Commission for
Communications Regulation

Submissions to Consultation

Interim Licences for the 900 MHz band

Consultation responses received from respondents & correspondence with interested parties since publication of Consultation 11/11

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Consultation Responses

Correspondence provided by respondents (and ComReg written responses to same) in the period following publication of submissions to Consultation 11/11

1. Telefonica O2: "ComReg Document 11/11 Proposal and Further Consultation Interim Licences for the 900MHz Band" *(letter - dated 22 February 2011)*

2. Ericsson: "ComReg 10 71" *(email - dated 6 March 2011)*

3. ComReg: Reply to Ericsson email of 6 March 2011 *(email - dated 9 March 2011)*

4. Hutchison 3G Ireland: "COMREG DOC. NO. 11/11"(*letter - dated 23 March 2011*)

5. ComReg: Reply to H3GI letter of 23 March 2011 *(letter - dated 25 March 2011)*

6. ComReg: Letter sent to the Sunday Times (*letter – dated 25 March 2011*

7. Sunday Times: Publication of clarification (*published 27 March 2011*)

Consultation Responses

1 Eircom Group

eircom Group

Response to ComReg Consultation Paper Interim Licences for the 900 MHz band

ComReg Document 11/11

18 March 2011

DOCUMENT CONTROL

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

Response to Consultation

eircom Group welcomes the opportunity to further contribute to the ongoing debate regarding the future licensing and liberalisation of mobile spectrum bands. We have reviewed the draft Decision regarding interim licences for the 900MHz band and make the following comments:

Administrative assignment

We note ComReg's consideration and rejection of options involving short term administrative assignment. We are of the view that ComReg's approach is correct in the circumstances specific to the consideration of interim licences while broader policy proposals are being developed. We consider it important to maintain the status quo for the interim period so that all possible options for the future can be fully evaluated. However, we remain firmly of the view that partial administrative assignment of the 900MHz and 1800Mhz bands is fully justified as a component of the package of measures to emerge in respect of the future licensing and liberalisation of the mobile spectrum bands.

Interim License Spectrum Fees

With regard to interim licence spectrum fees, we explained in our response to ComReg 10/71, Question 6, that the time value of money must be taken into account and as a matter of sound practice and consistency, adjustments have to be made relating to the Weighted Average Cost of Capital (WACC). ComReg's basis for rejecting our submission[1], namely that, "*As the WACC is a forward-looking measure, the risk associated with the uncertainty of future returns is one of the factors used to calculate its overall value. As the indexation period in relation to the existing spectrum fees is historic in nature, the use of such a measure to update fees would not be appropriate*", is not correct.

We note in particular that Vodafone and O2 will have incurred additional finance costs in providing the up-front payment at commencement of the licence. The true cost of the up-front payment to an operator is governed by their cost of capital[2] and is higher than that suggested by CPI escalation. Indeed it is questionable that CPI is at all relevant in respect of the up-front investment made in the licences. The correct approach is accordingly to consider the cost of capital.

We would agree that *estimates* of cost of capital are generally forward looking, but this in itself is not a valid reason for using CPI. At various times the Regulator has reviewed and specified eircom's cost of capital over the time in which the spectrum licences have been in existence. As such there is a historical record of the cost of capital that can be applied for the majority of the licence duration. Indeed given that Eircell was part of the eircom group of companies when its licence was acquired there can be little debate as to the merits of the industry cost of capital proxy proposed.

The true price paid by Vodafone, O2 and Meteor Mobile Communications Ltd for their licences is higher than that suggested by CPI escalation. As such the calculation of any interim fees and

[1] Section 4.3.2, item 5, page 72, ComReg 11/11
[2] The 10.2% proposed equates to eircom's Weighted Average Cost of Capital and is proposed in this context as a proxy for the telecommunications industry operator cost of capital.

rebates (to the extent relevant in the ultimate policy decisions arrived at) must be based on the costs incurred by the operators using the industry cost of capital as a reasonable proxy.

eircom accordingly submits that the ComReg must revise upwardly the interim licence fee proposed for O2 and Vodafone.

2 Hutchison 3G Ireland

Response by Hutchison 3G Ireland Limited
in respect of ComReg Document No. 11/11
"Interim Licences for the 900 MHz band"

18 March 2011

EXECUTIVE SUMMARY

Hutchison 3G Ireland Limited ("H3GI") is disappointed that ComReg has not taken due account in ComReg Document No. 11/11 *"Interim Licences for the 900 MHz band"* (the "Response to Consultation") of the significant and valid concerns raised by H3GI in its response of 29 October 2010 to ComReg Document No. 10/71 and previous responses to consultation.

- ComReg is attempting to restrict the current consultation to issues associated with the interim licence proposal. Its assertion that H3GI has conflated concerns regarding ComReg's broader spectrum award proposals with the proposed grant of interim rights of use, is disingenuous. These issues are clearly linked and it is improper and wrong of ComReg to seek to artificially sever them and thus to avoid proper scrutiny.

- ComReg has been considering options for liberalisation since 2008 and it is remarkable that there has been such delay and inertia in coming to a view on these important matters. The fact that the issues are complex is not sufficient justification particularly given the statutory functions and objectives of ComReg.

- A delay in liberalising 900 MHz spectrum is not justifiable by the availability of 800 MHz in early 2013.

- H3GI wants ComReg to auction liberalised 900 MHz by September 2011 and, based on the results of that auction, to licence liberalised 900 MHz spectrum immediately after its proposed auction. This is countenanced by ComReg in its Response to Consultation. However, ComReg's proposal is conditional and uncertain.

- H3GI does not believe that ComReg can justify its position that it wait until *"all transitional activities required to be completed by all existing licensees in the 900 MHz band could be completed prior to both 31 January 2013 and 800 MHz availability"*. ComReg does not need to use the entire 900 MHz band for transitional activities. This is clearly demonstrated by the Elisa case study in the attached report from Value Partners Management Consulting Limited ("Value Partners") and Radio Regulatory Associates Limited ("Radio Regulatory Associates"). As a result of ComReg's proposals, one block of 900 MHz will lie unused until at least January 2013.

- H3GI also does not believe that access to liberalised 900 MHz spectrum by successful bidders immediately after ComReg's proposed auction would provide H3GI or any other operator with an unfair competitive advantage. As a result of ComReg's failure to promptly make a decision in respect of the expiry of Vodafone's and O2's GSM 900 MHz licences and spectrum liberalisation, it is conferring an advantage of in excess of €43 m p.a. on Vodafone and in excess of €33 m p.a. on O2. 800 and 900 MHz are not highly substitutable. As a result, the business case for 800 MHz is medium to long term. In respect of new market entry issues, ComReg is disproportionately relying on unsubstantiated concerns. Finally, early

liberalisation would create an incentive for Vodafone, O2 and Meteor to complete their transitional activities as quickly as possible.

- H3GI could roll out a UMTS 900 MHz in rural areas in 6 months – significantly more than a couple of months in advance of January 2013.

- ComReg's proposed award of interim licences to Vodafone and O2 has the effect of rewarding them for failure to properly prepare for licence expiry at the end of the 15 year term of those licences.

- The proposed terms of the interim licences are unduly long and uncertain thus introducing further regulatory uncertainty which is extremely damaging. The market needs prompt action in setting a date for the auction and the actual dates for commencement of liberalised licences post auction. Vodafone and O2 should not be allowed to drag their feet over transitional issues and the current construction of the draft licences would appear to incentivise such foot dragging.

- ComReg's interim licence proposals, *inter alia*, are anti-competitive, lack objectivity and proportionality, and are discriminatory. H3GI considers that the administrative grant of new 2G licences to Vodafone and O2 without competitive award, is contrary to article 106 of the Treaty on the Functioning of the European Union (the "TFEU"), 107 TFEU, article 3(1)(b) TFEU, and article 4(3) of the Treaty on the European Union, as well as ComReg's statutory obligation to ensure efficient use of spectrum. ComReg's interim licence proposal unduly and disproportionately favours the interests of Vodafone and O2.

- ComReg's interim licence proposal deprives Ireland of the benefits of widespread, high speed, mobile broadband, slowing down GDP growth, damaging the development of the knowledge economy, widening the digital divide, restricting job growth and limiting the Irish government's ability to provide public services more effectively. It is calculated that Vodafone will earn in excess of €43 m p.a. and O2 will earn in excess of €33 m p.a. as a result of their interim licences. The cost of ComReg's proposals to H3GI is in excess of [**Commercially sensitive**]. As Value Partners and Radio Regulatory Associates conclude:

  "The delay in liberalisation of and access to 900MHz spectrum, as proposed in ComReg's Consultation Document No. 10/71 "800MHz, 900Mhz and 1800Mhz spectrum release", would increase the costs of Irish mobile network operators who wish to extend current 3G coverage to 99% of the Irish population by over €40m. Conversely, as is likely, should Irish mobile operators decide not to increase coverage, then there would be a direct and significant loss to Irish operators in foregone revenues and to Irish consumers in lost consumer surplus. Moreover, Ireland as a whole would be significantly harmed by virtue of a loss of GDP growth, exacerbation of the 'digital divide' and a hindering of the growth and development of vital business and governmental services. Given that, as we outline in section 3, ComReg's arguments on the benefits of delaying access to 900MHz spectrum until 2013

are baseless, there is no reason to impose a suboptimal outcome on Irish mobile network operators, consumers, businesses, government and society as a whole. This is in line with ComReg's own conclusion in 2008 that '[i]f demand is high then the benefits of liberalisation are likely to be significant… [and] wireless technologies are already proving very popular in Ireland'."[1]

- H3GI is concerned that the flaws it has identified above in relation to ComReg's interim licence proposal and the consequent harm occurring to H3GI and the State will be compounded by: (i) ComReg delaying in making a decision regarding spectrum release, auctioning liberalised 900 MHz and providing access to liberalised 900 MHz spectrum; and (ii) further delay in respect of transitional activities and the availability of 800 MHz. There is a significant risk that ComReg will not provide access to liberalised 900 MHz spectrum until after 2014 in which case Ireland may well be one of the last countries in Europe to provide access to liberalised 900 MHz.

- The effect of ComReg's interim licence proposal will be to confer significant competitive advantages on Vodafone and O2, competition will be stifled, new market entry will be deterred, with significant costs to consumers (e.g. as a result of denial of innovative services) and competition (both existing and potential) in general will be damaged.

Recommendation:

ComReg should amend its interim licence proposal, auction liberalised 900 MHz spectrum by September 2011 and, based on the results of that auction, licence liberalised 900 MHz immediately after its proposed auction.

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, and H3GI reserves all rights in respect of the same.

[1] At page 42 of the attached report.

INTRODUCTION

The purpose of this document is to respond to ComReg's Response to 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.

The format of this document is as follows:

1. Part 1 addresses ComReg's general comments;
2. Part 2 addresses competition;
3. Part 3 addresses objectivity;
4. Part 4 addresses discrimination;
5. Part 5 addresses proportionality;
6. Part 6 addresses efficient management and use of spectrum;
7. Part 7 addresses the economic harm of ComReg's interim licence proposal;
8. Part 8 addresses early liberalisation;
9. Part 9 addresses ComReg's draft Regulatory Impact Assessment;
10. Part 10 addresses the draft SI and licence;
11. Part 11 addresses miscellaneous matters;
12. Annex 1 contains relevant legislative provisions; and
13. Annex 2 contains a copy of a report prepared by Value Partners and Radio Regulatory Associates.

PART 1 – GENERAL COMMENTS

ComReg has been considering the timing of liberalisation of 900 MHz spectrum and how it might be effected since 2008. There have been some unfortunate and largely unexplained changes of approach throughout this period. The delay in setting an early and firm date for the availability of liberalised 900 MHz spectrum has been highly damaging to competition and innovation and the justifications advanced by ComReg for the delay and the award of the interim licences do not stand up to scrutiny.

ComReg's incorrect assertion that H3GI has conflated concerns

ComReg's attempt to restrict the current consultation to issues associated with the interim licence proposal and its assertion that H3GI has conflated concerns regarding ComReg's broader spectrum award proposals with the proposed grant of interim rights of use are most disingenuous. The proposed grant of interim licences is of course linked to the issue of delay to availability of liberalised 900 MHz spectrum and it is improper for ComReg to seek to argue otherwise and to seek to deny that a link exists between the two issues.

At page 12 of the Response to Consultation, ComReg accuses H3GI of, *inter alia*, conflating concerns regarding ComReg's broader spectrum award proposals (including the issue of whether or not to jointly make available liberalised 800 MHz and 900 MHz spectrum rights) with the proposed grant of interim rights of use. However, we note that ComReg itself links these issues by referring to the "...

availability, and joint award, of liberalised 800 MHz and 900 MHz spectrum rights ..."[2] as a justification for its *"Interim Licence Proposal"*.

With respect, ComReg cannot have it both ways – it is proposing to grant interim licences to Vodafone and O2 until such a time as the likely availability of 800 MHz spectrum and it is proposing to auction and release 800 MHz and 900 MHz spectrum together.

Whilst ComReg clearly wishes to restrict the current consultation process to the interim licence proposal for some purpose of its own, H3GI believes there to be a clear link between the delayed availability of liberalised 900 MHz spectrum and the interim licence proposal.

ComReg's decision as to whether or not to grant an interim 2G licence, of its nature, involves a concurrent decision by ComReg not to liberalise 900 MHz spectrum and to delay availability of liberalised 900 MHz spectrum until some future date, yet to be determined and it is entirely wrong of ComReg to suggest otherwise as the two issues are inextricably linked. ComReg would not be awarding interim licences absent a decision not to make available liberalised 900 MHz spectrum in 2011 as originally envisaged.

The way in which ComReg appears to be going about its consultation of these two artificially separate but necessarily interlinked issues seems part of a deliberate attempt to deprive undertakings from taking issue with ComReg's delay to make available liberalised 900 MHz.

H3GI hereby calls on ComReg to amend its interim licence proposal, auction liberalised 900 MHz spectrum by September 2011[3] and, based on the results of that auction, licence liberalised 900 MHz to the winning bidders immediately after its proposed auction.

ComReg's unnecessary delay in making available liberalised 900 MHz spectrum

(i) Grant of interim licence proposal

It is worth highlighting the fact that each of ComReg, Vodafone and O2 have had 15 years to prepare for the expiry of the 900 MHz licences of Vodafone and O2. ComReg has consulted for in excess of two and a half years in respect of expiry and spectrum liberalisation. Notwithstanding ComReg's claims that the issues raised by this consultation process are complex, such claims do not justify, in any way the extraordinary, unnecessary and excessive delay in this process. ComReg's conduct is entirely unacceptable in this regard.

Furthermore, it is wholly inappropriate for ComReg to seek to rely upon its own delay so as to now justify its proposed grant of interim 900 MHz licences to Vodafone and

[2] At page 11 of ComReg's Response to Consultation.
[3] This is based on ComReg issuing a response to consultation and further consultation in respect of its broader spectrum proposals in May 2011 and a decision and Information Memorandum in respect of its broader spectrum proposals in July 2011.

O2 until early 2013 or indeed the potentially later making available of 800 MHz spectrum. ComReg has, *inter alia*, failed to promptly make a decision in respect of these issues, respect legal certainty and promote investment, contrary to its statutory obligations.

It is difficult to understand how ComReg can reconcile further delay to making available liberalised 900 MHz spectrum with ComReg's statutory obligation to ensure efficient use of radio frequency in Ireland and the Government's commitment to the universal roll-out of broadband (as set out in Ministerial Policy Direction No. 3 dated 21 February 2003).

Consumer disruption

H3GI does not consider ComReg's interim licence proposal as justified by the consumer disruption issues asserted by Vodafone and O2.

In this respect, H3GI notes that ComReg itself has also considered the consumer disruption issues put forward by Vodafone and O2 to be "*significantly overstated*" (ComReg Document No. 09/99). However, ComReg now appears to be seeking to justify its apparent u-turn, at page 10 of the Response to Consultation, as follows:

"ComReg considers that the position it previously adopted in Consultation 09/14 and Consultation 09/99 on "consumer disruption" and the position it is now adopting in the context of the interim licence proposal are both appropriate in the particular circumstances in which they were proposed.

ComReg's position set out in 09/14 and 09/99 was set out in the context of a proposed auction where incumbent licensees (in this case, seeking administrative assignment of long term spectrum rights of use) would have been in a position to obtain, via a competitive spectrum award, the equivalent 900 MHz rights of use in advance of expiry of existing GSM 900 MHz rights of use and where any such competition would be held sufficiently before the expiry of existing rights of use so as to allow reasonable time for various mitigation techniques, including those previously raised by ComReg (e.g. build-out of 1800 MHz sites, Mobile Virtual Network Operator (MVNO) / national roaming agreements etc) to be implemented in the event that incumbent licensees were wholly or partially unsuccessful at the competition (i.e. obtained no 900 MHz rights of use or only obtained such rights in respect of one (1) 2 × 5 MHz block respectively);

On the other hand, the circumstances in which ComReg put forward the Interim Licence Proposal are materially different. In particular:

• ComReg is not in a position to finalise its decision making process on its broader spectrum proposals and hold a competition for the 900 MHz band in sufficient time prior to the expiry of Vodafone and O2's GSM 900 MHz licences in May 2011. This reflects both the extensive and complex nature of the issues raised during ComReg's consultation processes and, more recently, the need for ComReg to recalibrate and consult upon its proposals to take into account the major and earlier-than-expected development relating to 800 MHz spectrum availability, as well as the development

regarding availability of Long Term Evolution (LTE) equipment for the 1800 MHz band;

• In addition, it is ComReg's view that the availability, and joint award, of liberalised 800 MHz and 900 MHz spectrum rights represents an alternative and proportionate measure for meeting its statutory objectives (see Consultation 10/71 and the draft RIA in Chapter 3);

• As such, but for the Interim Licence Proposal or like measure, Vodafone and O2 would not be in a position to obtain any 900 MHz rights of use in the interim period. This is a clearly different context to that in which these parties might have to "win back" equivalent spectrum-use rights in a competition of the type proposed originally so as to ensure no such gap in spectrum holdings;

• Moreover, even assuming that any competition for the 900 MHz band could be held prior to licence expiry, there would not be significant time between such a competition and the expiry of Vodafone and O2's licences for these operators to complete any necessary mitigation strategies if one or both were partially or wholly unsuccessful at obtaining 900 MHz spectrum rights of use. This contrasts with the earlier timeframes when ComReg set out its position in relation to consumer disruption in Consultation 09/14 and Consultation 09/99;

• Indeed, the difference in context is made clear at footnote 59 of Consultation 10/71, which is discussed below."

The position in which ComReg now finds itself is directly attributable to failures by Vodafone and O2 and its own failures. As regards the failures to act by each of Vodafone and O2 to take adequate and timely steps to address the risks of consumer disruption, the award of an interim licence constitutes a reward for such behaviour and the manner in which ComReg proposes to draft the interim licences themselves seems to incentivise those undertakings in ongoing foot dragging. As regards the failure to act decisively by ComReg itself, it is clear that ComReg's own failure to stipulate/require (concurrent with ComReg Document No. 09/14 and ComReg Document No. 09/99) that Vodafone and O2 take proper steps to avoid customer disruption has led to the current situation as has its own failure to finalise its proposals in respect of the liberalisation of 900 MHz spectrum.

As set out in H3GI's response to ComReg Document No. 10/71, the interim licence proposal is unwarranted, discriminatory and disproportionate as both Vodafone and O2 have had more than a sufficient period of time to make arrangements in preparation for the expiry of their licences (e.g. migration of customers to 1800 or 2100 MHz) to prevent consumer disruption arising. In prioritising dubious concerns regarding consumer disruption, which have not been sufficiently backed up by independent consultants, ComReg is well aware that many of Vodafone's and O2's customers have 3G handsets and that all 2G devices are 1800 MHz enabled. The reliance on and prioritisation of somewhat unsubstantiated concerns regarding consumer disruption by ComReg is difficult to reconcile with ComReg's objective to ensure efficient use of spectrum under section 12 of the Communications Regulation Act 2002 Act, as amended (the "2002 Act").

ComReg's actions will have the effect of protecting the vested interests of Vodafone and O2 at the expense of competition and consumers at large.

In respect of the reference to footnote 59 of Consultation 10/71, H3GI believes that it adequately addressed this point in its response to ComReg Document No. 10/71. For the avoidance of doubt, H3GI believes that ComReg's rewarding Vodafone and O2 for their failure to plan sufficiently for licence expiry and failing to adhere to its own statutory functions and ensure prompt spectrum liberalisation without distorting competition do not promote efficient investment and innovation in new and enhanced infrastructures.

H3GI strongly refutes the contention at pages 12 and 13 of ComReg's Response to Consultation that *"this respondent did not counter other reasons relied on by ComReg when it put forward the Interim Licence Proposal….."*. H3GI refers ComReg to H3GI's response to ComReg Document No. 10/71 dated 29 October 2010 (the "H3GI Response to ComReg Document No. 10/71") and in particular sections 6 – 13 inclusive.

(ii) Nature of interim licence proposal

ComReg's proposals, *inter alia*, are liable to distort competition, lack objectivity and proportionality, and are discriminatory. The direct award of interim licences to Vodafone and O2 as proposed by ComReg, constitutes an arbitrary and discriminatory measure in favour of the incumbent operators to the disadvantage of other MNOs in Ireland, such as H3GI and competition generally.

It is difficult to reconcile the proposed duration of the interim licences to Vodafone and O2 with ComReg's own statement at page 37 of ComReg's Response to Consultation that "*the time period covered by the interim licence should be of the shortest duration that is possible and practical taking account of all the relevant circumstances*", and at page 44 of ComReg's Response to Consultation that "*ComReg is of the view that granting the licences for the shortest period that is reasonably required in light of the objectives being pursued is the most proportionate solution*".

The retention of the entire 900 MHz band for use by the incumbent operators for at least a further 20 month period is not in H3GI's view the shortest duration possible and practical and, as such, it is not appropriate as it lacks proper objective justification. It is H3GI's case that the necessary transitional activities of Vodafone and O2 could be completed well in advance of 2013. As discussed below in Part 8, a commitment by ComReg to liberalise early would create an incentive for Vodafone, O2 and Meteor to complete their transitional activities as quickly as possible.

Further, such a duration fails to ensure the efficient management and use of spectrum, contrary to ComReg's statutory obligation pursuant to section 12(1)(b) of the 2002 Act. As discussed below in Part 8, there is an absence of objective justification for requiring the entire 900 MHz band for migration of Vodafone's and O2's customers.

H3GI submits that a licence duration of at least 20 months is excessive and that it is both possible and practical to carry out any necessary transitional activities well within this timeframe. It appears to H3GI that ComReg's interim licence proposal including in particular, the mechanism for granting the relevant licences to Vodafone and O2, and their duration unduly and disproportionately favours the interests of Vodafone and O2.

It is also difficult to understand how ComReg's justification for the duration of the interim licences complies with paragraph 4 of article 5(2) of the Authorisation Directive:

"*Where Member States grant rights of use for a limited period of time, the duration shall be appropriate for the service concerned in view of the objective pursued taking due account of the need to allow an appropriate period for investment amortisation.*"

H3GI notes that Vodafone and O2 have already recovered their investment costs during the 15 year duration of their current GSM licences.

ComReg's interim licence proposal deprives Ireland of the benefits of widespread, high speed, mobile broadband, slowing down GDP growth, damaging the development of the knowledge economy, widening the digital divide, restricting job growth and limiting the Irish government's ability to provide public services more effectively.[4] It is calculated that Vodafone will earn in excess of €43 m p.a. and O2 will earn in excess of €33 m p.a. as a result of their interim licences.[5] The cost of ComReg's proposals to H3GI is in excess of **[Commercially sensitive]**.[6]

ComReg's proposed approach will create regulatory uncertainty

H3GI considers that ComReg's interim licence proposal is creating regulatory uncertainty in the Irish market and that such uncertainty will only be compounded should ComReg continue with the current interim licence proposal. H3GI believes that it is critical that regulatory certainty is achieved in the marketplace as a matter of urgency.

At pages 43 and 46 of ComReg's Response to Consultation, there are some indications that a proper timetable for action will be drawn up and adhered to. However, once again, ComReg's proposal is conditional and uncertain and has not been developed by it in any meaningful way.[7] It is conditional in that it seeks to make access to liberalised 900 MHz spectrum subject to: (i) the joint availability of 800 MHz and 1800 MHz spectrum; and (ii) the absence of competitive harm (i.e. holders of rights of use in respect of 800 MHz, 900 MHz and 1800 MHz not being in a position to show that they would suffer any disadvantage as a result of earlier liberalisation).

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[4] For more information, please see attached the report prepared by Value Partners and Radio Regulatory Associates.

[5] For more information, please see attached the report prepared by Value Partners and Radio Regulatory Associates.

[6] For more information, please see attached the report prepared by Value Partners and Radio Regulatory Associates.

[7] ComReg's position is contradicted by other statements by it at page 46 of its Response to Consultation.

It is uncertain in that ComReg fails to provide clarification as to when 800 MHz availability will actually take place. ComReg has already recognised in ComReg Document No. 09/99 (section 2.4) that the timescales for the availability of 800 MHz band were uncertain, and consequently "*ComReg, therefore, did not regard it as appropriate to delay the release of the 900 MHz band on a liberalised basis to enable the combined award of spectrum given the uncertainty surrounding the availability if the 800 MHz band*". ComReg has not advanced any arguments as to why this is no longer the case. H3GI is of the view that the timescales for the availability of the 800 MHz band are still considerably uncertain. H3GI considers this state of affairs as highly unsatisfactory.

H3GI is concerned that the flaws it has identified above in relation to ComReg's interim licence proposal and the consequent economic harm occurring to competition in the market generally, H3GI and the State will be compounded by: (i) ComReg delaying in making a decision regarding spectrum release, auctioning liberalised 900 MHz and providing access to liberalised 900 MHz spectrum; and (ii) further delay in respect of transitional activities and the availability of 800 MHz.

At page 37 of the Response to Consultation, ComReg states:

"This expiration date reflects ComReg's present understanding of the likely availability of 800 MHz spectrum. This expiry date also takes account of and takes account of some of the scenarios outlined by Red-M and Vilicom in its report on retuning and relocation activities. In the event that any difficulties or delays arise then ComReg can address the impact of such difficulties/delays and corresponding remedial measures at the relevant time and having regard to the best information available at the time.

...

ComReg is of the view that a fixed expiry date contributes to regulatory predictability."[8]

The fixed expiry date proposed by ComReg does not contribute to regulatory predictability. It is dependent on 800 MHz availability and transitional activities.

Contrary to ComReg's assertions, ComReg is not preserving the *status quo* for a short period. 2011/2012 is a critical period for the take up of 3G services. There is currently considerable enthusiasm among Irish consumers for smartphones and thus a huge appetite for 3G services. Failing to liberalise the 900 MHz spectrum at this time has the effect of preserving and entrenching the position of Vodafone and O2 just when there is a huge opportunity for H3GI to challenge the position of the incumbents and offer innovative new services. There is a significant risk that ComReg will not provide access to liberalised 900 MHz spectrum until after 2014 in which case Ireland may well be one of the last countries in Europe to provide access to liberalised 900 MHz.

[8] Page 37 of ComReg's Response to Consultation.

PART 2 - COMPETITION

State aid

ComReg's interim licence proposal distorts competition contrary to *inter alia*:

1. Article 106(1) of the Treaty on the Functioning of the European Union (the "TFEU");

2. Article 107(1) of the TFEU;

3. Article 3(1)(b) of the TFEU; and

4. Article 4(3) of the Treaty of the European Union (the "TEU").

H3GI continues to be of the view that the interim licence proposal and associated delay in making liberalised 900 MHz spectrum available give rise to serious concerns under articles 106 and 107 of the Treaty on the Functioning of the European Union (the "TFEU"), and the State's failure to comply with its obligations under article 4(3) of the Treaty of the European Union (the "TEU") and 3(1)(b) of the TFEU.

Article 106 of the TFEU

ComReg has failed in ComReg's Response to Consultation to provide any proper reasoning so as to explain or justify precisely why it is that the award of separate interim licences to each of Vodafone and O2 does not constitute the award of a "special" right. ComReg merely asserts that "*the proposed interim licences will be granted in accordance with objective, proportionate and non-discriminatory criteria which excluded MNOs, including H3GI, clearly do not satisfy. In this regard, ComReg refers to Section 3.2 of Consultation 10/71 and the relevant sections of this chapter*"[9]; and "*that H3GI's claim is based on the assumption that H3GI is being deprived of the ability to exploit 900 MHz frequencies.*"[10]

Jurisprudence on "special rights" provides that a special right is conferred where rights are granted by Member State authorities to a limited number of undertakings otherwise than in accordance with objective, proportionate and non-discriminatory criteria.

H3GI simply does not understand how ComReg can possibly consider the grant of 900 MHz licences to two existing MNOs on all the same terms as the existing licences awarded to those operators (albeit with modified financial measures), without giving other existing MNOs or new entrants an opportunity to have access to that spectrum as an award in accordance with objective, proportionate and non-discriminatory criteria. It seems to H3GI that simply being Vodafone and O2 are the

[9] Section 2.7.1.2 of ComReg's Response to Consultation, first paragraph of that section on page 22.
[10] Section 2.7.1.2 of ComReg's Response to Consultation, second paragraph of that section on page 22.

only criteria being identified by ComReg and that such criteria are plainly not objective or proportionate and discriminate in favour of Vodafone and O2.

The interim licence proposal will substantially affect the ability of other undertakings to provide electronic communications networks or services in competition with Vodafone and O2 making it more difficult for such operators to compete in the Irish mobile market to the detriment of competition in the mobile market generally. Clearly, other operators and new entrants are appropriate comparators for the purposes of considering discrimination in the present context as these operators compete head to head with Vodafone and O2 for all customers in the Irish mobile market.

ComReg continues to artificially separate the position of Vodafone and O2, who are each currently in possession of existing 2G Licences with that of H3GI, a 3G only operator, so as to deny the existence of an award of special rights to Vodafone and O2 and justify ComReg's discriminatory treatment of H3GI.

H3GI robustly rejects the suggestion by ComReg in section 2.7.1.2 that the interim licence proposal is a "*necessary and temporary step*" to allow effective competition between all interested parties for the long term award of a large quantity of spectrum in the 800 MHz/900 MHz band.[11] As explained in Part 3, there is no adequate justification for combining 800 MHz and 900 MHz spectrum in one auction. H3GI does not believe that the goal of effective competition for the long term award of a large quantity of 800 MHz/900 MHz spectrum can or should be balanced against the considerable delay involved and the significant competitive advantages that ComReg will confer on Vodafone and O2. Rather, the interim licence proposal will lead to the distortion of competition within the industry by conferring special rights on Vodafone and O2 making competition more difficult and less likely.

ComReg[12] seeks to rebut the issue of a conferral of special rights on Vodafone and O2 due to the apparent need to "*take into account the broader context within which the Interim Licence Proposal has arisen*". This opaque language by ComReg conceals a riddle. It would seem that ComReg is seeking to justify the conferral of a special right to take account of the failure of Vodafone and O2 to properly prepare for the loss of the 900 MHz spectrum on the expiry of their licences and because ComReg has not put in place mechanisms to award that spectrum under an open competition. This is an extraordinary justification.

ComReg's understanding of H3GI's previous proposal, as expressed by ComReg in section 2.7.1.2 of ComReg's Response to Consultation, is incorrect[13]. H3GI is not proposing the discriminatory award of licences to operators or the unlawful creation of special rights.

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[11] Second sentence of the second paragraph of section 2.7.1.2 on page 22 of ComReg's Response to Consultation.
[12] See section 2.7.1.2 of ComReg's Response to Consultation, penultimate sentence of the second paragraph in that section on page 22.
[13] In particular, final sentence of section 2.7.1.2 on page 22 of ComReg's Response to Consultation.

By way of clarification, H3GI's previous proposal proposed that each of the four MNOs be granted access to 5 MHz of liberalised 900 MHz spectrum immediately in mid-2011 by way of administrative grant for the minimum reserve price, with each operator having the opportunity to bid for additional spectrum (whether 900 MHz or 800 MHz) by auction in 2011, which would be available in 2013.

Article 107 of the TFEU

Article 107(1) of the TFEU requires the following four cumulative conditions to be satisfied for there to be a State aid: (i) there must be an intervention by the State or through State resources; (ii) the intervention must be liable to affect trade between Member States; (iii) it must confer an advantage on the recipient; (iv) it must distort or threaten to distort competition.

ComReg fails to properly ground/reason its rejection of H3GI's arguments that the interim licence proposal constitutes an illegal State aid. It is incorrect for ComReg to state simply in section 2.7.2.2 of ComReg's Response to Consultation that "*H3GI has failed to demonstrate how ComReg would be foregoing or waiving licence fees in pursuing the Interim Licence Proposal.*"[14] H3GI has set out in detail in H3GI's Response to ComReg Document No. 10/71 its reasons as to why the award of interim 2G licences to Vodafone and O2 constitutes illegal State aid. Further, ComReg incorrectly equates intervention by the State or through State resources which entails a financial burden on the State (the first limb of article 107 of the TFEU), solely with waiver of fees.[15] This appears to lead ComReg to wrongly discount the first limb of the State aid test, on the basis that ComReg will seek to obtain licence fees from Vodafone and O2 under the interim licence proposal, without proper consideration of the level of those fees. The failure by ComReg to obtain a licence fee which reflects the true market value of the rights awarded is no less objectionable from a State aid perspective than a decision by ComReg to waive the right to collect payment entirely.

Rather, ComReg's proposal of an interim licence to Vodafone and O2 will result in a significant financial burden being placed on the State, for example, *inter alia*, costs associated with the delay in making available more valuable liberalised 900 MHz spectrum and associated higher licence fees which could be obtained in respect of liberalised 900 MHz spectrum, or in the case of non-liberalised spectrum, licence fees which adequately reflect the value of the rights now being made available to Vodafone and O2; forgone revenue/GDP growth due to delay in liberalisation; and failure by ComReg to take proper account of indexation/inflation of the licence fees paid by Vodafone and O2 under their current 2G Licences in such a way that it does not allow for over-compensation for original infrastructure costs etc already recovered by these operators. Further details on the economic harm that will be caused to the State as a result of ComReg's decision to delay making liberalised 900 MHz spectrum available and associated interim licence proposal are set out in Part 7 of this response.

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[14] Page 22 of ComReg's Response to Consultation.
[15] Section 2.7.2.2, final sentence of the third paragraph of that section, on page 22 of ComReg's Response to Consultation.

ComReg's approach and simple reliance on Vodafone's arguments without engagement is not a proper discharge of ComReg's statutory obligation to consult. ComReg's approach ignores the fundamental recognition in the European Court of Justice ("ECJ") (now Court of Justice of the European Union) case of *Bouygues*[16] that a telecommunications licence has an economic/commercial value. In that case, none of the three operators had in fact entered the market or in fact, started to provide services and this was a key factor in the ECJ's consideration as to why the prior award of UMTS licences to Société française du radiotéléphone ("SFR") and Orange France SA ("Orange") did not confer any advantage on them over *Bouygues* together with the fact that a genuine EU framework objective was identified which limited the ability of the French State to charge different prices for the licences to all undertakings. In the current situation, Vodafone and O2 are each well established operators in the Irish mobile market and the value of any interim 2G licence granted to them must be considered to be of significant value and that value should be properly ascertained.

ComReg unduly dismisses H3GI's assertion that the award of the interim licence proposal will confer a selective advantage on Vodafone and O2 and discriminate against H3GI. In considering whether or not the interim licence proposal will favour certain undertakings compared to others who are in a "*comparable legal and factual situation*"[17] ComReg's consideration of what it considers to be the correct legal and factual situation solely by reference to the provision of 2G services in Ireland is artificial and leads to undue exclusion of H3GI's position. In *Bouygues*[18] none of the operators had entered the market. ComReg fails to recognise that notwithstanding the fact that H3GI is a 3G operator only, H3GI as a matter of fact competes with Vodafone and O2 for customers, and that the interim licence proposal will favour Vodafone and O2 by preserving their competitive advantage over other operators in the market such as H3GI, so as to distort competition in the market. Further, the interim licence proposal will constitute the award of a new (interim) 2G licence to each of Vodafone and O2 so as to favour these operators. In this context, ComReg cannot properly suggest that the award of such a licence is being carried out on the basis of objective, non-discriminatory criteria as part of a fair competition.

It is insufficient for ComReg to seek to justify the interim licence proposal by reference to a 'catch-all' general system of licensing, without further explanation. In the *Bouygues* case, there was a clear rationale provided for the treatment of the licence holders by the French State. It cannot be correct for ComReg to suggest that simply by virtue of the fact that there is a licensing system in place for mobile operators in Ireland, that State aid issues can never arise.

It is notable that ComReg did not seek to justify its interim licence proposal based on the nature and general scheme of the EU regulatory licensing framework for electronic communications ("Regulatory Framework") in previous consultations[19].

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[16] Case C-431/07P *Bouygues SA, Bouygues Télècom SA –v- Commission of the European Communities*, 2 April 2009.
[17] Section 2.7.2.2 of ComReg's Response to Consultation, first paragraph of that section at the top of page 23.
[18] Ibid.
[19] See, for example, ComReg Document No 10/71 - "*800MHz, 900MHz and 1800MHz Spectrum Release*" dated 17 September 2010.

H3GI notes the unclear and indistinct reference that ComReg makes to justify the interim licence proposal on the basis of "*the general system of which it forms a part*"[20]. This does not serve to illuminate H3GI's understanding of ComReg's rationale in the least. For the avoidance of doubt, H3GI does not believe that the interim licence proposal could properly be construed as falling within the nature and general scheme of the general system of licensing mobile network operators under the Regulatory Framework so as to be justifiable and bring the measure outside of the scope of article 107 of the TFEU. ComReg's interim licence proposal amounts to discriminatory treatment in favour of Vodafone and O2 and there is no EU regulatory principle or policy goal which forms part of the Regulatory Framework that can provide a compelling rationale or logic justifying such favourable treatment. Indeed, ComReg's interim licence proposal would seem entirely contrary to EU good governance principles. Further, section 11(1) of the European Communities (Electronic Communications Networks and Services) (Authorisation) Regulations 2003 (as amended)(the "Authorisation Regulations") requires that where ComReg proposes to issue spectrum licences, and considers that the number of such licences ought to be limited, it is obliged to "*give due weight to the need to maximise the benefits for users and to facilitate the development of competition*", and where ComReg takes a decision to limit such licences it is obliged to grant such licences on the basis of selection criteria which are "*objective, transparent, non-discriminatory and proportionate, and which give due weight to the achievement of the objectives set out in section 12 of the Act of 2002*". In particular, H3GI notes that an objective under section 12 of the 2002 Act is to promote competition. Conversely, ComReg's interim licence proposal will serve to hinder competition and to discriminate against H3GI.

In the *Bouygues* case[21], the ECJ when considering the issue of discrimination and general nature of the scheme, appeared to place significant weight upon (i) the fact that the solution reduced the risks of a late launch of UMTS services; and (ii) none of the operators had entered the market and that this was through no fault of their own - therefore there was no risk of discrimination given the general scheme of Community telecommunications law, which was to ensure access to certain wireless space in order to use UMTS technology. The *Bouygues* case[22] cannot properly be understood so as to lead to a conclusion that, by the mere fact that a national telecommunications regulator (such as ComReg) grants licences, the licensing process constitutes, *per se*, a general scheme. In order to constitute a general scheme, the measures in question must apply without distinction across the board to all firms in all economic sectors i.e. they must not be selective so as to affect the balance between certain firms and their competitors. As demonstrated above, the grant of interim 2G licences to Vodafone and O2 will significantly affect the balance between, on the one hand, Vodafone and O2, and on the other hand, other operators in the Irish mobile market including H3GI.

