\EC) (as amended by 2009\140\EC) provides that where ComReg intends to take measures which have a significant impact on the relevant market, it shall give interested parties the opportunity to comment on the draft measure within a reasonable period. ComReg's proposal obliging successful bidders to commit to achieving milestones that have not been predetermined or consulted upon, which may result in significant, and at present unquantifiable, penalties for non-compliance with such milestones is a measure which would have significant impact on the relevant market. It must form the basis of a separate consultation prior to the auction. By failing to consult with the licensees in relation to the terms of the proposed project plan, ComReg is failing in its obligation to act in a transparent manner and in a manner which promotes regulatory predictability by ensuring a consistent regulatory approach over appropriate review periods, in accordance with its obligations under the European Communities (Electronic Communications Networks and Services) (Framework) Regulations 2011. [Emphasis added]

“Telefonica appreciates ComReg's intention, in making the Advanced Commencement Proposal, to facilitate an early start in the use of spectrum for liberalised services. ... Telefonica notes that under current time-lines, and depending on the actual auction outcome there is likely to be less than 6 months between auction conclusion and the proposed start dates of January 2013, meaning that Advanced Commencement as currently proposed would not bring liberalisation forward. More importantly, Telefonica is concerned that there could be a significant amount of network re-engineering and re-tuning work required in the 900MHz band post-auction which would involve network operators undertaking network adjustments both sequentially and concurrently. It is not known how different operators will prioritise and value the ability to obtain spectrum for continued GSM service or for provision of liberalised services – this will only be determined by the assignment round of the auction. It is possible that an operator would place a higher value on the ability to re-configure its network early than on maintaining the existing position within the band, and the sequential actions might require one operator to vacate spectrum so that another operator can move-in to that position in the band. ComReg also needs to consider that network sharing operators might want to hold contiguous assignments in the band.

The reconfiguration of the band might involve a series of “moves” similar to those made in a “Gem Puzzle”. The diagram below depicts just one such sequence of moves, however there are several variations on this example. In this case, it is assumed that Telefonica, Vodafone, and Meteor obtain 2 lots of 900MHz each (Meteor's assignment might be of 2 liberalised lots), and a new entrant to the band obtains 1 lot. In this case, all three existing operators will be required to undertake significant network re-tuning, and it is only possible for Vodafone to commence when O2 has completed. In addition the network operators might need to undertake re-engineering of their GSM assignment plans in order to be able to use some liberalised spectrum for UMTS services.

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In the below scenario it is not technically feasible to make the currently unoccupied spectrum in question available in the 900 MHz band as proposed, as the full band will be required to physically facilitate the sequential relocation and re-tuning of 900 MHz lots of all existing occupants prior to licence commencement required by ComReg's Full Assignment Round approach. Essentially, the currently unoccupied space will be required to facilitate the necessary movement around in the band needed to re-locate and re-tune to the new 5 MHz block format away from the current 7.2 MHz holdings and more generally to move to the new allocations post-auction. [Emphasis added]

At pages 10, 11 and 24 of its response to ComReg's General Auction Consultation, the eircom Group states:

"eircom Group would agree in principle with allowing the possibility of earlier commencement of a 900 MHz Liberalised-Use Licence in respect of Blocks A and B or Block A depending on the relevant circumstances post award, provided it is not done in a manner that is prejudicial to eircom Group... At least one of the blocks will be required to facilitate any relocation activities within the band. Depending on when the award process is completed, in turn informing the period for relocation activities to be completed, and the extent of the relocation activities, there may be a requirement for both blocks A and B to facilitate relocation activities. As such we do not believe it can unequivocally be stated that Block A could be made available immediately following completion of the award process. Such matters can only be determined when all the facts are known following completion of the award process. More generally, chapter 7 of ComReg 11/60 sets out a number of factors that will need to be considered. The manner in which these factors will be considered should be clearly set out in the Information Memorandum." [Emphasis added]

"eircom Group has no principled objection to the possibility of Liberalised-Use Licence(s) commencing earlier in the 1800MHz band provided that: (i) It is not done so in a manner discriminatory to eircom Group (for example constraining our options in the assignment round); (ii) Sufficient spectrum is made available to ensure timely completion of any relocation activities within the band; (iii) A decision is taken on the merits once all facts are known when the proposed award process is concluded; and (iv) All relevant factors are clearly set out in the Information Memorandum." [Emphasis added]

"Firstly we would question an obligation on a prospective bidder to agree in advance with a final decision, before the circumstances of such decision are known. This would appear to be seeking to circumvent an entity's right to object to an unreasonable decision. Secondly we would question whether the threat of liquidated damages will ensure a timely transition. The threat of liquidated damages would incentivise existing GSM licensees to build headroom into their estimated project milestones in order to reduce the risk of being penalised. This could lead to protracted debates over the reasonableness or otherwise of project milestones. In our view a co-operative and participative approach which encourages parties to make best endeavours is more likely to achieve the desired outcome." [Emphasis added]

H3GI does not agree with Vodafone and O2 that: (i) ComReg needs to "conduct a rigorous analysis as to the scope and extent of consumer disruption"; or (ii) "ComReg's proposal obliging successful bidders to commit to achieving milestones ... must form the basis of a separate consultation prior to the auction". ComReg has consulted in respect of the award of

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the 800, 900 and 1800 MHz bands, including transitional activities, advanced commencement and consumer disruption for over three years. By virtue of ComReg Doc. No.s 11/60 and 11/75, it has consulted in respect of its proposal "*obliging successful bidders to commit to achieving milestones*". Furthermore, it does not agree with O2 and the eircom Group that: (i) "*ComReg's proposal that prospective bidders seeking to participate in the proposed auction must first agree to comply with the terms of a project plan identifying project milestones and related deliverables to be achieved and the imposition of a regime of liquidated damages for non-compliance with such milestones, is contrary to ComReg's obligation as a Regulator to promote regulatory predictability and certainty ... [and] ... clearly in breach of the principles of natural justice*"; and (ii) "*an obligation on a prospective bidder to agree in advance with a final decision, before the circumstances of such decision are known ... would appear to be seeking to circumvent an entity's right to object to an unreasonable decision*". In order for the proposed auction to be legally certain, ComReg must specify a robust framework for transitional activities, including milestones and timetable for completion with penalties that deter non-compliance. All interested parties have the opportunity to respond to ComReg's current consultation in respect of the principles that will apply to the transitional activities and ComReg's subsequent consultation in respect of the details of the transitional activities.

H3GI is deeply concerned by the view expressed by the eircom Group that "*The threat of liquidated damages would incentivise existing GSM licensees to build headroom into their estimated project milestones in order to reduce the risk of being penalised ... [and] ... could lead to protracted debates over the reasonableness or otherwise of project milestones*". This view evidences a belief that the incumbent operators can control the transition process without fear of any adverse consequences for themselves and contempt for the regulator and the fulfilment of its objectives. H3GI reiterates its request to ComReg to: (i) specify a robust framework for transitional activities, including milestones and timetable for completion with penalties that deter non-compliance; (ii) ensure that liberalised spectrum is available as soon as practicable after the award process, and in any event no later than 1 February 2013; and (iii) reserve Lot A of the 900 MHz band and unassigned 1800 MHz in both time slices for a new band entrant.¹

H3GI re-iterates its view that relocation and re-tuning should not take as long as alleged by the incumbent operators. In this regard, it refers to H3GI's response to ComReg's General Auction Consultation, the Elisa case study previously provided by H3GI to ComReg and how quickly O2 (UK) rolled out a HSPA 900MHz network in the UK (Notwithstanding the fact that O2 (UK) told Ofcom repeatedly that refarming the GSM spectrum was very complex and would take several years to accomplish). In relation to advanced commencement and the example cited by O2 in section 11 of its response to ComReg's General Auction Consultation, O2 does not demonstrate why the incumbent operators need to transition in this manner. H3GI also questions the reference by O2 to the incumbent operators re-engineering their GSM assignment plans in order to be able to use some liberalised spectrum for UMTS services. H3GI submits that transitional activities and advanced commencement should not be delayed by the incumbent operators re-engineering their GSM assignment plans in order to be able to use some liberalised spectrum for UMTS services. This is something that the

¹ As articulated in H3GI's Response to ComReg's Consultation re: Draft Auction Rules.

incumbent operators can do after their transitional activities are complete. The eircom Group has failed to demonstrate why block A cannot be made available immediately following completion of the award process.

Spectrum Cap of 2 x 10 900 MHz in the First Time Slice

At pages 7 and 18 of its response to ComReg's General Auction Consultation, O2 states:

"ComReg's T1 proposal, in particular the addition of a proposed new 900 MHz sub-cap, represents a failure by ComReg to meet its statutory obligation to ensure that there is no distortion or restriction of competition in the electronic communications sector. ComReg fails to ensure the avoidance of discrimination in the treatment of undertakings, because ComReg is aware that H3GI is the only existing operator that could launch UMTS immediately. Such a proposal is therefore clearly in breach of ComReg's obligation to be technology neutral, by disincentivising incumbent GSM operators from launching UMTS and thereby discriminating against them. The other operators would first have to reduce their GSM requirements at 900MHz in order to be able to fit any kind of UMTS services within the proposed cap."
[Emphasis added]

"The new 900 MHz sub-cap is the most significant new structural change introduced by Document 11/60 into ComReg's Auction Proposal. As a preliminary point, Telefonica notes that it is surprised and concerned that a change of this significance is to be decided upon without first consulting fully upon it with industry; no questions on the new sub-cap are raised or specific submissions invited, despite it being a new element to the Auction Proposal.

It is not clear from Document 11/60 what prompted ComReg to look at introducing an additional band cap. Telefonica can only assume it was on foot of the submission from H3GI in July 2011, shortly before Documents 11/60 was published. The main beneficiary of this band cap is H3GI. It appears from Document 11/58-60 that ComReg has not fully appreciated the very serious implications of this sub-cap for the remainder of the industry and for consumers. These include:

*(i) **Discrimination in favour of H3GI in the launch of advanced services.** The 900 MHz cap would mean that H3GI is the only existing operator that can launch a UMTS service in the short term. Such a measure is discriminatory and breaches the fundamental principle of equal treatment. As ComReg has previously acknowledged the GSM operators require their current 900 MHz spectrum for GSM services. Limiting their ability to purchase no more than an extra 2x2.8 MHz means that they cannot launch a UMTS service in the short term after the auction. This discriminatory measure distorts competition on the market, giving H3GI an unfair advantage insofar as it essentially leaves the field clear for H3GI to have a headstart in launching advanced services. This effectively penalises the other operators for the fact that the assignment process has been delayed, and they have legacy GSM customers and must therefore use the bulk of any 900 MHz bought within the cap to maintain services for these customers (ComReg has previously acknowledged that H3GI is in a better position to take full advantage of liberalised sub-1GHz spectrum and also recognised the continuing requirements of operators for 900 MHz spectrum to provide GSM services – Document 11/29, page 23).*

(ii) ComReg is forcing long-term technology selection on operators and the market.

With UMTS 900 ruled out in the short term, this is likely to force existing operators to try to purchase 800 MHz for LTE in T1 if they wish to roll out advanced services in T1. It is disingenuous to suggest that the sub-cap will only have a short term effect. An operator forced by the cap to purchase 800 MHz spectrum in the first time-slice and opt for LTE technology will then incur significant costs in rolling out LTE at 800 MHz. It would simply not be practical or financially feasible to then switch to investing in the rollout and provision of UMTS 900 based services in the second time slice. ComReg is therefore shaping demand for 900 MHz and availability of UMTS 900 services for the entire 17 years of the proposed new licences. It is making it far less likely that any of the existing GSM operators will be in a position to offer UMTS 900 services to their customers

(iii) Unjustifiably driving up the price for 800 MHz spectrum. *The 900 MHz cap forces demand from the existing operators to the 800 MHz band. In the event of strong demand for 800 MHz, which would arise if either H3GI or a new entrant also bid for it, the possibility of switching demand to the 900 MHz band is effectively eliminated. This runs directly counter to ComReg's own stated strategy in relation to the auction and to caps, which is to facilitate switching between bands and not to constrain auction outcomes by means of caps. This will at the very least significantly drive up the price of 800 MHz, and might result in at least one existing operator not being in a position to offer advanced services in the short term, which it could have done if it had been allowed to switch its demand to 900 MHz in response to price increases.*

(iv) Fragmentation - *an operator might want (for efficiency reasons) to operate in a single band below 1 GHz. If a bidder requires three lots below 1 GHz, then the cap prevents them from being obtained in the 900MHz band. That the cap only applies to the first time slice is of little use in mitigation, as it would not be practical to switch bands after just 2.5 years.*

(v) Driving down the price and demand for 900 MHz. *For the reasons outlined above, the cap is likely to drive down demand for and the price of 900 MHz. ComReg would essentially have forced the other 3 operators out of the 900 MHz band for advanced services, clearing the way for H3GI to pick 900 MHz up on long term licences for less than it would have had to pay in a competitive auction.*

Telefonica is surprised at the introduction of this proposal, as it restricts the outcome of the auction and pre-determines that at least one lot of 900MHz spectrum will either remain unsold, or will only be sold to a new entrant to the band. This is directly equivalent to reserving a lot of spectrum for a new entrant to the band – a proposal that was made initially by ComReg in 08/57 but which has been eliminated from further consideration during the consultation process. The proposal to impose such a restriction is directly contrary to ComReg's own view (as stated in 11/60, 3.146) that the auction itself should determine the assignments without restriction:

“Any form of administrative assignment of spectrum (i.e. Option 2) imposes a restriction on the range of possible outcomes in the auction. The more extensive the restriction, in terms of the possible auction outcomes which it precludes, the more likely it is that the actual optimal allocation is precluded from arising. Restrictions on auction outcomes will impact firstly on competition in the auction itself and ultimately downstream competition and consumers. An

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efficient outcome in the auction would be best achieved by not imposing unnecessary restrictions on the possible outcomes of the auction and thereby maximising the opportunities for competition in the auction itself – for example, a restriction that there must be a new entrant excludes all potential auction outcomes where no prospective new entrant is a successful bidder”.