Moreover, the effect of ComReg's interim licence proposal will be such so as to discriminate unduly against H3GI. ComReg consistently fails to recognise that the

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[20] Section 2.7.2.2 of ComReg's Response to Consultation, second paragraph of that section on page 23.
[21] Ibid.
[22] Ibid.

interim licence proposal will result in a distortion of competition as Vodafone and O2 will be given guaranteed access to 900 MHz spectrum while H3GI must compete using more expensive 3G spectrum and technologies, making it more difficult for it to do business in comparison with its aided rivals. Further, Vodafone and O2 will be able to avail of the 900 MHz spectrum at a price well below the open market rate that is likely to be realised in an open competition and thus benefit from lower operating and investment costs that result.

All that ComReg notes is that "*its position is not inconsistent with material in this connection presented by Vodafone in its response to Consultation 10/105*"[23]. This is not a proper discharge of ComReg's statutory obligation to carry out a proper and reasoned consultation.

Articles 3(1)(b) of the TFEU and article 4(3) of the TEU

ComReg's assertions at section 2.7.3.2 of ComReg's Response to Consultation (page 24) that "*H3GI has identified no breach by ComReg capable of engaging Article 3(1)(b) TFEU and/or Article 4(3)*" and that "*ComReg is of the view that it is circular to rely on these provisions in isolation*" do not provide an adequate explanation of ComReg's position. H3GI has set out its views in detail on these provisions during the course of the consultation process. ComReg's failure to explain its approach in more detail constitutes an improper abdication of responsibility on its part.

Distortion of competition

ComReg is required in carrying out its function of managing the radio frequency spectrum pursuant to section 10 of the 2002 Act, to have regard to its statutory objectives under section 12(1) of the 2002 Act, which include the promotion of competition and *"ensuring that there is no distortion or restriction of competition in the electronic communications sector".*

H3GI submits that ComReg's interim licence proposal distorts competition contrary to *inter alia*:

1. Article 4 of Directive 2002/77/EC (the "Competition Directive");

2. Recitals 6, 7 and 8 of Directive 2009/114/EC (the "GSM Amending Directive");

3. Article 1 (2) of Directive 87/372/EEC (the "GSM Directive") as amended by the GSM Amending Directive;

4. Recital 14 of Commission Decision of 16 October 2009 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;

[23] Section 2.7.2.2 of ComReg's Response to Consultation, final paragraph of that section on page 23.

5. Article 8 of Directive 2002/21/EC (the "Framework Directive") as amended by Directive 2009/140/EC; and

6. Section 12 (1)(a)(i) of the 2002 Act. [24]

As stated in H3GI's response to ComReg Document No. 10/71, H3GI remains of the view that the interim licence proposal and ComReg's concurrent decision to delay availability of liberalised 900 MHz spectrum, confers a competitive advantage on Vodafone and O2 by preventing H3GI from having the benefit of entering the 900MHz band for at least a further 20 months and consequently, stifling H3GI's ability to compete effectively with Vodafone and O2.

ComReg's proposals are discriminatory and will distort competition by impairing H3GI's ability to compete and entrenching the market position of Vodafone and O2, which are longer established players in the market to the detriment of competition and consumers and will have a particular adverse affect on the provision of new and innovative services to customers, including mobile broadband.

ComReg maintains that its interim licence proposal ensures that competition in the market is protected as it protects the existing competitive "*status quo*" for a short period. However, ComReg's approach fails to recognise that the existing market is far from competitive, as demonstrated by the large asymmetries between the market shares of Vodafone and O2, when compared with Meteor, H3GI and the MVNOs. In justifying its interim licence proposal by reference to the preservation of the *status quo*, ComReg ignores the fact that competition is dynamic, so that the preservation of the *status quo* by definition harms competition. This is compounded by **[Commercially sensitive]** and H3GI's concerns in respect of delay.

ComReg has also sought to justify the interim licence proposal on the basis that GSM only rights of use are being granted to Vodafone and O2 and that H3GI has never required GSM rights so that competition cannot be regarded as being distorted. ComReg fails to recognise that in granting the interim licence proposal and as a consequence of this decision, delaying the liberalisation of 900 MHz spectrum, ComReg is in fact hindering competition in the market.

H3GI is a 3G only operator and accordingly requires access to liberalised 900 MHz spectrum immediately in order to effectively compete with Vodafone and O2. Given that the Irish mobile market is saturated (i.e. over 100 per cent mobile penetration) the main way in which H3GI can grow market share and compete with Vodafone and O2 is to take customers from Vodafone and O2. This necessitates H3GI being in a position where it can offer advanced mobile services, which in turn requires H3GI to have access to liberalised 900 MHz spectrum.

In a market characterised by incumbent operator historic advantages and a significant imbalance in spectrum allocation amongst mobile operators, ComReg's interim licence proposal confers a significant advantage on Vodafone and O2. In contrast with the proposed interim licence spectrum fee of approximately €2.5 m p.a.,

[24] For ease of reference, the text of these provisions is set out in Annex 1 to this response.

ComReg's interim licence proposal confers in excess of €43 m p.a. on Vodafone and in excess of €33 m p.a. on O2.[25]

It also places H3GI at a significant disadvantage. ComReg's interim licence proposal costs H3GI in excess of **[Commercially sensitive]** in terms of unnecessary national roaming costs **[Commercially sensitive]**[26] As noted at section 4.2.1 of the attached report from Value Partners and Radio Regulatory Associates, ComReg's failure to immediately liberalise 900 MHz spectrum and its refusal to allocate the 900 MHz spectrum which is currently unallocated and available in Ireland, leaves H3GI as the only operator without 900 MHz in need of a national roaming agreement in order to maximise coverage for its customers. The burden of the cost of H3GI's roaming agreement with Vodafone is large **[Commercially sensitive]** and will continue to increase, as traffic continues to move away from voice to data. Accordingly, ComReg's decision to delay the availability of liberalised 900 MHz spectrum will result in an increase in H3GI's cost base, so as to distort competition in the Irish mobile market. As noted in the attached report from Value Partners and Radio Regulatory Associates at page 44:

*Any delay in the liberalisation of 900MHz spectrum, as outlined in ComReg's Consultation Document No. 10/71, would cost H3GI over **[Commercially sensitive]** from a need to pay increased roaming fees to Vodafone to ensure coverage of those customers who cannot economically be covered with a 2.1GHz network.*

In addition, Value Partners and Radio Regulatory Associates note at page 44 that:

"The money that H3GI pays to Vodafone in roaming costs, in order to maintain a competitive coverage level, prevents H3GI from passing the equivalent value to its consumers in the form of additional value-added services, increased innovation and lower prices. Such pricing and services would increase H3GI's competitiveness and maximise benefits to all users of mobile services in Ireland through increased price and service competition, whether an H3GI customer or not."

[Commercially sensitive] However, access to liberalised 900 MHz is key to achieving this. Otherwise, customers will have a sub-optimal experience and remain with the incumbent operator. **[Commercially sensitive][Commercially sensitive]**

At page 47 of the attached report, Value Partners and Radio Regulatory Associates conclude:

*"The delay in the liberalisation of, and access to, currently unallocated 900MHz spectrum until 2013 impacts consumers directly and distorts competition in the Irish mobile market. Moreover, it prevents H3GI competing on an equal basis with other Irish MNOs and therefore decreases the benefits of competition to Irish consumers with regard to lower prices and greater innovation **[Commercially sensitive]**. The total impact of ComReg's decision to unnecessarily delay access to 900MHz, in*

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[25] For more information, please see attached the report prepared by Value Partners and Radio Regulatory Associates.

[26] For more information, please see attached the report prepared by Value Partners and Radio Regulatory Associates.

financial terms alone, to H3GI is over ***[Commercially sensitive][Commercially sensitive]***

ComReg's decision to delay access to 900MHz spectrum (in particular that which is not already allocated) thus directly harms the interests of both H3GI and all consumers of voice and data mobile services in Ireland by reducing H3GI's ability to offer competitive pricing and new & innovative services, entrenches the unfair competitive advantage granted to Ireland's other mobile network operators, and runs contrary to both the EU Directive 2009/114/EC and ComReg's stated aim of 'ensuring that there is no distortion or restriction of competition in the electronic communications sector.'"

Accordingly, in granting the interim licence proposal and thereby taking the decision to delay the availability of liberalised 900 MHz, ComReg will place H3GI at a significant competitive disadvantage by hindering its ability to compete effectively with the incumbent operators. In so doing, ComReg is acting in direct contravention of its obligation to act in a neutral manner (in ComReg's own words, ComReg is required to promote competition and not competitors[27]) and in safeguarding existing competition, is in fact creating barriers to competition.

In justifying the interim licence proposal (Option 1) as the most preferred option in terms of ensuring that competition is not distorted, ComReg places considerable emphasis on the impact of earlier liberalisation (as proposed by H3GI) on new entrants. In dismissing H3GI's proposal for the immediate grant of rights of use to liberalised 900 MHz spectrum to all existing operators, ComReg states that:
"Any such option would discriminate against potential new entrants and reduce, potentially substantially, their willingness to pursue entry into the Irish market. "

H3GI believes that it is not appropriate for ComReg to rely on the theoretical possibility of new entry to justify its delay in liberalising 900 MHz spectrum and submits that new entrant concerns can only properly by relied upon by ComReg where it has sufficient evidence that "new entry" will occur.

Accordingly, ComReg's proposed approach places a premium on potential market entry at the expense of real market competition. In particular, ComReg states at page 51 that:

"Ensuring that potentially efficient new entrants are not dissuaded from entering the process is also critical for ensuring that competition in the downstream retail market is maximised over the medium and longer term. New entrants that are more efficient than incumbent operators, will increase market share by offering more innovative services at lower prices. This will in turn, increase the competitive stress felt by the other firms in the market, who will in turn react by striving to offer better services at keener prices. The potential benefits over the period to 2030 are substantial."

ComReg's statement ignores the important role played by H3GI in encouraging competition in the Irish mobile market since its launch in 2005. To date, H3GI has invested in excess of €500 million in capital expenditure and has delivered significant

27. Page 18 of ComReg's Response to Consultation.

benefits to Irish consumers, both through its role as a developer of innovative 3G services in Ireland and its contribution to the competitive mobile landscape. While H3GI has built its market share to 6.2 per cent (including mobile broadband subscriptions)[28], this is in no way comparable to the significant market shares currently held by the incumbents Vodafone (42 per cent including mobile broadband subscriptions) and O2 (33.8 per cent including mobile broadband subscriptions), who continue their substantial hold on Irish mobile consumers. H3GI would also note that other new market entrants (MVNOs) have also struggled to build market share and believes that, in the current economic climate, the likelihood of further market entry is low. H3GI notes the acknowledgement by ComReg at page 46 of the Response to Consultation that the retail mobile communications market in Ireland is characterised by high barriers to entry and expansion.

In justifying its interim licence proposal on the basis of encouraging new entry, ComReg has failed to recognise that, rather than distorting competition, early liberalisation of 900 MHz would allow the existing smaller market players (who are already struggling to build market share) to compete more effectively with the entrenched positions of the incumbents (by offering innovative and advanced services) thereby encouraging competition in the market. In contrast, H3GI believes that the interim licence proposal will only serve to safeguard the existing lack of competition in the Irish mobile market.

As previously stated in its response to ComReg Document No. 10/71, H3GI again submits that ComReg should take into account the positive impact of H3GI on competition in the Irish mobile market and the adverse impact of the interim licence proposal and the related decision to delay availability of liberalised 900 MHz spectrum which will further distort the ability of H3GI to effectively compete with the incumbent 2G operators to the detriment of competition and consumers.

Finally, H3GI submits that ComReg's continued reference to the fact that H3GI declined to accept its offer of 2G 900 MHz spectrum is disingenuous. H3GI declined the offer of 2G 900 MHz spectrum because at the relevant time, there was no indication that 2G 900 MHz spectrum would be liberalised for 3G use. Had H3GI accepted 2G 900 MHz spectrum, H3GI would not have been in a position to use this spectrum. It is puzzling to H3GI that ComReg should propose a course of action that would not result in the efficient use of spectrum, contrary to ComReg's statutory obligation under section 12(1)(b) of the 2002 Act.

PART 3 - OBJECTIVITY

ComReg's interim licence proposal lacks objectivity contrary to, *inter alia*:

1. Article 4 of the Competition Directive;

2. Recital 7 of the GSM Amending Directive;

28. See ComReg Quarterly Key Data Report Q3/2010, ComReg Document No. 10/106.

3. Recital 14 of Commission Decision of 16 October 2009 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;

4. Articles 5 and 7 of the Authorisation Directive as amended by Directive 2009/140/EC;

5. Article 9 of the Framework Directive as amended by Directive 2009/140/EC;

6. Regulation 11 (3) of the Authorisation Regulations; and

7. Regulation 23 (1) of the European Communities (Electronic Communications Networks and Services)(Framework) Regulations, 2003, as amended (the "Framework Regulations").[29]

In seeking to justify the interim licence proposal, ComReg relies, *inter alia*, upon an incorrect view that (i) 800 MHz and 900 MHz, and (ii) 900 MHz and 1800 MHz bands are highly substitutable and therefore the rights to these bands should be made available jointly.

ComReg's view is factually incorrect, so as to undermine ComReg's reasoning for delaying the release and liberalisation of 900 MHz spectrum to coincide with 800 MHz availability.

While 800 MHz and 900 MHz spectrum bands have some similar radio propagation characteristics, ComReg is misinformed when it considers these bands to be highly substitutable. H3GI has already set out at section 8 of its response to ComReg Document No. 10/71 (page 18) key differences between the 800 MHz band and 900 MHz band (e.g. lack of network equipment or existing GSM or 3G mobile devices currently available to support 800 MHz spectrum; the lack of a roadmap for 800 MHz devices/equipment; no worldwide harmonisation; fact that 900 MHz spectrum has been used for electronic communications services for nearly 20 years and in contrast to 800 MHz, is a global standard).

Additionally, H3GI refers to the detailed explanation of the limited substitutability of 800 MHz and 900 MHz band, contained at sections 3.1 and 3.2 of the attached report by Value Partners and Radio Regulatory Associates (page 9 onwards). In particular, the report notes the following:

"Comparing the 800MHz and 900MHz spectrum bands, there are five key areas which demonstrate that the two lack substitutability: compatibility, regulatory uncertainly, ecosystem differences, harmonisation and delayed access.

- ***Compatibility**: The 800MHz band has a number of compatibility issues that require additional measures at the national level to remedy. The immunity of equipment including DTT receivers and cable modems will need to be tightened but the process is still on-going and it is not clear how the transitional issues will*

[29] For ease of reference, the text of these provisions is set out in Annex 1 to this response.

be managed. There are no significant compatibility issues with the 900MHz band;

- ***Regulatory uncertainty**: The legacy issues associated with the 800MHz band create regulatory uncertainty. The discussion of whether licence conditions may be added to the 800MHz licences in some administrations, coupled with uncertainly regarding what might emerge from WRC-12 in terms of co-frequency co-ordination requirements, will tend to make the 800MHz band comparatively less attractive as regulatory certainty is essential for operators planning network investments;*

- ***Ecosystem differences**: The UMTS900-HSPA ecosystem has a massive lead over the 800MHz LTE ecosystem and given the issues regarding compatibility issues and harmonisation developments, it is likely that the advantage enjoyed by the 900MHz ecosystem will grow over the next few years;*

- ***Harmonisation**: The band plans for 800MHz illustrate the rather fragmented development of Digital Dividend spectrum plans in different regions of the world. Not only is there divergence over the frequency band plans but the specifics also differ, e.g. different duplex directions and duplex gaps are to be found with little commonality in the current plans. There is not going to be a common global band plan for the DDR spectrum; and*

- ***Delayed access to 900MHz**: The frequency co-ordination issue in central Europe may delay the wider deployment of 800MHz networks and therefore impact negatively on the addressable market which, all other things being equal, will result in a smaller 800MHz ecosystem in the early years. This will have implications for the cost and range of products and devices available compared to the 900MHz band.*

There is a material difference between 800MHz and 900MHz, and collectively these issues amount to a material difference between the two bands such that they are not substitutable."[30]

1800 MHz and 900 MHz are also not closely substitutable. Their propagation characteristics are substantially different. Whilst 900 MHz is suitable for wide area coverage and in-building penetration, 1800 MHz is suitable for capacity and speed. 1800 MHz has propagation characteristics far more akin to 2.1 GHz and 2.6 GHz than it does to 900 MHz.

ComReg's interim licence proposal unduly and disproportionately favours the interests of Vodafone and O2.

PART 4 - DISCRIMINATION

ComReg's interim licence proposal is discriminatory contrary to *inter alia*:

1. Article 4 of the Competition Directive;

[30] At page 85/86 of the attached report from Value Partners and Radio Regulatory Associates.

2. Recital 14 of Commission Decision of 16 October 2009 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;

3. Articles 5 and 7 of the Authorisation Directive as amended by Directive 2009/140/EC;

4. Articles 8 and 9 of the Framework Directive as amended by Directive 2009/140/EC;

5. Regulations 9 (4) and 11 (3) of the Authorisation Regulations; and

6. Regulation 23 (1) of the Framework Regulations.[31]

ComReg is required to treat like operators alike. Conversely, it is required to not treat dissimilar operators in a similar manner. ComReg, in proceeding with the interim licence proposal, has failed to recognise that H3GI is different to Vodafone and O2 in that H3GI is a 3G only operator and accordingly requires access to liberalised 900 MHz immediately in order to effectively compete. This is based on the fact that the main way in which H3GI can grow market share is to take customers from Vodafone or O2. This necessitates H3GI being in a position where it can offer advanced services, which in turn requires H3GI to have access to liberalised 900 MHz spectrum.

Accordingly, it is incorrect of ComReg to suggest that the proposed delay of liberalisation affects all operators equally. Rather, the delay places H3GI at a significant competitive disadvantage by hindering its ability to compete effectively with the incumbent operators. ComReg is in direct contravention of its obligation to act in a neutral manner (in ComReg's own words, ComReg is required to promote competition and not competitors) and serves to create barriers to competition.

At page 16 of the Response to Consultation, ComReg states:

"ComReg is still of the view that the Interim Licence Proposal would not result in unlawful discrimination against H3GI (or any other party) for the following additional reasons:

• The Interim Licence Proposal is open to Vodafone and O2, and would have been extended to Meteor also, had its 900 MHz licence also been about to expire with similar imminence. There is, accordingly, no discrimination as H3GI (or a new entrant) is not being denied anything it could lawfully have used until 2013 anyway;

• ComReg is proposing to have full liberalisation of the 900 MHz band in 2013 (with preparatory licences available in the meantime) and is proposing to confine any existing user of 900 MHz to GSM-only use. Having full liberalisation of the 900 MHz band in 2013 is the approach ComReg is proposing to take with regard to compliance

[31] For ease of reference, the text of these provisions is set out in Annex 1 to this response.

with the GSM Amendment Directive and such an approach is entirely reasonable, justified and appropriate;

• ComReg considers that as the Interim Licence Proposal would be limited to GSM-only, it cannot be said to be discriminatory vis-à-vis H3GI (or any other party).

• Moreover, ComReg does not consider it likely that the availability of GSM-only 900 MHz spectrum, between May 2011 and January 2013, would enable H3GI to invest in a GSM network which would allow it to offer lower tariffs than those tariffs it currently applies on the basis of its national roaming agreement with Vodafone. In this regard, ComReg further considers that it is highly unlikely that any operator would de novo build a GSM network where the guaranteed spectrum right of use was less than two years and in light of the imminent liberalisation of the spectrum band. It is therefore reasonable to form the view that H3GI would only be interested in GSM-only 900 MHz spectrum if, as a result of the auction, it has the certainty of holding 900 MHz spectrum as of 2013. In this regard, it is noted that H3GI declined the offer of a GSM 900 MHz licence when it obtained its 3G licence and, indeed, has not sought GSM 900 MHz rights of use since then nor has it sought access to such rights of use throughout this consultation process. However, such an argument would prejudge the outcome of the auction award: H3GI has no extant or guaranteed future "right" to any spectrum and to confer such a future right on H3GI would comprise discrimination against other MNOs; … "

ComReg's statement that H3GI is not being denied anything it could lawfully have used until 2013 is entirely self-serving and assumes that its policy decision to wait until that time to provide access to liberalised spectrum is correct and justified in accordance with ComReg's statutory functions. For the reasons set out above and below, H3GI does not believe that delaying liberalisation of the 900 MHz band until 2013 promotes competition, is objective, proportionate or ensures the efficient management and use of spectrum. In relation to ComReg's statement that *"as the Interim Licence Proposal would be limited to GSM-only, it cannot be said to be discriminatory vis-à-vis H3GI (or any other party)"*, ComReg fails to take account of the competitive harm its interim licence proposal has on H3GI.

The competitive harm is caused not only by ComReg's decision to grant an interim licence to Vodafone and O2 on a GSM only basis, but by its concurrent decision to delay the availability of liberalised 900 MHz. As discussed above, ComReg's attempt to restrict the current consultation to the issues associated with the interim licence proposal and its assertion that H3GI has conflated concerns regarding ComReg's broader spectrum award proposals with the proposed grant of interim rights of use, is disingenuous. H3GI submits that the interim licence proposal cannot be considered to be legally distinct from ComReg's broader proposal to delay the availability of liberalised 900 MHz spectrum, as ComReg's decision as to whether or not to grant an interim GSM licence, of its nature, involves a concurrent decision by ComReg to delay the availability of liberalised 900 MHz spectrum, so that the two proposals are inextricably linked and cannot be considered to be independent of one another.

H3GI is not interested in GSM-only 900 MHz spectrum between May 2011 and January 2013. It is interested in the early availability of liberalised 900 MHz

spectrum. H3GI's previous proposal was an attempt to balance the interests of incumbent operators, new market entrants and the State.

ComReg also notes at page 16 that:

"an administrative assignment of liberalised rights of use as proposed by H3GI would allow Vodafone, O2, Meteor and H3GI to develop market share before any new entrant could enter the market. Accordingly, H3GI's proposal appears to be discriminatory vis a vis new entrants"

As discussed in further detail at Part 2 above, H3GI believes that it is not appropriate for ComReg to rely on a theoretical possibility of new entry to justify its delay in liberalising 900 MHz spectrum. H3GI submits that new entrant concerns can only be properly relied upon by ComReg where it has sufficient evidence that new entry will occur. To date, ComReg has not provided any evidence to demonstrate that new entry is likely.

ComReg also notes that "*Compliance with the non-discrimination obligation is inherent in the test for the non-application of State aid and ComReg is firmly of the view that there is no State aid present in the Interim Licence Proposal (see Section 2.7 below).*"

For H3GI's response to ComReg's comments in respect of State aid please see Part 2.

"Finally, ComReg rejects H3GI's claim that it acknowledged, in Consultation 10/71, that it would, through the Interim Licence Proposal, be conferring an advantage on Vodafone and O2. ComReg merely noted such a view regarding advantage "could be argued" by some."

In respect of the above comment, H3GI submits that whether or not ComReg acknowledged that the interim licence proposal would confer an advantage of Vodafone and O2 or merely noted that such a view could be argued is irrelevant. It cannot be disputed that the interim licence proposal confers an advantage of Vodafone and O2 relative to other operators by allowing them an additional period to obtain a return on their original investment at a spectrum licence fee which is below market value.

Each of Vodafone and O2 have had the full term of their respective existing GSM 900 MHz licence within which to generate a reasonable return on capital investments and as a direct consequence of the interim licence proposal, will now have an additional period of approximately (20 months) during which to generate additional revenues and profit. As noted by ComReg, "*this additional period would be at the end of the investment cycle where it is quite plausible that the rate of return on this additional period would be considerably higher than in the earlier stages of the original investment cycle (as initial and ongoing capital investment are likely to have been recouped).*"

PART 5 - PROPORTIONALITY

ComReg's interim licence proposal is disproportionate contrary to *inter alia*:

1. Article 4 of the Competition Directive;
2. Recital 7 of the GSM Amending Directive;
3. Article 1 (2) of the GSM Directive as amended by the GSM Amending Directive;
4. Recital 14 of Commission Decision of 16 October 2009 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;
5. Articles 5 and 7 of the Authorisation Directive as amended by Directive 2009/140/EC;
6. Articles 8 and 9 of the Framework Directive as amended by Directive 2009/140/EC;
7. Regulation 11 (3) of the Authorisation Regulations;
8. Regulation 23 (1) of the Framework Regulations; and
9. Section 12 (3) of the 2002 Act.[32]

As set out below in Part 8, ComReg does not have to wait until 2013 to provide for access to liberalised 900 MHz.

At page 18 of the Response to Consultation, ComReg states that it disagrees with H3GI's assertion that the interim licence proposal would be disproportionate because of the views of respondents and the following reasons:

"ComReg notes in this regard that pursuant to Article 5(2) of the Authorisation Directive where licences are granted for a limited period of time they should allow for an appropriate period of time to allow for investment amortisation. In light of the level of investment that would be required by H3GI to deploy a 900 MHz network, ComReg believes that any such licence granted to H3GI would need to be substantially longer than 20 months.

ComReg does not believe that the administrative grant of a long term licence to H3GI would be proportionate. An administrative grant to H3GI at this time arguably pre-supposes that H3GI would be successful in the future auction for the long-term rights of use of the spectrum, whereas the outcome of that auction is of course unknown at this time and it would be unfair on all prospective bidders to prejudge that outcome. Further, awarding an interim 900 MHz licence to H3GI for a 20-month period has little practical value as no operator would be expected to invest in an expanded network

[32] For ease of reference, the text of these provisions is set out in Annex 1 to this response.

for a 20-month period, with the risk of then having to relinquish the spectrum if it did not succeed in the auction for the long-term right of use of the spectrum.

In addition, as H3GI is a 3G-only MNO, such an approach would require that its early grant of 900 MHz spectrum be liberalised. In turn, all other existing 900 MHz licences would arguably have to be liberalised to avoid potential discrimination and distortion of competition amongst existing competitors. There are, of course, a number of other negative aspects to such an approach which would have to be balanced against the benefits of a direct award to H3GI and/or the assignment of one liberalised block of 900 MHz spectrum to each of the Mobile Network Operator (MNOs). In particular:

• Such an approach would wholly, or at least materially, undermine the broader spectrum release process and the very significant benefits identified by ComReg (in Information Notice 10/59) as likely to accrue there from. A relatively short period in which the status quo would be preserved by limiting O2 and Vodafone to GSM-only use and during which H3GI would continue to operate in its existing frequency is a necessary and proportionate measure to enable ComReg to realise the benefits of its broader spectrum release proposals;

• H3GI's proposals are considered by ComReg and by its economic analysis as being materially less advantageous for the promotion of competition (or more damaging to competition) than the interim-licensing proposal, when viewed in the context of ComReg's broader spectrum release proposals. The required immediate liberalisation of all allocated 900 MHz spectrum (in order to 'level the playing field' after granting H3GI a liberalised 2 × 5 MHz block) would entrench the position of existing MNOs and likely deter any potential new entrant (who would miss out on the early mover advantage conferred on the existing MNOs), particularly where they might only win 800 MHz spectrum, contrary to ComReg's statutory objectives under section 12 of the 2002 Act;

• Under the regulatory framework generally, ComReg is not required to protect competitors (i.e. H3GI) but, instead, to protect and promote competition. It is not at all certain that an administrative assignment of a liberalised 2 × 5 MHz block of 900 MHz spectrum to existing MNOs would have as its object or effect the protection and promotion of competition. Unlike the interim award proposal, such an approach would clearly discriminate against all other potential new entrants to the 900 MHz band and would undermine the efficacy and the rationale of the auction process itself;

• It is always open to H3GI to seek to renegotiate its roaming arrangements if it is dissatisfied with costs or possibly to enter into different roaming arrangements with another MNO – indeed it is noted from one stakeholder's response to 10/105 that [confidential material removed];

• It could also be argued that H3GI is in a better position to take advantage of liberalised 900 MHz spectrum, as the incumbent 3G only carrier, and might thus be put in a more advantageous position than the other MNOs were it awarded liberalised 900 MHz spectrum prior to 2013.

• The existing GSM licensees have argued that they would each need 2 × 10 MHz of spectrum to maintain GSM services and roll out new 3G networks at 900 MHz. Under

Option 4 of the draft RIA, discussed in Chapter 3 below, each existing licensee would be guaranteed 2 × 7.2 MHz (their existing spectrum holding), and this only on a short term basis, until early 2013. Therefore, it is questionable how useful such a grant would be in practice to the existing GSM Licensees;

• ComReg is likely to require this fallow spectrum for potential re-location and re-tuning purposes in the lead-up to 800 MHz availability, thus ensuring efficient and effective management of the spectrum in accordance with its obligations under section 12 of the 2002 Act;

• ComReg arguably has very little choice but to implement some sort of interim award to ensure that competition and services to end-users are protected. While H3GI has argued that this approach, if not modified to its preference, has significant negative implications for it, ComReg is of the view that, if it implemented H3GI's alternative approach, ComReg would risk being in breach of a number of its statutory obligations outweighing any benefits which might accrue from H3GI's approach; and

• ComReg further notes that no other satisfactory approach has been suggested by respondents to 10/71 and that ComReg and its consultants are not aware of any less burdensome approach to achieving ComReg's primary objectives of ensuring that competition and services to end-users are maintained and protected (please see draft RIA in Chapter 3).

As such, based on the proposals available to date, the interim licence proposal would satisfy the test and requirement of proportionality."

Given the fact that ComReg is proposing to confer a significant and unwarranted competitive advantage on Vodafone and O2, Vodafone's and O2's views in relation to the proportionality of ComReg's interim licence proposal are of limited value.

ComReg has failed to justify the proportionality of its interim licence proposal by reference to, *inter alia*, the economic harm that it is likely to cause H3GI and the State. H3GI is fully aware of the fact that ComReg's role is to promote competition. However, for the reasons set out above and below (in particular, Part 2), H3GI believes that ComReg is failing to do so.

H3GI does not consider that ComReg is likely to require all of the fallow spectrum for potential re-location and re-tuning purposes in the lead up to 800 MHz availability. H3GI refers specifically to the Elisa case study at pages 49 and 84 of the attached report from Value Partners and Radio Regulatory Associates.

H3GI strongly refutes ComReg's view that H3GI's previous proposal would risk being in breach of a number of ComReg's statutory obligations (without further or proper explanation as to how this may be the case) outweighing any benefits which might accrue from H3GI's approach. Rather, H3GI's previous proposal was an attempt to balance the interests of incumbent operators, new market entrants and the State and an alternative to ComReg's current "broader spectrum release" proposals. ComReg's approach on proportionality is clearly based on a deliberate misunderstanding of H3GI's proposal.

By way of clarification, H3GI proposed that each of the four MNOs be granted access to 5 MHz of liberalised 900 MHz spectrum immediately in mid-2011 by way of administrative grant for the minimum reserve price, with each operator having the opportunity to bid for additional spectrum (whether 900 MHz or 800 MHz) by auction in 2011, which would be available in 2013.[33]

ComReg has misinterpreted H3GI's proposal (and has incorrectly restated it as Option 4) as "*the grant of an interim license to H3GI in respect of one 2 x 5 MHz block on a liberalised basis, where H3GI's assignment would be either block A or B*" so as to mean "*a short-term administrative assignment of liberalised rights of use (ie May 2011 to January 2013)*".

H3GI's proposal was in fact that one block of 2x 5 MHz of spectrum be granted to H3GI and the other MNOs on a liberalised basis on a long term basis.

Further, ComReg consistently states that the granting of one block (2 x 5 MHz) of liberalised 900 MHz spectrum would place any new entrants at a competitive disadvantage as it would allow H3GI and the other incumbents to develop market share before any new entrant could enter the market so that such a proposal is discriminatory vis-à-vis new entrants.

New entrant concerns can only properly be relied upon by ComReg where it has sufficient evidence that "new entry" will occur. H3GI would suggest that ComReg's concerns regarding potential new market entry are somewhat overstated. To date ComReg has not sufficiently demonstrated any legitimate new interest in entering the Irish market, that has been expressed by third parties. It is inappropriate for ComReg to rely on a theoretical possibility of new entry to justify its delay in liberalising 900 MHz spectrum.

H3GI expressly rebuts ComReg's statement (referred to at page 10 of the draft Response) that "*HG3I is in a better position to take advantage of liberalised 900 MHz spectrum, as the incumbent 3G only carrier, and might thus be put in a more advantageous position than the other MNOs were it awarded 900 MHz spectrum prior to 2013*". In contrast with the 'ready to go' 900 MHz infrastructure of the incumbent 2G operators, H3GI does not have any advantage by virtue of being a 3G only carrier. Each of the incumbent 2G operators has practical experience of a 3G network. ComReg's assertions fail to recognise H3GI's particular position as a 3G only operator. As such, H3GI is different to Vodafone and O2 in that, as a 3G only operator, H3GI requires access to liberalised 900 MHz immediately in order to compete effectively. H3GI refers ComReg to Part 4 (Discrimination) above.

It is disingenuous of ComReg to dismiss H3GI's arguments as to proportionality by reference to H3GI's roaming agreement with Vodafone. **[Commercially sensitive]**

[33] H3GI notes that ComReg has, in setting out H3GI's proposal as Option 4, incorrectly interpreted H3GI's proposal as meaning that such rights would be granted on an interim basis.

PART 6 - EFFICIENT MANAGEMENT AND USE OF SPECTRUM

ComReg's interim licence proposal does not ensure the efficient management and use of spectrum contrary to section 12 (1)(b) of 2002 Act. This provides as follows:

"The objectives of the Commission in exercising its functions shall be as follows –

(b) to ensure the efficient management and use of the radio frequency spectrum in the State in accordance with a direction under section 13, and ..."

As demonstrated by the attached report from Value Partners and Radio Regulatory Associates, ComReg's interim licence proposal leaves 900 MHz unused unnecessarily. As noted at Section 4.1 of the attached report from Value Partners and Radio Regulatory Associates, ComReg's interim licence proposal and its concurrent decision to delay the availability of liberalised 900 MHz spectrum will give rise to a delay of at least 22 months for the 2 x 5 MHz of 900 MHz spectrum which is currently unallocated and available for use in Ireland.[34]

As previously stated in its response to ComReg Document No. 10/71, H3GI is seriously concerned by ComReg's failure to make available the 2 x 5 MHz of 900 MHz spectrum which remains unassigned and available for immediate allocation in Ireland.[35] Such a blatant waste of highly valuable and desirable spectrum can hardly be regarded by ComReg as an efficient use of spectrum.

As stated above, H3GI would refer ComReg to page 44 of the attached report from Value Partners and Radio Regulatory Associates which notes that:

"ComReg's refusal to allocate the 900MHz spectrum currently left empty leaves H3GI as the only operator without 900 MHz in need of a roaming agreement to maximise coverage for its customers. As a direct result of this decision, H3GI's cost base is increased, which directly distorts competition in the Irish mobile market. The money that H3GI pays to Vodafone in roaming costs, in order to maintain a competitive coverage level, prevents H3GI from passing the equivalent value to its consumers in the form of additional value-added services, increased innovation and lower prices. Such pricing and services would increase H3GI's competitiveness and maximise benefits to all users of mobile services in Ireland through increased price and service competition, whether an H3GI customer or not."

PART 7 - ECONOMIC HARM OF COMREG'S INTERIM LICENCE PROPOSAL

As stated above, ComReg's interim licence proposal confers a significant competitive advantage on Vodafone and O2. In contrast with the proposed interim licence spectrum fee of approximately €2.5 m p.a., ComReg's interim licence proposal

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34. 22 month delay measured from March 2011 to the proposed release of spectrum in January 2013.

35. As noted by ComReg at Section 6.8 of the 2009 Consultation in ComReg Document 09/14 – *'Response to Consultation and Further Consultation – Liberalising the Future Use of the 900 MHz and 1800MHz Spectrum Bands & Spectrum Release Options'* dated 10 March 2009.

confers in excess of €43 m p.a. on Vodafone and in excess of €33 m p.a. on O2.[36] It also places H3GI at a significant disadvantage. ComReg's interim licence proposal costs H3GI in excess of **[Commercially sensitive]** in terms of unnecessary national roaming costs **[Commercially sensitive]**. **[Commercially sensitive]**

In addition, ComReg's interim licence proposal deprives Ireland of the benefits of widespread, high speed, mobile broadband, slowing down GDP growth, damaging the development of the knowledge economy, widening the digital divide, restricting job growth and limiting the Irish government's ability to provide public services more effectively. As DotEcon recognise in ComReg Document 10/71a, *"even small delays to the availability of [3G] services are likely to have a large welfare cost"*.

As Value Partners and Radio Regulatory Associates state (page 37/38):

"Delay in the liberalisation of and access to 900MHz spectrum would have further impacts on Irish society beyond its direct effect on consumers and operators. Preventing mobile operators from utilising currently spare 900MHz spectrum would slow GDP growth, widen the 'digital divide' and deny individuals, businesses and government on the move and in-building access to vital services and enhanced productivity tools. Moreover, the delay in liberalisation of 900MHz spectrum would be directly contradictory to ComReg's commitment to ensure swift and efficient use of spectrum: 'ComReg will also work proactively in the allocation of spectrum to encourage the trialling and development of flexible new mobile technologies and digital applications'."

In addition, MNOs will forego lost revenue and as a corollary to the revenue foregone by operators, consumers will lose consumer surplus. As Value Partners and Radio Regulatory Associates state at page 37:

"If 3G-enabled mobile broadband services are not rolled out to currently uncovered regions, consumers who are willing to pay for the mobility, quality and speed benefits that mobile broadband offers will not be motivated to take the service up. In particular, mobility will suffer as geographic coverage of 3G will lag population coverage (both in terms of land mass uncovered and in terms of ability to use mobile broadband in buildings). Research by Analysis Mason has shown that mobility is the key benefit delivered by mobile broadband, with "66% of non-mobile-broadband subscribers considering it a key factor in motivating them to buy the service". Any delay in the provision of 900MHz spectrum, and the lack of further expansion to current effective 3G coverage, would cost the Irish mobile network operators revenues from consumers potentially willing to purchase mobile broadband, if on-the-move coverage were better or the service offered higher quality/speed.

As a corollary to the revenues foregone by operators, consumers will lose consumer surplus, arising from the willingness of consumers to pay more for mobile broadband access than the cost of those services. Calculated via Hausman's approximate approach to the compensating variation, the consumer surplus foregone is €120 per year per customer who decides not to take up the service. This will come from a

[36] For more information, please see attached the report prepared by Value Partners and Radio Regulatory Associates.

lower value placed on mobile broadband by those who do choose to subscribe – as it will be available in fewer places and at slower speeds – and some consumers who decide not to subscribe at all, in particular because without 900MHz spectrum the 3G signal may not penetrate sufficiently into their homes. In addition, customers' ability to use 'always-on' data services on smartphones will suffer and thus consumers will forgo potential consumer surplus from their use of these devices."

Significantly, Value Partners and Radio Regulatory Associates identify the loss to the Irish economy (pages 38 – 42):

"As Pearce and Pagano have shown, increasing the penetration of mobile broadband stimulates significant GDP growth; their study looking at the benefits of increased wireless rollout in the US found that 'cumulative gains of 0.65% to 0.98% in GDP [arose] from indirect effects,… society as a whole benefits from a nationwide wireless broadband network'. Although the figures provided are unique to the American market, higher-speed and better-penetrating mobile broadband is likely to grow Irish GDP in a similar fashion. Such a GDP growth stimulus is exactly in line with Ireland's desire to deliver economic renewal, 'restruct[ing] and re-orient[ing] its economy to prepare for economic renewal'. In part these GDP benefits will arise from the qualitative benefits identified below.