ComReg would also appear to have accepted that such a sub-optimal auction outcome will have consequential loss for consumer welfare, e.g. (11/60, 3.158):

“Given the current (and likely future) importance of the mobile service market even small moves away from the optimal spectrum allocation could have potentially very large impacts on welfare over the period up until 2030. Market mechanisms may eventually undo mistakes made but during that time there would be less competition and less innovation relative to the optimal spectrum rights allocation and the loss to consumer welfare could be large”.

ComReg has pre-determined that there should be at least 4 operators in the 900MHz band, without carrying out any market analysis or regulatory impact assessment to support this decision.

Despite the lengthy analysis and exploration of considerations, neither ComReg nor DotEcon have stated specifically why it is now proposed to introduce this new cap. Telefonica notes that the primary driver appears to have been a concern raised by H3GI that 900 MHz spectrum is more in demand than 800 MHz up until approximately 2015, and that therefore ComReg should ensure more participants have the option to purchase 900 MHz in T1. However, as outlined in section 6, Telefonica considers that for practical and legal reasons the earliest the new licences can in fact start is 2014/2015, at which point this perceived differential in value for new services on ComReg’s own analysis will have disappeared, removing the need for a separate band cap.

Telefonica considers that the consequences of the cap outlined above are potentially unfair and contrary to ComReg’s obligations and objectives, including the obligations to ensure the efficient use of spectrum, promote competition in new services, not to discriminate as between users of spectrum and act in a technology neutral manner. They run directly counter to ComReg’s stated aim in relation to caps which is not to “constrain auction outcomes and thereby reduce the potential for realising a competitive and efficient result”. These consequences are not addressed in Documents 11/58-60 nor are they weighed against the perceived benefits of the cap. Telefonica further submits that the likely delayed start of the T1 licences to 2014-15 (and possible elimination of T1 altogether) renders the perceived disparity in value of 900 MHz and 800 MHz before 2015 a non-issue. In the circumstances Telefonica strongly submits that ComReg is legally obliged to now fully consult with industry on the proposed cap, working with it to assess its wider implications as outlined above, before reaching any final decision.” Emphasis added]

H3GI does not agree that ComReg has failed to consult in respect of its 2 x 10 900 MHz first time slice spectrum cap proposal. It has formed part of its consultation regarding its final decision ie ComReg Doc. No. 11/60 and related documents. H3GI also does not agree that ComReg’s spectrum cap proposal discriminates in favour of H3GI in the launch of advanced services. As O2 itself subsequently acknowledges, the proposed spectrum cap benefits H3GI

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or any new band entrant. H3GI does not agree that the incumbent operators cannot provide advanced services in the short term and need 2 x 10 900 MHz to serve their existing GSM customer base. This is supported by proposals from the incumbent operators and has been noted by ComReg. H3GI re-iterates that it is not in a better position to take full advantage of liberalised sub-1 GHz spectrum.

H3GI does not agree that ComReg is: (i) forcing long-term technology selection on operators and the market; (ii) unjustifiably driving up the price for 800 MHz spectrum; (iii) fragmenting spectrum; and (iv) driving down the price and demand for 900 MHz. As set out above, UMTS 900 is not ruled out in the short term. As a result, the 900 MHz cap will not force *“existing operators to try to purchase 800 MHz for LTE in T1 if they wish to roll out advanced services in T1”*, does not force *“demand from the existing operators to the 800 MHz band”*, does not prevent short term demand to launch advanced services being met and does not force *“the other 3 operators out of the 900 MHz band for advanced services, clearing the way for H3GI to pick 900 MHz up on long term licences for less than it would have had to pay in a competitive auction”*.

Yours sincerely


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Submissions to Document 11/75 and Correspondence with interested parties

5. H3GI: letter to ComReg “ComReg Doc. No.s 11/60 and 11/102” (letter dated 24 February 2012)

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24 February 2012

Dear Sinead

COMREG DOC. NO.S 11/60 AND 11/102

I refer to: (i) ComReg Doc. No. 11/60, "Multi-Band Spectrum Release – Release of the 800 MHz, 900 MHz and 1800 MHz radio spectrum bands" ("ComReg's General Auction Consultation"); (ii) the response of Hutchison 3G Ireland Limited ("H3GI") to ComReg's General Auction Consultation dated 14 October 2011 ("H3GI's Response to ComReg's General Auction Consultation"); and (iii) ComReg Doc. No. 11/102, "Spectrum Liberalisation – Publication of non-confidential responses to ComReg Document 11/60 and recent correspondence" (the "Responses to ComReg's General Auction Consultation"). The comments contained in this document are in addition and without prejudice to H3GI's previous responses to ComReg's consultations on liberalisation of the 900 MHz spectrum band.

In H3GI's Response to ComReg's General Auction Consultation, H3GI stated as follows:

*"H3GI welcomes ComReg acknowledgement that spectrum sharing can in principle bring benefits such as reduced costs and improved quality of service and the care that ComReg has shown not to include restrictions in the licences that would inhibit such sharing after the award process. However, it is probable that as a result of the current design of the auction, some operators may not be in a position to spectrum share by virtue of their location within the spectrum bands to be auctioned. With a view to allowing for the possibility of spectrum sharing with all of its positive benefits, whilst also taking account of the potential competition concerns, H3GI urges ComReg and DotEcon to devise a solution to this problem."*¹

In the Responses to ComReg's General Auction Consultation, Vodafone and the eircom Group made proposals in relation to network sharing.

H3GI now encloses an independent report prepared by Copenhagen Economics in relation to network sharing agreements and the upcoming Irish 800, 900 and 1800 MHz auction. In particular, H3GI commissioned Copenhagen Economics to assess the possible accommodation of network sharing agreements (NSAs) in the assignment phase of the upcoming Irish 800, 900 and 1800 MHz auction. The focus of the assignment was threefold. First, Copenhagen Economics was asked to briefly assess the need for accommodation of NSAs in the Irish spectrum auction. Second, Copenhagen Economics was asked to assess the network sharing proposals previously put forward by Vodafone and the eircom Group.

¹ At page 51.

Directors
Robert Finnegan: Irish
Canning Fok: British
Frank Sixt: Canadian
Robert Eckert: U.S.A
Edmond Ho: British
David Dyson: British
Richard Woodward: British

Third, Copenhagen Economics was asked to propose modified versions of the proposals previously put forward by Vodafone and the eircom Group to the extent they found it necessary.

Copenhagen Economics concludes as follows:

1. Taking care of the synergistic benefits associated to NSAs is a real issue that ComReg should worry about.
2. There are good objective reasons to modify the auction rules to allow for such considerations and there are simple ways of doing it.
3. Vodafone's proposal is desirable in that it allows bidders to negotiate directly with each other which maximises the probability of an efficient outcome.
4. However, it is necessary to modify Vodafone's proposal to give bidders incentives to bid truthfully. The modification is to let the prices paid in the negotiation outcome be whatever the bidders can agree on. That is, in the negotiation phase the bidders would negotiate allocations and additional prices to pay. If no negotiation outcome is reached, the bids from the previously held assignment round come into force.
5. eircom Group's first, second and third proposal all have serious flaws as they do not ensure efficiency and favour existing NSAs over potential NSAs. eircom Group's fourth proposal expands the possibilities for harassing bidding.

Copenhagen Economics recommends that *"ComReg takes account of the synergistic benefits associated to NSAs by accommodating for NSAs in the Irish spectrum auction ... [and] ... that this is done by using our modified version of Vodafone's proposal"*.

H3GI agrees with this analysis and urges ComReg to accept Copenhagen Economics recommendation in its final decision in respect of this matter.

Yours sincerely



MARK HUGHES
Head of Regulatory

Copy: Mr Jim Connolly, ComReg (jim.connolly@comreg.ie)
Mr Samuel Ritchie, ComReg (samuel.ritchie@comreg.ie)
Mr Patrick Mulvey, ComReg (patrick.mulvey@comreg.ie)

NETWORK SHARING AGREEMENTS AND THE IRISH SPECTRUM AUCTION

PREPARED FOR HUTCHISON 3G IRELAND LIMITED | 22 FEBRUARY 2012

INFORMED DECISIONS



COPENHAGEN ECONOMICS

EXECUTIVE SUMMARY

Hutchison 3G Ireland Limited has commissioned Copenhagen Economics to assess the possible accommodation of Network Sharing Agreements (NSAs) in the assignment phase of the upcoming Irish 800, 900 and 1800 MHz auction. The focus of the assignment is three-fold. First, we have been asked to briefly assess the need for accommodation of NSAs in the Irish spectrum auction. Second, we have been asked to assess the network sharing proposals previously put forward by Vodafone and eircom Group. Third, we have been asked to propose modified versions of the proposals previously put forward by Vodafone and eircom Group to the extent we find it necessary.

The issue of NSAs arises in context of the assignment phase because partners in an NSA may have a joint valuation of certain allocations of spectrum that is higher than the sum of the valuations of the individual partners in the NSA. In other words, there is interdependence between valuations that are not necessarily taken care of in the current auction setup: The joint valuation is higher if members of a NSA together can achieve contiguous spectrum. Importantly, granting NSA partners contiguous spectrum can facilitate a more efficient use of spectrum through less network costs incurred which will ultimately benefit the consumers in the market. In short, taking care of the synergistic benefits associated to NSAs is a real issue that ComReg should worry about. There are good objective reasons to modify the auction rules to allow for such considerations and there are simple ways of doing it.

In this respect, Vodafone has submitted one proposal and eircom Group has submitted four proposals on how to complement the auction rules to accommodate for NSAs.

We find that Vodafone's proposal is desirable in that it allows bidders to negotiate directly with each other which maximises the probability of an efficient outcome. However, it is necessary to carefully consider how prices in a negotiation outcome are determined to ensure that bidders have incentives to bid truthfully. This is discussed in more detail below. With respect to eircom Group's proposals, we find that the first, second and third proposal all have serious flaws as they do not ensure efficiency and favour existing NSAs over potential NSAs. Lastly, we find that whilst eircom Group's fourth proposal has better features in terms of efficiency and fairness, it expands the possibilities for harassing bidding.

At the outset, Vodafone's proposal seems most promising in terms of releasing the social value from NSA partners obtaining contiguous spectrum. In our review of Vodafone's proposal, we therefore take a further step and suggest a simple modification of Vodafone's proposal that gives bidders incentives to bid truthfully. The modification is to let the prices paid in the negotiation outcome be whatever the bidders can agree on. That is, in the negotiation phase the bidders would negotiate allocations and additional prices to pay. If no negotiation outcome is reached, the bids from the previously held assignment round come into force.

All in all, we recommend that ComReg takes account of the synergistic benefits associated to NSAs by accommodating for NSAs in the Irish spectrum auction. We recommend that this is done by using our modified version of Vodafone's proposal.

Chapter 1 | THE IMPORTANCE OF ACCOMODATING FOR NSAs

The issue of NSAs is relevant in the context of auctions because NSAs affect individual bidders' valuation of different allocations. In essence, the NSA issue arises because partners in an NSA may have a joint valuation of certain allocations of spectrum that is higher than the sum of the valuations of the individual partners in the NSA. In other words, there is interdependence between bids that is not necessarily taken care of in the current auction setup: The joint valuation is higher if the partners of the NSA together can achieve contiguous spectrum. In the current setup, bidders can only express preferences for own allocations by bidding on own allocations.

The generic CCA auction format for the allocation phase is implicitly based on the assumption that each bidder has a certain valuation of each allocation that the bidder can bid for. A bidder's valuation of an allocation depends on the commercial value to the bidder of the allocation, irrespectively of how the remaining bidders are positioned. This is usually a fair, though maybe not perfect, assumption. The existence of NSAs breaks with this assumption. For a bidder engaged in an NSA, the value of a certain allocation will depend directly on the allocation of another bidder. If the NSA partners are positioned next to each other, they will be able to share frequencies more efficiently and therefore value their own allocation higher.

The argument for accommodating for NSAs in the assignment round corresponds to the argument for guaranteeing contiguous spectrum for bidders in the assignment round. Guaranteeing contiguous spectrum in the assignment round is motivated by bidders placing higher valuations on contiguous spectrum than non-contiguous spectrum.¹ Accommodating for NSAs in the assignment round is motivated by bidders placing higher valuations on spectrum contiguous with the NSA partner's spectrum than spectrum not contiguous with the NSA partner's spectrum.

At the outset, it is not certain that the value of an existing or potential NSA is sufficiently large to make it socially optimal to grant NSA partners contiguous spectrum. If the value of an NSA is small relative to bidders' valuations for different allocations, there may be cases where it is not socially optimal to grant NSA partners contiguous spectrum. However, it is possible to deal with this issue in relatively simple ways. One can allow bidders to express preferences for being placed next to another bidder, either in a negotiation or in a bidding process. This will ensure that NSA partners are granted contiguous spectrum *if* granting them contiguous spectrum maximizes the total value of bid amounts and thus social value.

Of all the objectives one may have for a spectrum auction, e.g. efficiency, promotion of competition in telecom markets or geographic coverage, accommodating for NSAs is a relatively easy objective to achieve. All that has to be done is to ensure that existing or potential NSA partners are granted contiguous spectrum. Given the large potential benefits arising

¹ See e.g. DotEcon, "Issues relating to the award of spectrum in multiple bands in Ireland, Prepared for ComReg by DotEcon (Non-confidential version)", Document 11/58, 24/08/2011. On page 105 it reads: "... the assurance of contiguous frequencies ... alleviates the problem of an inefficient auction outcome resulting from bidders placing different values on contiguous and non-contiguous spectrum assignments."

from NSA partners sharing infrastructure and rolling out new networks more efficiently, accommodating for NSAs should be a priority for ComReg. Importantly, granting NSA partners contiguous spectrum can facilitate a more efficient use of spectrum through less network costs incurred which will ultimately benefit the consumers in the market.

In short, taking care of the synergistic benefits associated to NSAs is a real issue that ComReg should worry about. There are good objective reasons to modify the auction rules to allow for such considerations and there are simple ways of doing it.