…

The Irish rural population is, on average, older and less affluent than the urban population; 'there are proportionally more old people in rural areas (12.2%) than in urban locations (10.3%)', and inhabitants of rural areas have lower levels of disposable income. This 'urban-rural' socio-economic divide would be significantly exacerbated if the citizens living in rural areas were denied access to high-speed, high-quality mobile broadband until 2013, especially in Ireland where mobile broadband penetration is significantly above the EU average while fixed line penetration is significantly below. As eircom themselves have stated, the limitations of DSL are such that 'even when the local exchange is upgraded to handle broadband, a modem will not connect as the signal becomes so weak after 5km' and 'it would not be economic to extend fixed line broadband nationwide and… some parts of rural Ireland would have to rely on wireless broadband'. A widening of the digital divide would run directly counter to the new Government's desire to build a 'fair society … [where] nobody will be left behind' and with a 'a renewed focus [on] tackling poverty, educational disadvantage and social protection'.

As one well-documented example of the many benefits of higher-speed broadband connectivity, there is a direct and quantifiable correlation between access to higher-speed broadband and job growth. Studies throughout Europe and the US have demonstrated that 'over 80 new jobs are created for roughly every 1000 new broadband connections and that broadband alone added up to 1.4% to rate of growth in jobs'. Ireland's average unemployment rate is over 13%, a figure lowered by recently elevated levels of emigration, but in areas of rural Ireland the unemployment rate is over 14.5%. As it stands, 42% of the population live in rural Ireland, but rural areas account for approximately 28% of total employment opportunities. High-speed, high-quality and in-building mobile broadband facilitates practices such as tele-working, remote working while on the move, telemetry-based business solutions such

as mobile Point of Sale applications (including new and innovative services such as the smartphone-based small business card acceptance service Square in the US), data-intensive van tracking and true remote monitoring, all of which make it easier for employees to work remotely and thus help drive job growth. This is in line with the new Government's Programme for National Recovery, and its 'immediate focus on the jobs crisis'."

ComReg's delay to the availability of liberalising 900 MHz will result in significant detriment to 'e-learning', and smart metering (page 39 of the report). In terms of environmental costs, it is noted that the delay in the availability of liberalised 900 MHz and the resultant build-out of 3G services on 2.1 GHz spectrum could have a significant and unnecessary detrimental effect on the Irish environment not least due to, *inter* alia, physical impact of site building, and extra CO2 emissions produced as a result of operating a larger number of base stations (page 34 of the report).

Value Partners and Radio Regulatory Associates conclude:

"The delay in liberalisation of and access to 900MHz spectrum, as proposed in ComReg's Consultation Document No. 10/71 "800MHz, 900Mhz and 1800Mhz spectrum release", would increase the costs of Irish mobile network operators who wish to extend current 3G coverage to 99% of the Irish population by over €40m. Conversely, as is likely, should Irish mobile operators decide not to increase coverage, then there would be a direct and significant loss to Irish operators in foregone revenues and to Irish consumers in lost consumer surplus. Moreover, Ireland as a whole would be significantly harmed by virtue of a loss of GDP growth, exacerbation of the 'digital divide' and a hindering of the growth and development of vital business and governmental services. Given that, as we outline in section 3, ComReg's arguments on the benefits of delaying access to 900MHz spectrum until 2013 are baseless, there is no reason to impose a suboptimal outcome on Irish mobile network operators, consumers, businesses, government and society as a whole. This is in line with ComReg's own conclusion in 2008 that '[i]f demand is high then the benefits of liberalisation are likely to be significant… [and] wireless technologies are already proving very popular in Ireland'."[37]

At page 15 of the Response to Consultation, ComReg states:

"First, ComReg would point out that the three year objective described in this policy direction is now long expired. In any case, and as noted in Section 3.2.3 of Consultation 10/71, ComReg is of the view that the Interim License Proposal is in compliance with the above policy direction as it promotes the national objective regarding broadband rollout by facilitating the proposed joint release of 800 MHz and 900 MHz spectrum.

ComReg also notes that it is far from clear that a delay in 900 MHz award to coincide with 800 MHz spectrum availability would negatively impact on mobile broadband penetration contrary to the aforementioned policy direction. This policy direction is aimed at overall broadband penetration, both fixed and mobile, which continues to rise. Indeed, ComReg notes that mobile broadband penetration has continued to rise

[37] At page 42 of the attached report.

steadily without liberalised 900 MHz spectrum. ComReg has no reason to believe that this trend would not continue on until the availability of 800 MHz spectrum.

Further, a combined award process will also facilitate greater market entry and the provision of a greater range of broadband services in the medium to long term by increasing the amount of sub-1GHz available to any one undertaking which will of course, in turn, improve mobile broadband penetration. Moreover, as set out elsewhere in this document, even if fully liberalised interim licences were granted immediately on the expiry of Vodafone's and O2's licences, due to, amongst other things, their existing extensive GSM user base and the time required for the completion of any necessary retuning and relocation activities, ComReg does not believe it is likely that widely deployed high coverage 3G 900 MHz services would be available substantially in advance of January 2013. In addition, and in light of ComReg's proposed issue of preparatory (and potentially test licences), ComReg does not believe that a short delay in the availability of liberalised 900 MHz spectrum will have a materially negative effect on the availability of mobile broadband on a nationwide basis.

ComReg also notes that this policy direction is not intended to apply in a vacuum and should be read in light of the justifications given for delaying the award milestones (as set out by ComReg in Consultation 10/71) which would, in ComReg's view, outweigh any alleged and intangible impediment to mobile broadband penetration.

As such, ComReg does not agree that a short delay in the award of 900 MHz spectrum would run contrary to the aforementioned policy direction."
H3GI does not agree that the proposed joint release of 800 MHz and 900 MHz spectrum: (i) promotes the national objective regarding broadband rollout; or (ii) facilitates *"greater market entry and the provision of a greater range of broadband services in the medium to long term by increasing the amount of sub-1 GHz available to any one undertaking which will of course, in turn, improve mobile broadband penetration"*. 800 MHz and 900 MHz are not highly substitutable. As a result, 800 MHz availability does not justify a delay in the availability of liberalised 900 MHz and with it the promotion of the national objective of broadband rollout. Nor does it facilitate greater market entry and the provision of a greater range of broadband services in the medium to long term.

A delay in the 900 MHz award to coincide with 800 MHz spectrum availability will negatively impact on mobile broadband penetration contrary to the aforementioned policy direction, and consumers will continue to be denied innovative high value data services. In this respect, H3GI refutes ComReg's assertion at page 15 of ComReg's Response to Consultation that *"it is far from clear than a delay in 900 MHz award to coincide with 800 MHz spectrum availability would negatively impact on mobile broadband penetration contrary to the aforementioned policy direction*", namely Ministerial Policy Direction No. 3 dated 21 February 2003. H3GI refers ComReg to the attached report prepared by Value Partners and Radio Regulatory Associates. As a result of any such delay, H3GI and other MNOs will be prevented from using 900 MHz for 3G purposes and mobile broadband penetration will be reduced. Any fixed and mobile broadband penetration otherwise will be *"second best"*.
[Commercially sensitive]

In relation to ComReg's statement that *"even if fully liberalised interim licences were granted immediately on the expiry of Vodafone's and O2's licences, due to, amongst other things, their existing extensive GSM user base and the time required for the completion of any necessary retuning and relocation activities, ComReg does not believe it is likely that widely deployed high coverage 3G 900 MHz services would be available substantially in advance of January 2013"*, ComReg pre-determines the outcome of spectrum liberalisation, fails to promote innovation and accepts the *status quo* contrary to *inter alia*: section 12 of the Communications Regulation Act, 2002, as amended.

For the reasons set out in the attached report from Value Partners and Radio Regulatory Associates, H3GI believes that a delay until at least January 2013 will have a significant and adverse effect on the availability of mobile broadband on a nationwide basis.

PART 8 – EARLY LIBERALISATION

H3GI is concerned about ComReg's proposed approach to delay liberalisation of 900 MHz spectrum and believes that a delay in liberalising 900 MHz spectrum is not justifiable so as to coincide with 800 MHz availability. H3GI wants ComReg to hold the auction for liberalised 900 MHz spectrum by September 2011 and to licence liberalised 900 MHz spectrum to the winning bidders immediately after ComReg's proposed auction. H3GI does not believe that such access to liberalised 900 MHz spectrum would provide H3GI or any other operator with an unfair competitive advantage. H3GI's position is that early liberalisation of 900 MHz spectrum is imperative to ensure that the Irish mobile market is competitive, and to avoid further distortion of competition by conferring significant competitive advantages on the incumbent 2G operators so as to discriminate unduly against H3GI.

H3GI's position on early liberalisation is countenanced by ComReg at pages 43 and 46 of ComReg's Response to Consultation. At page 43 of the Response to Consultation, ComReg states:

"Although not previously canvassed by ComReg in its earlier consultations, ComReg notes that its currently proposed broader spectrum proposal (as set out in Consultation 10/71 and Consultation 10/105) could in principle be modified so as to provide the potential for earlier liberalisation of the 900 MHz band than has been previously proposed, on assumptions including that:

- *all transitional activities required to be completed by all existing licensees in the 900 MHz band could be completed prior to both 31 January 2013 and 800 MHz availability;*

- *all holders of rights of use in respect of the 800, 900 and 1800 MHz bands (whether the rights are then current or contingent or prospective) approving of, or at a minimum not being in such a position to show that they would suffer any disadvantage as a result of, such earlier liberalisation; and*

- *appropriate spectrum fees would be determined for the period relating to the earlier 900 MHz liberalised rights of use.*

As these matters would be determined by the outcome of the proposed auction (in particular, whether there could be a licensee with only 800 MHz liberalised rights of use) and events subsequent to that (being the speed at which all transitional activities could be completed by 900 MHz licensees), it is not possible to conclusively state at this point in time whether and, if so when, earlier availability of liberalised 900 MHz rights would occur."

At page 46 of the Response to Consultation, ComReg states:

"ComReg notes that there could be the potential of earlier liberalisation of the 900 MHz band under Option 1. This could provide to H3GI the possibility of reducing its reliance on national roaming, assuming that it acquired the relevant spectrum usage rights for the longer 2013-2030 period."

However, ComReg's proposal is conditional and uncertain.[38] H3GI does not believe that ComReg can justify its position that it wait until *"all transitional activities required to be completed by all existing licensees in the 900 MHz band could be completed prior to both 31 January 2013 and 800 MHz availability"*. ComReg does not need to use the entire 900 MHz band for transitional activities. As a result of ComReg's proposals, one block of 900 MHz will lie unused until at least January 2013. This is clearly demonstrated by the Elisa case study in the attached report from Value Partners and Radio Regulatory Associates (page 49 onwards). As a result of ComReg's proposals, one block of 900 MHz will lie unused until at least January 2013.

H3GI also rejects ComReg's contention (for example, at page 46 of ComReg's Response to Consultation) that early liberalisation is unnecessary as, *inter alia,* H3GI would not be in a position in any case to ensure roll-out of enhanced 3G services in advance of 31 January 2013. Whilst H3GI faces the full costs of site acquisition, site build, commissioning of base stations etc in the 900 MHz spectrum band, that will require extensive radio planning and design work to accommodate 900 MHz and H3GI will be required to either rig new antennae to support 900 MHz or replace its existing antennae with multi band antennae to deploy 900 MHz, H3GI nonetheless could roll out a UMTS 900 MHz in rural areas in 6 months – significantly more than a couple of months in advance of January 2013.

As stated in H3GI's response to ComReg Document No. 10/71, H3GI remains of the view that the interim licence proposal and ComReg's concurrent decision to delay availability of liberalised 900 MHz spectrum band, confers a competitive advantage on Vodafone and O2 by preventing H3GI from having the benefit of entering the 900 MHz band for at least a further 20 months and, consequently, stifling H3GI's ability to compete effectively with Vodafone and O2.

ComReg's interim licence proposal and its concurrent decision to delay availability of liberalised 900 MHz spectrum so as to coincide with 800 MHz availability are discriminatory and will distort competition by impairing H3GI's ability to compete and

[38] ComReg's position is contradicted by other statements by it at page 46 of its Response to Consultation.

entrenching the market position of Vodafone and O2, which are longer established players in the market to the detriment of competition and consumers and will have a particular adverse affect on the provision of new and innovative services to customers, including mobile broadband. H3GI is a 3G only operator and accordingly requires access to liberalised 900 MHz spectrum immediately in order to effectively compete with Vodafone and O2. ComReg's decision to delay the availability of liberalised 900 MHz spectrum will also result in an increase in H3GI's cost base (e.g. through unnecessary national roaming costs [**Commercially sensitive**]), so as to distort competition in the Irish mobile market. H3GI reiterates its views on distortion of competition as set out in Part 2 above. 800 and 900 MHz are not highly substitutable. As a result, the business case for 800 MHz is medium to long term. H3GI believes that it is not appropriate for ComReg to rely on the theoretical possibility of new entry to justify its delay in liberalising 900 MHz spectrum and submits that new entrant concerns can only properly by relied upon by ComReg where it has sufficient evidence that "new entry" will occur. Finally, early liberalisation would create an incentive for Vodafone, O2 and Meteor to complete their transitional activities as quickly as possible.

Accordingly, H3GI calls upon ComReg to hold the auction for liberalised 900 MHz by September 2011 and to licence liberalised 900 MHz spectrum to the winning bidders immediately after its proposed auction.

PART 9 – COMREG'S DRAFT REGULATORY IMPACT ASSESSMENT

For the reasons set out above and below, ComReg's draft regulatory impact assessment ("RIA") is fundamentally flawed.

At page 41 of the Response to Consultation, ComReg states:

"As a general premise, ComReg wishes to stress that its general obligation to foster competition is subject to a broad discretionary power. There is no requirement that the assessment of the promotion of competition be made immediately after the award of the Interim License Proposal. It is perfectly legitimate for ComReg to determine that competition will in the medium to long term be better fostered as a result of the auctioning of a large quantity of 800 MHz/900 MHz spectrum and that the Interim License Proposal is a temporary intermediate step to achieve that goal. This is all the more so considering the fact that the market today is competitive. The assumption that the grant of an interim license of 2 × 5 MHz blocks to H3GI would necessarily be more pro-competitive than any other option, without even considering the implication of such interim licence for the other operators is unsubstantiated and is in fact predicated on a preconceived vision of what the competitive outcome should be."

ComReg has not done or demonstrated any assessment of competition in the mobile market in Ireland. As a result, it is not in a position to make the statement that *"...the market today is competitive."* It is also not clear whether it has determined that "... *competition will in the medium term be better fostered as a result of the auctioning of a large quantity of 800 MHz/900 MHz spectrum ...".* If so, it has not demonstrated the basis for this determination. As stated above, H3GI's previous proposal, as set out in its response to ComReg Document No. 10/71, was an attempt to balance the interests of incumbent operators, new market entrants and the State.

ComReg further states:

"Thus, ComReg is faced with the policy issue of how to address these expiry related concerns and at the same time allow it to bring forward its final proposals for the award of the relevant spectrum bands in a timely fashion with the expected date of early 2013 for 800 MHz availability in mind. ComReg is considering all the proposed options, including its own proposal set out in Consultation 10/71 and those that have been put forward by stakeholders in response to Consultation 10/105, before making its final decisions on how to award spectrum rights of use in these bands in the currently-envisaged time period of 2013 to 2030. An important element in considering what is a facilitating measure is that the option chosen does not prejudge or prescribe ComReg's final decision. Thus, the policy issue is how to deal with the imminent expiry of Vodafone's and O2's 2G rights of use in a way that does not materially distort competition in the relevant mobile markets or the final decisions on its broader spectrum release proposals which ComReg has yet to make. In essence, ComReg must seek to retain the viability as an option of a full band spectrum award, without predetermining it."

ComReg's interim licence proposal is not necessary for the purposes of ComReg bringing forward *"its final proposals for the award of the relevant spectrum bands in a timely fashion with the expected date of early 2013 for 800 MHz availability in mind"*. Early liberalisation (as discussed above) does not prejudice ComReg's proposals for the award of the relevant spectrum bands in a timely fashion.

ComReg states at page 44 of the Response to Consultation that:

"ComReg is of the view that granting the licences for the shortest period that is reasonably required in light of the objectives being pursued is the most proportionate solution"

H3GI submits that ComReg's interim licence proposal and its concurrent decision to delay the availability of liberalised 900 MHz spectrum cannot be considered to be the *"most proportionate solution"* given the disproportionate effect that such a decision will have on H3GI.

As noted at page 42 of the attached report from Value Partners and Radio Regulatory Associates:

"ComReg's refusal to allow timely access to currently available 900MHz spectrum would represent a significant and unfair competitive disadvantage to H3GI's business in comparison to other Irish MNOs. … ComReg's proposals to delay the liberalisation of 900MHz spectrum, as outlined in its Consultation Document No. 10/71, despite there being 2x 5MHz of 900MHz spectrum currently lying vacant39 … would extend the length of time for which HG3I would require a national roaming agreement to give its customers 99% coverage, both (1) harming its ability to compete on a price basis; and (2) damaging the consumer experience of H3GI's services, [as discussed in further detail at pages 44/45 of the Value Partners and

[39] Source: ComReg 10/71a, Section 4.3.1.

Radio Regulatory Associates Report] with an impact on both customer satisfaction and H3GI's ability to compete effectively."

At page 46 of the Response to Consultation, ComReg states: *"H3GI's preferred option is Option 4."* This is not correct. At no stage has H3GI proposed or stated any preference for Option 4.

H3GI notes that in, addressing H3GI's arguments in respect of its reliance on its national roaming agreement with Vodafone, ComReg states at page 46 of the Response to Consultation that:

"At the same time, it has to be presumed that the decision to enter into the roaming agreement was a commercially sound one whereby the benefits of attracting more customers onto H3GI's network outweighed the related roaming costs."

ComReg fails to grasp the fundamental point and take into account that the issue is not whether national roaming makes sense versus 2100 MHz network rollout, but that ComReg is obliged to make liberalised 900 MHz available in order to *inter alia* promote competition, the interests of users and the efficient management and use of spectrum and thus H3GI will have the opportunity to reduce the need for national roaming.

H3GI would also point out that the continued increase in the proportion of data traffic travelling on H3GI's network has meant that, as noted at page 45 of the attached report from Value Partners and Radio Regulatory Associates, handing over a 3G connection to Vodafone's GSM network (where H3GI's roaming agreement is restricted to voice calls only with some limited data availability) often results in a substantial deterioration in the service being provided to H3GI's consumers. As a result, H3GI's continued reliance on its national roaming agreement with Vodafone is causing significant reputational harm to H3GI. In this regard, H3GI notes the statement at page 45 of the attached report from Value Partner and Radio Regulatory Associates that *"**[Commercially sensitive]**"*.

At page 46 of the Response to Consultation, ComReg states:

"Of the four options, potential new entrants would be highly likely to see Option 1 as the best option. This is because it would facilitate the continuation over a minimal period of the status quo without potentially granting existing operators a first mover advantage in rolling out and commercially providing 3G services using the 900 MHz band. In ComReg's opinion, the mobile market and especially the 3G market is likely to become much more of a "mass market" when the 900 MHz spectrum is liberalised, and any incumbency (first mover) advantages provided under options 3 and 4 are likely to be difficult to overcome, as experience with 2G services in Ireland has shown. For this reason potential new entrants would not likely be in favour of either Options 3 or 4.

In addition, to the extent that Options 3 or 4 would involve a new entrant gaining access to liberalised rights of use from 2011, then such a grant, before any new entrant could have any network in place, would not be of any material benefit over

and above the benefit provided by the proposed issue of preparatory licences to same."

As stated above, ComReg's proposed approach places a premium on potential new market entry at the expense of real market competition. To date, H3GI has invested in excess of €500 m in capital expenditure, delivered significant benefits to Irish consumers, both through its role as a developer of innovative 3G services in Ireland and its contribution to the competitive mobile landscape.

Whilst H3GI has built its market share to 6.2 per cent (including mobile broadband subscriptions), this is in no way comparable to the significant market shares currently held by the incumbents Vodafone (42 per cent including mobile broadband subscriptions) and O2 (33.8 per cent including mobile broadband subscriptions), who continue their substantial hold on Irish mobile consumers. H3GI would also note that other new market entrants (MVNOs) have also struggled to build market share and believes that, in the current economic climate, the likelihood of further market entry is low. H3GI notes the acknowledgement by ComReg at page 46 of the Response to Consultation that the retail mobile communications market in Ireland is characterised by high barriers to entry and expansion.

In justifying its interim licence proposal on the basis of encouraging new entry, ComReg has failed to recognise that, rather than distorting competition, early liberalisation of 900 MHz would allow the existing smaller market players (who are already struggling to build market share) to compete more effectively with the entrenched positions of the incumbents (by offering innovative and advanced services) thereby encouraging competition in the market. In contrast, H3GI believes that the interim licence proposal will only serve to safeguard the existing lack of competition in the Irish mobile market.

H3GI believes that it is not appropriate for ComReg to rely on the theoretical possibility of new entry to justify its delay in making liberalised 900 MHz spectrum available and submits that new entrant concerns can only properly by relied upon by ComReg where it has sufficient evidence that "new entry" will occur.

Competition is dynamic. As a result, preservation of the *status quo* by definition involves harming competition. This is compounded by **[Commercially sensitive]** ComReg refers to the *"3G market"*. However, it fails to define and analyse this market e.g. product, geographic and temporal markets, product substitutability, high and non-transient market shares. H3GI submits that ComReg has failed to do a proper competitive analysis of the relevant markets. ComReg is failing to analyse its options in the correct context i.e. a retail mobile communications market without distinction between 2G and 3G in which, as ComReg has stated, the first mover advantage of Vodafone and O2 has been difficult to overcome. Contrary to ComReg's apparent assertion, the retail mobile communications market is not competitive.

At page 47 of the Response to Consultation, ComReg states:

"Another relevant factor to consider in this assessment is consumers' installed base of compatible equipment. In this regard, Qualcomm estimated that in 2010 over 55%

of phones sold in Western Europe were 2G-only phones. In addition, H3GI noted that almost all handsets sold now and indeed for the last 2 years support 3G 900 MHz."

In contrast to ComReg's statement above, H3GI understands that in 2010 19% of handsets sold in Western Europe were 2G only, and that the sale of 2G handsets is forecast to decline to 0% by 2015.[40]

At page 50 of the Response to Consultation, ComReg states:

"Option 3 would likely be the least preferable option from a consumer's perspective because it would immediately reduce competition both in the market and in any competitive process to award spectrum rights of use. The apparent discrimination in favour of particular operators would all but guarantee that operators contemplating new entry would revise their decisions while also placing H3GI at a competitive disadvantage."

H3GI welcomes ComReg's acknowledgement that Option 3 as proposed by Vodafone would place H3GI at a competitive disadvantage.

At page 50 of the Response to Consultation, ComReg states *"ComReg's role to encourage efficient use and ensure effective management of spectrum has the objective of promoting competition."* This is not correct. Notwithstanding article 8 of the Framework Directive, ComReg has *inter alia* two separate objectives: (i) to ensure the efficient management and use of the radio frequency spectrum in the State[41]; and (ii) to promote competition[42]. For the reasons set out in this response and H3GI's response to ComReg Document No. 10/71, ComReg has failed to comply with its statutory objective of ensuring the efficient management and use of the radio frequency spectrum in the State.

In support for its view that Option 1 (i.e. the interim licence proposal) represents the most proportionate approach and would have the least distortive effect on competition, ComReg's states at page 51 of ComReg's Response to Consultation that choosing Option 4[43] ie earlier liberalisation of 900 MHz spectrum, *"might even effect competition in a way which is detrimental to H3GI's position on the market"* as *"Given the considerable time that would appear to be required by H3GI to plan, design and implement a 3G 900MHz network, it follows that H3GI may not be in a significantly better position if it were awarded liberalised rights of use from mid-2011".* H3GI disputes the above statement. As stated in the Executive Summary above, whilst H3GI acknowledges that it will face the full costs of site acquisition, site build, commissioning of base stations etc in the 900 MHz spectrum band, will require extensive radio planning and design work to accommodate 900 MHz and will be required to either rig new antennae to deploy 900 MHz, H3GI could roll out a UMTS 900 MHz network in rural areas in six months i.e. significantly in advance of January 2013.

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[40] *Informa Mobile Handsets Market Size & Segmentation Forecasts, 4Q 2010* published January 2011.
[41] Section 12 (1)(b) of the Communications Regulation Act, 2002, as amended.
[42] Section 12 (1)(a)(i) of the Communications Regulation Act, 2002, as amended.
43. Option 4 is not what H3GI proposed exactly.

ComReg also notes at page 54 that:

"Option 4 could be see to more certainly bring forward the benefits of liberalisation. However, the likely reality is that no substantial moves will be made in this regard in the advance of the final award of spectrum usage rights for the longer term and given the lack of widespread compatible equipment in consumers' hands, any potential foreshortening of the period until advanced services are actually rolled out in the 900MHz band may be negligible."

In terms of ComReg's comments regarding the lack of widespread compatible equipment, H3GI would submit again that it understands that the majority of consumers now have handsets which are 3G compatible, with only 19% of handsets sold in Western Europe in 201 being 2G only, and that the sale of 2G handsets forecasted to decline to 0% by 2015.[44]

Finally, H3GI submits that ComReg's continued reference to the fact that H3GI declined to accept its offer of 2G 900 MHz spectrum is disingenuous. H3GI declined the offer of 2G 900 MHz spectrum because at the relevant time, there was no indication that 2G 900 MHz spectrum would be liberalised for 3G use. Had H3GI accepted 2G 900 MHz spectrum, H3GI would not have been in a position to use this spectrum. It is puzzling to H3GI that ComReg should propose a course of action that would not result in the efficient use of spectrum, contrary to ComReg's statutory obligations under section 12(1)(b) of the 2002 Act.

PART 10 – DRAFT SI AND LICENCE

As explained above, H3GI believes that the current interim licence proposal is inappropriate. ComReg should hold the auction for liberalised 900 MHz by September 2011 and based on the results of that auction, ComReg should licence liberalised 900 MHz spectrum immediately thereafter.

It would be a breach of ComReg's objectives and functions to award any interim licence or issue any related SI which did not facilitate such an arrangement.

PART 11 - MISCELLANEOUS

ComReg has failed to take account of H3GI's Response to ComReg Document No. 10/71. As a result, H3GI reiterates the points made by it in that response. This response is in addition to and without prejudice to that response.

CONCLUSION

At page 79 of the Response to Consultation, ComReg concludes:

"*To conclude, ComReg considers that granting interim licences to O2 and Vodafone until 31 January 2013, as per its draft decision, carries the following key benefits:*

44. See note 41 above.

• it should maintain the status quo for a short period prior to the implementation of ComReg's broader spectrum release proposal, and in particular it should maintain current levels of market competition and eliminate or minimise any disruption to existing consumer services;

• maintaining the status quo (as detailed in section 2.4.3 of Consultation 10/71) will allow ComReg to properly develop and consider its proposals regarding the longer-term release of spectrum in the 800 MHz, 900 MHz, and 1800 MHz bands, taking into account its statutory functions and objectives, the relevant facts, and submissions from interested parties;

• it will ultimately facilitate the full liberalisation of spectrum usage in the 900 MHz band by early 2013, in accordance with the EC Decision requiring same;
• using a competitive process for awarding 900 MHz spectrum usage rights (and which may combine the 800 and 1800 MHz bands), if that is the approach ultimately selected by ComReg in the context of its broader spectrum liberalisation process, should maximise the likelihood that competition in the provision of mobile electronic communications services will be enhanced in the medium to long term, particularly as the granting of interim licences will mean that no operator will be given a first mover advantage in rolling out advanced services at 900 MHz; and

• the granting of interim licences will allow for a subsequent competition for the long-tem assignment of the spectrum that shall be open, transparent and fair, as all parties thereto shall be assessed on the merits of their respective offerings and not on incumbency."

H3GI strongly refutes ComReg's conclusions and does not consider that the interim licence proposal can properly be justified on the basis of these conclusions:

• the interim licence proposal will not maintain or enhance competition either in the short or long term. Instead, the interim licence proposal will confer significant competitive advantages on Vodafone and O2 and lead to further entrenchment of their respective positions in the Irish mobile market. Notwithstanding the fact that H3GI considers potential consumer disruption issues raised by Vodafone and O2 to be significantly overstated, as demonstrated by H3GI above, any potential for consumer disruption can be addressed relatively easily and quickly without the interim licence proposal in its current form;

• as H3GI has demonstrated above (e.g. Part 3) there is no objective reason as to why ComReg needs to wait until 800 MHz availability before making available liberalised 900 MHz spectrum. Notwithstanding this, ComReg has had considerable time to properly develop and consider its proposals regarding the longer-term release of spectrum in the 800 MHz, 900 MHz, and 1800 MHz bands;

• the interim licence proposal will unnecessarily and unduly delay the availability of liberalised 900 MHz spectrum. Contrary to ComReg's assertion, it will not facilitate the full liberalisation of spectrum usage in the 900 MHz band by early 2013, in accordance with the EC Decision requiring same;

• the interim licence proposal is not required to avoid the conferral of a first mover advantage in rolling out advanced services at 900 MHz. Early liberalisation does not confer a first mover advantage on H3GI/other operator in the market or in any way distort competition;

• the interim licence proposal directly favours the positions of Vodafone and O2 and will further entrench the position of the incumbents. Further, the interim licence proposal will stifle competition, deter new market entry, and lead to significant costs for consumers (e.g. due to denial of innovative services) and competition (both existing and potential) in general will be damaged.

H3GI is disappointed that ComReg has not taken due account in ComReg's Response to Consultation of the significant and valid concerns raised by H3GI in H3GI's Response to ComReg Document No. 10/71 and previous responses to consultation on liberalisation of the 900 MHz spectrum.

H3GI considers it is imperative that ComReg amend its interim licence proposal, auction liberalised 900 MHz spectrum by September 2011 and, based on the results of that auction, licence liberalised 900 MHz immediately after its proposed auction.

Recommendation:

ComReg should amend its interim licence proposal, auction liberalised 900 MHz spectrum by September 2011 and, based on the results of that auction, licence liberalised 900 MHz immediately after its proposed auction

ANNEX 1 – RELEVANT LEGISLATIVE PROVISIONS

Article 4 of Directive 2002/77/EC

"Rights of use of frequencies

Without prejudice to specific criteria and procedures adopted by Member States to grant rights of use of radio frequencies to providers of radio or television broadcast content services with a view to pursuing general interest objectives in conformity with Community law:

1. Member States shall not grant exclusive or special rights of use of radio frequencies for the provision of electronic communications services.

2. The assignment of radio frequencies for electronic communication services shall be based on objective, transparent, non-discriminatory and proportionate criteria."

Recitals 6, 7 and 8 of Directive 2009/114/EC

"(6) The liberalisation of the use of the 900 MHz band could possibly result in competitive distortions. In particular, where certain mobile operators have not been assigned spectrum in the 900 MHz band, they could be put at a disadvantage in terms of cost and efficiency in comparison with operators that will be able to provide 3G services in that band. Under the regulatory framework on electronic communications, and in particular Directive 2002/20/EC of the European Parliament and of the Council of 7 March 2002 on the authorisation of electronic communications networks and services (Authorisation Directive) [8], Member States can amend and/or review rights of use of spectrum and thus have the tools to deal, where required, with such possible distortions.

(7) Within six months of the entry into force of this Directive, Member States should transpose Directive 87/372/EEC as amended. While this does not in itself require Member States to modify existing rights of use or to initiate an authorisation procedure, Member States must comply with the requirements of Directive 2002/20/EC once the 900 MHz band has been made available in accordance with this Directive. In doing so, they should in particular examine whether the implementation of this Directive could distort competition in the mobile markets concerned. If they conclude that this is the case, they should consider whether it is objectively justified and proportionate to amend the rights of use of those operators that were granted rights of use of 900 MHz frequencies and, where proportionate, to review these rights of use and to redistribute such rights in order to address such distortions. Any decision to take such a course of action should be preceded by a public consultation.

(8) Any spectrum made available under this Directive should be allocated in a transparent manner and in such a way as to ensure no distortion of competition in the relevant markets."

Article 1 (2) of Directive 87/372/EEC as amended by Directive 2009/114/EC

"Member States shall, when implementing this Directive, examine whether the existing assignment of the 900 MHz band to the competing mobile operators in their territory is likely to distort competition in the mobile markets concerned and, where justified and proportionate, they shall address such distortions in accordance with Article 14 of Directive 2002/20/EC of the European Parliament and of the Council of 7 March 2002 on the authorisation of electronic communications networks and services (Authorisation Directive)."

Recital 14 of Commission Decision of 16 October 2009 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

"Differences in the existing national situations could result in distortion of competition. The existing regulatory framework gives Member States the tools they need to deal with these problems in a proportionate, non-discriminatory and objective manner, subject to Community law, including Directive 87/372/EEC, Directive 2002/20/EC of the European Parliament and of the Council of 7 March 2002 on the authorisation of electronic communications networks and services (Authorisation Directive) [7] and Directive 2002/21/EC of the European Parliament and of the Council of 7 March 2002 on a common regulatory framework for electronic communications networks and services (Framework Directive) [8]."

Articles 5 and 7 of Directive 2002/20/EC as amended by Directive 2009/140/EC

Article 5

"Rights of use for radio frequencies and numbers

1. Member States shall facilitate the use of radio frequencies under general authorisations. Where necessary, Member States may grant individual rights of use in order to:
- avoid harmful interference,
- ensure technical quality of service,
- safeguard efficient use of spectrum, or
- fulfil other objectives of general interest as defined by Member States in conformity with Community law.

2. Where it is necessary to grant individual rights of use for radio frequencies and numbers, Member States shall grant such rights, upon request, to any undertaking for the provision of networks or services under the general authorisation referred to in Article 3, subject to the provisions of Articles 6, 7 and 11(1)(c) of this Directive and any other rules ensuring the efficient use of those resources in accordance with Directive 2002/21/EC (Framework Directive).

Without prejudice to specific criteria and procedures adopted by Member States to grant rights of use of radio frequencies to providers of radio or television broadcast content services with a view to pursuing general interest objectives in conformity with

Community law, the rights of use for radio frequencies and numbers shall be granted through open, objective, transparent, non-discriminatory and proportionate procedures, and, in the case of radio frequencies, in accordance with the provisions of Article 9 of Directive 2002/21/EC (Framework Directive). An exception to the requirement of open procedures may apply in cases where the granting of individual rights of use of radio frequencies to the providers of radio or television broadcast content services is necessary to achieve a general interest objective as defined by Member States in conformity with Community law.

When granting rights of use, Member States shall specify whether those rights can be transferred by the holder of the rights, and under which conditions. In the case of radio frequencies, such provision shall be in accordance with Articles 9 and 9b of Directive 2002/21/EC (Framework Directive).

Where Member States grant rights of use for a limited period of time, the duration shall be appropriate for the service concerned in view of the objective pursued taking due account of the need to allow for an appropriate period for investment amortisation.

Where individual rights to use radio frequencies are granted for 10 years or more and such rights may not be transferred or leased between undertakings pursuant to Article 9b of Directive 2002/21/EC (Framework Directive) the competent national authority shall ensure that the criteria to grant individual rights of use apply and are complied with for the duration of the licence, in particular upon a justified request of the holder of the right. If those criteria are no longer applicable, the individual right of use shall be changed into a general authorisation for the use of radio frequencies, subject to prior notice and after a reasonable period, or shall be made transferable or leaseable between undertakings in accordance with Article 9b of Directive 2002/21/EC (Framework Directive).

3. Decisions on the granting of rights of use shall be taken, communicated and made public as soon as possible after receipt of the complete application by the national regulatory authority, within three weeks in the case of numbers that have been allocated for specific purposes within the national numbering plan and within six weeks in the case of radio frequencies that have been allocated to be used by electronic communications services within the national frequency plan. The latter time limit shall be without prejudice to any applicable international agreements relating to the use of radio frequencies or of orbital positions.

4. Where it has been decided, after consultation with interested parties in accordance with Article 6 of Directive 2002/21/EC (Framework Directive), that rights for use of numbers of exceptional economic value are to be granted through competitive or comparative selection procedures, Member States may extend the maximum period of three weeks by up to a further three weeks.

With regard to competitive or comparative selection procedures for radio frequencies, Article 7 shall apply.

5. Member States shall not limit the number of rights of use to be granted except where this is necessary to ensure the efficient use of radio frequencies in accordance with Article 7.

6. Competent national authorities shall ensure that radio frequencies are efficiently and effectively used in accordance with Articles 8(2) and 9(2) of Directive 2002/21/EC (Framework Directive). They shall ensure competition is not distorted by any transfer or accumulation of rights of use of radio frequencies. For such purposes, Member States may take appropriate measures such as mandating the sale or the lease of rights to use radio frequencies."

Article 7

"Procedure for limiting the number of rights of use to be granted for radio frequencies

1. Where a Member State is considering whether to limit the number of rights of use to be granted for radio frequencies or whether to extend the duration of existing rights other than in accordance with the terms specified in such rights, it shall inter alia:
(a) give due weight to the need to maximise benefits for users and to facilitate the development of competition;
(b) give all interested parties, including users and consumers, the opportunity to express their views on any limitation in accordance with Article 6 of Directive 2002/21/EC (Framework Directive);
(c) publish any decision to limit the granting of rights of use or the renewal of rights of use, stating the reasons therefor;
(d) after having determined the procedure, invite applications for rights of use; and
(e) review the limitation at reasonable intervals or at the reasonable request of affected undertakings.

2. Where a Member State concludes that further rights of use for radio frequencies can be granted, it shall publish that conclusion and invite applications for such rights.

3. Where the granting of rights of use for radio frequencies needs to be limited, Member States shall grant such rights on the basis of selection criteria which must be objective, transparent, non-discriminatory and proportionate. Any such selection criteria must give due weight to the achievement of the objectives of Article 8 of Directive 2002/21/EC (Framework Directive) and of the requirements of Article 9 of that Directive.

4. Where competitive or comparative selection procedures are to be used, Member States may extend the maximum period of six weeks referred to in Article 5(3) for as long as necessary to ensure that such procedures are fair, reasonable, open and transparent to all interested parties, but by no longer than eight months.

These time limits shall be without prejudice to any applicable international agreements relating to the use of radio frequencies and satellite coordination.

5. This Article is without prejudice to the transfer of rights of use for radio frequencies in accordance with Article 9b of Directive 2002/21/EC (Framework Directive)."

Articles 8 and 9 of Directive 2002/21/EC as amended by Directive 2009/140/EC

Article 8

"Policy objectives and regulatory principles

1. Member States shall ensure that in carrying out the regulatory tasks specified in this Directive and the Specific Directives, the national regulatory authorities take all reasonable measures which are aimed at achieving the objectives set out in paragraphs 2, 3 and 4. Such measures shall be proportionate to those objectives.

Unless otherwise provided for in Article 9 regarding radio frequencies, Member States shall take the utmost account of the desirability of making regulations technologically neutral and shall ensure that, in carrying out the regulatory tasks specified in this Directive and the Specific Directives, in particular those designed to ensure effective competition, national regulatory authorities do likewise.

National regulatory authorities may contribute within their competencies to ensuring the implementation of policies aimed at the promotion of cultural and linguistic diversity, as well as media pluralism.