Chapter 2 EXISTING PROPOSALS FOR ACCOMODATION OF NSAs

2.1. VODAFONE'S PROPOSAL

In Vodafone's proposal, an assignment round is carried out, but the results are not visible or valid unless the bidders fail to reach a voluntary agreement:

"... one possible process could entail the assignment round being completed but the results not made known to the bidders. ComReg could then allow the bidders some time to agree a set of final assignments which were acceptable to all parties. Once agreed, bidders would then pay the price they submitted as part of the assignment round. If there was no negotiated agreement reached, the final allocations would then be announced based on the outcome of the actual assignment round."

Source: Vodafone Response – ComReg 11/60, paragraph 41.

However, it is not entirely clear whether bidders would be allowed to exchange payments during the negotiation and what prices are paid in case of a negotiation outcome.² In the following we will argue that the exchange of payments is not the most important issue for the success of this option and that the issue of prices paid in case of a negotiation outcome can easily be solved to give a good incentive structure that maximizes the probability of releasing the positive values described in chapter 1.

The idea of letting all parties negotiate a set of assignments is attractive. A negotiation where all parties can participate allows bidders to express preferences that take other bidders' positions into account. Given the significant value attached to contiguous spectrum for existing and potential NSA partners, the winning bidders will have a strong incentive to agree on a negotiation outcome rather than subjecting themselves to the result of a bidding phase where they cannot express preferences to be placed next to particular bidders.

In contrast, proposals without direct negotiation all have shortcomings in terms of maximising the probability of releasing the benefits of NSAs. As we will explain below, all the reviewed proposals that merely involve bidding suffer either from inadequate possibilities for bidders to express their preferences to be positioned next to their desired NSA partners or from the risk of harassing bidding. These two shortcomings induce a smaller probability of achieving contiguous spectrum for NSA partners due to mis-coordination (inadequate possibilities to express preferences) or harassment (harassing bidding).

Moreover, uncertainty about the precise value of contiguous spectrum for NSA partners also speaks in favour allowing direct negotiation. In some negotiation cases, bidders may be able to reach a negotiation outcome merely by deciding on the ranking of allocation options, not the valuation of them. In all negotiation cases, NSA partners have the possibility of discussing the value of contiguous spectrum thus getting a second opinion on the value estimate. Either way, bidders' uncertainty about the value of contiguous spectrum is better resolved in

² Two issues relating to the prices are uncertain. First, whether the relevant bids are the bids corresponding to the actual position obtained or the bids that would have won the bidding phase of the assignment round, and second, whether the prices arising from these bids are determined using a first- or a second-price rule.

a negotiation process than in a bidding process where they explicitly have to bid specific values for specific allocations.

However, one must consider what prices are to be paid if a negotiation outcome is achieved. Importantly, if the prices paid in the case of a negotiation outcome depend on the bids given in the bidding phase, it can distort incentives arising in the bidding phase.

In a negotiation process, bidders can affect which outcome is chosen, and thus which of their submitted prices they will pay. This distorts the incentives to bid truthfully because bidders have to trade off submitting bids that are closer to their true preferences versus submitting bids that are lower in anticipation of paying lower prices in case of a negotiation outcome. Higher likelihood of a negotiation outcome will cause rational bidders to down-scale some or all bids to maximise their expected payoff.

To ensure a desirable incentive structure in Vodafone's proposal, one needs to separate the prices paid in the negotiation outcome from the bids given in the face of a non-negotiation outcome. Prices in the negotiation outcome cannot depend on bids given in a regular assignment stage without negotiation. If they do, rational bidders will factor in the likelihood of reaching different negotiation outcomes when bidding in the assignment round, instead of merely bidding its true valuations for the different allocations.

The straightforward solution is to let the prices paid in the negotiation outcome be whatever the bidders can agree on. That is, in the negotiation phase the bidders would negotiate allocations and what additional prices to pay – and if no negotiation outcome is reached, the bids from the previously held assignment round come into force. In this way, bidders will not have incentive to change bids according to the likelihood of reaching certain negotiation outcomes. If a negotiation solution is reached, the bids from the bidding phase are irrelevant. If a negotiation solution is not reached, each bidder will be best off from having bid according to its true preferences in the bidding phase of the assignment round.

The prices to be paid in a negotiation outcome could either be paid to ComReg or to other bidders (or both). From a theoretical viewpoint, the important point is that bids given in the assignment round are not linked to the prices paid if a negotiation outcome is reached, not who the prices are paid to. The possibility of exchanging payments in the negotiation phase is, in other words, not related to the potential incentive problem, merely to the functioning of the negotiation phase.

However, in a negotiation process, bidders can basically offer each other two things to obtain a preferable position in one band: money or a preferable position in another band. Requiring that payments are made to ComReg limits the effectiveness of the first method of compensation, money, because bidders are better off from receiving an amount from a competitor than from the competitor paying the same amount to ComReg.

Being able to negotiate compensation to each other rather than to ComReg should thus make it easier to reach a negotiation outcome as bidders then also have to option of being compensated directly for accepting less advantageous positions. This is an argument for allowing bidders to compensate each other directly in the negotiation process.

Being able to negotiate compensation to each other will obviously limit the revenue raised by ComReg in the assignment phase of the auction. However, the majority of the revenue raised in the auction will in any case be raised in the main stage of the auction. Therefore, the foregone revenue in the assignment phase from letting bidders pay each other instead of paying ComReg may prove a small price to pay to ensure that NSA partners receive contiguous spectrum in the best manner. Ultimately, ensuring contiguous spectrum for NSA partners is about ensuring a technologically efficient use of spectrum which in turn will benefit competition in the market and the consumers in it.

2.2. EIRCOM GROUP'S PROPOSALS

Proposal 1: Unconditional direct implementation

eircom Groups' first proposal involves disregarding allocations that do not give NSA bidders contiguous spectrum in the assignment round:

"Under the unconditional implementation, only assignments that realise the synergistic values created by Network Sharing Agreements are considered during the assignment stage."

Source: eircom Group response to Draft Decision, Multi-Band spectrum Release. ComReg Doc. 11/60, Appendix 1, p. 6.

This proposal favours operators that are engaged in existing NSAs over other operators. First, one or more other operators may be prepared to pay enough for a specific allocation to outweigh the synergistic values achieved by the ensuring that existing NSA bidders are given contiguous spectrum. The unconditional direct implementation precludes such alternative allocations, no matter how much bidders have bid for them, by simply excluding them from the assignment stage. Therefore, the proposal does not always ensure efficiency. Second, only known NSAs are presumably taken into account. Bidders that are considering entering into an NSA are not given the same privilege of being guaranteed contiguous spectrum with the desired NSA partner although the value of the potential NSA may outweigh the value of existing NSAs.

Proposal 2: Conditional direct implementation

eircom Groups' second proposal is based on ComReg estimating the social value of NSAs and adding the social values to the allocations that achieve them:

"Under the conditional implementation, all assignments are considered, but the auctioneer uses an estimate of the social value of the NSA (including both the value of spe-

cific frequencies and the value of the NSA) to calculate the total value of each assignment. The auctioneer's estimate of the NSA value represents the amount of the positive externality."

Source: eircom Group response to Draft Decision, Multi-Band spectrum Release. ComReg Doc. 11/60, Appendix 1, p. 6.

The main issue with this proposal lies in ComReg's estimation of the social value of NSAs. The efficiency of this approach is only guaranteed if ComReg determines the correct social value of the NSA.

A main point of having an auction instead of a beauty competition is exactly to avoid the regulator having to determine the commercial values that can be achieved by private parties. Both the value of spectrum and the value of an NSA depend on the business plans of the operators in question and these values are best determined by the operators themselves. Moreover, ComReg cannot rely on information from NSA partners when estimating the value of an NSA because the NSA partners will have an incentive to overstate the value of the NSA to be certain to achieve contiguous spectrum. One can interpret the estimated value of the NSA that is added to the allocations that give NSA partners contiguous spectrum as bids from a phantom bidder that only bids for the allocations that suit the NSA partners.

As for the unconditional direct implementation, the conditional direct implementation also favours operators that are engaged in existing NSAs over other operators. Only the value of known NSAs are presumably estimated and taken into account which hinders appropriate consideration of other potential NSAs.

Proposal 3: Authorisation of communication and coordination

The third proposal from eircom Group allows NSA partners to communicate in the assignment stage:

"... remove the usual proscription on bidding communication and bidding coordination among NSA partners in the Assignment Stage (but not in the Principal Stage)."

Source: eircom Group response to Draft Decision, Multi-Band spectrum Release. ComReg Doc. 11/60, Appendix 1, p. 7.

Two concerns speak against this solution. First, efficiency is not ensured despite communication because the bidders can only bid for individual blocks, not make bids contingent on other bidders' allocations. This concern is especially relevant if two NSAs are in place. If two sets of NSA partners independently decide to seek contiguous spectrum by bidding for the same blocks of spectrum, the outcome can be high prices and non-contiguous spectrum for all NSA partners. Second, this proposal also favours operators that are engaged in existing NSAs over other operators. Only operators that are current NSA operators are allowed to communicate and they may communicate over issues not directly relevant to the NSA (e.g. competing bidders' likely bids, values of different allocations etc.).

Proposal 4: Bidding on entire vector of allocations

eircom Groups' fourth proposal allows bidders to bid for the entire vector of allocations. Instead of just bidding for own allocations, the bidders can then also influence other bidders' allocations by submitting different bids for allocations where the bidder has the same position but other bidders have different positions.

Of all the four eircom Group proposals, this one has the best features in terms of efficiency and fairness. All bidders are given the same opportunities to bid, their bids are treated identically, no allocation options are excluded, and ComReg has no influence on which allocation is chosen. By allowing bidders to bid for allocations that specify not only one's own allocation but also the allocation of other bidders, the auctioneer allows bidders to also express preferences for other bidders' allocations.

The concern with this proposal is that there are wide opportunities for harassing bidding. The proposal allows bidders to express preferences against a good outcome for certain rivals by bidding more for allocations where these rivals are positioned poorly. The problem with harassing bidding becomes especially evident when there are four bidders with two (existing or potential) NSAs in a band, see Box 2.1.

Box 2.1: Example of harassing bidding

Consider four bidders A, B, C and D that have all won blocks in a spectrum band. Bidders A and B are (potential or existing) NSA partners and so are bidders C and D.

A total of 24 different allocations are possible in the band. The damaging effects of harassing bidding will stand out from merely considering a couple of the different allocations:

	Position 1	Position 2	Position 3	Position 4
Allocation 1	A	B	C	D
Allocation 2	C	A	B	D
Allocation 3	C	D	A	B

Of the three allocations considered above, the NSA partners A and B obtain contiguous spectrum in all of them while the NSA partners C and D only obtain contiguous spectrum in allocation 1 and 3.

Under eircom Group's fourth proposal, A and B can jointly or individually hinder C and D from obtaining contiguous spectrum by bidding aggressively for allocation 2. It may be in the commercial interest for A or B to pay considerably for preventing C and D from obtaining contiguous spectrum such that they are forced to spend extra costs on rolling out networks on their own rather than together. However, it is not welfare enhancing that one private party (A or B) can invest in increasing the costs of competitors (C and D) by bidding aggressively for a certain allocation (allocation 2).

Source: Copenhagen Economics.

Harassing bidding can come in many forms. If a certain position is e.g. particularly undesirable for one bidder, other bidders can bid on the bidder obtaining exactly this position. Notice also that harassing bidding from just one bidder is enough to prevent other bidders from obtaining their desired outcome. The reason is simply that you can express preferences not only over own positions and positions of your desired NSA partner but also over positions of bidders that you have no existing or potential commercial relationship with.

It should be pointed out that the possibilities of harassing bidding are not completely absent in any bidding setup. In the setup in the draft information memorandum bidders can e.g. bid more for middle blocks to make it more difficult for NSA bidders to achieve contiguous spectrum. The harassment possibilities are however limited in that bidding setup relative to eircom Group's fourth proposal because a bidder cannot bid specifically on how to position all other bidders.³

2.3. CONCLUSION

All in all, we recommend that ComReg takes account of the synergistic benefits associated to NSAs by accommodating for NSAs in the Irish spectrum auction. We recommend that this is done by using our modified version of Vodafone's proposal.

³ In the context of the example in Box 2.1, bidder A can e.g. only bid for a position (i.e. either position 1, 2, 3 or 4) in the rules in the draft information memorandum. Bidder A can thus only bid to occupy one position, not to let C and D occupy specific positions at each end of the band.

6. RTE: email to ComReg "Overload problem" (email dated 4 January 2012)

From: Kehoe, Mick
Sent: 04 January 2012 14:37
To: Hugh Tuckey
Cc: DCENR's Digital Switchover Group (DSG)
Subject: Overload problem

Hugh,

I have just read your attached letter, received late on the 21 December and the 22 December publication and my initial comments, on the letter mainly, are as follows.

I would agree with the vast majority of the technical areas in your letter but I think it takes little account of the practical issues for home aerial installations caused by the policy decision to reduce the broadcast spectrum. Technically here is no rocket science in the solution, put a suitable filter between the aerial and the amplifier or install a new reduced band/narrow band aerial or amplifier, but unfortunately at present no suitable amplifiers, aerials, low-bandpass, notch or other filter are easily available from any retailers or manufacturers at an affordable price. Cutting out everything above 790 MHz is new to the world of television aerial systems manufacturers and system installers and as we all already know from other DSG work this area is completely unregulated and it is largely reactive rather than proactive.

As per ComReg, I don't believe that home antennas systems, equipment, standards and specifications fall under the auspices of RTÉ, SAORVIEW or RTÉNL. However there is a real issue for a small but not insignificant number of homes and rather than letting it slip between the cracks we believe a little bit of effort from all of the DSG Group parties and the new telecom services would make a substantial beneficial contribution to a smooth ASO and launch of any new telecommunication services.

A policy decision was made to slice off a part of broadcast spectrum for other services. This policy decision is going to cause problems for a small but not insignificant number of legacy home installations. Most if not all aerial systems were installed in the last 20 years and most if not all were installed to the relevant, and still current, technical and policy standards (*until 24 October 2012*).