2. The national regulatory authorities shall promote competition in the provision of electronic communications networks, electronic communications services and associated facilities and services by inter alia:
(a) ensuring that users, including disabled users, elderly users, and users with special social needs derive maximum benefit in terms of choice, price, and quality;
(b) ensuring that there is no distortion or restriction of competition in the electronic communications sector, including the transmission of content;
(d) encouraging efficient use and ensuring the effective management of radio frequencies and numbering resources.

3. The national regulatory authorities shall contribute to the development of the internal market by inter alia:
(a) removing remaining obstacles to the provision of electronic communications networks, associated facilities and services and electronic communications services at European level;
(b) encouraging the establishment and development of trans-European networks and the interoperability of pan-European services, and end-to-end connectivity;
(d) cooperating with each other, with the Commission and BEREC so as to ensure the development of consistent regulatory practice and the consistent application of this Directive and the Specific Directives.

4. The national regulatory authorities shall promote the interests of the citizens of the European Union by inter alia:
(a) ensuring all citizens have access to a universal service specified in Directive 2002/22/EC (Universal Service Directive);
(b) ensuring a high level of protection for consumers in their dealings with suppliers, in particular by ensuring the availability of simple and inexpensive dispute resolution procedures carried out by a body that is independent of the parties involved;
(c) contributing to ensuring a high level of protection of personal data and privacy;

(d) promoting the provision of clear information, in particular requiring transparency of tariffs and conditions for using publicly available electronic communications services;
(e) addressing the needs of specific social groups, in particular disabled users, elderly users and users with special social needs;
(f) ensuring that the integrity and security of public communications networks are maintained.
(g) promoting the ability of end-users to access and distribute information or run applications and services of their choice;

5. The national regulatory authorities shall, in pursuit of the policy objectives referred to in paragraphs 2, 3 and 4, apply objective, transparent, non-discriminatory and proportionate regulatory principles by, inter alia:
(a) promoting regulatory predictability by ensuring a consistent regulatory approach over appropriate review periods;
(b) ensuring that, in similar circumstances, there is no discrimination in the treatment of undertakings providing electronic communications networks and services;
(c) safeguarding competition to the benefit of consumers and promoting, where appropriate, infrastructure-based competition;
(d) promoting efficient investment and innovation in new and enhanced infrastructures, including by ensuring that any access obligation takes appropriate account of the risk incurred by the investing undertakings and by permitting various cooperative arrangements between investors and parties seeking access to diversify the risk of investment, whilst ensuring that competition in the market and the principle of non-discrimination are preserved;
(e) taking due account of the variety of conditions relating to competition and consumers that exist in the various geographic areas within a Member State;
(f) imposing ex-ante regulatory obligations only where there is no effective and sustainable competition and relaxing or lifting such obligations as soon as that condition is fulfilled."

Article 9

"Management of radio frequencies for electronic communications services

1. Taking due account of the fact that radio frequencies are a public good that has an important social, cultural and economic value, Member States shall ensure the effective management of radio frequencies for electronic communication services in their territory in accordance with Articles 8 and 8a. They shall ensure that spectrum allocation used for electronic communications services and issuing general authorisations or individual rights of use of such radio frequencies by competent national authorities are based on objective, transparent, non-discriminatory and proportionate criteria.

In applying this Article, Member States shall respect relevant international agreements, including the ITU Radio Regulations, and may take public policy considerations into account.

2. Member States shall promote the harmonisation of use of radio frequencies across the Community, consistent with the need to ensure effective and efficient use thereof and in pursuit of benefits for the consumer such as economies of scale and

interoperability of services. In so doing, they shall act in accordance with Article 8a and with the Decision No 676/2002/EC (Radio Spectrum Decision).

3. Unless otherwise provided in the second subparagraph, Member States shall ensure that all types of technology used for electronic communications services may be used in the radio frequency bands, declared available for electronic communications services in their National Frequency Allocation Plan in accordance with Community law.

Member States may, however, provide for proportionate and non-discriminatory restrictions to the types of radio network or wireless access technology used for electronic communications services where this is necessary to:
(a) avoid harmful interference;
(b) protect public health against electromagnetic fields;
(c) ensure technical quality of service;
(d) ensure maximisation of radio frequency sharing;
(e) safeguard efficient use of spectrum; or
(f) ensure the fulfilment of a general interest objective in accordance with paragraph 4.

4. Unless otherwise provided in the second subparagraph, Member States shall ensure that all types of electronic communications services may be provided in the radio frequency bands, declared available for electronic communications services in their National Frequency Allocation Plan in accordance with Community law. Member States may, however, provide for proportionate and non-discriminatory restrictions to the types of electronic communications services to be provided, including, where necessary, to fulfil a requirement under the ITU Radio Regulations.

Measures that require an electronic communications service to be provided in a specific band available for electronic communications services shall be justified in order to ensure the fulfilment of a general interest objective as defined by Member States in conformity with Community law, such as, and not limited to:
(a) safety of life;
(b) the promotion of social, regional or territorial cohesion;
(c) the avoidance of inefficient use of radio frequencies; or
(d) the promotion of cultural and linguistic diversity and media pluralism, for example by the provision of radio and television broadcasting services.

A measure which prohibits the provision of any other electronic communications service in a specific band may only be provided for where justified by the need to protect safety of life services. Member States may, exceptionally, also extend such a measure in order to fulfil other general interest objectives as defined by Member States in accordance with Community law.

5. Member States shall regularly review the necessity of the restrictions referred to in paragraphs 3 and 4, and shall make the results of these reviews public.

6. Paragraphs 3 and 4 shall apply to spectrum allocated to be used for electronic communications services, general authorisations issued and individual rights of use of radio frequencies granted after 25 May 2011.

Spectrum allocations, general authorisations and individual rights of use which existed by 25 May 2011 shall be subject to Article 9a.

7. Without prejudice to the provisions of the Specific Directives and taking into account the relevant national circumstances, Member States may lay down rules in order to prevent spectrum hoarding, in particular by setting out strict deadlines for the effective exploitation of the rights of use by the holder of the rights and by applying penalties, including financial penalties or the withdrawal of the rights of use in case of non-compliance with the deadlines. These rules shall be established and applied in a proportionate, non-discriminatory and transparent manner."

Section 12 (1)(a)(i) of the Communications Regulation Act, 2002, as amended

"The objectives of the Commission in exercising its functions shall be as follows –

(a) in relation to the provision of electronic communications networks, electronic communications services and associated facilities –

(i) to promote competition, …"

Section 12 (3) of the Communications Regulation Act, 2002, as amended

"In carrying out its functions, the Commission shall seek to ensure that measures taken by it are proportionate having regard to the objectives set out in this section."

Regulation 9 (4) of the European Communities (Electronic Communications Networks and Services)(Authorisation) Regulations, 2003, as amended

"The Regulator shall, establish open, transparent and non-discriminatory procedures for the grant of licences and shall cause any such procedures to be made publicly available. Such procedures are without prejudice to specific criteria and procedures for the grant of a licence in relation to apparatus for wireless telegraphy under any enactment to providers of radio or television broadcast content services with a view to pursuing general interest objectives in accordance with European Community law."

Regulation 11 (3) of the European Communities (Electronic Communications Networks and Services)(Authorisation) Regulations, 2003, as amended

"Where the Regulator decides, having taken into account the matters referred to in paragraph 1 (a) and (b), that the number of licences referred to in that paragraph ought to be limited it shall grant such licences on the basis of selection criteria which are objective, transparent, non-discriminatory and proportionate and which give due weight to the achievement of the objectives set out in section 12 of the Act of 2002."

Regulation 23 (1) of the European Communities (Electronic Communications Networks and Services)(Framework) Regulations, 2003, as amended

"The Regulator shall, subject to any directions issued by the Minister pursuant to section 13 of the Act of 2002, ensure the effective management of radio frequencies for electronic communications services in accordance with section 12 of the Act of 2002 and ensure that the allocation and assignment of such radio frequencies is based on objective, transparent, non-discriminatory and proportionate criteria."

ANNEX 2 – REPORT PREPARED BY VALUE PARTNERS AND RADIO REGULATORY ASSOCIATES

VALUE PARTNERS
MANAGEMENT CONSULTING

RADIO REGULATORY ASSOCIATES LTD

RRA

FINAL VERSION

REPORT PREPARED FOR HUTCHISON 3G IRELAND LIMITED "H3GI"

London, 17th March 2011

3 IRELAND SUBMISSION SUPPORT TO COMREG

1 Executive Summary

Hutchison 3G Ireland Limited (H3GI) asked Value Partners and Radio Regulatory Associates (RRA) jointly to review and comment on ComReg's proposals outlined in its Consultation Document no. 10/71 800MHz, 900MHz & 1800MHz spectrum release and the supporting material from ComReg's consultants, DotEcon. This is the final report.

There are six areas where our analysis does not agree with that presented in the ComReg documents mentioned above. These are laid out below, along with the section they reference in the main document.

a) The 800 and 900MHz spectrum bands are not substitutable (Section 3)

ComReg have based a number of their proposals outlined in Document No. 10/71 on the notion that the 800MHz and 900MHz spectrum bands are highly substitutable, and as such can be auctioned together. When the two spectrum bands are analysed in detail, it is clearly demonstrable that due to combinatory issues of compatibility, ecosystems and harmonisation, the two bands are non-substitutable. As such, the resulting negative effects from a joint auction of 800 and 900MHz are avoidable.

b) The proposals to delay the release and liberalisation of 900MHz spectrum until the availability of 800MHz spectrum will cause significant damage to all Irish mobile operators and Irish society as a whole (Section 4.1)

Any delay to the release and liberalisation of 900MHz spectrum will have a significant impact on Ireland, either:

- Costing mobile network operators a combined €40m in the form of unnecessary infrastructure investments in rollout of 3G at 2.1GHz, which will also increase the environmental impact of mast building versus 900Mhz spectrum; or

- If, as seems likely, Irish operators choose to minimise investment and risk, then Ireland would forego the benefits of widespread mobile broadband until 800MHz and 900MHz spectrum are available in 2013. Consumers, operators and Ireland as a whole will suffer from the loss of

high-speed, high-quality, mobile internet access, causing a loss of GDP growth, a widening of the Irish digital divide, a less competitive and mobile businesses environment, less dynamic job creation and a decreased ability to provide government initiatives online.

c) The proposed spectrum allocation would fail to ensure a fully competitive mobile market by failing to address the current inequalities in spectrum allocation between mobile operators (Section 4.2)

The Irish mobile network market is currently characterized by a significant imbalance in spectrum allocation between mobile operators. Failure to liberalise 900MHz spectrum and to intervene in favour of a fairer distribution of mobile spectrum will cause an extension and entrenchment of current competitive inequalities [**Commercially sensitive**]. H3GI will continue to be competitively disadvantaged against its rival operators due to its lack of 900MHz spectrum [**Commercially sensitive**]. Consumers will forgo the financial and service benefits of competition amongst operators.

In addition, giving O2 and Vodafone continued access to 2G 900MHz via the proposed interim licenses will provide a significant benefit valued at over €43m per year for Vodafone and over €33 per year for O2. This is well above the current proposed price in ComReg's *800 MHz, 900 MHz & 1800 MHz spectrum release* of approximately €2.5m per year for each operator.

d) Case studies from other markets show that refarming GSM bands can be completed expeditiously (Section 4.3)

The example of how Elisa has tackled refarming is an indication that Vodafone and O2 have exaggerated the implications of refarming issues. In reality, a quicker refarming of 900MHz is feasible – at least clearing one 5MHz block of spectrum for UMTS is feasible if the unallocated 900MHz spectrum is awarded this summer and liberalised with immediate effect. In Elisa's case this was possible within 12 months of the start of refarm from a standing start, i.e. with no work already done.

e) Case studies from other markets demonstrate that regulators in markets similar to Ireland have intervened to ensure a competitive spectrum allocation (Section 5)

In many European markets, as in Ireland, incumbent operators benefit from an asymmetric allocation of sub-1GHz spectrum. There are a number of examples of where regulatory authorities have decided to intervene in their respective mobile markets to address competition issues. Typically, these interventions are designed to 'level the playing field' by redistributing existing spectrum holdings. The examples of Sweden and Denmark are particularly instructive; with a similar market structure to Ireland, regulators chose to allocate some 900MHz spectrum to non-incumbent operators at the same time as extending the incumbent operators' 900MHz licences. This sets a clear European precedent for regulatory intervention in redistributing 900MHz spectrum to ensure a competitive mobile landscape.

f) The proposed reserve price has been set using flawed methodology and has the potential to choke off competition in the auction process (Section 6)

Considerable evidence from comparable European spectrum auctions demonstrates the lack of need for a restrictively high reserve price. ComReg provides little evidence for its proposal of a reserve price of €25m for each single 2 x 5MHz of 900MHz spectrum and bases its recommendations on an unproven threat of collusion between operators. ComReg's currently proposed reserve price poses the danger of choking off competition in the auction process, deterring potential bidders or damaging winning bidders' ability to compete going forward.

These are discussed in more detail in the following document.

2 Introduction

2.1 Irish spectrum auctions

ComReg is currently developing its plans for the liberalisation of the 900MHz and 1800MHz bands used for the provision of 2G services, as well as the release of the 800MHz spectrum which will become available when Analogue Switch Off occurs in Quarter 4 of 2012.

In September 2010, ComReg published consultation document 10/71, *800MHz, 900MHz & 1800MHz spectrum release*. The consultation document describes ComReg's proposed approach to the liberalisation of 900MHz and 1800MHz bands and the release of 800MHz, 900MHz and other spectrum bands. It also proposes an auction allocation methodology for 800MHz and 900MHz assignment and the setting of a reserve price for the future liberalised segments of 900MHz spectrum.

The three core elements of the consultation are:

- ComReg's intention to release both the 900MHz and 800MHz spectrum simultaneously at the later date of liberalisation of 800MHz spectrum planned for 2013: *'ComReg is of the view-in-principle that it is no longer appropriate to maintain its previous position of considering the award of spectrum rights of use in the 900MHz in isolation and is instead considering combining both the 800 and 900MHz bands in a single award process'*[1]*;*

- The proposal to issue interim licences to Vodafone and O2 to allow them to continue using their existing 900MHz from the expiry of their licences in 2011 until new liberalised spectrum is made available in 2013, as well as a discussion of transitional arrangements; and

- A proposed auction format and reserve price, with ComReg having updated their proposals regarding the setting of a reserve price for the auction of 900MHz spectrum: '*ComReg is of the view that a minimum price at the upper end of the range estimated by DotEcon is appropriate. ComReg is therefore proposing a minimum price of €25 million*'[1].

[1] Source: ComReg – Document No. 10/71 - 800MHz, 900MHz & 1800MHz spectrum release

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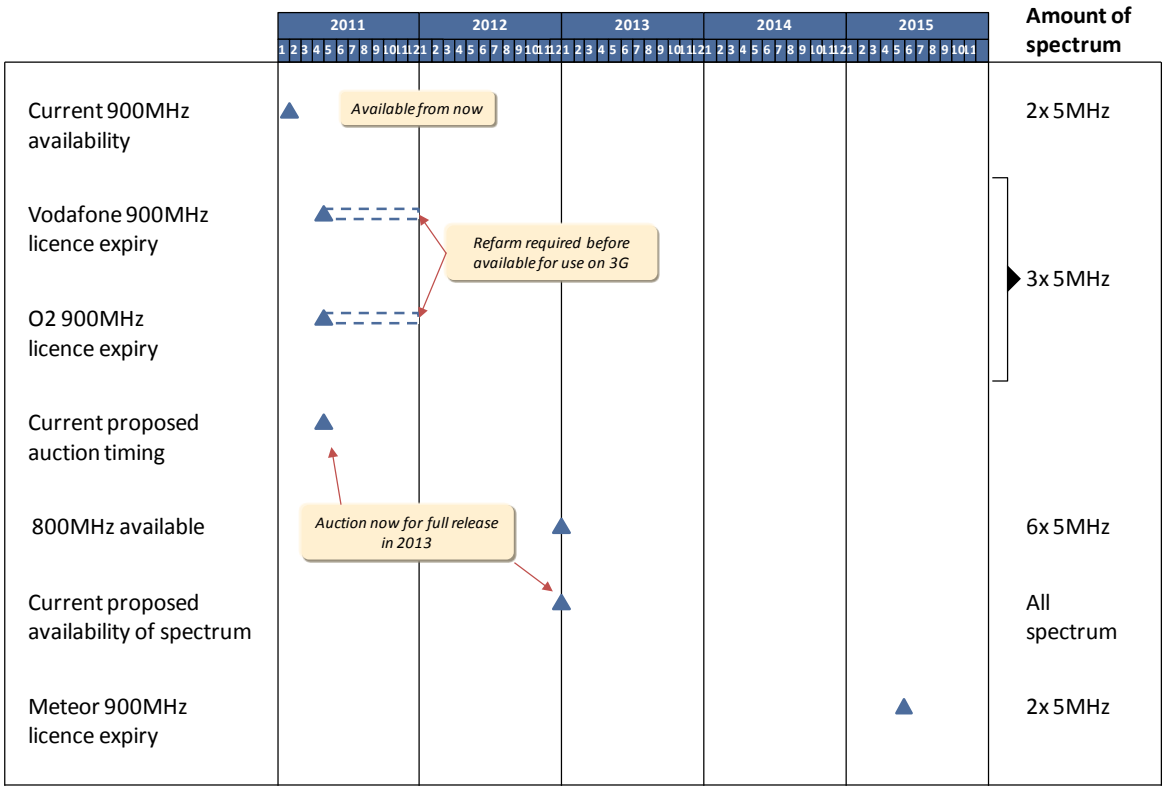
The timings for the proposed spectrum auctions in Ireland are outlined in the exhibit below.

Exhibit 1: **Timings of proposed Irish spectrum auctions**



Source: ComReg 10/71, DotEcon (ComReg 10/71a),

2.2 Benefits of 900MHz

2.2.1 Technical benefits

The release of sub-1GHz spectrum is important because of its significantly superior propagation characteristics against higher-frequency spectrum result, resulting in:

- larger cell ranges: high-speed data services can cover the same amount of area using fewer base stations, as the cell radius for HSPDA service improves by 70% compared to UMTS2100[2];

- better indoor penetration: tests carried out comparing 2.1GHz spectrum and 900MHz spectrum found that at street level, 900MHz spectrum achieved up to 12 dB advantage over 2.1GHz and

[2] Source: GSA

measured BPL and penetration advantages were 3dB and 5.5dB, respectively. This equates to an overall advantage of approximately 20 dB of 900MHz over 2.1GHz spectrum[3]; and

- faster data rates – Nokia Siemens networks estimates that on average data rates are ~ 1Mbps faster for 3G over 900MHz than at 2.1GHz[4].

Moreover, field measurements comparing the two spectrum bands confirmed the expected coverage improvement with 900MHz spectrum was 9 – 12 dB in rural areas and 11 – 13 dB in urban areas[5].

2.2.2 Benefits to operators of 900MHz

As a consequence of its superior propagation characteristics, 3G services at 900MHz offer significant financial benefits to operators over 2.1GHz.

a) Minimise Capex requirements

Launching an efficient and competitive 3G network over a 900MHz spectrum band compared with launching an equivalent service over 2.1GHz spectrum requires around three times fewer base station sites. Moreover, due to the similarity of the technology of 3G and the existing 900MHz GSM base stations, there is no need to invest in new base stations & sites. This saves site acquisition and build costs, and considerable roll-out time. Additionally, it enables the usage of existing power supplies and transmissions, and facilitates the sharing of antenna lines - resulting in further savings.

Overall, rolling out 3G services on 900MHz spectrum technology requires much less new RF equipment and less manpower; a 900MHz spectrum 3G network is quicker to build out and allows a significantly faster route to market.

[3] Source: GSA
[4] Source: NSN *WCDMA Frequency Refarming: A leap forward towards ubiquitous mobile broadband coverage*
[5] Source: GSA

b) Minimise Opex costs

Operating a 3G network over 900MHz spectrum technology can be achieved with far fewer base station sites, when compared with achieving the same coverage on 2.1GHz spectrum. Fewer base station sites result in both lower rental and transmission costs. Less energy is required to power this smaller number of sites and maintenance costs are also reduced.

Summary

Overall, the financial benefits of running a 3G network over 900MHz spectrum compared to over 2.1GHz spectrum are significant and material: both Capex and Opex are reduced with no detrimental effects on network quality.

3 Substitutability of 800MHz and 900MHz

3.1 Discussion

H3GI has challenged[6] ComReg's assertion that the 800MHz spectrum is 'highly substitutable' with the 900MHz spectrum. The approach taken by H3GI was to consider the two bands in terms of an evaluation under the European Commission's methodology for defining relevant product markets[7].

Implicit in a definition of spectrum lots being 'highly substitutable' is that the spectrum bands can deliver products and services that can be deemed as being in the same relevant market – or more precisely the downstream market of products and services that can be delivered using radio spectrum is of equal value. There are many factors that may have a bearing on how one entity will value future spectrum holdings. At a fundamental level there will be a consideration of: the technical conditions that apply to the spectrum under evaluation, e.g. compatibility issues may be more challenging in some bands than others; regulatory uncertainty regarding a particular frequency band or allocation which could adversely affect the value of spectrum and the potential size of the future market for the planned products and services. There are therefore many factors that come into play when determining whether one band is highly substitutable with another but key considerations would include:

- Compatibility issues, i.e. to what extent is the spectrum 'clean' and devoid of legacy issues such as in-band and adjacent band compatibility constraints;
- Regulatory uncertainty;
- Current and planned growth in the respective ecosystems for products and devices;
- Extent of frequency harmonisation; and
- Delayed access to spectrum.

[6] Source: Response by Hutchison 3G Ireland Limited in respect of ComReg Document No 10/71 '800MHz, 900MHz and 1800MHz spectrum release' §8 refers
[7] Source: Commission Notice on the definition of relevant market s for the purpose of Community competition law (97/C 372/03)

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This section highlights that there are a number of issues associated with the 800MHz band that do not apply to the 900MHz band and that collectively these issues amount to a material difference. There are compatibility issues in the 800MHz band that are of a different order to the 900MHz band; there is regulatory uncertainty with the 800MHz band; the ecosystem for 900MHz is considerably larger than the 800MHz ecosystem; the 800MHz band is more fragmented than the 900MHz band and there will be delays in the 800MHz band becoming available in parts of Europe and elsewhere.

These issues are discussed in the following sub-sections.

3.2 Compatibility Issues

The planned release of the 800MHz band in the EU for mobile broadband services is the Digital Dividend from the planned closure of the analogue television transmissions and the migration to digital terrestrial television (DTT). As digital is more spectrally efficient than analogue transmissions this has allowed some spectrum, previously used for broadcasting services, to be re-allocated to higher value use, i.e. mobile broadband services such as LTE. In the EU the Digital Dividend spectrum has been identified as the 790 – 862MHz band.

The EU Commission recognised that compatibility issues would need to be analysed and, in particular, questions about compatibility between future mobile broadband services such as LTE and broadcast services such as DTT, cable networks, aeronautical services and Short Range Devices (SRDs) would need to be addressed.

In conformity with the Radio Spectrum Decision[8], the Commission issued mandates[9] to the European Conference of Posts and Telecommunications (CEPT) to study compatibility issues in the 800MHz band and adjacent bands. In addition to the CEPT activities, there have been a number of related studies and measurement campaigns to assess interference into DTT, cable systems and Short Range Devices (SRDs) in the 863 – 870MHz band which is just above the 800MHz band.

[8] Source: Commission Decision 2002/676/EC on a regulatory framework for radio spectrum policy in the European Community (Radio Spectrum Decision)
[9] Source: First Mandate to CEPT on technical considerations regarding harmonisation options for the digital dividend – January 2007. Second Mandate to CEPT on technical considerations regarding harmonisation options for the digital dividend in the European Union – April 2008

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The CEPT has studied in-band and adjacent band compatibility issues under the aforementioned Mandates from the Commission. The context of these studies was to establish the 'least restrictive technical conditions' as part of the wider WAPECS[10] initiative within the EU to promote greater flexibility in the use of spectrum as part of a liberalisation programme to support a technology and service neutral approach to spectrum management. The CEPT produced four reports[11] associated with the 800MHz band and these reports provide very useful material but it is acknowledged in CEPT Report 30 that additional measures at the national level will be required to supplement the conditions contained in the CEPT Reports and, indeed, there is reference in footnote 4 to an example where one national regulator is considering the introduction of a protection clause in the mobile licences for the 800MHz spectrum that places an obligation on the licensee to investigate and remedy interference caused to DTT services.

3.2.1 Immunity issues

In addition to the CEPT activities mentioned above, there are a number of related compatibility issues that are still under active investigation and study by trade associations, MNOs, regulators, European Telecommunications Standards Institute (ETSI), European Committee for Electro-technical Standardisation (CENELEC). In particular, there is concern that the current standard that defines the immunity of television and associated equipment to radiated field strengths is no longer appropriate, as it was developed prior to the allocation of the 800MHz band to mobile services. On the basis of the evidence presented by various stakeholders, e.g. cable operators and DTT equipment manufacturers, the Commission requested that a joint ETSI/CENELEC working group be established to develop a revised immunity standard for televisions and associated equipment.

3.2.2 International Telecommunications Union (ITU)

There are studies being undertaken in response to Resolution 749 (WRC-07) and the results and recommendations of these studies will be considered under agenda item 1.17 of the World Radiocommunications Conference 2012 (WRC-12). In summary, the main issues are:

- Interference from mobile services (LTE) into the Digital Terrestrial Television (DTT) service;

[10] Source: Wireless Access Policy for Electronic Communications Services (WAPECS)
[11] Source: CEPT Report 30; "The identification of common and minimal (least restrictive) technical conditions for 790-862MHz for the Digital Dividend in the European Union": CEPT Report 31; "Technical considerations regarding harmonisation options for digital dividend in the European Union": CEPT Report 32; Recommendation on the best approach to ensure the continuation of existing Program Making and Special Events (PMSE) services operating in the UHF (470 – 862MHz), including the assessment of the advantage of an EU-level approach; CEPT Report 29; Guideline on cross border co-ordination issues between mobile services in one country and broadcasting services in another country

- Interference from mobile services (LTE) into cable systems;

- Interference from mobile services into co-primary services such as the Aeronautical Radionavigation Service (ARNS); and

- Interference into SRDs in the adjacent band (863 – 870MHz).

3.2.3 CEPT Studies

As mentioned previously, the CEPT, under mandates from the Commission, has published four reports that directly address the 800MHz digital dividend band. The most relevant report in the context of compatibility issues is CEPT Report 30. This report provides technical conditions that are the least restrictive to provide a basic level of co-existence between mobile services and DTT services - it does not prevent harmful interference occurring in a percentage of locations and additional national measures are required to address these issues. The approach taken is to specify Block Edge Masks (BEMs) for the base station (BS) and also for the terminal station (TS). The BEMs define the in-block and out-of-block emissions for base stations and terminal stations. Further information on the CEPT Report 30 and discussion of compatibility issues between LTE and DTT can be found in Appendix 1 of this report, together with more information on concerns regarding the potential imposition of a protection clause in 800MHz licences.

3.2.4 Need for revision of immunity standards for DTT receivers and associated equipment

It has been noted earlier in this section that there is an issue with regards to the incompatibility between existing DTT receivers and associated equipment and the proposed LTE network deployments.

The immunity of current generation domestic equipment (televisions, set top boxes (STBs) and cable modems (CMs)) has been specified for the relatively benign radio environment that currently exists – the advent of LTE services in the near future will fundamentally change the radio environment – it will become considerably more hostile as mobile broadband networks are relatively high density networks with thousands of transmitters in a mature network and potentially millions of LTE handsets/dongles being operated in the home environment. The proximity of LTE devices to DTT receivers and similar equipment will result in considerably higher field strengths

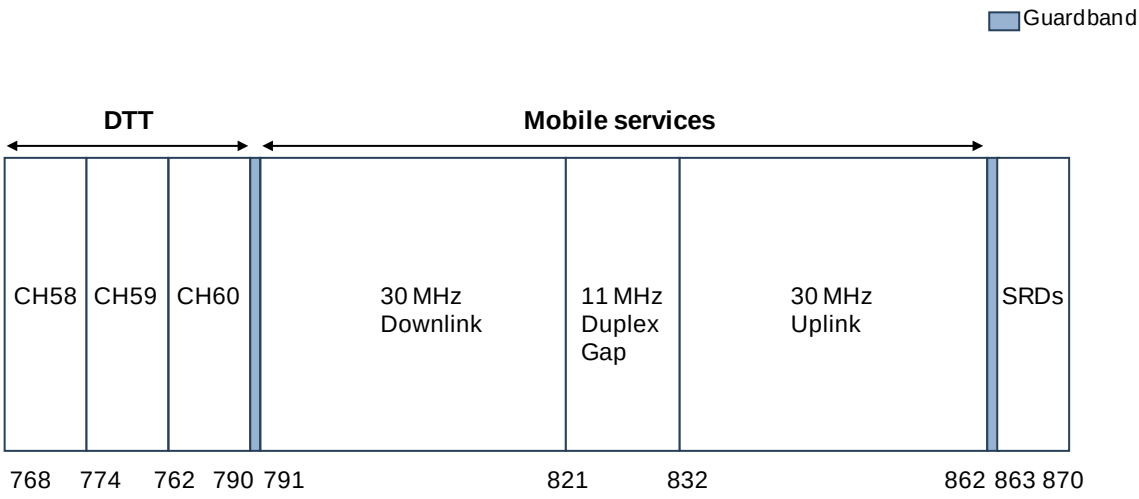
being present in the home environment. Tests have demonstrated that the current immunity standard of 1V/m will not be sufficient to prevent interference being experienced by DTT and associated devices.

The EU Commission has formally requested that ETSI and CENELEC work together to develop new standards for DTT, STBs and CMs. A joint working group has been established and progress is being made on a range of issues such as defining the post LTE electromagnetic environment for the 800MHz band, identifying appropriate revisions for relevant standards including new test methods and immunity levels. However, the standardisation process is still on-going and there are some fundamental questions that remain unanswered such as investigations into the need for a new test method to simulate the interference characteristics of LTE and other broadband radio systems, in this regard, and progress has been hampered as there are no LTE 800MHz terminals available to assess the measurement methodologies under consideration. Further information on the various activities related to quantifying immunity issues and identifying the necessary changes required in standards is shown in Appendix 1.

3.2.5 800MHz Band Plan and adjacencies

The band plan for Europe is shown in Exhibit 2 below. The 800MHz band consists of 2 x 30MHz of paired spectrum with the normal duplex direction reversed, i.e. the downlink is in the lower block and the uplink is in the higher block. The decision to reverse the duplex direction was made by the CEPT to reduce compatibility issues between TS and DTT receivers, as there is now a frequency separation of at least 42MHz between LTE uplink stations and DTT on Channel 60.

Exhibit 2: **European Band Plan showing the mobile allocation and adjacencies**



Source: RRA

In addition to co-channel interference and coordination issues, there are compatibility issues that impact on the adjacent bands – DTT below 790MHz, particularly Channel 60 which uses the frequency block 782 – 790MHz and SRDs that use the band 863 – 870MHz. The adjacent channel issues with DTT have been discussed in relation to CEPT Report 30, noting that the technical conditions need to be supplemented by national measures as appropriate. The other consideration is SRDs in the band 863 – 870MHz this is discussed in the following section.

3.2.6 Compatibility with SRDs

The 863 – 870MHz band is allocated on a harmonised basis throughout Europe for licence-exempt SRDs. The band is sub-divided into three application specific sub-bands – see Exhibit 3 below:

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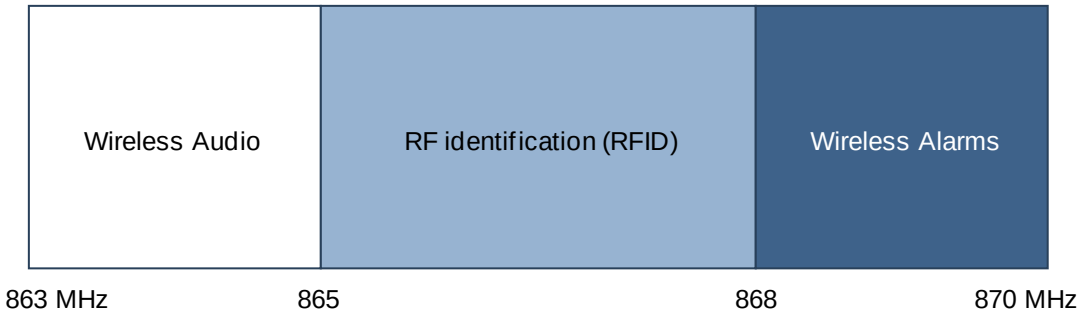
Exhibit 3: **Band plan for SRDs**



Source: RRA

The entire band may also be used by generic SRDs which may be narrowband or wideband systems using spread spectrum.

Licence-exempt SRDs operate on a non-protected, non-interference basis and this is assisted by the use of low power and/or very short duty cycles or mitigation protocols – e.g. 'listen before transmit'.

The current standards for SRDs reflect the radio environment that currently exists, but the allocation of the band 790 – 862MHz to mobile services will significantly change the radio environment. Tests have shown that use of mobile LTE TS in close proximity to SRD receivers may lead to interference or blocking in some cases, particularly at or near the 863MHz boundary.

Currently, one European regulator has commissioned studies to determine the extent of SRD deployment in the 863 – 870MHz band and to assess the immunity of SRDs to interference from mobile terminals in the 800MHz band. Further information on test results is provided in Appendix 1 to this report.

3.3 Regulatory Uncertainty

3.3.1 National measures to remedy interference caused to DTT

The technical conditions defined in CEPT Report 30 are used in the Annex to Commission Decision 2010/267/EU[12], and define the baseline technical conditions for mobile use of the 800MHz band. However, as noted previously, there remain some interference concerns and the text in the Decision notes that '*BEMs shall be applied as an essential component of the technical conditions necessary to ensure coexistence between services at national level.* ***However, it should be understood that the derived BEMs do not always provide the required level of protection of victim services and additional mitigation techniques would need to be applied in a proportionate manner at national level in order to resolve any remaining cases of interference'.*** [Emphasis added]

Recognising that there will be interference problems into DTT and associated services when LTE is deployed, some regulators have proposed that a 'protection clause' be inserted into the licence conditions for the mobile service. This provision will require the licensee to be responsible for investigation and the remedy of interference to DTT and associated equipment, e.g. Ofcom in the UK and the PTS in Sweden are considering such an approach. Some stakeholders have argued that the regulatory uncertainty surrounding the possible costs and associated liabilities of interference to DTT services makes valuing the 800MHz spectrum very difficult, and have called for further analysis of the issues. Further details are contained in Appendix 1.

3.3.2 World Radiocommunications Conference 2012 (WRC-12)

While the International Telecommunications Union (ITU) decided at the last World Radiocommunications Conference held in 2007 (WRC-07) to allocate the band 790 – 862MHz to Mobile Services on a co-primary basis with Fixed Services and Broadcast Services in Region 1 (with effect from the 17 June 2015), Resolution 749 (WRC-07) requires studies to be conducted into sharing between the Mobile Service and other services in the band 790 – 862MHz in Regions 1 and 3, and for the studies to be completed for consideration at the next Conference in 2012 (WRC-12).

[12] Source: Commission Decision of 6 May 2010 on harmonised technical conditions of use in the 790 – 862MHz frequency band for terrestrial systems capable of providing electronic communications services in the European Union

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The WRC-12 Conference will consider these matters under agenda item 1.17 and the Conference will review the studies conducted under Resolution 749 (WRC-07) regarding sharing between the mobile service and other services in the band 790-862MHz in Regions 1 and 3. The work being carried out in the ITU-R in preparation of WRC-12 is being undertaken by a joint Task group of Study Groups 5 and 6 (JTG 5-6) and has been focused on 3 issues:

- Issue A: mobile service / broadcasting service
- Issue B: mobile service / aeronautical radionavigation service
- Issue C: mobile service / fixed service

These issues and the associated methods to satisfy the agenda item 1.17 are described in the draft Conference Preparatory Meeting (CPM) report (Document CPM11-2/1-E, 13 August 2010). Based on this work, a draft European Common Position (ECP) has been produced. The consideration of different methods is still subject to possible changes during the CPM process and therefore consequential changes may be needed to the associated draft ECP.

This process is still on-going with a series of meetings planned over the next year or so. There is a degree of dissent within the CEPT as some countries with ARNS are currently concerned with aspects of the ECP. The net result is that there will remain regulatory uncertainty until the WRC-12 Conference when all these studies will be considered under agenda item 1.17.

The current position is that mobile services cannot claim protection from harmful interference caused by ARNS and mobile services are not permitted to cause harmful interference into stations of existing ARNS. From the 17 June 2015, mobile services will be able to enter co-ordination as a co-primary service in the band 790 – 862MHz. Frequency co-ordination between administrations with ARNS and central European countries planning to deploy Mobile Services will need to use the regulatory procedures that emerge from WRC-12 and that may mean using a predetermined co-ordination distance metric to trigger co-ordination between administrations or, alternatively, the use of a predetermined aggregate field strength value to trigger co-ordination. Until the ITU Conference has made a decision on these matters, there will remain a degree of regulatory uncertainty. The current draft text in the relevant documentation has a predetermined co-ordination distance that is

in the range of 400 – 500 km, which is a significant area and indicates that co-ordination between administrations will extend over a sizable portion of central Europe.

Further information on this issue is provided in Appendix 1 to this report.

In conclusion, the requirement under the Radio Regulations to co-ordinate mobile services with other co-primary services such as ARNS is an issue that is still under study and active discussion in preparation for the World Radiocommunications Conference in 2012.

Regulatory uncertainty caused by the WRC-12 process is likely to slow rapid deployment of mobile services and when taken together with the compatibility issues discussed in this section the impact becomes more significant.

It is acknowledged that an outline "framework agreement" between CEPT and the Commonwealth of Independent States (CIS) equivalent body, the RCC, has recently been reached but some details are still undecided, and further negotiation appears necessary to conclude a comprehensive agreement. The co-ordination zone between ARNS systems and mobile may be reduced from 400km to between 20 – 50kms depending on topography and other propagation characteristics. The framework agreement may ease discussions of this item at the WRC-12 Conference. However, until the details of the framework agreement are fully agreed and the ITU-R Conference has concluded on its discussion of agenda item 1.17 in 2012 there will remain regulatory uncertainty around ARNS and mobile use of the 800MHz band.

3.3.3 900 MHz band

In contrast, the 900MHz band has none of these concerns, there is no equivalent to the interference into DTT and associated equipment, no interference into SRDs and co-existence with GSM-R is not considered a significant issue. There are no international frequency co-ordination problems as the process for the 900MHz band is well understood and codified with bi-lateral and multi-lateral frequency co-ordination Agreements (MoUs) between European administrations the norm.

Therefore, on the basis of compatibility issues, the 900MHz band has a material advantage over the 800MHz band. This advantage has to be considered with the other advantages that the

900MHz band enjoys (discussed in the following sub-sections) when estimating the cumulative benefit that the 900MHz band has over 800MHz band.

3.3.4 Conclusions

It is clear from the preceding text in this section that the compatibility issues for 800MHz are of a different order to the issues that impact on the 900MHz band. Interference into DTT and associated equipment, ARNS and SRDs are all issues that require further study and action by standards and regulatory bodies. There are no corresponding parallels with the 900MHz band, the only minor issue is co-existence with GSM-R rail networks.