RTÉNL and SAORVIEW are talking to the various installers and industry groups and all are aware of this current/future issue. The TV installer briefings are not public meetings so there is a registration process but they are not confidential in any way either. ComReg, the BAI and the DCENR are welcome to attend and participate any time you wish to do so. We would welcome ComReg's and the BAI's involvement at the coalface.

In reality the situation the DSG Group faces is a bit chicken and egg. In the ideal world the perfect technical solution would be available now, but it's not.

- RTÉNL believes that for various practical and political reasons we (ComReg, DCENR, RTÉ, SAORVIEW, TG4, TV3, RTÉNL, etc) need as many people as possible to migrate to SAORVIEW, or another digital service, in advance of ASO.
- At some point after ASO telecommunication services will move into the freed broadcast spectrum.
- Once telecommunications move into the broadcast spectrum, post ASO, a small but not insignificant number of homes will experience interference problems.
- *Unless there is an earlier intervention by some party.* Once a sufficient volume of homes have interference problems suitable filters will appear on the market. Hopefully they will cost less than c. €20, plus installation.
- Going forward (once the new policy/standards become widely known) installations with filters, reduced band aerials, reduced band amplifiers, etc. will become the industry norm.

RTÉNL believes it would be counterproductive to the aims of the the DSG Group (Digital Switch On, Analogue Switch Off, minimum disruption to the public, minimum cost to the public, etc) to inform every home in the country with an aerial that their aerials will not meet the relevant standards from October 24 2012. Especially as the vast majority of homes will not, in reality, be impacted in any way in the foreseeable future, and as there is currently no technical solution easily or cheaply available to them. It would, in our view, be more practical to have an agreed mechanism and process in place to address any issues with home antenna systems as and when they arise in conjunction with the roll out of the new services.

As previously stated RTÉNL believes that there is a piece of work to be done by the DSG Group on this issue. With a joint effort this problem can be minimised without unnecessarily frightening every home in the country with an aerial away from migrating to a digital service in advance of ASO, or unnecessarily frightening them into the ongoing expense of a pay television platform.

- RTÉNL & SAORVIEW are continually talking to TV installers on this issue and you may be right when you say that the public should be informed as well. As this message has the potential to damage the migrating away from Analogue services in advance of ASO, and/or in advance of a suitable technical solution being available, the message should be carefully crafted, agreed and consistent across the DSG Group.
- A common message by the various relevant authorities (ComReg, BAI, DCENR) and the broadcasters would help encourage the necessary filters or narrowband aerials or amplifiers onto the shelves at an early juncture.
 - An important part of this is ComReg and or the DCENR clearly confirming to the industry what the actual broadcast digital dividend is, its implications for antenna systems and its timing.
 - Additionally ComReg clearly confirming that these new adjacent telecommunication services are actually going to materialise and an expected timeframe.
- As always RTÉ, SAORVIEW, the other broadcasters and RTÉNL will play our part however as the technical solution is unlikely to arrive in advance of the actual problem, without intervention, we think it is critical that the parties rolling out the new services in the vacated broadcast spectrum (the only people that will know what is being switched on or tested where and when) are compelled to be involved in the resolution.

Hopefully we can get to discuss the issue at the next DSG meeting which I believe is scheduled for the 18 Jan.

Regards,

Mick....

Submissions to Document 11/75 and Correspondence with interested parties

7. IBEC: email to ComReg "ComReg plans re publication of information memorandum on spectrum" (email dated 15 February 2012)

From: Torlach Denihan

Sent: 15 February 2012 14:12

To: Alex Chisholm

Subject: ComReg plans re publication of information memorandum on spectrum

Dear Alex

I would be obliged for an indication of the month during which ComReg plans to publish its information memorandum on spectrum. It would be extremely useful for interested parties to know this for planning and resource allocation purposes.

Yours sincerely

Torlach Denihan

Submissions to Document 11/75 and Correspondence with interested parties

8. ComReg: reply to IBEC email of 15 February 2012 (email dated 16 February 2012)

From: Alex Chisholm
Sent: 16 February 2012 14:54
To: Torlach Denihan
Cc: Samuel Ritchie
Subject: RE: ComReg plans re publication of information memorandum on spectrum

Dear Torlach,

Thank you for e-mail of yesterday.

ComReg appreciates the planning and resource implications of its spectrum award proposals on interested parties.

As identified in section 1.3 of Document 11/75, ComReg must first finalise its decision-making on the substantive aspects of its multi-band spectrum award proposals before it can move towards finalising the information memorandum. In that regard, ComReg expects to issue its response to consultation and final decision on its multi-band spectrum award proposals shortly, and would expect a further period of several weeks from said issue, barring events outside of ComReg's control, within which to publish its response to Document 11/75 and issue a final information memorandum.

Please be advised that ComReg will be publishing your email and our response in due course.

Sincerely,

Alex Chisholm

Chair, ComReg

9. Telefonica: letter to ComReg “Multi-band Spectrum Release, CCA, and Swiss Lessons” (letter dated 1 March 2012)

1st March 2012

Mr George Merrigan
Director – Market Framework
ComReg
Abbey Court
Irish Life Centre
Lower Abbey Street
Dublin 1

Dear Mr Merrigan

Multi-band Spectrum Release, CCA, and Swiss Lessons

I am sure you are already aware of it; however I would like to draw your attention to the multi-band spectrum auction which concluded in Switzerland last week. This is of particular interest as it is the first example where a Combinatorial Clock Auction (CCA) format was used for a multi-band mobile spectrum auction that is comparable to ComReg's proposed auction. There are several similarities between this auction in Switzerland and the one proposed by ComReg for Ireland, including in the auction mechanism, and also in the fact that the auction was used to re-assign currently licensed spectrum.

We note the apparent disparities between the prices paid by the three bidders in Switzerland. The extent of the disparity is somewhat surprising as we understand that the CCA is intended to determine assignments in a straightforward manner, and to determine spectrum pricing to reflect market value. While achieving both of the above, the auction mechanism must deliver an outcome that meets ComReg's objectives of Non-discrimination; Transparency; Objective justification; and Proportionality.

ComReg itself has set-out the objectives of the auction mechanism in several consultations, including 09/99 which includes the following:

- the auction should encourage participation in the process, and mitigate concerns about bidder asymmetries both between the incumbent operators and between incumbents and potential entrants;
- the auction should promote incentives for bidders to bid in a straightforward manner, and not to engage in strategic behaviour or tacit collusion;

- the auction should provide a high level of clarity and certainty for bidders as to the level of expenditure that they are liable for as a result of the bids that they place; and
- the auction process should be simple and transparent to bidders.

At the very least, the disparities in the Swiss auction result would suggest that the mechanism may have been susceptible to strategic behaviour, and may also have failed to give bidders clarity and certainty as to the level of expenditure that they were liable for as a result of the bids that they placed. It is difficult to make an assessment of these apparent deficiencies, because there is no transparency as to what specific combinations of bids determined the outcome.

It is Telefonica's expectation that ComReg will now review its proposed auction mechanism against the outcome of the Swiss auction to ensure that it will meet ComReg's objectives, and Telefonica would welcome a statement by ComReg that such review has been carried out. Dotecon itself has stated that CCA is the most appropriate format, subject to the proviso that the detailed rules for the auction (e.g. in relation to activity rules for bidders) are optimised for the specific circumstances.