3.4 Comparison of the current and planned ecosystems for the 800MHz and 900MHz bands

3.4.1 The 900MHz ecosystem and the regulatory situation

It is clear from even a fairly cursory assessment of the current market that the 900MHz UMTS-HSPA ecosystem is experiencing significant growth and that trend is set to continue as the number of administrations that now permit the use of the 900MHz band for UMTS-HSPA has passed a critical mass. As of November 2010, a total of twenty administrations had given approval for the 900MHz band to be used for UMTS-HSPA, and a total of 25 UMTS-HSPA 900 networks have been commercially deployed. Exhibit 4 below has the detailed information.

Exhibit 4: **UMTS900 Global Status**

25 Commercial UMTS 900 networks		
Country	Operator	Service launch
Finland	Elisa	November 2007
Estonia	Elisa	January 2008
Thailand	AIS	May 2008
Australia	Optus	May 2008
Belgium	Mobistar	May 2008
Belgium	Proximus	July 2008
New Zealand	Vodafone	July 2008
Finland	DNA	October 2008

Iceland	Siminn	October 2008
Venezuela	Digitel	March 2009
Finland	TeliaSonera	June 2009
Croatia	Tele2	July 2009
Australia	Vodafone	August 2009
Faroe Islands	Faroese Telecom	November 2009
Armenia	Orange	November 2009
Latvia	LMT	November 2009
Poland	Aero2	November 2009
Ghana	MTN	December 2009
Hong Kong	CSL Limited	January 2010
Romania	Vodafone	April 2010
Bulgaria	Vivacom	June 2010
Estonia	EMT	June 2010
Greenland	TELE	August 2010
South Africa	MTN	March 2010
South Africa	Cell C	September 2010

Source: GSA November 2010

One of the drivers for the growth of UMTS900-HSPA ecosystem has been the opening of the 900MHz band for 3G services – there is now a high degree of regulatory certainty with 32 countries allowing the 900MHz band to be used for UMTS-HSPA. Several other countries are expected to liberalise access to the 900MHz band in the very near future. The entire EU will permit UMTS-HSPA, most already comply and the remainder are in the process of finalising spectrum awards and/or refarming exercises as a necessary first step prior to liberalising use of the GSM spectrum. The regulatory position is illustrated in Exhibit 5: below.

Exhibit 5: **900MHz band re-farming – regulatory status**

Country	Re-farming status
Armenia	UMTS900 is allowed
Australia	UMTS900 is allowed
Belgium	UMTS900 is allowed
Bulgaria	UMTS900 is allowed

Croatia	UMTS900 is allowed
Denmark	UMTS900 is allowed
Estonia	UMTS900 is allowed
Faroe Islands	UMTS900 is allowed
Finland	UMTS900 is allowed
France	UMTS900 is allowed
Germany	Under consideration
Ghana	UMTS900 is allowed
Greece	Under consideration
Greenland	UMTS900 is allowed
Hong Kong	UMTS900 is allowed
Hungary	Under consideration
Iceland	UMTS900 is allowed
Indonesia	UMTS900 is allowed
Ireland	Under consideration
Italy	UMTS900 is allowed
Latvia	UMTS900 is allowed
Malaysia	Under consideration
Malta	UMTS900 is allowed
Netherlands	Under consideration
New Zealand	UMTS900 is allowed
Norway	UMTS900 is allowed
Poland	UMTS900 is allowed
Portugal	UMTS900 is allowed
Romania	UMTS900 is allowed
Russia	Under consideration
Saudi Arabia	UMTS900 is allowed
Singapore	UMTS900 is allowed
Slovenia	Under consideration
South Africa	UMTS900 is allowed
Spain	Under consideration
Sweden	UMTS900 is allowed
Switzerland	UMTS900 is allowed
Thailand	UMTS900 is allowed
UAE	UMTS900 is allowed

UK	UMTS900 is allowed*
Ukraine	Under consideration
Venezuela	UMTS900 is allowed

Source: GSA – Global mobile Suppliers Association (9 Nov 2010) updated by RRA*

A more detailed assessment of where administrations have granted UMTS-HSPA access to the 900MHz band and the current status of deployment plans is provided in Exhibit 6: below.

Exhibit 6: **UMTS900 Networks - planned and actual deployments**

Country	Operator	Status
Armenia	Orange	Launched
Australia	Otus	Launched
Australia	Vodafone	Launched
Belgium	Mobistar	Launched
Belgium	Proximus	Launched
Bulgaria	Vivacom	Launched
Bulgaria	Globul	Testing
Croatia	Tele2	Launched
Estonia	Elisa	Launched
Estonia	EMT	Launched
Faroe Islands	Faroese Telecom	Launched
Finland	Elisa	Launched
Finland	DNA	Launched
Finland	TeliaSonera	Launched
France	SFR	In deployment
France	Orange	In deployment
Ghana	MTN Ghana	Launched
Greece	Cosmote	Testing
Greenland	TELE	Launched
Hong Kong	CSL Limited	Launched
Iceland	Siminn	Launched
Latvia	LMT	Launched
New Zealand	Vodafone	Launched

Norway	TeleNor	Planned
Norway	Netcom	Planned
Poland	Aero2	Launched
Poland	Polkomtel	Planned
Romania	Vodafone	Launched
Russia	All operators	Trials
Slovenia	Tusmobil	Trials
South Africa	Cell C	Launched
South Africa	MTN	Launched
Spain	Telefonica	Testing
Sweden	3	In deployment
Switzerland	Orange	Planned 2011
Thailand	AIS	Launched
Ukraine	Beeline	Planned
Ukraine	MTS	Planned
Venezuela	Digitel	Launched

Source: GSA – Global mobile Suppliers Association (9 November 2010)

The ecosystem for the UMTS900-HSPA market has grown phenomenally over the past few years and reflects the liberalisation of the GSM bands in Europe and elsewhere. The amending Directive, 2009/114/EC, which opens the 900MHz GSM band to UMTS and the Commission Decision 2009/766/EC which liberalises the GSM 900MHz and 1800MHz bands only came into effect in May 2010 and these regulatory measures have had a major impact on the market.

These regulatory developments have been mirrored by an unprecedented increase in data volumes being carried on mobile networks as the market evolves from a voice centric to a data centric market - spurred by the success of smart-phones. The success of mobile broadband has concentrated minds on how to accommodate the forecasted growth in data traffic and one serious consideration is how to access additional spectrum. Only spectrum that is harmonised at a regional, or better still, at a global level is attractive to the public mobile industry. Consequently, the GSM 900 and 1800MHz spectrum bands are particularly attractive as they are widely available on a harmonised basis, which provides the essential conditions for an ecosystem to develop and deliver substantial economies of scale. It is for this reason that the opening of the 900MHz band is so attractive and complements access to new spectrum bands such as 800MHz and 2.6 GHz.

To help put this in context, some information on the UMTS900-HSPA market is shown below. The following text is taken from the GSA GSM/3G Market/Technology Update published November 2010:

"480 UMTS900-HSPA devices have been launched in the market by 74 suppliers. The availability of UMTS900-HSPA user devices is excellent and growing. Excluding notebooks and e-book readers, 21% of all HSPA devices operate in the 900MHz band. 480 UMTS900-HSPA devices have been launched by 74 suppliers (GSA HSPA Devices survey, November 9, 2010), including 255 UMTS900-HSPA phones and 85 USB dongles. The number of UMTS900-HSPA devices announced has grown 152% since October 2009. EDGE is supported in 99% of UMTS900 devices". It is worth noting that the most recent GSA survey, dated the 7th February 2011, now lists 526 UMTS900-HSPA devices launched by 81 suppliers – an increase of 46 devices and 7 suppliers in a matter of a few months.

By any measure, the development and commercialisation of UMTS900-HSPA products has been impressive and has completely dwarfed the ecosystems for the 800MHz LTE market which are discussed in the next section.

3.4.2 The 800MHz ecosystem and regulatory situation

In contrast, the ecosystem for LTE 800MHz devices is tiny by comparison with the UMTS900-HSPA market and the prospects are relatively muted, given the delays in making the 800MHz band available and subsequently awarding the spectrum. There remain concerns about the timing of access to the 800MHz band on a pan-European scale, and compatibility issues together with concerns regarding regulatory uncertainty about frequency coordination with other co-primary services such as ARNS, which will not be resolved until the outcome of the ITU-R WRC-12 is known.

The information that is contained in Exhibit 7 below lists the current details from GSMA on the availability of 800MHz LTE devices, showing that approximately 16 devices were available as of February 2011. In addition, Huawei announced the E398 USB dongle at the recent Mobile World Congress (MWC) which operates in the 800, 1800 and 2600MHz bands. The information is a snap shot of the situation at that time and the mobile sector is a fast moving industry but a basic comparison of the size of the UMTS900-HSPA ecosystem and the 800MHz LTE ecosystem can leave no doubt that the former is very significantly larger and likely to remain so for the medium

term and the scale benefits may well extend into the long term. What is beyond question is that the two ecosystems cannot be considered highly substitutable when the range and choice of products and devices is so self-evidently different and the cost structure will be lower for 900MHz devices based on the larger market size and associated economies of scale.

Exhibit 7: **LTE 800MHz devices**

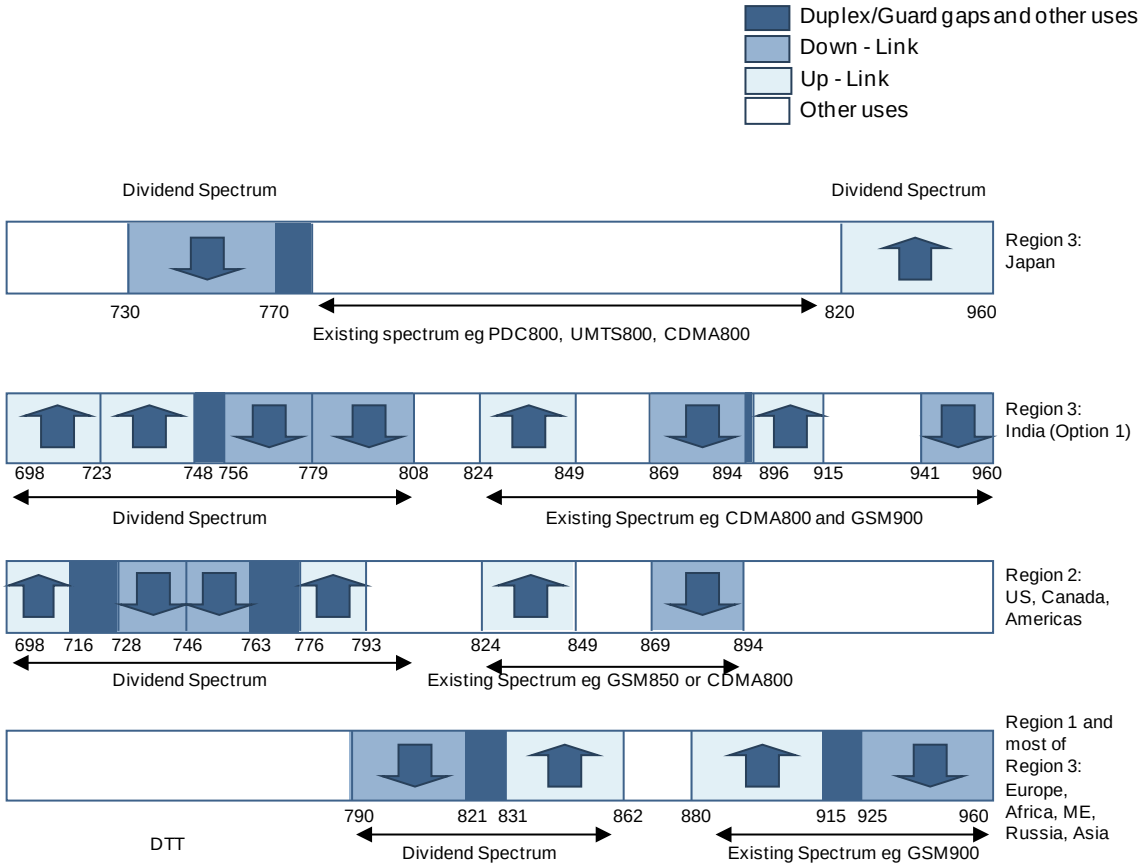
Device	Data Rate	Frequency Band	LTE Ready
AirPrime MC7710 Sierra Wireless	100Mb/s 50MB/s	800MHz, 900MHz, 1800MHz, 2100MHz, 2600MHz Type: Embedded Module	Yes
AirPrime MC7710 Sierra Wireless	100Mb/s 50Mb/s	800MHz, 900MHz, 1800MHz, 2100MHz, 2600MHz Type: Embedded Module	Yes
ALT6705 Adadigics	n/a n/a	800MHz, 850MHz Type: Power Amplifier	Yes
EHWIC-4G-LTE-G D Cisco	n/a n/a	800MHz, 900MHz, 1800MHz, 2100MHz, 2600MHz Type: Unknown	Yes
F-06C NTT DOCOMO	75Mb/s 25Mb/s	800MHz Type: USB Modem	Yes
Icera Espresso® **410 Dual Cell platform (LTE) Icera**	50Mb/s n/a	700MHz, 800MHz Type: Embedded Module	Yes
L-02C NTT DOCOMO	75Mb/s 25Mb/s	800MHz Type: USB Modem	Yes
MC551 Novatel Wireless	n/a n/a	700MHz, 800MHz, 1900MHz Type: USB Modem	Yes
MiFi 4510L Intelligent Mobile Hotspot Novatel Wireless	n/a n/a	700MHz, 800MHz, 1900MHz Type: Router	Yes
PCI Express Mini Card IP Wireless	102Mb/s 50Mb/s	700MHz, 800MHz, 850MHz, 900MHz, 1700MHz, 1800MHz, 1900MHz, 2100MHz, 2300MHz, 2500MHz, 2600MHz, 2700MHz Type: Embedded Module	Yes
RF6260 RF Micro Devices	n/a n/a	800MHz, 850MHz, 900MHz, 1700MHz, 1800MHz, 1900MHz, 2100MHz Type: Power Amplifier	Yes
USB-032038-AL-03-EU IP Wireless	102Mb/s 50Mb/s	800MHz, 1800MHz, 2500MHz Type: USB Modem	Yes

Source: GSMA Mobile Broadband Devices February 2011

3.5 Frequency harmonisation

One of the factors that contributed to the success of GSM was the harmonisation of the 900MHz band in Europe followed by the harmonisation of the 1800MHz band. A critical mass was achieved in Europe and the GSM technology went on to dominate the mobile market with many countries aligning with the European band plan. However, the Digital Dividend is much less coherent with different portions of the television band being identified as the Digital Dividend in different world markets. The band plans being developed in different regions of the world have also diverged on the specifics – e.g. the amount of spectrum identified for mobile services, the size of the duplex gap and the downlink and uplink arrangements. The divergence in approaches is illustrated below in Exhibit 8.

Exhibit 8: **Digital Dividend spectrum plans**



Source: RRA

There are attempts to identify a portion of spectrum that could be globally available to enable roaming, but at present there is no agreement. Consequently, the Digital Dividend spectrum is less homogeneous than the GSM bands and, therefore, the magnitude of the economies of scale is likely to be less than that realised in the GSM bands. This is because the addressable market will be more fragmented than was the case with the 900MHz band. The prospects for the 900MHz band are correspondingly brighter, as the same economies of scale will be evident as the band is refarmed for UMTS-HSPA.

3.6 Delays in gaining access to the 800MHz band

The timing of the clearance of the 800MHz band in the EU and more widely across Europe and Region 1 is somewhat uncertain. The Commission Decision (2010/267/EC) has a target date of 2013 but there are derogations until 2015. The ITU-R Radio Regulations specify that the allocation to mobile services only comes into effect in June 2015, and until then mobile services are required to protect and cannot claim protection from, interference from stations of existing services listed in the Radio Regulations in footnotes to the Table of Frequency Allocations (e.g. Radio Regulations 5.316 lists those countries that have registered protection of existing use of the band for ARNS). There are nineteen countries listed under RR 5.316. How co-ordination is to be implemented between mobile services and ARNS is currently being studied in the ITU-R.

The uncertainty about when the 800MHz band will be commercially available across Europe and the divergence in the frequency band plans being developed for the digital dividend spectrum outside Europe is not conducive to providing the necessary market fundamentals for the rapid development of the ecosystem for 800MHz products and devices. This consideration is likely to influence vendors' plans for developing devices for the 800MHz band – the R&D spend will be driven by potential investment returns and it seems reasonable to speculate that the larger UMTS900 – HSPA market will be a more attractive investment opportunity than the smaller and more fragmented 800MHz market.

3.7 Conclusion

3.7.1 Compatibility

The 800MHz band has a number of compatibility issues that require additional measures at the national level to remedy, and immunity of DTT and associated equipment is required to be tightened, but the process is still on-going and it is not clear how the transitional issues will be managed. One option is that the cost of investigation and remedy of interference will fall onto the mobile operators, but there is uncertainty about the costs and any other liabilities that may accrue making it more difficult to value the 800MHz spectrum. In contrast, the 900MHz band has been used for mobile services for the past twenty years, and consequently, the challenges are of a completely different order. There are no significant compatibility issues with the 900MHz band. The only issue is co-existence with GSM-R systems but this scenario has been studied by the CEPT and the solution is relatively trivial and builds on the existing approach taken regarding GSM networks and GSM-R networks. The ITU WRC-12 Conference review of studies in response to Resolution 749 (WRC-07) regarding the regulatory process that applies to the protection of existing services such as ARNS is another uncertainty that does not apply to the 900MHz band. The 900MHz band is well understood, stable and benefits from being widely used for GSM and now moving rapidly into UMTS900-HSPA deployment.

3.7.2 Regulatory Uncertainty

The legacy issues associated with the 800MHz band create regulatory uncertainty. The discussion of whether a licence condition may be added to the 800MHz licences in some administrations coupled with uncertainly regarding what might emerge from WRC-12 in terms of co-frequency co-ordination requirements will tend to make the 800MHz band comparatively less attractive as regulatory certainty is essential for operators planning network investments.

3.7.3 Ecosystems

The evidence is overwhelming – the UMTS900-HSPA ecosystem has a massive lead over the 800MHz LTE ecosystem and given the issues raised in this section regarding compatibility issues and harmonisation developments, it is likely that the advantage enjoyed by the 900MHz ecosystem will grow over the next few years. Heroic assumptions would need to be made about the take-up of 800MHz LTE to challenge this conclusion and that seems to be a vanishingly small possibility.

3.7.4 Harmonisation of spectrum

The band plans for 800MHz illustrate the rather fragmented development of Digital Dividend spectrum plans in different regions of the world. Not only is there divergence over the frequency band plans but the specifics also differ, e.g. different duplex directions and duplex gaps are to be found with little commonality in the current plans. There is not going to be a common global band plan for the digital dividend spectrum.

3.7.5 Delayed Access to 800MHz

Taken together with the frequency co-ordination issue in central Europe, that may delay the wider deployment of 800MHz networks and therefore impact negatively on the addressable market which, all other things being equal, will result in a smaller 800MHz ecosystem in the early years that will have implications for the cost and range of products and devices available compared to the 900MHz band, a rational mobile operator would have to conclude that the 800MHz band is currently not highly substitutable with 900MHz spectrum. In the long term the two bands may become substitutable but not in the near-medium term.

4 Impact of delaying 900MHz liberalisation

4.1 Impact on Ireland

Currently, 2x 5MHz of 900MHz spectrum is already available in Ireland. A further 3x 5MHz 900MHz will become available once O2 and Vodafone's 900MHz licences expire in May 2011[13]. ComReg has changed its mind from previous consultations, where it stated that '*the 900MHz band should be liberalised to ensure that the benefits of the liberalised band are realised as early as possible*'[14]. It is currently proposing to delay liberalising and making all of this 900MHz spectrum available until 2013: '*ComReg is of the view-in-principle that it is no longer appropriate to maintain its previous position of considering the award of spectrum rights of use in the 900MHz in isolation and is instead considering combining both the 800 and 900MHz bands in a single award process*'[15]. This amounts to a delay of at least 22 months for the 2x 5MHz now available[16] and at least 10 months[17] for the 3x 5MHz available on expiry of O2 and Vodafone's licences, even taking into account a reasonable time for refarming (as outlined in section 4.4). This delay in the liberalisation of 900MHz spectrum (henceforth referred to in this section as the delay) will cause significant and avoidable harm to the Irish economy as a whole, including both network operators and consumers. As we show in section 3, there will be no significant benefit from this delay as the 800MHz and 900MHz bands are not good substitutes. The proposed delay in the release of 900MHz spectrum will limit Irish mobile network operators' ability to cost-effectively expand the existing coverage of 3G networks in Ireland to levels equivalent to those already achieved with 2G networks. ComReg themselves note that the liberalisation of 900MHz will '*offer the prospect of mobile broadband services being more widely available nationally*[18]' and state that '*higher data rate services are therefore more likely to be deployed*'[19].Without timely access to 900MHz spectrum, operators will be unable to realise the potential benefits of high-speed mobile broadband to Ireland as a whole, and will have to choose between two suboptimal options:

a) Build-out on the 2.1GHz network

Mobile network operators could cover the proportion of the population with no access to mobile broadband services using 2.1GHz rather than 900MHz before the release of 900MHz spectrum in

[13] Source: ComReg 10/71a, Section 4.3.1
[14] Source: ComReg, 10/71
[15] Source: ComReg, 10/71
[16] 22 month delay measured from March 2011 to the proposed release of spectrum at the end of Jan 2013
[17] 10 month effective delay refers to the period from the end of a reasonable refarming process (1 year from today's date, i.e. March 2012) and the proposed release of spectrum at the end of Jan 2013
[18] Source: ComReg, 09/99
[19] Source: ComReg, 08/57

2013. This incremental extra cost of rolling out 3G coverage over 2.1MHz rather than over 900MHz will increase the costs of rollout to the Irish economy by at least €40m. It will also increase the environmental costs of rollout in terms of the physical impact of base stations deployed and CO_2 emitted; or

b) Do nothing

Mobile network operators could choose not to build out their networks beyond the current 3G network deployment. This would mean that consumers currently without good (in-home) coverage of mobile broadband would not be able to use it as an acceptable solution to their broadband needs, there would be a lower level of on the move coverage when roaming outside the home and consumers would experience lower connection speeds when they are covered. This will have a direct detrimental impact on consumers and operators, as well as a negative impact on the Irish economy as a whole, widening the digital divide, lowering business competitiveness and job creation and limiting the government's ability to provide services online.

These options are detailed in the following sections.

4.1.1 Launching 3G-enabled mobile services on 2.1GHz rather than 900MHz spectrum would increase roll-out costs by over €40m and increase environmental effects

a) Increased costs of rollout

If operators were obliged to use 2.1GHz rather than 900MHz to launch 3G-enabled mobile services to reach 99% penetration as with 2G services, the costs of roll-out to the Irish economy will significantly increase. The delay in liberalisation and utilisation of currently unallocated 900MHz spectrum from the auction timing of May 2011 over a roughly two year period to January 2013 would necessitate a significant and avoidable increase in investment in base station infrastructure to achieve 99% population coverage on 3G. This extra investment in base station infrastructure, as a direct result of the delay in 900MHz spectrum liberalisation, would not only damage Ireland's mobile network operators financially in the first instance, but also significantly reduce their ability to provide competitive pricing plans and innovative services to Ireland's consumers. The delay in the availability of liberalised 900MHz spectrum until 800MHz spectrum is made available therefore has a direct impact on network operators and mobile consumers and represents a significant loss to the

Irish economy in terms of misallocated resources for the investment in additional 2.1GHz base stations, an investment that is sub-optimal as the depreciation period will in many cases be limited to a few years rather than the normal life cycle for depreciation base station costs.

Extending current 3G networks to achieve the desired coverage of 99% of the Irish population over 2.1GHz would cost over €40m more than rolling out the same service on 900MHz. 2.1GHz's inferior propagation characteristics mean that if the current 3G network were to be extended to cover 99% of the population, and 900MHz spectrum were not liberalised for use, then roughly three times the number of base stations would be required, resulting in extra resource usage and cost. By contrast, a roll-out on 900MHz would also allow for the reuse of existing 2G infrastructure and minimise new base station builds. This is in line with ComReg's comments in consultation 08/57 that '*deploying new wireless technologies and applications at 900MHz rather than higher frequency spectrum is likely to significantly reduce the number of mast sites needed to offer high quality mobile broadband services… this should result in a significant cost saving in deploying 3G infrastructure at 900MHz compared to existing 3G spectrum at 2100MHz*'[20]. It is also in line with Telecoms and Internet Federation's finding that to roll out LTE in rural areas '*use of lower-frequency spectrum greatly improves coverage [:]...without Digital Dividend spectrum coverage costs will increase by a factor of 3*[21]'. Utilising 900MHz spectrum would also provide greater flexibility in the location of base station sites and mean that they can be located near to, rather than in, populated areas; building in the built-up areas that 2.1GHz requires may increase planning difficulties and cost of acquisition and use of those sites. This cost has not been quantified but would be additive to the cost identified above.

b) Environmental impact

Should Irish operators choose to build out more base stations, ComReg's proposals to delay the liberalisation of 900MHz spectrum will have a significant and unnecessary detrimental effect on the Irish environment. The environmental impact of the delay in liberalisation of 900MHz and the resultant build-out of 3G services on 2.1GHz spectrum can be measured by combining the effects of the:

- Physical impact of site building on local ecosystems and habits; and

[20] Source: ComReg 08/57
[21] Source: Telecommunications and Internet Federation, Building a Next Generation Access Network for Ireland

- Extra CO_2 emissions produced as a result of operating a larger number of base stations.

i) Building more base stations will significantly impact the local environment and natural ecosystem

Delay in the liberalisation of 900MHz spectrum will result in the unnecessary degradation of the Irish environment because (i) more base station sites would be required and (ii) there would be less choice over site location due to inferior propagation characteristics of 2.1GHz spectrum.

In line with ComReg's comments in its consultation document of 08/57: '*deploying new wireless technologies and applications at 900MHz rather than higher frequency spectrum is likely to significantly reduce the number of mast sites needed to offer high quality mobile broadband services'*. In this way, timely liberalisation of 900MHz spectrum would result in a smaller number of base stations needed.

Moreover, using 900MHz spectrum would also provide far greater flexibility in the location of those required base station sites. This means that base stations can be located near to, rather than in, populated areas, in line with the Department of the Environment and Local Government's guidelines for the building of telecommunications antennae and support structures. There exists a hierarchy in the factors which determine the suitability of an area for potential building of a new base station. '*Visual impact is among the most important considerations which have to be taken into account in arriving at a decision on a particular application*[22]*... base sites in rural areas can be placed in forestry plantations'* despite the need to clear significant flora. Additional considerations such as access roads and support poles also have to be taken into account when addressing the impact of a base station site: *'an access road may sometimes cause greater visual impact than the actual installation.'* And as a last resort, only if no other more suitable location can be found should '*free-standing masts be located in residential areas or beside schools'.*

Clearly, base site selection is significantly more complex when using 2.1GHz spectrum. A delay in the liberalisation of 900MHz spectrum will not only increase the number of new base stations required, but it will make the placement of those base stations more difficult and potentially more damaging to the environment and the local ecology.

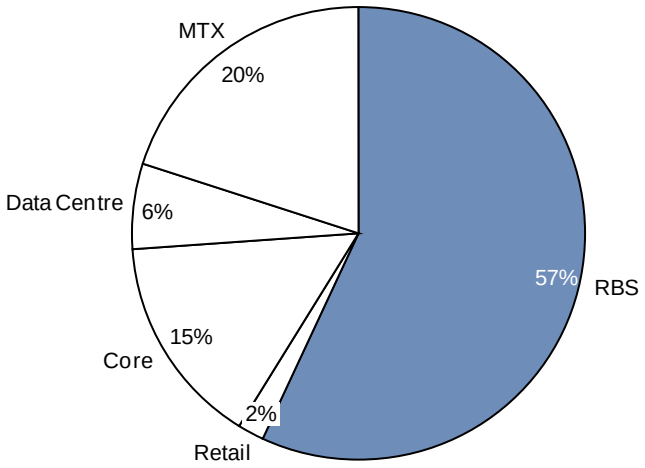
[22] Department of the Environment and Local Government – Telecommunications Antennae and Support Structures 1996

ii) Operating more base stations will significantly increase CO_2 emissions

ComReg's proposals to delay the liberalisation of 900MHz spectrum will result in the unnecessary production of significant quantities of CO_2 greenhouse gases.

Radio base station power consumption represents the majority of total power consumption of a mobile network operator. Exhibit 9 demonstrates how base station power consumption represents over 57% of Vodafone's mobile network in the UK, and it can be safely assumed that the breakdown of power consumption shown is typical of all mobile network operators.

Exhibit 9: **Power consumption in Vodafone's UK network.**



Source: Vodafone UK

Clearly, base station power consumption is a significant contributor to total power usage and therefore to CO_2 emissions. In its efforts to reduce emissions, the European Union (EU) has issued a mandate to CEN/CENELEC/ETSI to consider standardisation as a means of enabling efficient energy use in fixed and mobile networks - in recognition that 'ICT' accounts for around 2% of total carbon emissions. Fixed and mobile networks currently account for over 25% of the total ICT emissions and the sector is growing fast. In the EU, telecommunications is one of the most rapidly growing sectors in terms of energy consumption: with a forecast total of 130 TKh per year by 2015.[23]

[23] RRA - 2011

If ComReg's proposals to delay the liberalisation of 900MHz spectrum bands are fulfilled, then a significant extra number of unnecessary extra base stations will be required to deliver an effective coverage of 3G services over 2.1GHz spectrum. As a result, significant quantities of extra power will be consumed and a considerable amount of resultant CO_2 gas produced.

4.1.2 Failing to increase the coverage of 3G mobile broadband would harm the Irish economy, stifling economic development and increasing the digital divide

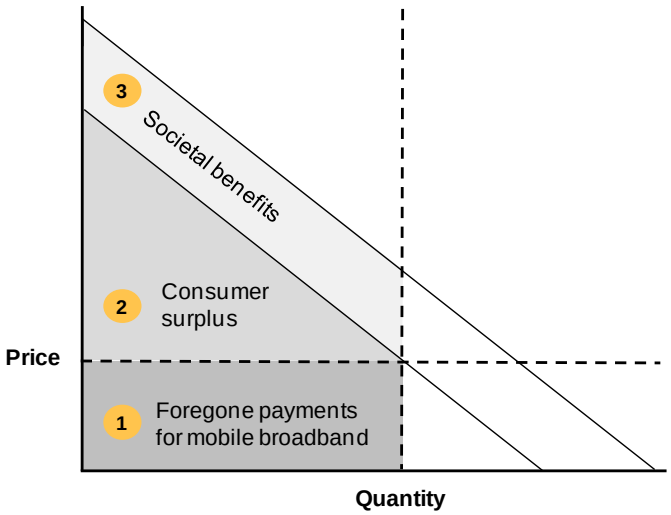
If 900MHz spectrum liberalisation and release is delayed until the release of 800MHz spectrum in January 2013, and Ireland's mobile network operators decide not to extend their 3G networks beyond those already in operation, then consumers (both those who are not already covered and those who are) will be denied a number of the benefits of mobile broadband, including:

- On the move coverage when roaming outside the home;
- Higher quality of connection, including fewer coverage blackspots and the ability to use mobile broadband throughout consumers' houses (given the benefits of 900MHz spectrum as described in section 2.2.2); and
- Higher speed of connection – as mentioned in section 2.2.1, average data speeds for 3G connections at 900MHz are approximately 1Mbps faster than 3G at 2.1GHz[24].

A lack of access to high-speed mobile broadband services until 900MHz spectrum is made available in 2013 will cause significant losses to both consumers and operators. These losses can be categorised into three discrete categories: the foregone payments for mobile broadband, lost consumer surplus and un-captured societal benefits:

[24] Source: NSN *WCDMA Frequency Refarming: A leap forward towards ubiquitous mobile broadband coverage.*

Exhibit 11: **Total benefits of the provision of a service**



Source: Value Partners

The total benefit denied to the Irish public as a result of the delay of liberalisation of 900MHz spectrum comprises:

- **foregone payments for mobile broadband**: representing lost potential revenue for mobile operators;

- **lost consumer surplus**: the surplus of consumer willingness to pay over and above the price charged, representing value that accrues directly to consumers; and

- **uncaptured societal benefits**: the social benefits of broadband which affect whole communities over and above those that directly accrue to the individual consumer.

As DotEcon's concludes in its report to ComReg, '*even small delays to the availability of services are likely to have a large welfare cost*'[25]. The overall effect of ComReg's proposal to delay liberalisation of 900MHz spectrum as laid out in its Consultation Document No. 10/71, would be a loss of both customer surplus and the wider societal benefits derived from broadband connectivity.

[25] Source: DotEcon, *Award of liberalised spectrum in the 900MHz and other bands*, ComReg document 10/71a

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a) Impacts on stakeholders

If 3G-enabled mobile broadband services are not rolled out to currently uncovered regions, consumers who are willing to pay for the mobility, quality and speed benefits that mobile broadband offers will not be motivated to take the service up. In particular, mobility will suffer as geographic coverage of 3G will lag population coverage (both in terms of land mass uncovered and in terms of ability to use mobile broadband in buildings). Research by Analysis Mason has shown that mobility is the key benefit delivered by mobile broadband, with "*66% of non-mobile-broadband subscribers considering it a key factor in motivating them to buy the service*"[26]. Any delay in the provision of 900MHz spectrum, and the lack of further expansion to current effective 3G coverage, would cost the Irish mobile network operators revenues from consumers potentially willing to purchase mobile broadband, if on-the-move coverage were better or the service offered higher quality/speed.

As a corollary to the revenues foregone by operators, consumers will lose consumer surplus, arising from the willingness of consumers to pay more for mobile broadband access than the cost of those services. Calculated via Hausman's approximate approach to the compensating variation[27], the consumer surplus foregone is €120[28] per year per customer who decides not to take up the service. This will come from a lower value placed on mobile broadband by those who do choose to subscribe – as it will be available in fewer places and at slower speeds – and some consumers who decide not to subscribe at all, in particular because without 900MHz spectrum the 3G signal may not penetrate sufficiently into their homes. In addition, customers' ability to use 'always-on' data services on smartphones will suffer and thus consumers will forgo potential consumer surplus from their use of these devices.

b) Impacts on the Irish economy

Delay in the liberalisation of and access to 900MHz spectrum would have further impacts on Irish society beyond its direct effect on consumers and operators. Preventing mobile operators from utilising currently spare 900MHz spectrum would slow GDP growth, widen the 'digital divide' and deny individuals, businesses and government on the move and in-building access to vital services

[26] Source: Analysys Mason *Connected Consumer Survey* http://www.analysysmason.com/About-Us/News/Newsletter/Operators-should-position-mobile-broadband-as-a-complement-to-fixed-not-a-substitute/?journey=1391,

[27] Hausman's approximate approach to the compensative variation is CV ≈ 0.5 P_1Q_1/α, where the numerator is the revenues generated by the product and the denominator is the own-price elasticity of demand for the product (Source: LECG, *The Economic Benefit from Investment in Advanced Mobile Infrastructure and Services: the Case of Thailand*)

[28] Calculated based on a mobile broadband price of €19.99 per month (Basic MBB package from Vodafone, O2, 30 day pass from Meteor) annualised to ~ €240, with an own-price elasticity range of -0.5 to -1 (Source: LECG, *The Economic Benefit from Investment in Advanced Mobile Infrastructure and Services: the Case of Thailand*)

and enhanced productivity tools. Moreover, the delay in liberalisation of 900MHz spectrum would be directly contradictory to ComReg's commitment to ensure swift and efficient use of spectrum: '*ComReg will also work proactively in the allocation of spectrum to encourage the trialling and development of flexible new mobile technologies and digital applications*'[29].

i) The Irish economy would forgo GDP growth

As Pearce and Pagano have shown, increasing the penetration of mobile broadband stimulates significant GDP growth; their study looking at the benefits of increased wireless rollout in the US found that '*cumulative gains of 0.65% to 0.98% in GDP [arose] from indirect effects,… society as a whole benefits from a nationwide wireless broadband network*'[30]. Although the figures provided are unique to the American market, higher-speed and better-penetrating mobile broadband is likely to grow Irish GDP in a similar fashion. Such a GDP growth stimulus is exactly in line with Ireland's desire to deliver economic renewal, '*restruct[ing] and re-orient[ing] its economy to prepare for economic renewal*'[31]. In part these GDP benefits will arise from the qualitative benefits identified below.

ii) The Irish 'digital divide' between rural and urban citizens would continue to widen

The Irish rural population is, on average, older and less affluent than the urban population; '*there are proportionally more old people in rural areas (12.2%) than in urban locations (10.3%)*'[32], and inhabitants of rural areas have lower levels of disposable income[33]. This 'urban-rural' socio-economic divide would be significantly exacerbated if the citizens living in rural areas were denied access to high-speed, high-quality mobile broadband until 2013, especially in Ireland where mobile broadband penetration is significantly above the EU average while fixed line penetration is significantly below[34]. As eircom themselves have stated, the limitations of DSL are such that '*even when the local exchange is upgraded to handle broadband, a modem will not connect as the signal becomes so weak after 5km*' and '*it would not be economic to extend fixed line broadband nationwide and… some parts of rural Ireland would have to rely on wireless broadband*'[35]. A

[29] Source: Next Generation Broadband: Gateway to a Knowledge Ireland 2009
[30] Source: Pearce and Pagano, *Accelerated Wireless Broadband Infrastructure Deployment: The Impact on GDP and Employment*
[31] Sourec: Ireland – The Smart Economy
[32] Source: Central Statistics Office, *2006 Census of Population – Volume 2 – Ages and Marital Status*
[33] Households in urban areas spend an average of €820.81 per week compared to €735.35 in rural households. (Source: Irish Statistics Office, *Household Budget Survey 2004-05*
[34] As published in ComReg's latest market report, 10/106, the EU average Fixed Broadband penetration is 25.6% against Ireland's 22.9%, while the EU average mobile broadband penetration over dedicated devices is 6.1% against Ireland's 10.6%
[35] Source: RTE News, 2009, http://www.rte.ie/news/2009/0311/eircom.html?view=print

widening of the digital divide would run directly counter to the new Government's desire to build a '*fair society … [where] nobody will be left behind*' and with a '*a renewed focus [on] tackling poverty, educational disadvantage and social protection*'[36].

As one well-documented example of the many benefits of higher-speed broadband connectivity, there is a direct and quantifiable correlation between access to higher-speed broadband and job growth. Studies throughout Europe and the US have demonstrated that '*over 80 new jobs are created for roughly every 1000 new broadband connections and that broadband alone added up to 1.4% to rate of growth in jobs*'[37]. Ireland's average unemployment rate is over 13%[38], a figure lowered by recently elevated levels of emigration, but in areas of rural Ireland the unemployment rate is over 14.5%. As it stands, 42% of the population live in rural Ireland, but rural areas account for approximately 28% of total employment opportunities[39]. High-speed, high-quality and in-building mobile broadband facilitates practices such as tele-working, remote working while on the move, telemetry-based business solutions such as mobile Point of Sale applications (including new and innovative services such as the smartphone-based small business card acceptance service Square in the US), data-intensive van tracking and true remote monitoring, all of which make it easier for employees to work remotely and thus help drive job growth. This is in line with the new Government's Programme for National Recovery, and its '*immediate focus on the jobs crisis*'[40].

Mobile broadband plays a further role in the creation of human capital over and above direct job creation. High-speed, high-quality in-home mobile broadband allows for a true 'e-learning' experience, facilitating two-way interaction with data-heavy and media-rich content such as downloadable lectures, two-way tutoring via video call, reference library access and so on. Through e-learning, individuals can acquire professional skills to increase their marketability as workers, or develop social networks to cultivate peer-to-peer communities, knowledge sharing and their integration with the economy[41]. Studies have shown that e-learning can help increase student engagement, motivation, and attendance. A research synthesis of 19 education programs in Europe, the Middle East, Africa and the US found that use of e-learning solutions produced significant positive effects on reading achievement, writing, and maths[42]. Mobile broadband is

[36] Source: Speech by the Taoiseach, Mr. Enda Kenny, T.D., on the Government Programme for National Recovery Dáil Éireann on Tuesday 15 March 2011
[37] Source: Gillett and others, *Impacts of Broadband on Economic Activities in US Communities*, 2006
[38] Source: Economic and Social Research Institute - 2010
[39] Source: National Rural Network of Ireland – 2010
[40] Source: Speech by the Taoiseach, Mr. Enda Kenny, T.D., on the Government Programme for National Recovery Dáil Éireann on Tuesday 15 March 2011
[41] Source: World Bank: Chapter 3: Economic Impacts of Broadband
[42] Source: Penuel et al. 2010 – Intel – The Positive Impact of e-learning

particularly valuable here as it can be provided on a pay-as-you go basis, reducing the ongoing costs of internet access as well as minimising start-up costs of in-home infrastructure installation. It can also be used on a truly mobile basis: allowing for e-learning across laptops and smartphones while on the move – for example, services such as Khan Academy which exist to '*provid[e] a free world-class education to anyone anywhere*'[43].

Mobile broadband connectivity has further societal benefits beyond employment benefits. As an example, a wireless connection to broadband can also increase an individual's home energy efficiency, minimising pollution and potentially reducing individual energy bills. Internationally, an increasing proportion of energy meters installed use 'smart metering' technology which communicates meter readings to a centralised reader over 3G mobile broadband connections. As it stands, smart metering and smart grid services to at least one third of the Irish population can only be delivered using wireless technology[44]. Provision of such services further helps promote smarter energy and energy use, and lowering energy use will help achieve Ireland's ambitious target of meeting '*40% of its energy needs from renewable by 2020*'[45].

iii) Businesses would forgo a significant degree of increased productivity and access to information

Broadband is a vital business utility: *'Building Ireland's 'Smart Economy' recognises that broadband is a key enabling infrastructure for the knowledge-intensive services and activities on which future prosperity will increasingly depend'*[46]. Beyond the well-documented benefits of access to information and faster and more secure communications, mobile broadband can provide a range of other benefits to businesses. A mobile broadband connection allows businesses a large degree of operating flexibility: they can operate ICT systems on a 'utility' basis using outsourced cloud computing services, outsourced supply chain management, flexible working hours (utilising mobile employees) and outsourced business functions (admin, HR, research etc.). High-speed mobile broadband services which are available as widely as possible across Ireland '*enable visual networking for more effective remote working, advanced e-commerce and remote access to powerful computing (cloud computing)*[47]'. As a result of mobile broadband connections, businesses benefit from greater operating efficiencies and optimised cost bases, allowing them to focus on

[43] Source: Kan Academy, http://www.khanacademy.org/about
[44] Source: ESB Networks, *ESB Network response to ComReg consultation on 800MHz, 900Mhz and 1800MHz spectrum release*
[45] Source: Ireland – The Smart Economy
[46] Source: Next Generation Broadband: Gateway to a Knowledge Ireland 2009
[47] Source: Next Generation Broadband: Gateway to a Knowledge Ireland 2009

core activities such as innovation, growth and job creation. Encouraging this is in line with Ireland's focus on the Smart Economy, focusing on driving '*productivity, making the most of available resources, combining them in new ways and creating new sources of value*'[48], as well as ensuing that Ireland is '*the best incubation environment for Irish entrepreneurs*[49]'. To realise this it is essential that businesses have access to truly mobile broadband (to use anywhere), without significant in-building coverage blackspots at high speed and quality.

iv) Government initiatives would cost more to deliver to rural areas and would experience significantly lower take-up

As mentioned above in section 4.1.3.b.ii, mobile broadband represents a cheap and effective way of delivering a number of vital government initiatives to rural communities. The cost of provision of services, such as e-health and financial services advice and information, in rural areas would increase significantly in the absence of high-quality, high-speed mobile broadband coverage: *'digital applications will deliver more effective and efficient public services to every region and sector in society. More sophisticated online applications can be used to engage with Government clients such as those that experience difficulty interacting using more traditional methods'*[50] as well as being '*responsive to changing needs and quicker to discontinue what is no longer useful*'[51]. As underlined by Ireland's National Broadband Scheme, the Department of Communications, Energy and Natural Resources has prioritised the diffusion of broadband services to the remaining rural communities currently uncovered. Moreover, the lack of ubiquitous mobile broadband would significantly hamper the Irish government's initiative for the development of an Irish 'smart economy', in which broadband connectivity plays a significant role in facilitating business productivity and economic growth: '*a sustainable approach to economic development complements the core strength of Ireland's economy, it will allow us develop a digital services export economy which will only require a high speed broadband network, a renewable electricity supply and our own ingenuity to succeed*'.[52] It will hamper Ireland's efforts to emulate California's 'Silicon Valley' and attract '*inward investment'*[53] and skilled workers from overseas: "*broadband can enhance a city's or a country's appeal to the "creative class" of knowledge workers and attract human capital*

[48] Source: Ireland – The Smart Economy
[49] Source: Ireland – The Smart Economy
[50] Source: Next Generation Broadband: Gateway to a Knowledge Ireland 2009
[51] Source: Ireland – The Smart Economy
[52] Source: Building Ireland's Smart Economy – A framework for sustainable economic renewal - 2008
[53] Source: Next Generation Broadband: Gateway to a Knowledge Ireland 2009

amid intensifying global competition for talented workers".[54] The ability to work on a truly mobile basis, as provided by mobile broadband, is a core part of this.

4.1.3 Conclusion

The delay in liberalisation of and access to 900MHz spectrum, as proposed in ComReg's Consultation Document No. 10/71 "800MHz, 900Mhz and 1800Mhz spectrum release", would increase the costs of Irish mobile network operators who wish to extend current 3G coverage to 99% of the Irish population by over €40m. Conversely, as is likely, should Irish mobile operators decide not to increase coverage, then there would be a direct and significant loss to Irish operators in foregone revenues and to Irish consumers in lost consumer surplus. Moreover, Ireland as a whole would be significantly harmed by virtue of a loss of GDP growth, exacerbation of the 'digital divide' and a hindering of the growth and development of vital business and governmental services. Given that, as we outline in section 3, ComReg's arguments on the benefits of delaying access to 900MHz spectrum until 2013 are baseless, there is no reason to impose a suboptimal outcome on Irish mobile network operators, consumers, businesses, government and society as a whole. This is in line with ComReg's own conclusion in 2008 that '*[i]f demand is high then the benefits of liberalisation are likely to be significant… [and] wireless technologies are already proving very popular in Ireland*'[55].

4.2 Impact on the Irish competitive environment

ComReg's refusal to allow timely access to currently available 900MHz spectrum would represent a significant and unfair competitive disadvantage to H3GI's business in comparison to other Irish MNOs.

To date, H3GI has delivered significant benefits to Irish consumers, both through its role as a developer of innovative 3G services in Ireland and its contribution to the competitive mobile landscape. However, H3GI is currently significantly disadvantaged in the mobile operator market as it has less than half the total spectrum allocation of its MNO competitors and no 900MHz spectrum. In order for H3GI to maintain a network coverage equivalent to its competitors, it has both invested a significant amount in base station rollout at 2.1GHz and entered into a national roaming agreement with Vodafone to ensure voice coverage to 99% of the Irish population.

[54] Source: World Bank
[55] Source: ComReg 08/57

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ComReg's proposals to delay the liberalisation of 900MHz spectrum, as outlined in its Consultation Document No. 10/71, despite there being 2x 5MHz of 900MHz spectrum currently lying vacant[56], would extend the advantages currently enjoyed by other MNOs. It would extend the length of time for which HG3I would require a national roaming agreement to give its customers 99% coverage, both (1) harming its ability to compete on a price basis; and (2) damaging the consumer experience of H3GI's services, with an impact on both customer satisfaction and H3GI's ability to compete effectively. It also [**Commercially sensitive**] is (4) not aligned with EU directive 2009/114/EC on the frequency bands reserved for public pan-European cellular digital land-based mobile communications in the Community.

The refusal to allocate the 2 x 5MHz of 900MHz spectrum which is currently unallocated directly contradicts ComReg's duties '*in relation to the provision of electronic communications networks, electronic communications services and associated facilities (i) to promote competition (ii) to contribute to the development of the internal market, and (iii) to promote the interests of users within the Community*'[57] and further '*in so far as the promotion of competition is concerned— (i) ensuring that users, including disabled users,* ***derive maximum benefit in terms of choice, price and quality****, (ii) ensuring that there is* ***no distortion or restriction of competition in the electronic communications sector****, (iii) encouraging efficient investment in infrastructure and promoting innovation, and (iv) encouraging efficient use and ensuring the effective management of radio frequencies and numbering resources*'[58] [emphasis added]

The factors mentioned above are discussed in more detail below.

4.2.1 Delay in liberalisation of 900MHz would extend H3GI's dependence on its costly national roaming agreement, harming its ability to compete

H3GI is the only mobile network operator in Ireland which does not possess any 900MHz spectrum. In order to match the coverage levels provided by its competitors, H3GI is dependent on a national roaming agreement with Vodafone. The burden of the cost of this roaming agreement – used for both in-building and geographic coverage – is large and will increase, as a proportion of traffic moves away from voice and towards data.

[56] Source: ComReg 10/71a, Section 4.3.1
[57] Source: Communications Regulation Act, 2002, Section 12
[58] Source: Communications Regulation Act, 2002, Section 12

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ComReg's refusal to allocate the 900MHz spectrum currently left empty leaves H3GI as the only operator without 900 MHz in need of a roaming agreement to maximise coverage for its customers. As a direct result of this decision, H3GI's cost base is increased, which directly distorts competition in the Irish mobile market. The money that H3GI pays to Vodafone in roaming costs, in order to maintain a competitive coverage level, prevents H3GI from passing the equivalent value to its consumers in the form of additional value-added services, increased innovation and lower prices. Such pricing and services would increase H3GI's competitiveness and maximise benefits to all users of mobile services in Ireland through increased price and service competition, whether an H3GI customer or not.

Any delay in the liberalisation of 900MHz spectrum, as outlined in ComReg's Consultation Document No. 10/71, would cost H3GI [**Commercially sensitive**] from a need to pay increased roaming fees to Vodafone to ensure coverage of those customers who cannot economically be covered with a 2.1GHz network.

4.2.2 [Commercially sensitive]

4.2.3 [Commercially sensitive]

4.2.4 ComReg's delay in equalising access to 900MHz spectrum across Irish MNOs is contrary to EC directive 2009/114/EC on the promotion of competition

In Directive 2009/114/EC, the European Union amended Council Directive 87/372/EEC on the frequency bands to be reserved for the coordinated introduction of public pan-European cellular digital land-based mobile communications in the Community. This directive opened up the 900MHz band for access in EU Member States. It recognises that a lack of access to 900MHz spectrum can cause competitive disadvantage, mandates liberalisation of 900MHz spectrum as rapidly as possible, and recommends a reconsideration of 900MHz allocations to address any distortions of competition in the mobile market.

In the directive, it is recognised that a lack of access to 900MHz spectrum could cause a competitive disadvantage: '*whereas… where certain mobile operators have not been assigned spectrum in the 900MHz band, they could be put at a disadvantage in terms of cost and efficiency*

in comparison with operators that will be able to provide 3G services in that band.'[59] The directive therefore references Member States' existing ability to review rights to spectrum to mitigate such competitive distortions: '*Under the regulatory framework on electronic communications, and in particular Directive 2002/20/EC of the European Parliament and of the Council of 7 March 2002 on the authorisation of electronic communications networks and services (Authorisation Directive), Member States can amend and/or review rights of use of spectrum and thus have the tools to deal, where required, with such possible distortions*.'[60]

The Directive further mandates Member States to open the 900MHz band to UMTS (i.e. 3G services) as soon as possible: '*The 900MHz band should therefore be opened to UMTS, a system that can coexist with GSM systems, as well as to other systems as soon as it can be demonstrated that they can coexist with GSM systems in accordance with the procedure laid down in the Radio Spectrum Decision for the adoption of harmonised conditions for the availability and efficient use of radio spectrum*.' [61] As soon as the 900MHz band has been made available under the directive, Member States should '*consider whether it is objectively justified and proportionate to amend the rights of use of those operators that were granted rights of use of 900MHz frequencies and, where proportionate, to review these rights of use and to redistribute such rights in order to address such distortions*.'[62]

ComReg's proposal to delay the availability of all 900MHz spectrum (even that which is currently unoccupied) until 2013 is not in line with the Directive. Furthermore, ComReg's decision to prolong existing 900MHz spectrum allocations via issuing interim licences is not in line with the Directive, which recognises the negative impact on competition from an imbalance of 900MHz spectrum amongst operators.

4.2.5 Conclusions

The delay in the liberalisation of, and access to, currently unallocated 900MHz spectrum until 2013 impacts consumers directly and distorts competition in the Irish mobile market. Moreover, it prevents H3GI competing on an equal basis with other Irish MNOs and therefore decreases the benefits of competition to Irish consumers with regard to lower prices and greater innovation

[59] Source: Directive 2009/114/ec of the European Parliament and of the Council of 16 September 2009 amending Council Directive 87/372/EEC on the frequency bands to be reserved for the coordinated introduction of public pan-European cellular digital land-based mobile communications in the Community.
[60] Source: Directive 2009/114/Ec of the European Parliament and of the Council
[61] Source: Directive 2009/114/Ec of the European Parliament and of the Council
[62] Source: Directive 2009/114/Ec of the European Parliament and of the Council

[**Commercially sensitive**]. The total impact of ComReg's decision to unnecessarily delay access to 900MHz, in financial terms alone, to H3GI is over [**Commercially sensitive**], [**Commercially sensitive**]

ComReg's decision to delay access to 900MHz spectrum (in particular that which is not already allocated) thus directly harms the interests of both H3GI and all consumers of voice and data mobile services in Ireland by reducing H3GI's ability to offer competitive pricing and new & innovative services, entrenches the unfair competitive advantage granted to Ireland's other mobile network operators, and runs contrary to both the EU Directive 2009/114/EC and ComReg's stated aim of '*ensuring that there is no distortion or restriction of competition in the electronic communications sector.*'[63]

4.3 Impact on Vodafone and O2

The proposals outlined in ComReg's Consultation Document no. 10/71, *800MHz, 900MHz & 1800MHz spectrum release* detail and describe the mechanisms by which ComReg propose to grant Vodafone and O2 interim licenses for 2G voice services over 900MHz spectrum bands. The interim license period refers to the time between the date of the expiration of Vodafone and O2's 2G licenses in May 2011, and the availability of 900MHz spectrum in 2013.

4.3.1 To Vodafone and O2, the interim 2G 900MHz licenses represent over €43m and €33m in saved revenue, respectively

If the interim licenses are awarded as proposed in ComReg's consultation document no. 10/71, then both Vodafone and O2 will be able to continue providing the same 2G services, uninterrupted, to their customers over 900MHz spectrum. Were interim licenses are not awarded to Vodafone and O2, both operators would face considerable losses in revenue. These revenue losses would arise as a result of churning customers who would be left uncovered by reduced 2G network coverage over 1800MHz spectrum. It has been calculated that Vodafone could lose revenues of over €43m and O2 of over €33m per year. This is considerably greater than the charges proposed by ComReg in *800MHz, 900MHz & 1800MHz spectrum release*, suggesting that O2 and Vodafone are likely to benefit from their access to 2G 900MHz on a net basis (i.e. once the costs of the licence itself have been included)

[63] Source: Communications Regulation Act, 2002, Section 12

4.4 Time required to liberalise and refarm UMTS900

When looking at the ability to refarm to realise the benefits listed above in Ireland, the key questions are whether the claimed benefits of refarming 900MHz can be realised in the real world or whether the thoeretical advantages are more hype than reality. The constant message from the incumbent GSM operators is that refarming is very difficult and will take many years to even partially complete. The major constraint that has been voiced in the recent past by incumbent MNOs is that refarming of the GSM bands must protect legacy GSM subscribers during the refarming process and that this is a slow and challenging process.

There is now more evidence emerging that illustrates that refarming of the GSM bands is manageable and can be completed fairly expeditiously without having a major impact on the quality of the GSM network. The case study that follows describes of one GSM operator's experience of refarming its 900MHz spectrum to permit UMTS900 services to be rolled-out.

The case study described here is that of Elisa, the Finnish telecommunications operator, which launched its UMTS 900 network in November 2007. It had reasoned that providing full 3G voice and mobile broadband coverage using 2100MHz would be too expensive, impractical and would take too long to implement in Finland. As noted earlier in this report, radio propagation path-loss at 900MHz is much lower than at 2100MHz and Elisa decided to refarm its 900MHz spectrum, at that time used for its GSM network. Elisa has a licence for 2 x 11.4MHz of the 900MHz band (the other two operators, DNA and Sonera, also each have equal assignments of 2 x 11.4MHz). The task facing Elisa was how to clear sufficient 900MHz spectrum from within its assignment to initially support one UMTS carrier. (Note typically 2 x 5MHz is assumed for UMTS but a smaller allocation of 2 x 4.2MHz is in reality sufficient.)

4.4.1 Elisa – Case study

Elisa's starting assumptions were that using UMTS in the 900MHz band would deliver significant cost savings and network service benefits. The superior propagation characteristics (as outlined in section 2.2) mean that the required coverage area (e.g. 99% population) can be achieved using significantly fewer base station sites than a network using 2.1 GHz spectrum.

The intention was thus to roll-out a 900MHz network, taking less time than an eqivalent network using 2.1 GHz spectrum because fewer base stations would be required and an existing 900MHz GSM operator would have the network assets in place and optimised for 900MHz. Elisa's time to market (in areas of low coverage) would be considerably reduced if 900MHz spectrum were used. In addition to these benefits, Elisa expected to achieve improved indoor coverage. In the case of Elisa, UMTS900 was used as a complement to its existing 2100MHz network, as would be the case in Ireland, and was deployed to improve coverage, reduce Capex and Opex, and improve the quality of service for in-building coverage.

Elisa has reported back on its experience[64] of deploying a UMTS900 network and concluded that the anticipated benefits of rolling-out a 900MHz UMTS network had been realised and, in many cases, exceeded.

a) Refarming GSM 900MHz – How Elisa approached this exercise

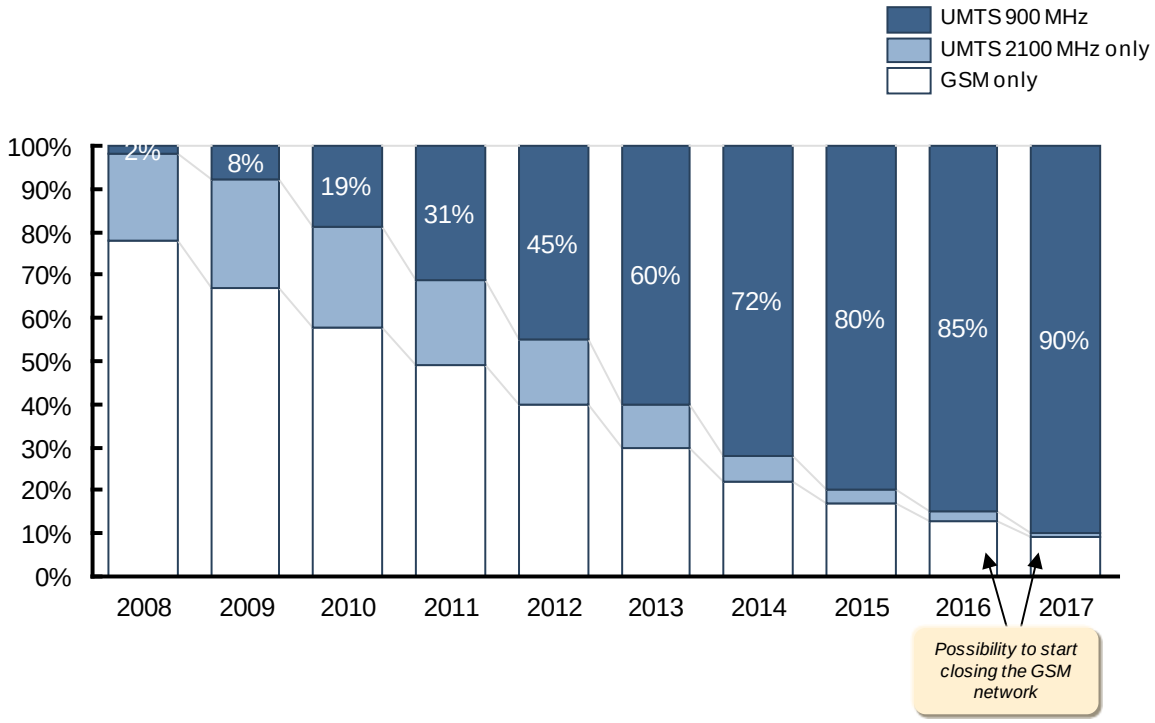
It is instructive to note how Elisa planned to refarm its 2G spectrum. The process was relatively quick and did not result in any significant loss of network quality for the users of the 2G network. The whole process, from the initial GSM network audit to the launch of the UMTS 900 network, took about one year.

To assist in releasing spectrum for the UMTS carrier, Elisa used Adaptive Multi-rate half-rate codec (AMR HR) to improve the spectral efficiency of its GSM network and thereby expedited the release of 900MHz spectrum for the refarm exercise.

A key driver for the refarming exercise was the availability of handsets with UMTS900 capabilities in addition to GSM and the UMTS2100 functionality. The information below from Elisa has a possible scenario for UMTS900 terminal penetration rates in Finland.

[64] Source: Elisa – UMTS900 – A Case Study by the GSA: September 2008

Exhibit 13: **UMTS900 compatible handset market share forecast**



Source: Elisa[65]

With UMTS900, Elisa was able to reuse its existing GSM900 sites and frequencies to fill in the areas not covered by the existing UMTS2100 network, which is mainly concentrated in urban areas of Finland. The 900MHz sites located in the lower population-density areas of Finland offered unused bandwidth that could be shifted to the UMTS900 overlay without impacting the existing GSM service. Elisa used the existing GSM900 cell sites that had been optimised for GSM coverage over the previous 17 years. This ensured that the UMTS900 network delivered the same coverage and network quality that had previously been experienced on the GSM network by subscribers in these areas.

The goal was to use as many of the existing antennas, antenna lines and other cell-site components as possible. In fact, in the initial rollout, existing infrastructure was used in almost 100% of the cases. The only alterations needed were the addition of a multi-radio combiner at each site to handle the transmission and reception of both network signals, and a tower-mounted

[65] The forecast of the market share for UMTS900 handsets is possibly conservative as this was produced prior to the surge in 900MHz devices being made available in the past year

amplifier to improve upline coverage at some sites. For UMTS2100 to get the same coverage would have required two to three times the number of sites.

Elisa initially deployed in rural and suburban areas until it had good national 3G coverage. Its plan is now to extend into urban areas so there will be a national UMTS 900MHz network available, and Elisa will then use the 2.1 GHz network as a capacity layer for urban subscribers. This is a similar approach to that used by many mobile operators when the GSM 1800MHz band became available; the higher frequency band was often being used to provide capacity in hotspots as a complement to the national 900MHz network.

b) Refarming Process

To colocate UMTS900 in its existing cell sites, Elisa had to first optimise its GSM900 network - essentially reducing the bandwidth available for GSM traffic; this was achieved by making more efficient use of the available spectrum (detailed in the following paragraphs). This process introduced a small measure of interference, which was not significant but required careful consideration. For a co-ordinated deployment, the basic goal was to optimise the existing GSM900 network in a way that released as many channels as possible for UMTS900.

As a first step, Elisa used system measurements, network optimizers and other tools to fine-tune the existing GSM equipment and frequencies as well as theAMR HR codec. This audio data compression technology and network frequency planning optimisation assisted Elisa in freeing up the necessary bandwidth for UMTS.

Elisa discovered that more than 50% of the handsets on its network supported AMR HR codec, even in 2007, which made the use of this technology feasible. In addition to using the AMR HR codec, some off-loading of capacity onto GSM1800 spectrum helped to reduce the traffic load on the 900MHz GSM network and thus to free up the required 900MHz channels.

The key findings from Elisa's deployment of UMTS900 are shown in Exhibit 15 below:

Exhibit 14: **Performance metrics: coverage, in-building penetration, data throughput, co-existence with GSM and required bandwidth.**

FIELD EXPERIENCE OF UMTS900

Item under analysis	Expected performance	Verified
Coverage area compared to UMTS2100MHz	3 times larger	3 - 5 times larger
Indoor coverage compared to UMTS2100MHz	10 – 20 dB better	Verified
Required spectrum	4.2MHz enough for UMTS900	Verified
Co-existence with GSM900	No significant interference	Verified
HSPA throughput at UMTS2100MHz cell edge	Doubled	More than doubled
1 Mbps coverage area for UMTS900	Similar to voice coverage area for GSM900	Verified

Source: Elisa

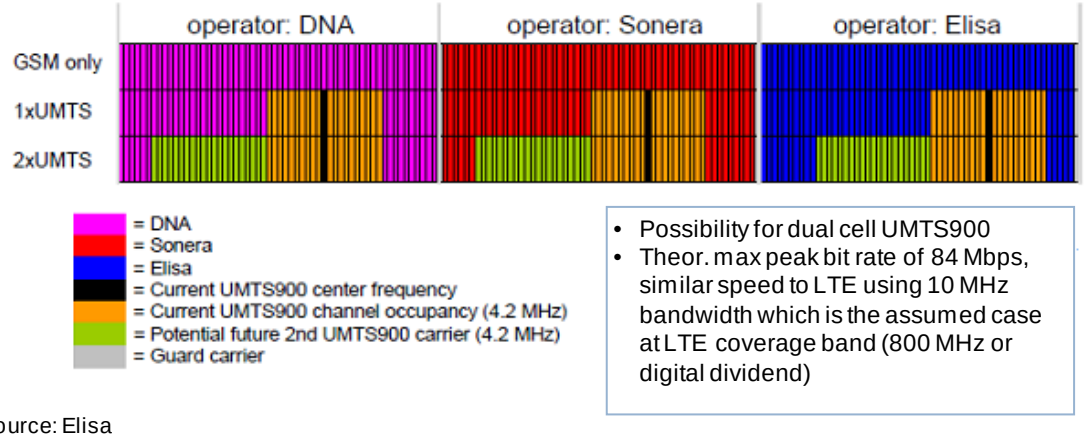
c) Cost savings

Elisa reported that Capex and Opex costs fell by between 50 – 70% in rural and suburban areas, and similar results have been reported by other operators. If this is representative, and it appears to be a reasonable assumption, then there are significant cost savings to be gained from having access to 900MHz spectrum.

A useful presentation slide from Elisa is reproduced below:

Exhibit 15: **900MHz allocations and refarming in Finland**

- 11.4 MHz or 57 GSM carriers per operator /DNA 58)
- Each operator has allocated UMTS900 carrier in such a way that 2nd UMTS carrier can be activated later without moving 1st carrier
  - 2nd carrier assumes that GSM900 traffic must be very low. We can have max 16 GSM carriers together with 2xUMTS, which implies max GSM 1+1+1
  - The use of AMR HR and 1800 MHz makes refarming easier (later possibly Orth, Sub Channel)



Source: Elisa

Source: Elisa

As can be seen from the frequency band plan, each operator has allocated one UMTS900 carrier using a 2 x 4.2MHz channel with provision for a second UMTS carrier as market conditions change and GSM is retained as a residual service prior to eventual closure.

4.4.2 Conclusion

The evidence from Elisa's experience of real network deployment (and others), despite being based on a relatively small sample, is that the benefits of 900MHz have been verified. The cost savings and improvements in network quality – particularly in-building coverage – are factual, and can be used in estimations of the benefits that accrue to operators of 900MHz spectrum, compared to operators that only have access to 2100MHz.

Naturally, Finland and Ireland are different in terms of subscriber numbers and population densities, but the differences are not too great as to invalidate comparison. Both countries have broadly similar populations, although Finland has a lower population density. The example of how Elisa has tackled refarming is an indication that Vodafone and O2 have exaggerated the implications of refarming issues. In reality, a quicker refarming of 900MHz is feasible – at least clearing one 5MHz block of spectrum for UMTS is feasible if the unallocated 900MHz spectrum is

awarded this summer and liberalised with immediate effect. In Elisa's case this was possible within 12 months of the start of refarm from a standing start, i.e. with no work already done.

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5 Other regulatory interventions

5.1 Discussion

5.1.1 The background to why regulatory intervention may be appropriate

National regulatory bodies have a duty to promote competition and ensure efficient and effective use of radio spectrum under national and European legislation, given that radio spectrum is a scarce and finite resource. Radio spectrum is used for numerous services and applications, from scientific use such as in radio astronomy and space research to communications for the emergency services. However, the greatest economic welfare from spectrum services is that derived from public mobile services (i.e. 2G, 3G and future systems such as LTE). It is therefore incumbent on regulatory authorities to pay particular attention to the current and future mobile broadband market with a view to fostering competition and reducing competitive distortions.

The public mobile industry has grown from a niche market only a little over twenty-five years ago to a huge industry that exists today. Figures in GSMA's document *The European Mobile Manifesto*, November 2009, state that in Europe the sector represents 1.3% of EU Gross Value Added, 1.2% of EU GDP and employs over 600,000 people. Within EU telecoms, mobile revenues now account for 61%, up from 47% in 2002. Current estimates suggest that the mobile industry in Europe will spend approximately €145bn in capital expenditure to 2013 creating direct and indirect employment for over 4.7 million people. In many national markets, the operators that were first into the market – and therefore benefitted from first-mover advantage and little competition – often still dominate the market in terms of subscriber numbers, brand recognition and spectrum holdings. New entrants are often characterised by only holding spectrum in the 2.1 GHz or 2.6 GHz bands (where awarded). This asymmetric distribution of spectrum already tilts the playing field in favour of the incumbents but this competitive advantage would be further magnified if the GSM spectrum, once liberalised for 3G/4G services, is retained by the incumbents – either by administrative grant of new licences for the liberalised spectrum or through an auction process that fails to promote a wider redistribution of spectrum holdings.

Intervention by regulatory authorities can be direct – an administrative grant of new spectrum rights or a redistribution of spectrum holdings to ensure a more symmetric distribution of spectrum holdings. A slightly less direct approach is for a regulator to impose a spectrum cap on certain band(s) which effectively ensures that new entrants and/or operators with less spectrum are able to acquire more in an award process. This approach is particularly relevant in relation to the sub-1

GHz bands that are acknowledged to confer advantages that are difficult, if not impossible, to replicate with higher frequency bands.

ComReg is proposing to use a clear auction of the GSM spectrum to reset the regulatory landscape claiming that all players are on an equal footing. This is clearly **not** the case - as the incumbents will have reached scale and are consequently very well positioned to be successful in an auction process as these operators are able to spread the costs of higher bids across larger customer bases.

New entrants and smaller players are therefore inherently disadvantaged when compared to the incumbent operators in a mature market. In situations where the national market has players that are well established and able to leverage their market presence in an auction process, the regulator should actively promote new entry or ensure smaller players are not denied access to valuable spectrum. Reserving spectrum for new entrants or implementing a spectrum cap are attractive options that can ensure a more even distribution of spectrum holdings and thereby reduce competitive distortions.

It is noted that ComReg has not proposed to reserve any spectrum for a new entrant or a non-GSM operator. The only measure to promote competition is the proposal to limit any operator to a maximum of 2 x 20MHz of sub-1 GHz spectrum. This effectively leaves 2 x 5MHz for a 'new entrant' which is an insufficient allocation for them to compete on anything like equal terms with the incumbents. Moreover, the situation is made worse by ComReg's proposal to delay the release of the 900MHz spectrum until the 800MHz spectrum becomes available in 2013, or later.

There are a number of examples of where regulatory authorities have decided to intervene in their respective mobile markets to address competition issues. Typically, these interventions are designed to 'level the playing field' by redistributing existing spectrum holdings or to promote competition by reserving some spectrum for new entrants or applying a spectrum cap(s) to ensure that incumbents are prevented from gaining further concentration of spectrum holdings to the detriment of a competitive market.

The rationale for intervention is often to reduce the historical advantages that operators that were granted GSM spectrum have enjoyed. Such operators are often the incumbent operator, and are well established with significant market share. Liberalisation of GSM spectrum or awards of new frequency bands represent opportunities to address these issues.

3 IRELAND SUBMISSION SUPPORT TO COMREG

In this section, reference will be made to a number of cases whereby the relevant national regulatory authorities have or propose to intervene in the spectrum market to address perceived or potential distortions of competition.

Examples that typically fall into this category are frequently associated with plans for the liberalisation of the GSM frequency bands (particularly the 900MHz band) as this development could not only lock-in existing competitive benefits, but also extend those benefits into the future mobile broadband market and thereby further distort the competitive landscape.

The other prime example of where intervention is commonly applied is when the regulator awards new spectrum, (e.g. the 2.6 GHz or 800MHz bands). In these awards, the use of either spectrum caps or reserving spectrum for new entrants can be applied. Both remedies are designed to prevent incumbent operators from increasing their existing concentration of spectrum holdings to the detriment of smaller players or new entrants.

5.1.2 Legal context

Regarding the GSM spectrum refarming issue, Member States are required, under Article 1(2) of Directive 87/372/EEC, when implementing Directive 2009/114/EC ('GSM amending Directive') to examine whether the existing assignment of the 900MHz band ... *'is likely to distort competition in the mobile markets concerned and, where justified and proportionate, they will address such distortions in accordance with Article 14 of Directive 2002/20/EC (Authorisation Directive)'*.

In considering whether intervention is likely to be deemed necessary and proportionate, a regulatory authority will take account of the spectrum holdings of the incumbent operators and in which frequency bands those holdings are distributed. The market structure and market share for the incumbent operators will also be of interest; a market characterised by an unequal distribution of spectrum holdings, typically where the incumbents enjoy a significant advantage in terms of spectrum holdings and have a larger market share, indicates a market that would benefit from regulatory intervention.

These are the very factors that apply to the Irish market. There is an uneven distribution of spectrum holdings to the extent that one of the four operators only has access to the 2.1 GHz band while the other three operators enjoy privileged positions of having both GSM spectrum and 2.1 GHz. The Irish mobile market is dominated by two incumbent operators, Vodafone Ireland and O2

Ireland. As noted earlier, a clear auction will still favour the incumbents, and intervention beyond the limited use of a spectrum cap is required if ComReg is intent on levelling the competitive playing field.

5.2 Case Studies

5.2.1 Liberalisation of the GSM spectrum Bands

a) Sweden

i) 900MHz

The Swedish mobile market has five operators but, like Ireland, the GSM frequency bands are assigned to four operators – Telia Sonera, Swefour, Tele2 and Telenor with one operator with no access to GSM spectrum. In November 2008, the existing GSM operators and Hi3G (the 3G operator in the 2.1 GHz band) submitted a proposal to the Swedish regulatory authority (Post and Telecom Agency – PTS). The proposal sought the renewal of the GSM licences in the 900MHz, the liberalisation of the spectrum (subject to transitional issues) and for 2 x 5MHz of the 900MHz band to be granted to Hi3G – the 3G operator licensed to use the 2.1 GHz band.

The 900MHz licences for Tele2, Telenor, Telia Sonera and Swefour were due to expire on 31st December 2010. There was to be a transitional period whereby the four incumbent operators initially gained access to some additional spectrum to ease the refarming exercise.

The licence term for the liberalised 900MHz licences has been extended to 31st December 2025.

The Swedish decision had two fundamental considerations:

- Whether extending and liberalising existing GSM900MHz licences are justified under Swedish/EU law; and

- Whether administratively assigning unallocated spectrum to existing licensees is legal.

The Swedish telecom authorities determined that these interventions were justified.

In relation to the granting of a 900MHz licence to Hi3G, the regulator notes: *'One important aspect that should be borne in mind in conjunction with converting the 900MHz band for new technology is*

the competitive advantages that this consequently brings with it for existing operators in the band, mainly in relation to UMTS operators that do not have access to 900MHz frequencies. Rolling out mobile communications services in the 900MHz band is considerably less expensive than in the 2.1 GHz band. The partial transfer of certain frequency space is thus a pre-condition for dealing with the risk that competition between UMTS operators may become distorted. In summary, this decision is deemed to be in line with the concept of efficiency, which includes general objectives concerning competition, investment security, range, price and quality, etc, and which generally permeates European spectrum management under binding international regulations.'

ii) 1800MHz

A total of 2 x 35MHz was relicensed to the four incumbents with an expiry date of December 2027 (December 2017 for Swefour). This decision will mean a reduction in the existing spectrum holdings for the incumbents with the intention of releasing 2 x 40MHz of 1800MHz spectrum to be awarded in a planned auction (the details of the auction design are awaited). It is anticipated that the incumbents will be restricted in bidding for additional spectrum in the 1800MHz band.

b) Denmark

The Danish regulators consulted on re-farming the GSM 900 and 1800MHz bands in November 2009 and the Danish market structure is similar to that of Ireland's. There were three incumbent GSM operators – TDC, Telenor Denmark and Telia Denmark. The 3G market has the 2G incumbents plus a new entrant – Hi3G. Each operator has 2 x 15MHz of spectrum in the 2.1GHz band. However, the Danish regulator decided that in liberalising the GSM spectrum there should be a redistribution of spectrum to help level the competitive playing field.

The key proposals included:

- 2 x 5MHz of 900MHz spectrum and 2 x 10MHz of 1800MHz spectrum would be awarded through an auction process **but** the incumbents were excluded from the auction – effectively reserving the GSM spectrum for a 'new' entrant (which included Hi3G)

- All licences would be technology and service neutral.

3 IRELAND SUBMISSION SUPPORT TO COMREG

On 23rd December 2009, the Danish authorities (NITA) issued their decisions. The 900MHz band was to be liberalised into the hands of the incumbents with effect from 1st May 2011 but 2 x 5MHz of the 900MHz band will be awarded to a new entrant with effect from 1st January 2011. The new entrant's licence term was to expire in 2034.

The incumbent 900MHz operators' liberalised licences now expire in 2019, when new licences will be granted for a 15 year period and thus all 900MHz licences will then have a common expiry date of 2034.

In the 1800MHz band, the release of 2 x 10MHz was decided on 23rd December 2009 (as above). The release of 1800MHz spectrum required the existing licensees to accommodate this new band plan.

The new entrant licence expires in 2032. The existing licences have a new expiry date of June 2017 and, at that point, new licences will be granted (through a competitive process) that expires in 2032.

The regulator's decisions were challenged but subsequently rejected by the Danish national competition authority. The decision to intervene by the regulator had been found to be in keeping with national and European legislation. This is a significant precedent and supports the principle of national regulators adopting a similar approach if market conditions are comparable.

The original proposal was for the GSM licences to be liberalised eight months after the new entrant's licence came into force. In fact the GSM licences were liberalised in March 2010, five months prior to the award of the released spectrum. An auction of the 900MHz and 1800MHz spectrum, reserved for a 'new entrant', was held in October 2010 and resulted in Hi3G Access Denmark being successfully granted both licences. The price paid was DKK 8 million (€ 1.07 million) for the 900MHz licence and DKK 4 million for the 1800MHz licence – this being the reserve prices imposed by the regulator. [The relatively low reserve price set by the regulator has the effect of deterring frivolous bidders but leaving the market to set an appropriate market price.]