We also reiterate our specific proposals made in response to consultation document 11/60 which would increase the transparency of the supplemental round, and winner and price determination.

Yours Sincerely

Tom Hickey

CC: Samuel Ritchie

10. Telefonica: email to ComReg "Questions on the Proposed Multi-Band Auction" (email dated 5 March 2012)

From: Hickey Tom (IE)
Sent: 05 March 2012 12:28
To: Patrick Mulvey; Samuel Ritchie
Subject: Questions on the Proposed Multi-Band Auction

Samuel/Patrick

There are a couple of questions that I have in relation to ComReg's proposed Multi-band auction. Hopefully you can answer them either directly in response to this e-mail, or the matters will be clarified in ComReg's Response to Consultations 11/60 and 11/75.

There are bidder specific categories of lots in both the 900MHz and 1800MHz bands for the first time slice. The current licensees may choose to bid in order to liberalise one or more of these lots during the auction. The questions that arise are:

1. In the event that a bidder chooses to bid to liberalise one of their party specific lots, how does ComReg decide which one of their party specific lots is to be liberalised, or how does the bidder indicate which one they are bidding to liberalise – there are price implications depending on whether a fully occupied lot or a partially lot is chosen
2. Can ComReg confirm that all unsold lots (including unsold party-specific lots) need to be counted when calculating the knockout bid?

Regards
Tom Hickey

11. eircom Group: letter to ComReg "Proposed Multi-band Spectrum Award" (letter dated 9 March 2012).

9th March 2012

George Merrigan
Director of Market Framework
Commission for Communications Regulation
Abbey Court
Irish Life Centre
Lower Abbey Street
Dublin 1

Dear George,

Proposed Multi-band Spectrum Award

I am writing to highlight our concerns in light of two recent events that raise serious questions regarding the efficiency and effectiveness of the proposed multi-spectrum award process.

Our first concern relates to the proposed Combinatorial Clock Auction (CCA) design developed by Dotecon. As you may be aware the outcome of the Swiss multi-band award was published on 23rd February 2012. The Swiss award process shares significant similarities with the proposed Irish process including the use of the CCA format designed by Dotecon. The results of the Swiss auction are set out below for reference.

Auction result

Frequency band	Orange	Sunrise	Swisscom
800 MHz	20 MHz	20 MHz	20 MHz
900 MHz	10 MHz	30 MHz	30 MHz
1800 MHz	50 MHz	40 MHz	60 MHz
2.1 GHz FDD	40 MHz	20 MHz	60 MHz
2.1 GHz TDD	0	0	0
2.6 GHz FDD	40 MHz	50 MHz	40 MHz
2.6 GHz TDD	0	0	45 MHz
Auction price	154'702'000	481'720'000	359'846'000

FDD: Frequency Division Duplex => Two radio channels are needed for a connection
TDD: Time Division Duplex => Only one radio channel is needed for a connection

The award process determined that the operator Sunrise should pay over CHF325m more than the operator Orange despite the fact that both operators won 160MHz of spectrum (albeit with variations in quantity in the various spectrum bands). The award process determined that Sunrise should pay over CHF120m more than the operator Swisscom despite the fact that Swisscom won more spectrum in aggregate, 255MHz, and the same or more spectrum in all bands relative to Sunrise except for the 2600MHz band.

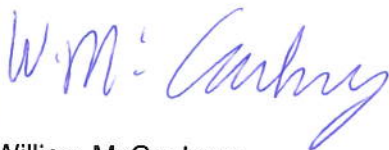
The outcome of the Swiss auction is extremely asymmetrical in terms of the amounts to be paid by each of the winners relative to the quantity of spectrum acquired. In our view such a similarly asymmetrical outcome in Ireland would be highly damaging to the competitive functioning of the market and contrary to ComReg's statutory objectives.

This matter is of fundamental concern to us. We request ComReg to set out in unambiguous terms the steps it will take that will ensure that such illogical and extreme asymmetries will not be permitted to arise from its proposed award process. This should occur in advance of publication of any Decision in respect of the proposed multi-band award process.

Our second concern relates to the continued uncertainty in relation to the availability of the 2.6GHz. We have set out our detailed position on this issue in response to a number of consultations, most recently our response to ComReg 11/80. As we highlighted in that response there are clear and compelling reasons to combine the release of the 2.6GHz band with ComReg's proposed multi-band spectrum award process in respect of the 800MHz, 900MHz and 1800MHz bands and we urged ComReg to move rapidly to conclude its review in respect of the future use of the 2.6GHz band. We are disappointed to note the absence of any sense of urgency in progressing this matter to a rapid resolution. ComReg states¹ that it will return to this issue "over the coming months, to consult on the future use of the band from April 2014". We request ComReg to publish its timeline for the conclusion of this review to ensure that clarity on the availability of the 2.6GHz is given to interested parties in advance of the proposed multi-band award process. The absence of clarity will undermine the efficiency of the proposed multi-band award process.

We believe it is critical for the industry to be confident that the auction process will proceed without leading to unintended consequences. Given the significance of the issues I would appreciate if you could confirm the steps ComReg will take to address this matter at your earliest convenience. I can be available at short notice to meet if required.

Yours sincerely,

A handwritten signature in blue ink that reads "W.M. McCoubrey". The signature is fluid and cursive, with the first letters of the first and last names being capitalized.

William McCoubrey
Head of Policy – Mobile and Consumer Affairs

¹ Paragraph 10 of ComReg 12/09 published 15th February 2012

12. eircom Group: email to ComReg " Proposed Multi-Band Spectrum Release"
(email dated 14 March 2012)

From: McCoubrey, William
Sent: 14 March 2012 08:11
To: George Merrigan
Cc: Samuel Ritchie
Subject: Proposed Multi-Band Spectrum Release

Dear George,

Can you please advise anticipated date for the next ComReg publication in respect of the proposed multi-band spectrum release by return. I would also be grateful if you could indicate when you will be in a position to respond to / discuss the concerns raised in our letter of 9th March.

I look forward to hearing from you.

Regards,
William

William McCoubrey
Head of Regulatory Policy - Mobile and Consumer Affairs



1 Heuston South Quarter
St. John's Road, Dublin 8

13. ComReg: reply to eircom Group email of 14 March 2012 (email dated 14 March 2012)

From: George Merrigan
Sent: 14 March 2012 10:16
To: McCoubrey, William
Cc: Samuel Ritchie
Subject: RE: Proposed Multi-Band Spectrum Release

Dear William

Thank you for your emails of the 9 March and earlier this morning. I note Samuel has acknowledged your email of 9 March and has checked as to whether you consider any of the content of the attached letter to be confidential. ComReg will treat your letter as a late response to consultation and will carefully consider its content in that respect, along with other late submissions received.

ComReg intends to publish its final decision on the proposed multi-band spectrum auction very shortly. However, and as you would expect, ComReg will first give full and due consideration to all responses received including yours of Friday last.

Regards

George Merrigan | Director, Market Framework Division |
✉ **Commission for Communications Regulation, Abbey Court, Irish Life Centre,**
Lower Abbey Street, Dublin 1, Ireland
www.comreg.ie

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