The relevant text in Annex 4 of ComReg's document No.11/11 is rather selective – there is no mention of regulatory intervention to assist new entrants/non-GSM operators.

c) France

In February 2008, ARCEP, the French regulator, implemented the directions it adopted on 5th July 2007 for the re-use of the 900 and 1800MHz bands for 3G. In determining this direction, ARCEP also made provision that a new 3G entrant in the 2.1 GHz band would be given access to 2 x 5MHz in the 900MHz band. This would require existing 900MHz operators to relinquish spectrum by a fixed date to enable the cleared spectrum to be re-assigned to the new 3G entrant. This intervention is recognition of the fact that a new entrant in the 2.1 GHz band would be at a serious competitive disadvantage without access to 900MHz spectrum, given that the three incumbents are well established and all have 900MHz spectrum.

It is worth noting that the 900MHz spectrum in France has been liberalised since February 2008 – there was no artificial constraint on when the incumbent operators could refarm the spectrum. The redistribution of 900MHz spectrum has been done by administrative intervention designed to effectively level to some extent the playing field between incumbent operators and a new entrant.

d) Netherlands

The Dutch government extended two of the three 900MHz licences by a little under three years to align all 900MHz licences to a common expiry date of 2013. The licensees' can apply to liberalise their licences for the remaining term (that ends in 2013) but there are a number of administrative procedures to clear. However, in principle, the licences can be varied to permit UMTS use irrespective of when 800MHz spectrum is available.

e) Switzerland

GSM licences were extended in May 2009 until December 2013 in order to align expiry dates. The decision to extend these licences also included measures which came into effect early in 2010 allowing the regulator to redistribute spectrum in the bands and to liberalise the use of the bands. The redistribution of spectrum was completed in March 2010 and each operator now has access to at least 2 x 5MHz of liberalised spectrum in the 900MHz band.

The licences all expire in 2013 and an auction is planned for later this year – the auction will include spectrum in the 800MHz, 900MHz, 1800MHz, 2.1GHz and 2.6GHz bands.

5.2.2 Awards of new spectrum

a) The Netherlands

i) Netherlands Auction of 2.6GHz

The 2.6 GHz award had a total of 190MHz available. The Netherlands Regulator reserved 135MHz of the spectrum for new entrants. There was however a spectrum cap of 40MHz applied. This meant that 2 x 40MHz of the paired spectrum was likely to be awarded to new entrants dependent upon their interest in unpaired spectrum. The other important factor was that the incumbent operators (KPN, T-Mobile and Vodafone) were all subject to a cap of 20MHz. KPN did challenge the auction design but was unsuccessful.

The auction design was a combinatorial clock auction using generic lots – allowing the auction process to determine the balance between paired and unpaired lots. The auction was technology and service neutral and eligibility was based on €50,000 per eligibility point. The auction had a clock stage where prices were increased until demand equalled supply and there followed a single round supplementary bid process, which allowed bidders to bid for other combinations not reflected in the clock stage, and finally an assignment stage.

The auction duly produced two new entrants to the Dutch mobile market – Tele2 and Ziggo – each operator won 2 x 20MHz of spectrum. For the incumbents, Vodafone Netherlands won a licence for 2 x 10MHz; KPN also won a licence for 2 x 10MHz whereas T-Mobile Netherlands only secured a licence for 2 x 5MHz.

ii) Netherlands Auction of 800MHz spectrum

The Dutch government has announced plans to auction spectrum in the 800, 900 and 1800MHz bands by the end of 2011. Importantly, once again, the Dutch government is proposing that spectrum be reserved for a new entrant (similar approach adopted for the award of spectrum in the 2.6 GHz band). A block of 2 x 10MHz of the 800MHz band will be reserved for a new entrant (one-third of the total spectrum available). This intervention (and previous interventions) is intended to promote competition in the provision of mobile services by increasing the number of operators able to compete in the Dutch mobile market.

b) Denmark

Denmark awarded the 2.6 GHz band (+ 2010 – 2025MHz) in April 2010.

There was no reserving of spectrum for a new entrant, but a spectrum cap of 2 x 20MHz was applied for the paired spectrum. This meant that at least 2 x 10MHz would be available for a new entrant or a non-GSM operator as there were three incumbent operators and the cap restricts total 'domestic' demand to 2 x 60MHz out of a total of 2 x 70MHz. The results confirmed that the three incumbents all won 2 x 20MHz as expected, and Hi3G Denmark won the remaining paired spectrum that was denied to the incumbents as a result of the spectrum cap.

The auction results were as follows:

- Hi3G: 2 x 10MHz paired spectrum + 25MHz unpaired spectrum
- TDC: 2 x 20MHz paired spectrum
- Telenor: 2 x 20MHz paired + 10MHz unpaired spectrum
- Telia Sonera: 2 x 20MHz paired + 10MHz unpaired spectrum

c) Belgium

The Belgian market currently has three operators - Belgacom, Mobistar and KPN Belgium. In the 900MHz band, Belgacom and Mobistar each have 2 x 12MHz of spectrum and KPN Belgium has 2 x 11MHz. Consequently the entire 2 x 35MHz that had been harmonised for GSM systems has been assigned. From April 2010 the 900MHz licences have been liberalised into the hands of the incumbents however, a 2 x 5MHz block of this spectrum band is to be released to the regulator for award to a new entrant.

The three incumbents' also have assignments in the 1800MHz band and the 2.1GHz (3G) band. In the 1800MHz band, Belgacom and Mobistar both have 2 x 15MHz whereas KPN Belgium has 2 x 23MHz (presumably as compensation for having less 900MHz spectrum). As there is 2 x75MHz available in the 1800MHz band, there is currently unassigned spectrum in this band. All three

operators have 2 x 15MHz assigned in the 2.1GHz band which leaves a further 2 x 15MHz unassigned.

The Belgian regulator, BIPT, recently announced plans to run an auction for the fourth 3G licence in June 2011. The important condition attached to this award is that a new entrant can also acquire spectrum in the 900MHz band and the 1800MHz band – 2 x 5MHz and 2 x 15MHz respectively – ensuring that a new entrant has access to the lower frequency bands and thereby better able to compete with the incumbent operators.

The release of 900MHz spectrum requires the incumbents to reduce their spectrum holdings in the band. There is sufficient unassigned spectrum in the 1800MHz band to meet BIPT's planned award of 2 x 15MHz. Similarly, there is unassigned spectrum in the 2.1GHz band, sufficient for the planned award to a new entrant.

It is clear that the Belgian regulator has taken the view that a redistribution of spectrum holdings is required to promote a more competitive mobile market but has decided that the liberalisation of the 900MHz spectrum can go ahead immediately rather than be delayed until the 800MHz spectrum is available. The Belgian regulator also plans to run an auction for the 2.6 GHz band this October. This award has 2 x 10MHz reserved for a new entrant. It is therefore quite possible that a new entrant in the Belgian market could acquire spectrum in the 900, 1800, 2100 and 2600MHz bands by the end of 2011 and, with such a portfolio of spectrum, the new entrant will be better placed to compete in the Belgian mobile market.

5.2.3 Conclusions

The examples shown above in this Section demonstrate how a number of regulatory authorities have actively intervened to address perceived or potential competitive distortions in their mobile markets. In some cases, regulators have directly intervened to redistribute the 900MHz and 1800MHz spectrum, in other cases they have reserved spectrum for new entrants or non-GSM operators in order to redistribute spectrum assets and constrain the incumbent operators so that new entry is virtually guaranteed. These different forms of intervention all share the same objective – to promote a more competitive mobile market. It has to be noted that in some cases, the decision to intervene was challenged, usually by an incumbent, but the decisions taken have subsequently been ruled 'in keeping' with national and European legislation and the proposals have stood.

3 IRELAND SUBMISSION SUPPORT TO COMREG

Many interventions have been implemented, as discussed in the previous paragraphs, and the resulting redistribution of spectrum holdings have promoted a more competitive mobile market that aim to deliver benefits to consumers in the future.

In contrast, in the Irish auction the spectrum cap is set too high and will not ensure any significant redistribution of spectrum holdings. In fact it is likely that the Irish market for mobile spectrum will be even more concentrated after the award process than it is now. Further concentration of the Irish mobile spectrum market will harm future competition, not promote it.

The delay in releasing the 900MHz spectrum until the availability of the 800MHz spectrum will also harm consumer benefit as an opportunity to promote competition is lost. H3GI offers the best option for challenging and disrupting the incumbent operators but needs early access to the 900MHz band. There are many examples of where intervention in the mobile spectrum market has been deemed appropriate, particularly to assist smaller players or new entrants. The Irish market mirrors the situation found in other countries, where a decision to intervene was taken.

6 Approach to reserve price benchmarking

6.1 Background to ComReg proposed reserve price

In 2009, ComReg commissioned economics consultancy DotEcon to provide advice on spectrum liberalisation in the 900MHz and 1800MHz bands in the Republic of Ireland. As a part of this, DotEcon produced recommendations regarding the setting of a reserve price for Ireland's auction of 900MHz spectrum.

DotEcon undertook an international spectrum reserve price benchmarking exercise to inform its recommendations to ComReg regarding a reserve price for Ireland. DotEcon used two different benchmarking methods: (i) a simple averaging method of international benchmarks of final prices for auctions of comparable spectrum, and (ii) benchmarking using econometric formula controlling for some of the differences in spectrum value that might arise across awards, countries and time. Both approaches '*involved gathering data for reserve prices and licence prices for awards of comparable spectrum in other countries and adjusting these to provide benchmarks for Ireland'*.[66]

DotEcon's initial benchmarking exercise produced implied Irish reserve prices of €16-34m. '*Benchmarks created using the simple averaging method suggested the upper end of the range, whereas benchmarks based on econometric methods suggest the middle to lower end of the range'*. The more accurate econometric analysis produced results in the lower end of the range of recommended benchmarks.

Subsequent to DotEcon's initial benchmarking exercise and its resultant recommendations, ComReg received a number of responses to Consultation 09/99 - prompting DotEcon to review and update of its benchmarking analysis to reflect the '*wave of new auctions in Europe and Singapore'*[67]. DotEcon produced an updated report, reflecting the new auctions and changes in Irish GDP and economic forecasts, which produced a new recommended range for ComReg's reserve price. DotEcon's updated recommendation was made in September 2010 and presented a value for the liberalised spectrum of €18m-€26m.

Alongside its pricing recommendation to ComReg, DotEcon suggested ComReg set a reserve price at the lower end of its revised band: '*we would recommend ComReg to set reserve prices*

[66] Source: DotEcon – Liberalisation of spectrum in the 900MHz and 1800MHz bands
[67] Source: DotEcon – Award of 800MHz and 900MHz spectrum, Update report on benchmarking

within the €18m-€26m predicted price range for a 2x5MHz sub-1GHz licence with 15-years duration so as to err on the side of caution in terms of minimizing the risk of choking off efficient demand for both 800MHz and 900MHz spectrum'.

As outlined in Section 4.5 of ComReg's Document No. 10/71, ComReg have proposed to set the reserve price for 2x5MHz of liberalized sub-1 GHz spectrum at €25m – at the highest end of DotEcon's updated range. ComReg's rationale for proposed setting of this extremely high reserve price includes their *'concerns regarding the risk of tacit collusion between bidders'*[68] and the need to set a reserve price high enough to discourage frivolous bids from non-serious parties.

6.2 Issues with reserve price proposed

There are four significant issues with ComReg's proposal to set the reserve price for 900MHz spectrum at €25m:

1) ComReg have failed to demonstrate the need for a high reserve price, which risks choking off competition and stifling the price discovery mechanism;

2) ComReg have incorrectly interpreted DotEcon's recommendations contained in its reserve price benchmarking report;

3) DotEcon's use of international 'final price' benchmarking as a proxy for reserve price setting is fundamentally flawed; and

4) DotEcon's benchmarking is not a good comparator for an Irish spectrum auction

These are discussed in more detail below.

[68] Source: ComReg – Document No. 10/71 – 800Mhz, 900MHz & 1800MHz spectrum release

6.2.1 ComReg have failed to demonstrate the need for a high reserve price, which risks choking off competition and stifling the price discovery mechanism

a) Objectives in reserve price setting

As stated by DotEcon in its recommendation to ComReg: *'it is not ComReg's objective to maximise revenue in this auction. Therefore, in determining reserve prices, it would not be appropriate for it to trade off revenues against the probability of selling lots in the same way as a private seller might. Rather, its priority is to support the efficient use of spectrum, so as to generate value for the Irish economy and society.'* ComReg's only priorities in the setting of a reserve price are: covering the costs incurred in undertaking the auction; deterring frivolous bids; and allowing the auction process to efficiently allocate spectrum through an unhindered price discovery process.

Consultation 10/71 outlines the mandated guidelines in place for the setting of a reserve price, as outlined below. None of these justify the proposed €25m reserve price.

i) The reserve price should not give rise to or increase incentives for collusive behaviour

ComReg states in consultation 10/71 that '*whilst the combination of 800MHz and 900MHz spectrum in a joint award will result in a larger number of potential outcomes, ComReg remains concerned about the risk of tacit collusion between bidders...and for this reason, ComReg is of the view that a reserve price at the upper end of the range estimated by DotEcon is appropriate'*. This is the only reason given for ComReg's decision to impose a reserve price at the upper end of DotEcon's benchmarks.

However, when discussing the positive consequences of its proposal to auction the 800MHz and the 900MHz spectrum band together, ComReg states that '*the addition of the 800MHz spectrum band into the process... and the possibility of additional bidders partaking in the auction significantly reduce ComReg's previous concerns regarding the risk of tacit collusion, as there no longer appears to be a likely natural outcome as there may have been with the 900MHz band alone'*. Given the premise that 800MHz spectrum is released at the same time as 900MHz spectrum, ComReg appears to admit that fears of tacit collusion are significantly reduced. There is no further clear reason for the rejection of DotEcon's recommendations regarding pricing at the lower end of its proposed price band. DotEcon clearly states that '*with less of a concern over collusive*

behaviour in the auction, it is DotEcon's recommendation that the reserve prices be set more moderately against the estimated benchmark value range'. ComReg's proposal to set a high price due to fears of tacit collusion not only lacks evidence and factual support but also contradicts the explicit advice of their consultants DotEcon.

In any case, were collusion to be an issue in the spectrum auction, it is neither the duty nor the role of the regulator to set reserve prices to counteract this risk. Irish mobile network operators are reputable companies, bound by legal mechanisms (e.g. Section 4 of the Competition Act 2002 and Article 101 of the Treaty on the Functioning of the European Union) to deal with any such collusion:

- Section 4 of the Competition Act 2002 prohibits '*any agreement entered into between enterprises or associations of enterprises...engaged in identical or similar trade of goods or provision of services, which directly or indirectly results in bid rigging or collusive bidding*.'

- Article 101 of the Treaty on the Functioning of the European Union '*prohibits all agreements between undertakings, decisions by associations of undertakings and concerted practices which may...directly or indirectly fix purchase or selling prices or any other trading condition'.*

Reserve prices are a blunt instrument to prevent tacit collusion, with significant negative side-effects on the efficiency of the auction's price-discovery mechanism. Expulsion from the auction and the significant legal consequences of the discovery of collusive behaviour are both more powerful and more effective deterrents of this risk.

ii) The reserve price should not be set so high as to choke off demand

At the current proposed level, ComReg's decision to set a reserve price of €25m is in serious risk of deterring potential bidders and thus 'choking off' competition. As DotEcon itself explains, '*if a reserve price were set simply to reflect administration costs and to deter frivolous applications, this would certainly also avoid any risk of choking off demand'*. Neither ComReg nor DotEcon show any serious consideration of the risk to damaging demand in the setting of an excessively high reserve price.

iii) The reserve price should not be set so low that there is participation by frivolous bidders

ComReg's concerns regarding the deterrence of frivolous bids also fail to support the need for such an excessively high reserve price. As shown in Section 1.3 below, there are many examples of international spectrum auctions where even small reserve prices fulfilled this function. As stated by DotEcon itself: *'The recent trend among European spectrum regulators seems to be towards setting low reserve prices. This is evident in the low but non-trivial reserve prices set for 2.6GHz spectrum auctions in Norway, Sweden, Denmark, Germany and the Netherlands...[and] for the 2.6GHz auctions held to date, the low but non-trivial approach has been the most common approach for setting reserve prices.'* None of these auction processes were dogged by frivolous bids, and ComReg presents no evidence or reason for why the auction process in Ireland would be any different.

iv) The reserve price should not reflect any "social option value"

This does not impact on the discussion of lowering the reserve price.

v) The administrative costs of running the award process should be recovered from the reserve price set.

As demonstrated in Section 1.2, other European auctions have set extremely low reserve prices and successfully covered the costs of their respective auctions. As DotEcon themselves concede, *'[i]n practice, the administrative costs of running an award are likely to be small relative to the value created by users, so this method may not be much different to the 'low but non-trivial' approach*.'[69] This is therefore unlikely to be a constraint on the reserve price over and above that suggested by iii) above.

b) Conclusion

As ComReg comments in Section 13.2 of Consultation 09/99, there is good reason to use a reserve price. Low reserve prices are often used by national mobile network regulatory authorities to avoid the risk of 'choking off' demand for spectrum and to reflect the administrative costs incurred in running the auction, but are still sufficient to deter frivolous bidders. DotEcon itself

[69] Source: DotEcon 09/99c, *Liberalisation of spectrum in the 900MHz and 1800MHz bands*

recognises that the '*recent trend among European spectrum regulators seems to be towards setting low reserve prices... there seems to be a certain consistency across the benchmarks calculated from reserve prices used in the various auctions. They imply a low but nontrivial reserve price of between €100,000 and €130,000 for a 2 x 5MHz lot in Ireland*.' Given that, as demonstrated above, neither ComReg nor DotEcon have successfully proven that the Irish market is prone to collusion, there is no reason to set the reserve price above a low but nontrivial reserve price which DotEcon's concedes '*has…significant advantages from the point of view of a regulator*.'[70]

An increased reserve price may also harm successful bidders to the detriment of their businesses and the Irish public. The excessive reserve price currently proposed by ComReg would take vital investment out of the industry at a time when it needs that investment to, amongst other things, address the explosion of data demand driven by consumer behaviour needs. It seems illogical, especially given the ComReg's mandate to '*support the efficient use of spectrum...to generate value for the Irish economy',* to design an auction which is has the potential to damage it.

6.2.2 ComReg have incorrectly interpreted DotEcon's recommendations

ComReg's interpretation of DotEcon's recommendation for a reserve price for the 900MHz spectrum auction is flawed. Significant recommendations made by DotEcon to the effect that ComReg should '*err on the side of caution when selecting a reserve price'* have been ignored by ComReg in the process of making its proposal. By DotEcon's own admission, the higher boundary of its recommendation was achieved through the simpler, less refined method of average international benchmarking, while the lower results were achieved using far more accurate methods. By proposing a reserve price at the upper end of DotEcon's recommendations, ComReg have incorrectly taken the least accurate and least reliable value.

ComReg's proposed justifications for this high reserve price - concerns over (i) tacit collusion amongst mobile operators, and (ii) the need to set a price which would deter frivolous bidders – have been shown to be wholly unproven. ComReg is therefore incorrect in its selection of a reserve price value at the top of DotEcon's range.

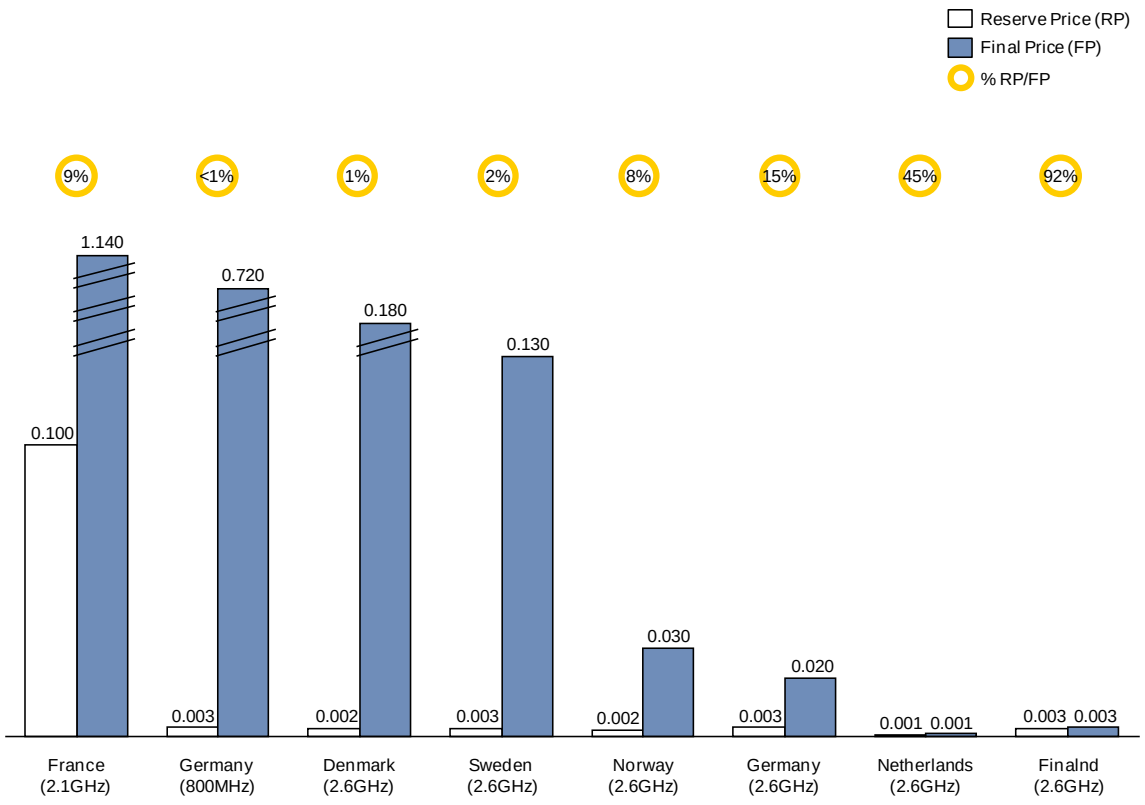
[70] Source: DotEcon *Liberalisation of spectrum in the 900MHz and 1800MHz bands,* Section 10.3.3

6.2.3 *DotEcon's use of international 'final price' benchmarking as a proxy for reserve price setting is fundamentally flawed*

In its recommendations to ComReg, DotEcon have used international benchmarks of 'final auction prices', upon which it has based its recommendations for 'reserve prices'. If DotEcon were to have used benchmarks at all, it should have used a benchmark of reserve prices in order to set the recommendations of reserve price in Ireland. Instead, DotEcon used a flawed methodology to generate a reserve price which is far too high for Ireland.

Benchmarks from a number of recent international auctions show that the ratio of reserve price to final price tends to be over 25% on average:

Exhibit 16: **Reserve prices compared to final prices for recent European spectrum auctions (€/MHz/pop)**



Source: Analysis Mason, Value Partners Analysis

If we were to apply the average pricing from these auctions to ComReg's currently proposed price of €25m (based on final price benchmarking), then an appropriate reserve price would be €6.5m – a decline of €18.5m. Even if, as DotEcon note, '*practice in setting reserve prices is so varied that one should not treat average behaviour by regulators as indicating typical behaviour'*, in no case is the appropriate reserve price equal to the final price. The only cases where the reserve price was similar to the final price achieved in the auction was in auctions characterized by a significant lack of competition (as in Finland where 70MHz of spectrum was available with no spectrum set aside for new entrants).

Furthermore, the very fact that DotEcon's updating of its benchmarking in document 10/71b caused such a significant revision to the proposed price range should also encourage ComReg to proceed with caution in setting a reserve price at the upper end of DotEcon's proposed range.

6.2.4 DotEcon's benchmarking is not a good comparator for an Irish spectrum auction

This section considers the pitfalls of benchmarking auction prices. It notes that DotEcon accepts that the approach it has used is simplistic and that there is a fundamental information deficit surrounding the 800MHz and 900MHz bands – the same bands under consideration by ComReg.

Despite concerns regarding a lack of relevant and directly comparably information available, DotEcon suggests that "*a modest adjustment of the estimated reserve price may be needed"* to reduce the risk that a reserve price set too high risks 'choking off' demand inefficiently. The correct approach, given the uncertainty surrounding the robustness of the estimated reserve price, would be far more conservative and reduce the price considerably – otherwise there is a material risk of distorting the efficiency of the auction.

The key element in conducting a benchmarking exercise is to ensure that like-for-like comparisons are used in the data sets. Auction price information must be carefully filtered and this process is a non-trivial exercise. For example, auction prices will be dependent on many factors that are often specific to each award including:

- The quantity of spectrum that is available;
- Whether it is adjacent to an incumbent's spectrum holdings and is harmonised;
- The timing of the award relative to other spectrum market developments;
- The degree of harmonisation and equipment availability for the frequency band;

- The nature of technical limitations imposed in the licence;
- The competitive intensity for the award, e.g. number of bidders, number of spectrum lots;
- The structure of the telecoms market;
- The availability of substitutable spectrum;
- The presence of non-technical licence conditions, e.g. roll out obligations;
- Prevailing market sentiment;
- The design and rules of the auction;
- The dynamics of the existing spectrum holdings of licensees;
- The presence or absence of caps on spectrum acquired in the award;
- The level of substitutability between spectrum lots;
- The prevailing competitive landscape for mobile services;
- Whether demand exceeds supply; and
- The size and significance of potential barriers to entry.

The factors detailed above can make it extremely difficult for valid like-for-like comparisons to be made. If the approach adopted has been to only take account of basic top level information available for each auction, i.e. frequency band and price(s) paid, then it is highly likely that invalid comparisons are made.

a) DotEcon has used invalid information sets and incorrect assumptions

It is also evident from an examination of the auction data sets used by DotEcon that even allowing for its 'top level' approach, a number of the auctions included in the data are not comparable with 900MHz mobile spectrum. For example, the inclusion of the DECT Guard Band auction in the UK and the 1785 – 1805MHz auctions in the UK and Ireland are not comparable auctions for mobile spectrum. The DECT Guard Band auction was for low power, concurrent licences. As such, it could only be used for in-building and campus type use, not wide area mobile networks. There was also a co-ordination/interference threat from other licensed networks (10 licences were awarded for the same frequency channels). Mobile spectrum is normally licensed on a national basis with the assignments made being that are unique to each licensee. There is no need to co-ordinate use at the national level. Only international coordination is required, a process managed through MoUs. Therefore, this award is a niche application and the prices paid reflect that fact; a good number of the concurrent licences only raised approximately £50,000 which was the reserve price. Moreover, the joint Irish/UK auction of the 1785 – 1805MHz block of spectrum was for licences that would serve niche markets - as the spectrum falls outside the standard GSM bands, and the spectrum is

unpaired whereas GSM uses paired (FDD) spectrum. The primary interest to date has been in paired spectrum with unpaired spectrum attracting either much lower prices or no takers at all.

The eco-system for unpaired (TDD) devices and equipment is very limited and the prices paid reflect these market fundamentals. The economies of scale that apply to GSM and UMTS do not apply to unpaired spectrum allocations and more so when the spectrum is not even harmonised for mobile services. Essentially, the 1785-1805MHz band is not part of the GSM/UMTS/LTE ecosystem and is therefore a band that may find a niche application but it is likely to struggle to compete against the public mobile sector. Prices reflect the niche nature of this band and it should not be included in the comparison information data.

The Swedish auction of one block of unpaired spectrum (1900 – 1905MHz) is also an invalid comparison as demand for spectrum in Sweden is very low (as noted above), despite the fact that the spectrum is in a band that is harmonised as an IMT (3G) band. It is the unpaired nature of the spectrum that adversely affects the price. Consequently, this spectrum is of low value and not comparable to GSM spectrum.

Similar judgements can be made about the Norway auction of 1790 – 1800MHz spectrum. This band is not part of the GSM eco-system and therefore products and devices are very limited and would attract a cost premium if available. Given that an operator in this band would more than likely be competing with GSM/UMTS services it is difficult to see how an operator is to prosper unless it could differentiate itself from its competitors. The only viable option would be to identify a niche market not being served by the mass-market mobile sector. A small niche market will be valued accordingly.

In DotEcon's auction price benchmarking analysis, the 800MHz and 1800MHz bands are used to calculate the GSM averages benchmark. The 2.1GHz and 2.6GHz prices are not included in the calculation. Arguably, the 1800MHz and 2.1GHz bands are much closer substitutes than 800MHz and 1800MHz. The 1800MHz band is also anticipated to become a major LTE band, the LTE ecosystem for this band is growing fast with a number of GSM operators trialling LTE 1800 equipment. The 1800MHz band may become a major LTE band together with the 2.6GHz band. It is not obvious why DotEcon has used 800MHz and 1800MHz as they are not close substitutes.

b) International spectrum benchmarks demonstrate the difficulties involved in finding comparable examples across countries

It may be constructive to consider the range of prices paid for the same spectrum over a similar time period in one region of the world, to illustrate the degree of variance in the results obtained. A good example is the awards for the 2.1GHz spectrum, the existing 3G band that was awarded in Europe during 2000 – 2001 (with one award in 2002). The major spectrum awards are shown below in Exhibit 18.

Exhibit 17: **Major European auctions for the 2.1GHz (3G) spectrum**

Administration	Revenue raised (converted into US $) billion
UK	35
Netherlands	2
Germany	45
Italy	10

Source: RRA

Taking these results and expressing in per capita terms:

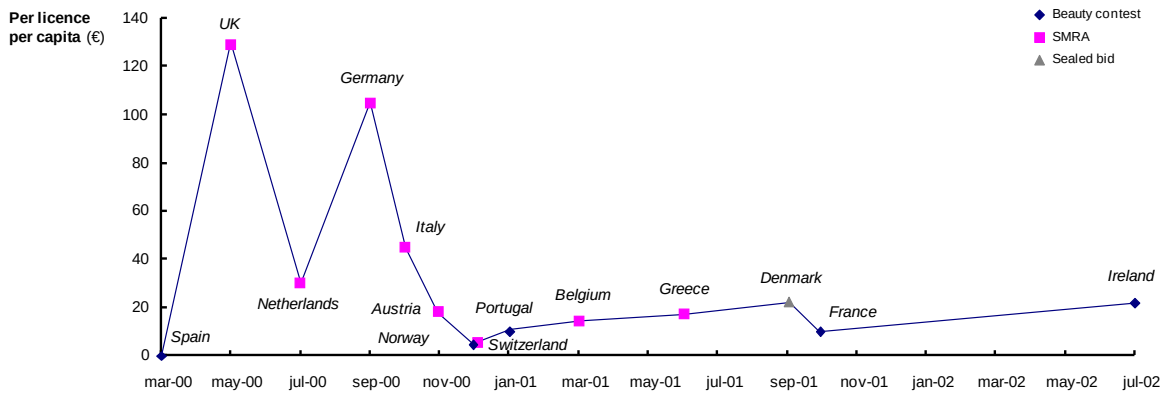
Administration	Auction finished	Euros per Capita
UK	April 2000	630
Netherlands	July 2000	170
Germany	August 2000	615
Italy	October 2000	240

Source: RRA

It is clear that these auctions, held over a similar time period, for the same frequency bands and bandwidth, produced significantly different results. The Netherlands auction raised less than one third of the per-capita revenue of the UK auction, and the Italian auction raised per-capita revenues less than 40% of the UK outcome. The German auction raised revenues that were 98% of the UK per-capita level but this is discussed further below.

The full range of results obtain in a number of European countries is shown below in Exhibit 19.

Exhibit 18: **Per license per capita results for European awards of the 2.1GHz spectrum in 2000-2002**



Source: RRA based on DotEcon material

Exhibit 19 demonstrates how auction (and other forms of award) revenues fell considerably after 2000. This can be attributed to the market downturn, the strategic advantages of winners in early EU auctions which discourage participation in later auctions, and market consolidation. In this way, auction timing and market sentiment can play a large part in dictating the revenues generated in awards.

i) The underperforming 3G auctions in the Netherlands and Italy in 2000

The Netherlands auction was based on the UK auction design but critically, the market structure in the Netherlands had not been factored into the design. The Netherlands had five incumbent MNOs and offered five licences – similar to the UK but the UK had four incumbents and had reserved one licence for a new entrant. The UK auction attracted nine new entrants creating a very competitive

auction, the Netherlands auction discouraged new entrants as they were clearly in a weak position compared to the incumbents. Consequently, new entrants partnered with the incumbents, reducing competition in the auction. Only one relatively weak new entrant bid was made in the auction, by Versatel, and it stopped bidding mid-way through the auction.

The Italian auction was also flawed as it failed to recognise the importance of the final market structure. The Italian auction had a rule that '*if the number of bidders who satisfied the various prequalification conditions was not more than the number of licences on offer, then the number of licences on offer would be reduced'.* This rule may have been added as an attempt to prevent the outcome that befell the Netherlands auction. This approach has two difficulties, firstly it is likely to artificially create an overly concentrated market and the rule does not necessarily deliver a competitive auction as it only requires one more bidder to be prequalified than the number of licences on offer and the rule is met. The competitive nature of the auction is further reduced if one of the bidders is weak.

ii) The German 3G Auction in 2000

The design of the German auction included little consideration of the market structure and it is felt by some auction theorists that this was a significant flaw in the auction design. By auctioning 12 blocks of spectrum which could be aggregated into 3-block or 2-block licences, the auction was at considerable risk of concentrating the market, given that the UK felt that 2-blocks was sufficient for a viable 3G network. Only seven bidders emerged, and of these one seemed to be relatively weak. Six licences were granted but the bidding behaviour of the two dominant players (Deutsche Telekom and Vodafone-Mannesmann) was deemed to be odd and irrational: they initially pushed prices up to almost UK levels but then went no further, and failed to push any of the weaker bidders out of the auction. Consequently, the German administration raised significant revenues and Germany was left with an un-concentrated market. The market subsequently contracted and spectrum came back to the German regulator. The final tranche of 2.1G Hz spectrum was finally awarded in 2010 as part of the 'super auction' of the 800MHz/1800MHz/2100MHz/2600MHz spectrum bands.

iii) German auction 2010

Competitive intensity was relatively weak given that only the four incumbents qualified to bid and that there were no new entrants in the auction. The one important exception was the 800MHz

spectrum band. All four operators were keen to acquire 800MHz spectrum but demand exceeded supply as there are only three viable packages of spectrum (2 x 10MHz) available for the four separate bidders. The results demonstrate how local market and regulatory conditions can impact the prices paid in an auction process.

6.2.5 Conclusions

The variety of issues that can impact the outcome of a spectrum auction mean auctions over a very similar time period and for the same frequency band can produce extremely varied results. It is therefore extremely difficult to verify that the data used in DotEcon's reserve price benchmarking is suitable to enable a 'like-for-like' comparison. The information needs to be subjected to a detailed examination of all relevant factors that apply to each auction. Often, what may appear to be similar auctions for similar frequency bands are on closer examination fundamentally different.

Differences can be due to any number of factors, for example: the auction design; market structure; inappropriate reserve prices; and the level of competitive intensity in the auction. All these factors would impact the respective prices paid for spectrum in the associated auctions.

Valuing spectrum based on a small sample of auction prices may give some useful indications of the underlying value of similar spectrum. However, great care must be exercised as the auction results will, as demonstrated above, be heavily dependent on a range of specific and unique factors. The data sets used by DotEcon have been questioned by the examples shown in this section. Considering that this appraisal is at an extremely high-level, it is highly likely that a more detailed review would reveal other issues that would detract further from the reliability of DotEcon's estimated spectrum valuation.

Setting inappropriately high reserve prices can impact on the efficiency of an auction. Much of Europe has tended in recent times to set low reserve prices. The USA in contrast tends to set reserve prices high – e.g. $4.64bn for Block C in the FCC auction of 700MHz in 2008. There have however been cases where a high reserve price has deterred bidders and spectrum lots have not been awarded or the outcome of the auction has been distorted by the high reserve price.

6.3 Conclusion

Neither ComReg nor DotEcon has provided evidence or supporting rationale for the fear of collusion to outweigh the harm caused by an excessively high reserve price. There is therefore no reason to accept the argument that a high reserve price is needed at all, and no justification for ComReg not setting a price in line with other European NRAs at the minimum value required to both deter frivolous bidders and recover the costs of the auction.

Moreover, even if a significant reserve price were needed, the methodology that DotEcon has used to derive a recommended reserve price range is fundamentally flawed. Combined with ComReg's misinterpretation of DotEcon's recommendations the €25m reserve price cannot be justified.

There is a significant risk that the reserve price will damage the competitive price-finding nature of the auction process and impede the efficient and effective use of spectrum as mandated to ComReg resulting in detrimental effects on Irish mobile network operators, consumers and Irish society as a whole.

7 Conclusions

The proposals outlined in ComReg's Consultation Document no. 10/71, *800MHz, 900MHz & 1800MHz spectrum release*, would have a detrimental effect on HG3I, competition in the Irish mobile market and on the Irish society as a whole. There are six areas of disagreement with document 10/71, as set out below.

a) ComReg is incorrect in its assertion that the 800 and 900MHz spectrum bands are highly-substitutable

Comparing the 800MHz and 900MHz spectrum bands, there are five key areas which demonstrate that the two lack substitutability: compatibility, regulatory uncertainly, ecosystem differences, harmonisation and delayed access.

- ***Compatibility***: The 800MHz band has a number of compatibility issues that require additional measures at the national level to remedy. The immunity of equipment including DTT receivers and cable modems will need to be tightened but the process is still on-going and it is not clear how the transitional issues will be managed. There are no significant compatibility issues with the 900MHz band;

- ***Regulatory uncertainty***: The legacy issues associated with the 800MHz band create regulatory uncertainty. The discussion of whether licence conditions may be added to the 800MHz licences in some administrations, coupled with uncertainly regarding what might emerge from WRC-12 in terms of co-frequency co-ordination requirements, will tend to make the 800MHz band comparatively less attractive as regulatory certainty is essential for operators planning network investments;

- ***Ecosystem differences***: The UMTS900-HSPA ecosystem has a massive lead over the 800MHz LTE ecosystem and given the issues regarding compatibility issues and harmonisation developments, it is likely that the advantage enjoyed by the 900MHz ecosystem will grow over the next few years;

- ***Harmonisation***: The band plans for 800MHz illustrate the rather fragmented development of Digital Dividend spectrum plans in different regions of the world. Not only is there divergence over the frequency band plans but the specifics also differ, e.g. different duplex directions and duplex gaps are to be found with little commonality in the current plans. There is not going to be a common global band plan for the DDR spectrum; and

- ***Delayed access to 900MHz***: The frequency co-ordination issue in central Europe may delay the wider deployment of 800MHz networks and therefore impact negatively on the addressable market which, all other things being equal, will result in a smaller 800MHz ecosystem in the early years. This will have implications for the cost and range of products and devices available compared to the 900MHz band.

There is a material difference between 800MHz and 900MHz, and collectively these issues amount to a material difference between the two bands such that they are not substitutable.

b) ComReg's proposals to delay the liberalisation of 900MHz spectrum until the availability of 800MHz spectrum will cause significant damage to all Irish mobile operators and Irish society as a whole

The proposed delay in liberalisation of 900MHz spectrum would increase the costs of all Irish mobile network operators who wish to extend current 3G network coverage to 99% of the Irish population by over €40m. However, it is more likely is that Irish mobile operators would decide to minimise investment and risk exposure and suspend the roll-out of further 3G services to cover 99% of the population. In this scenario Ireland would forego the benefits of widespread mobile broadband until 800MHz and 900MHz spectrum are available in 2013. Ireland as a whole, consumers and operators will suffer from the loss of high-speed, high-quality, mobile internet access, causing a loss of GDP growth, a widening of the Irish digital divide, a less competitive and mobile businesses environment, less dynamic job creation and a decreased ability to provide government initiatives online.

c) The proposed spectrum allocation would fail to ensure a fully competitive mobile market by failing to address the current inequalities in spectrum allocation between mobile operators

The Irish mobile network is currently characterised by a significant imbalance in spectrum allocation between mobile operators. The delay in the liberalisation of currently unallocated 900MHz spectrum until 2013 would also impact consumers directly by distorting competition in the Irish mobile market [**Commercially sensitive**]. It would prevent H3GI from competing on level playing field with the other Irish MNOs, entrenching the unfair competitive advantage afforded Ireland's other mobile operators, and would therefore decrease the rewards of competition to Irish consumers. [**Commercially sensitive**]

In addition, giving O2 and Vodafone continued access to 2G 900MHz via the proposed interim licenses will provide a significant benefit valued at over €43m per year for Vodafone and over €33 for O2 per year. This is well above the current proposed price in ComReg's *800 MHz, 900 MHz & 1800 MHz spectrum release* of approximately €2.5m per year for each operator.

d) Case studies from other markets show that refarming GSM bands can be completed expeditiously

The example of how Elisa has tackled refarming is an indication that Vodafone and O2 have exaggerated the implications of refarming issues. In reality, a quicker refarming of 900MHz is feasible. Clearing one 5MHz block of spectrum for UMTS is feasible if the unallocated 900MHz spectrum is awarded this summer and liberalised with immediate effect. In Elisa's case this was possible within 12 months of the start of refarm from a standing start, i.e. with no work already done.

e) Case studies from other markets demonstrate that regulators in markets similar to Ireland have intervened to ensure a competitive spectrum allocation

Significant inequality in spectrum band allocation currently exists in the Irish mobile market. A number of regulatory authorities have actively intervened to address perceived or potential competitive distortions in their mobile markets. In some cases, regulators have directly intervened to redistribute the 900MHz and 1800MHz spectrum, in other cases they have reserved spectrum for new entrants or non-GSM operators in order to redistribute spectrum assets and constrain the incumbent operators so that new entry is virtually guaranteed. These different forms of intervention

all share the same objective – to promote a more competitive mobile market. It has to be noted that in some cases, the decision to intervene was challenged, usually by an incumbent, but the decisions taken have subsequently been ruled 'in keeping' with national and European legislation and the proposals have stood.

There are many examples of where intervention in the mobile spectrum market has been deemed appropriate, particularly to assist smaller players or new entrants. The Irish market mirrors the situation found in other countries, where a decision to intervene was taken. The examples of Sweden and Denmark are particularly instructive; with a similar market structure to Ireland, regulators chose to allocate some 900MHz spectrum to non-incumbent operators at the same time as extending the incumbent operators' 900MHz licences. This sets a clear European precedent for regulatory intervention in redistributing 900MHz spectrum to ensure a competitive mobile landscape.

In contrast in the Irish auction the spectrum cap is set too high and will not ensure any significant redistribution of spectrum holdings. In fact it is likely that the Irish market for mobile spectrum will be even more concentrated after the award process than it is now. Further concentration of the Irish mobile spectrum market will harm future competition, not promote it.

f) The proposed reserve price has been set using flawed methodology and has the potential to choke off competition in the auction process

ComReg have proposed a reserve price of €25m for each single 2 x 5MHz block of liberalised 900MHz spectrum. Neither ComReg nor DotEcon has provided evidence or supporting rationale for the fear of collusion to outweigh the harm caused by an excessively high reserve price. There is therefore no reason to accept the argument that a high reserve price is needed at all, and no justification for ComReg not setting a price in line with other European NRAs at the minimum value required to both deter frivolous bidders and recover the costs of the auction.

Moreover, even if a significant reserve price were needed; the methodology that DotEcon has used to derive a recommended reserve price range is fundamentally flawed. Combined with ComReg's misinterpretation of DotEcon's faulty recommendations the €25m reserve price cannot be justified.

There is a significant risk that the reserve price will damage the competitive price-finding nature of the auction process and impede the efficient and effective use of spectrum as mandated to

ComReg resulting in detrimental effects on Irish mobile network operators, consumers and Irish society as a whole.

8 Appendix 1: Additional information on the CEPT, ITU-R and ETSI / CENELEC study activities

8.1.1 CEPT Report 30 – Minimal (least restrictive) technical conditions

The Report assumes that the band 790 – 862MHz is likely to be used for fixed/mobile communication networks using a cellular topology with two-way communications. Therefore, two different BEMs) have been developed:

- One for BS

- One for the TS

The most critical scenario studied in the Report is compatibility between Electronic Communication Networks (ECN) and terrestrial broadcasting. (ECN compatibility with another ECN was also studied).

8.1.2 Conclusions

a) ECN Base Stations (e.g. LTE) causing interference to DTT

Interference at a percentage of locations for DTT reception will result. Consequently, Report 30 has developed a series of BEMs for the base station dependent on whether DTT frequencies in that location (region) are protected, where DTT is subject to an intermediate level of protection and where DTT is not protected – these three categories are designated A, B and C.

The BEM approach has been widely used by CEPT to determine least restrictive technical conditions with the objective that this approach permits flexible use of the relevant spectrum under consideration balanced by technical constraints that are the least restrictive consistent with preventing harmful interference. It is acknowledged that this approach will not prevent interference in all cases – there will be a role for further national intervention as the circumstances dictate. This caveat is particularly important in relation to the 800MHz band whereby DTT and cable systems are deployed that have been designed for a less hostile radio environment than that which will exist once the 800MHz band is licensed for high density ECN networks such as LTE. Consequently there are concerns regarding the current generation of DTT receivers and related equipment that they will lack sufficient immunity from radiated field strengths as the equipment has been shown in

tests to have relatively poor electro-magnetic immunity – or more accurately, the immunity standard was fit for purpose when the entire 470 – 862MHz band was used extensively for broadcast services and, therefore, the radio environment was relatively benign but the advent of LTE networks in the 800MHz band will result in a more challenging radio environment for the DTT receivers and associated equipment. This problem has been validated in numerous studies and measurement exercises (discussed below).

To conclude on the CEPT activities, the technical requirements specified in CEPT Report 30 are the basis for the conditions contained in the Annex to Commission Decision 2010/267/EU[71] and the text in the Decision notes that '*BEMs shall be applied as an essential component of the technical conditions necessary to ensure coexistence between services at national level. However, it should be understood that the derived BEMs do not always provide the required level of protection of victim services and additional mitigation techniques would need to be applied in a proportionate manner at national level in order to resolve any remaining cases of interference'*.

Recognising that there will be interference problems into DTT and associated services when LTE is deployed, some regulators have proposed that a 'protection clause' be inserted into the licence conditions for the mobile service. This provision will require the licensee to be responsible for investigation and the remedy of interference to DTT and associated equipment, e.g. Ofcom in the UK and the PTS in Sweden are considering such an approach.

b) Co-channel Interference

Noting that some administrations currently still have DTT services in the band 790 – 862MHz and some may not migrate for some time, there is a co-channel interference scenario that could extend over an area of many kilometres around LTE base stations, particularly if in a DTT 'edge of service' area.

It is acknowledged that co-frequency compatibility is not a scenario that would apply in Ireland as the 800MHz band is to be cleared of DTT use. However, the timing of the release of the 800MHz band is not common throughout Europe and there will be a transitional period within which LTE and DTT may be co-frequency. There are also a number of eastern-European countries that operate

[71] Commission Decision of 6 May 2010 on harmonised technical conditions of use in the 790 – 862MHz frequency band for terrestrial systems capable of providing electronic communications services in the European Union.

ARNS systems in this band. The impact of this is two-fold – the availability of a harmonised 800MHz band in Europe is consequently fragmented and may not be fully aligned for many years after the EU target date of 2013 (an objective that can already be stretched to 2015 in the EU) and there is a frequency co-ordination issue with ARNS that is the subject of current studies and review in 2012.

The uncertainty around when the 800MHz band will be made available in a number of Europe countries and the regulatory uncertainty regarding co-ordination issues can be expected, all other things being equal, to reduce the growth of the 800MHz ecosystem. This in turn has direct implications for the relative size of the ecosystem and the availability of the economies of scale that would otherwise be generated in a band that did not have these access and regulatory issues. These are material considerations in relation to the substitutability between 800MHz and 900MHz spectrum lots.

The second point is that frequency co-ordination between ECN systems (LTE) and ARNs systems in neighbouring countries is subject to consideration at the WRC-12 Conference and is currently being studied in the ITU-R (and the CEPT in preparation for the Conference). This may lead to delays in deploying LTE systems in central European countries which in turn will delay the growth of the ecosystem for LTE 800 products and services.

i) Immunity tests and related activities

As noted in §3 of the report, current DTT and associated equipment such as cable network systems are not sufficiently immune to the level of radiated field strength emissions that will be found when LTE networks are deployed. There will be a period of many years (5 – 15?) where legacy equipment will be prone to interference. There has been considerable activity over the past year or so to determine whether LTE in the 800MHz band is compatible with equipment currently on the market for the delivery of cable TV networks including STBs, CMs and DTT receivers. Measurements have been conducted by various parties including the German regulator BZT[72] and Cobham Technical Services[73]. In general these reports identify a compatibility issue that is primarily caused by a lack of immunity in the current products or the associated cabling. For example, the Cobham Technical Services report conducted radiated measurements on nine STBs

[72] Immunity of integrated TV receivers, set top boxes and data modems connected to broadband cable and TV networks against radiation from LTE equipment, 28 January 2010
[73] Cobham Technical Services, ERA Technology Report 2010 - 0792

and twelve CMs. Seven of the nine STBs tested suffered interference from an LTE UE handset operating at the CEPT recommended maximum power of + 25 dBm and with a one metre separation distance. All twelve of the CMs suffered interference under the same conditions, i.e. the LTE handset was operated at 25 dBm and the separation distance was one metre.

For the STB tests, the only interference occurred when the unwanted LTE signal was co-channel with the wanted CATV signal – no adjacent, local oscillator or image channel interference was observed. Other tests have shown that these devices are prone to being more susceptible to interference at offsets that correspond to the local oscillator and image frequencies – e.g. N + 5 and N + 9.

The equipment under test in these various trials all comply with the existing immunity standard[74] for DTT receivers, STBs and CMs but the more challenging radio environment that will result from LTE deployment in the band 790 – 862MHz will necessitate a tightening of the immunity level for these devices.

Operators that deploy LTE networks in the 800MHz band will need to factor this issue into their valuation of the spectrum especially where some regulators are considering a licence condition that will require the licensee to investigate interference complaints and remedy the problem – which may require the fitting of filters or better quality coaxial cables etc.

There is a view that the interference to DTT/STBs/CMs is over-stated and in the vast majority of cases there will not be a serious problem – in many cases increasing the separation distance by another metre or so will solve many problems but there will remain a significant number of interference cases that will be reported and will require investigation. What are the likely costs and liabilities that may fall onto the mobile operator if the 'protection clause' option is adopted by regulators. There is also a reputational issue here. MNOs will not wish to be associated with causing interference to domestic television reception when rolling out a new mobile broadband service. If MNOs are responsible for investigation of and remedying interference, it would mean taking on a function that is outside an operator's core competences and commercial focus.

[74] Source: EN55020:2007; Sound and television broadcast receivers and associated equipment – immunity characteristics – limits and methods of measurement; CENELEC

c) SRDs

There is a harmonised European SRD band that is just above the new 800MHz mobile band, the allocation is from 863 – 870MHz. Concerns about compatibility between LTE mobile terminals and SRD devices has resulted in tests to determine the potential impact. An extract of the results for the 863 – 865MHz sub-band obtained by Copsey Communications is shown below:

8.1.3 863 – 865MHz

Six SRD devices were tested.

Results show that 50% of devices were adversely affected by a 10MHz wide signal at 857MHz; a third of devices were susceptible to LTE transmissions below 830MHz and one device was susceptible to LTE transmissions below 779MHz. Interference from LTE UE operators at the 857MHz centre frequency was detectable when the power exceeded 0.15 mW ERP (3 metre separation distance).

Interference was recorded within 4 metres of the LTE UE.

Further testing and studies to estimate the extent of the deployment of SRDs are currently being progressed.

8.1.4 Regulatory uncertainty

Many MNOs have sought clarification on the scale of the problem as they are unable to value the 800MHz spectrum, for example O2 in its response to the UK regulator's consultation document [75] stated that:

"..We believe that Ofcom needs to undertake further assessment of its proposed "protection clause" approach.

Whilst we agree that the most effective means of preventing interference to the existing DTT service may be by the addition of a protection clause to licences in the cleared spectrum, we note

[75] Source: http://stakeholders.ofcom.org.uk/binaries/consultations/clearedaward/summary/condoc.pdf

that this may not be the most efficient, in terms of Ofcom's statutory duties. Such a proposal may have a significant effect on the utility (efficient use) of the spectrum, competition through the use of the spectrum, and economic benefits arising from the cleared spectrum. In addition, the exact formulation of such a clause may set precedents in terms of interference protection that Ofcom should consider further before concluding on this important policy point.

For example, what is the particular characteristic of the current broadcast transmission licences that requires Ofcom to impose such an unquantifiable condition on new, neighbouring licensees? Is it their public service nature? Apparently not, since the proposal is to impose the same condition to protect the commercial DTT services. Is it their coverage obligation? If so, this approach will need to be adopted for other licences also burdened with coverage obligations, and any protection afforded to the commercial DTT services would need to be aligned with the statutory requirement rather than any arbitrary commitment. Is it the DTT receivers used? This cannot be the case, as receiver performance is not specified, we understand, in these licences, but in the D Book specifications.

The over-riding requirement to protect DTT reception in all retained frequencies exposes the potential purchasers of the spectrum to an unbounded risk, with potential limitless investigation costs where new services are alleged to be the cause of someone's unsatisfactory TV picture. As Ofcom will appreciate, the prospect of new licensees having to account for, investigate, and pay for poor (cheap), unspecified receiving equipment, and compensate the users for loss of service, is something that will make all prospective licensees think very carefully about the valuations put on the cleared spectrum. *[Emphasis added]*

In terms of developing the protection clause approach, O2 believes that Ofcom needs to undertake further analysis of this proposal, as it affects all stakeholders including other users of the radio spectrum not directly interested in the DDR. We consider that a stand-alone piece of work, including an impact assessment on this specific point, would be appropriate -including the implications for protecting indoor/ set top antennas.

8.1.5 WRC-12 – Resolution 749 (WRC-07) consideration under agenda item 1.17

These issues and the associated methods to satisfy the agenda item 1.17 are described in the draft CPM report (Document CPM11-2/1-E, 13 August 2010). Based on this work, a draft ECP has been produced. The consideration of different methods is still subject to possible changes during the CPM process and therefore consequential changes may be needed in the associated draft ECP.

The allocation of the band 790 – 862MHz to the mobile services at WRC-07 has certain conditions attached. The key provisions related to the 790 – 862MHz band are:

- *before 17 June 2015 in Region 1 and 3 the band or part of the band 790-862MHz is allocated to mobile service in accordance with RR Nos. 5.316 and 5.316A only in some countries under condition that stations of the mobile service shall not cause harmful interference to, or claim protection from, stations of services (including ARNS) operating in accordance with the Table in countries other than those mentioned in these footnotes;*

- *in accordance with Resolution 749 (WRC-07) sharing studies for Regions 1 and 3 in the band 790-862MHz should be done only in order to protect services (including ARNS) to which the frequency band is currently allocated so under AI 1.17 protection of mobile service whose allocation become effective only in 2015 or which is on a secondary basis with respect to other services from ARNS and other primary services shall not be considered.*

- *the requirement to obtain agreement under RR No. 9.21 with respect to the ARNS in countries mentioned in No. 5.312 was the specified condition for allocating the band 790-862MHz to the mobile service in Region 1 after 17 June 2015 under RR No. 5.316B and is integral part of the allocation.*

This process is still on-going with a series of meetings planned over the next year or so. There is a degree of dissent within the CEPT as some countries with ARNS are currently concerned with aspects of the ECP. The net result is that there will remain regulatory uncertainty until after the WRC-12 Conference when all these studies will be considered under agenda item 1.17. Currently, mobile services cannot claim protection from harmful interference caused by ARNS and mobile

services are not permitted to cause harmful interference into stations of existing ARNS. From the 17 June 2015, mobile services will be able to enter co-ordination as a co-primary service in the band 790 – 862MHz. Co-ordination between administrations with ARNS and central European countries planning to deploy mobile services will face constraints caused by the co-ordination process that currently may use a predetermined co-ordination distance metric to trigger co-ordination between administrations or, alternatively, the use of a predetermined aggregate field strength value to trigger co-ordination. The predetermined co-ordination distance is in the range of 400 – 500 km which is a significant area and indicates that co-ordination between administrations will extend over a sizable portion of central Europe. The following extract from is from the ECC document CPG-12 PTD10 (113) Annex 13 and illustrates the current uncertainty regarding the use of aggregate trigger field strengths:

"Aggregate trigger field strength value is calculated from all the sources of interference including new assignment to mobile station at the border of the service area of potentially affected ARNS assignments confined to national territory. However, the methodology for verification of aggregate interference trigger field strength values from the mobile service needs to be developed.

Also since the mobile user terminals are not notified it is not clear how mobile user terminals should be taken into account while identifying affected administrations through application of aggregate trigger field strength values. Therefore, it needs to be further studied (one possibility could be to apply predetermined co-ordination distance for the uplink)".

In conclusion, the requirement under the Radio Regulations to co-ordinate mobile services with other co-primary services such as ARNS is an issue that is still under study and active discussion in preparation for the WRC-12.

Regulatory uncertainty caused by the WRC-12 process is likely to slow rapid deployment of mobile services and when taken together with the compatibility issues discussed earlier in §3 of this report the impact becomes more significant.

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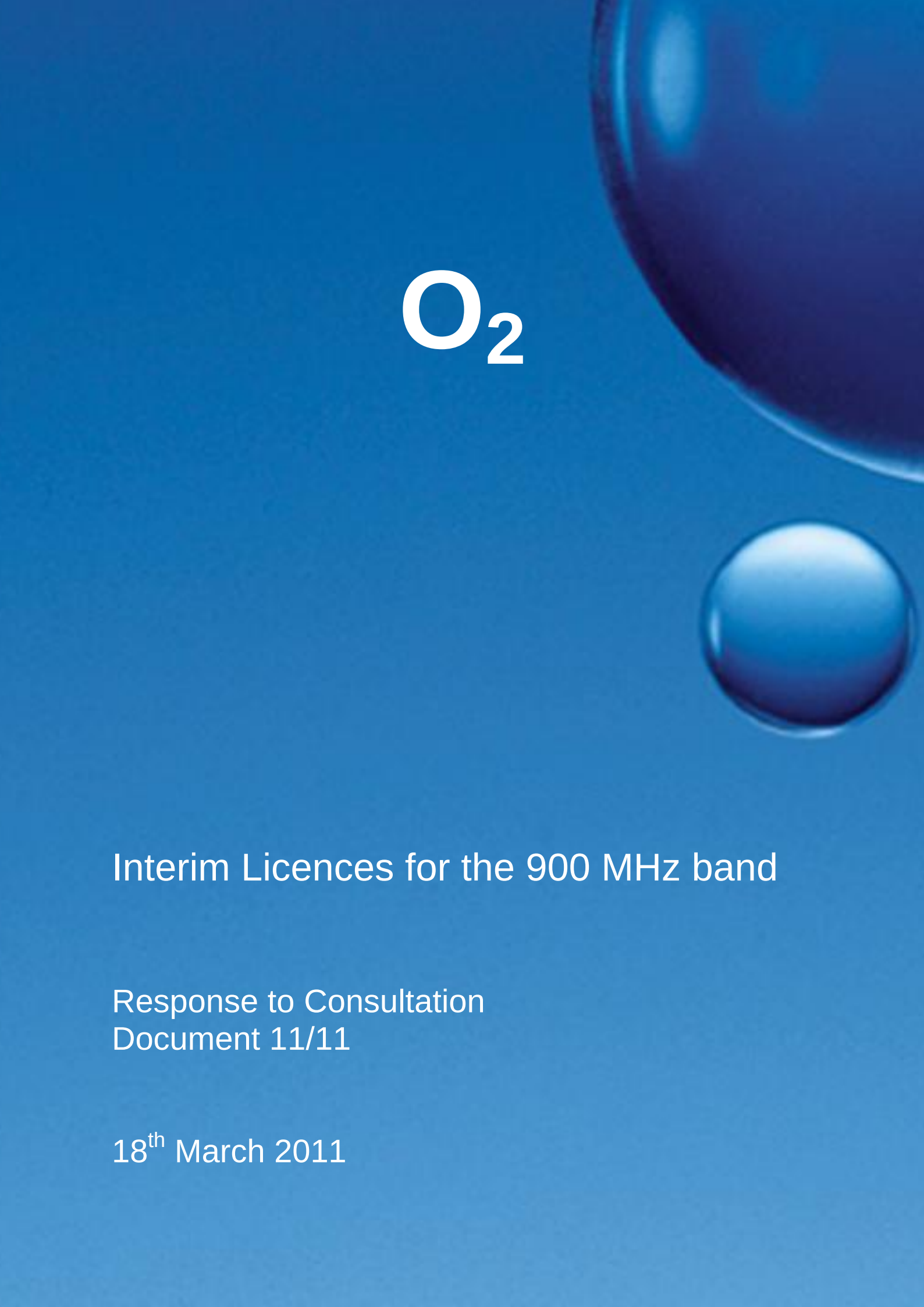

Interim Licences for the 900 MHz band

Response to Consultation
Document 11/11

18th March 2011

1. Introduction

1.1. This is O2's response to ComReg document 11/11 "Interim Licences for the 900 MHz band". This is a standalone consultation on the net issue of the granting of Interim Licences to O2 and Vodafone in the 900 MHz band ("Interim Licences"). It is related to five previous consultation documents addressing liberalisation and licensing in the 800MHz, 900MHz and 1800MHz bands. O2 welcomes the proposal by ComReg to grant an Interim Licence to O2 and Vodafone to cover the period from expiry of the existing 900 MHz licences on 15th May 2011 until 31st January 2013 (as the proposed start date of liberalised 800MHz, 900MHz and 1800 MHz licences). O2 believes that in all of the current circumstances, the grant of these Interim Licences is the only viable regulatory option available to avoid significant immediate disruption to consumers and competition. Further ComReg's Interim Licence proposal represents the minimum intervention to avoid this disruption in the immediate future.

1.2. **Urgency of Decision.** O2's existing 900 MHz licence expires in just under 2 months on 15th May 2011. O2's overriding priority therefore in the present consultation is that an appropriate licence is granted in advance of this expiry date. O2 considers that the issue of an Interim Licence has been fully consulted upon, that there is no requirement for further consultation and that ComReg should now proceed to a final Decision by the end of March, if ComReg is to allow sufficient time for the statutory appeals period, the passing of the necessary Regulations and for O2 and Vodafone to make the required licence applications in advance of 15th May 2011.

1.3. **Reservation of rights.** In the circumstances, and with a view to facilitating the ending of the consultation process and issue of a final Decision, O2 considers that it has been left with no option but to support the proposal and not comment in detail on aspects of document 11/11. Failure to comment on specific aspects of document 11/11 should not be taken however as implicit acceptance of specific assertions in the document. In particular, where aspects of document 11/11 relate to, or impact upon the wider consultation for the proposed multi-band spectrum auction, silence in this response should not be deemed to be an acceptance of any part of document 11/11[1]. O2 fully reserves its rights to comment on such issues in the next stage of consultation on the proposed auction. O2 also 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.

1.4. **Legal challenge does not prevent grant of a licence.** There is the possibility of a legal challenge to ComReg's proposed Decision to grant an Interim Licence. Any

[1] *For example O2 does not agree with ComReg's proposal to increase the original licence fee by an amount equal to the compound change in the Consumer Price Index (CPI), however given the urgency with which ComReg must proceed to a decision, no further comment is made on this matter. This does not imply a general acceptance that it is appropriate to apply CPI to licence fees.*

such challenge is a matter for determination by the courts. O2 notes however that the fact of an appeal in itself does not operate as a stay on the operation of the Decision, nor does it prevent ComReg proceeding to grant licences to O2 and Vodafone, and O2 submits that ComReg must do so.

2. Compliance of Interim Licence proposal with ComReg's statutory functions

2.1. O2 agrees with ComReg's rejection of the allegations in the H3Gi response to document 10/71 relating to alleged non-compliance of the Interim Licence with ComReg's statutory functions and obligations. O2 agrees with ComReg that, contrary to the H3Gi allegations, the Interim Licence proposal would not constitute discrimination, dis-proportionality, special rights, state aid or a distortion of competition on the grounds alleged by H3Gi. These matters have already been considered during the previous consultations, and we would refer to our previous submissions on these issues in the responses to document 10/71 and 09/99.

2.2. **Draft Regulatory Impact Assessment**. O2 agrees with ComReg's assessment of the options put forward in the draft RIA. O2 would argue that the proposed interim license (option 1) maintains the existing competitive position as a temporary measure to allow for the auction process to proceed. The proposed interim license does not prejudge or prescribe the auction process or ComReg's ultimate decision and is the option most likely to minimise disruption to consumers.

2.3. There remain net aspects of the Interim Licence proposal where O2 does not agree, or where clarification or correction is necessary. This response is intended to assist ComReg by raising those aspects about which O2 has concerns, setting out O2's general position on ComReg's proposals. Where O2 has identified specific areas of concern, it has made proposals to assist with the particular issue. Where O2 has commented on specific aspects of document 11/11 below however, such comments do not have a substantive impact on the overall proposal, and consideration of such comments does not require any further consultation by ComReg.

3. Duration of the Interim Licences

3.1. **Term.** The term is the minimum possible term ComReg could grant to avoid significant immediate disruption to consumers and competition. As O2 and other operators have noted, ComReg may be required to extend the Interim Licence post 31st January 2013 for a number of reasons, including lack of readiness of operators or a delay in Analogue TV Switch Off. For this reason O2 considers that it would be better if ComReg built in to the proposed Interim Licence Regulations the ability to extend the Interim Licences on specific, objectively justifiable grounds. O2 notes however ComReg's statements to the effect that it will deal with the issue of extension if it arises ("*In the event that any difficulties or delays arise then ComReg*

can address the impact of such difficulties/delays and corresponding remedial measures at the relevant time" section 2.9.2). O2 hereby puts ComReg on notice that it will rely on ComReg doing so appropriately, in a timely and reasonable manner.

3.2 **Withdrawal of licences during the Term.**

ComReg is proposing in the draft Decision that "*licences granted pursuant to this Decision may be foreshortened pursuant to Regulation 15 of the Authorisation Regulations to facilitate liberalisation of rights of use of 900 MHz spectrum*" . O2 does not object in principle to the prospect of 900 MHz liberalised licences being available ahead of the currently proposed date of 2013, provided this is done in a fair and legally compliant manner and with the agreement of the licence holders. However, ComReg needs to clearly describe the circumstances where this might occur, as it raises complex issues of valuation and bidding strategy for that spectrum in the proposed multi-band spectrum auction. It should therefore be examined in detail and fully consulted upon in ComReg's upcoming consultation on the proposed multi-band spectrum auction, before any decision is made. O2 does not believe that any such early liberalisation of 900 MHz should involve any mandatory foreshortening of the Interim Licences without the agreement of the affected interim licensees. As noted above, the Interim Licences are being granted for sound regulatory reasons to avoid imminent and severe disruption to consumers and competition. Granting these licences with the prospect of imminent unilateral revocation immediately creates again the very problem that the Interim Licences are meant to solve. Any shortening of a licence term by a regulator should only be done with the consent of the licensee, and with at a minimum appropriate repayment of fees for the unused term. ComReg has previously acknowledged this principle in other consultations e.g. in relation to early surrender of Meteor's 900 MHz GSM licence.

4. **Interim Licence fees**

4.1 O2 views on the level of the Interim Licence fees have been previously set out, and we would refer in particular to the submissions on this issue in O2's response to Document 10/71. O2 remains of the view that it is not correct to apply CPI in the manner proposed by ComReg to arrive at the proposed fee. It is not correct to suggest that the use of CPI in the 26GHz auction in some way constitutes implied acceptance of use of CPI in the very different situation that arises on the Interim Licence fee calculation. O2 does not propose making further detailed submissions in the present response. However, this should not be taken as an implicit acceptance that these levels of fees are appropriate either on an interim or a longer term basis, particularly in the wider context of minimum fees for the proposed multi-band spectrum auction.

4.2 There are two new elements in the detailed licence fee proposal first published in document 11/11 that do require comment however:

4.2.1 **Fee for part of a month.** ComReg is proposing, in Section 9(2) of the draft Regulations, that a licensee should pay the full fee for a month, where it has the licence for any part of a month (as O2 and Vodafone will do from May 16th – 31st 2011). This is not a fair or reasonable means of charging, and will result in licensees being overcharged by in excess of €100,000 in May alone. O2 should only be charged for the part of the month it is actually licensed for, on a pro-rata basis. Indeed this is the mechanism proposed by ComReg in Section 9(5) of the same draft Regulations. If this is deemed not to be practical by ComReg, then fees should only be charged for whole months.

4.2.2 **No repayment of fees in the event of withdrawal or return of licence.** Section 9(4) provides that In the event of withdrawal of a licence (e.g. to facilitate early liberalisation, as noted above) O2 is not entitled to any repayment of fees. This is clearly unfair. If the licence is withdrawn by the Regulator to facilitate early liberalisation, so that the licensee does not have use of it for the full term it was originally granted for, then the licensee should be entitled to a repayment on a pro-rata basis for the unused part of the licensed term. This principle has previously been acknowledged by ComReg in relation to e.g. early surrender of Meteor's licence**.** Equally, and as O2 has previously submitted in its response to document 10/71, it is in the interests of efficient spectrum use and allocation that licensees should have the ability to return parts of their licence during the term if they manage to reduce their spectrum requirements. In that situation it should be possible to secure a repayment of the fee for the unused part of the term.

5. Interim Licence conditions

5.1 O2 notes and agrees with ComReg's proposed approach that "*the existing GSM 900 MHz licence conditions applicable to each of Vodafone and O2 would be attached to their respective proposed Interim Licence conditions*" (page 62). As ComReg indicates "*the Interim Licence is designed to maintain the status quo*" (page 63). However, O2 notes that upon a comparison of the actual text of the proposed licence conditions with O2's existing licence conditions, that there are several significant differences. Introduction of these new licence conditions will have a significant negative impact (in terms of costs and competitiveness) upon O2 and directly contradicts ComReg's proposed approach as outlined in the quotes above. To introduce these new conditions during a short consultation process where ComReg has stated its intention of proceeding to an immediate Decision, would constitute a failure in ComReg's general obligations of proper consultation on these issues. O2 therefore submits that in order to be consistent with its own proposal as consulted

upon, and its stated objective, that ComReg should do as proposed and simply attach the existing licence conditions to the new Interim Licence. It would be disproportionate for ComReg to introduce amended or new obligations for what is a short term interim licence. In addition, and with regard to the specific new conditions proposed, O2 has the following specific comments:

5.1.1 **e-billing.** ComReg propose changing the licence condition so as to require O2 to obtain customers' "prior" agreement. This change is currently the subject of a separate ComReg consultation on e-billing. In imposing this condition on O2 and Vodafone now ComReg is pre-judging the outcome of that consultation. It is also discriminatory in its effect, as it imposes a licence restriction on only two of the operators, making it significantly more difficult for them to roll out e-billing compared to their competitors and putting them at a competitive disadvantage (contrary to the specific provisions in Regulation 10 of the Authorisation Regulations). Further, as O2 has previously stated in its response to document 10/71, the Authorisation Regulations do not permit the inclusion of billing requirements in a radio licence – these requirements should be included in the General Authorisation, and a consistent obligation should apply to all providers of Electronic Communications Services. This is necessary to ensure a level playing pitch exists for mobile licensees when compared with other providers of electronic communication services including MVNO operators.

5.1.2 **Additional Services.** There is a list of 5 new categories of additional services included in sub-clauses 2.1(vii)-(xi). These include an obligation for the licensee to provide "a platform for electronic commerce". There has been no discussion, consultation or explanation from ComReg as to what these changes involve. O2 understands that the draft licence is illustrative in this regard, and that the actual conditions for the O2 interim licence will be identical to those of O2's actual current licence. We reserve the right to comment further if this is not the case.

5.1.3 **per second billing.** Again, it is O2's assumption that this text is illustrative, and that the final text for the O2 interim licence will be identical to that in the current licence.

4 Vodafone Ireland

Vodafone Response to the ComReg Draft Decision on Interim Licences for the 900 MHz Band

Ref. ComReg Document 11/11

Response Date:18 March 2011

Introduction

Vodafone considers that ComReg's Interim Licence Draft Decision is overall a reasonable, proportionate, and non-discriminatory measure that is consistent with ComReg's regulatory objectives and functions. The proposed Interim Licences are essential to provide certainty to all of the existing 900 MHz licensees around their ability to maintain continuity of current services to their customers in the short term (from 16 May 2011 to 31 January 2013) while safeguarding the existing strong level of competition in the market.

We also welcome ComReg's decision to adopt our recommendation to treat the 900 MHz Interim Licensing arrangements dealing with any transition period separately from the proposals relating to the spectrum award process for the sub-1GHz and 1800 MHz bands.

Vodafone considers that amendments to some specific details of ComReg's Draft Decision on Interim Licences, set out fully in subsequent sections of this response, would enhance it by more fully achieving statutory regulatory objectives.

Vodafone would therefore recommend the incorporation of these amendments in relation to interim licence duration, spectrum usage fees, and the text of the proposed billing licence condition into ComReg's final Interim Licence Decision. Given the extremely limited time now remaining until the expiry of Vodafone's existing 900 MHz licence, we would now urge ComReg to speedily implement its final Interim Licence decision.

This response document should be read in conjunction with Vodafone's responses to ComReg's previous consultation documents relating to the future licensing of the 900 MHz, 800 MHz, and 1800 MHz bands.

Consultation Issues

Duration of Interim Licences

Vodafone does not consider that the proposed setting of a specific date of 31 January 2013 for the expiry of the Interim 900 MHz licences, rather than the conditions based approach to Interim Licence expiry suggested by Vodafone, has been established by ComReg to be appropriate and necessary.

Firstly, Vodafone believes that the imposition of a fixed expiry date is not possible in current circumstances. ComReg states that its rationale for not previously proposing a specific end date was that the steps currently envisaged for securing 800 MHz availability are not fully within ComReg's control. However this reason is no less valid currently. Moreover ComReg itself acknowledges in section 2.9.2.2 of the current consultation document that 'some' uncertainty remains in relation to the achievement of these conditions, and of the potential for delay for the reasons previously outlined by Vodafone.

Secondly, Vodafone considers that the adoption of a fixed expiry date is bad policy. It risks creating a situation where the conformity with a fixed expiry date is given priority over actual market conditions. ComReg states that it would not be reasonable or necessary to "copper-fasten" the duration of the proposed Interim Licences in the manner suggested by Vodafone. This appears to imply that Vodafone's proposed approach would limit and restrict the capacity to terminate Interim Licences so as to allow timely assignment of new liberalised licences in the sub-1 GHz and 1800 MHz bands, and that this lack of flexibility is a negative aspect of Vodafone's proposed approach. However Vodafone would note that the inflexibility of a specific end date for Interim Licences is far greater than an end date contingent on fulfilment of necessary and objectively justified minimum requirements. Moreover there is a clear policy risk in the use of a specific end point: the date may be reached prior to all of the minimum conditions for orderly allocation (as proposed by Vodafone) being met (e.g. where legal appeal proceedings against a spectrum award process had not been included). ComReg's proposed approach would not be without risk even in the case where it had a very high degree of confidence around factors such as the exact timing of availability of spectrum in the 800 MHz band, and the capacity to conclude any legal appeal proceedings against spectrum assignment decisions in a timely manner. However ComReg has not established that there is a sufficiently high level of certainty in relation to these issues, and has on the contrary acknowledged that at least some uncertainty still remains.

Thirdly, ComReg has failed to justify its decision to adopt a fixed expiry date for Interim Licences. Vodafone notes ComReg's view that the situation in relation to many of the factors that would determine the fulfilment of the proposed minimum conditions set out by Vodafone in response to ComReg consultation document 10/71 has, and will continue to, become clearer. ComReg does not specify the developments that have increased the certainty around the factors identified by Vodafone. Further, the extent to which certainty around these factors may increase over time was also known when ComReg initially proposed in ComReg document 10/71 that a specific end date would not be required. This reason is not therefore, on its own or combined with other considerations, of relevance to the decision to adopt a specific end date rather than one that would be determined by the fulfilment of reasonable minimum conditions.

Vodafone notes ComReg's concerns that the inclusion of conditions such as we have proposed could create perverse incentives, for example by delaying or frustrating transitional activities. However to the extent that there may be incentives to prolong the duration of Interim Licences, appropriate safeguards can be put in place to remove the scope for this. In Vodafone's response to ComReg 10/71 we indicated that any condition associated with the completion of spectrum relocation/re-tuning by licensees could be abrogated where there were objective grounds to believe that one or more of the existing licensees were not making all reasonable efforts to expedite the process. Review by an expert independent third party of the efficiency of the spectrum re-location re-tuning measures undertaken by an Interim Licensee could for example be initiated in the event of potential undue delay in the completion of transition. A flexible approach to conditionality could effectively minimise any potential scope for delay or obstruction.

In any event it is unclear whether, under most circumstances, there would actually be an incentive for existing licensees to seek to prolong the duration of Interim Licences. In particular, given ComReg's current proposals to assign Interim Licences on a GSM-only usage basis, existing 900 MHz licensees would have strong incentives to take all measures within their control to expedite spectrum relocation and retuning activities to gain access as early as possible to liberalised new licences that would be allocated in the sub-1GHz and 1800 MHz bands. Vodafone considers that these incentives would far outweigh any potential benefit from prolonging the duration of unliberalised Interim Licences.

Despite the factors recognised by ComReg, and the acknowledgement that Vodafone's proposed minimum conditions appear to be reasonable, ComReg nevertheless disagrees that the expiry of Interim Licences should be made subject to the fulfilment of these conditions. However given the assessment of the issues set out above, ComReg's present view is not objectively justified or proportionate and Vodafone believes that there are therefore clear grounds for the adoption of Vodafone's minimum conditions approach to the timing of expiration of the Interim Licences.

If ComReg nonetheless determines that a specific expiration date of 31 January 2013 should remain in place in its final decision then it should at least include a formal review clause in the licence term to make provision for a further short term extension in objectively justified circumstances. In the absence of such a provision, ComReg risks serious service disruption to end users if there is, for example, unanticipated delay in the making available of the 800 MHz band.

Vodafone considers that if it were the case that there was sufficient clarity and certainty at this stage to enable ComReg to set a specific end date of 31 January 2013 for the expiration of 900 MHz Interim Licences (which Vodafone does not accept for the reasons already set out) this should now enable the publication by ComReg of specific dates for the completion of all the intermediate measures required to ensure a seamless transition from the present situation of the imminent expiry of two of the existing 900 MHz licences to the granting of new liberalised licences in the sub-1 GHz and 1800 MHz bands.

In particular ComReg should be in a position to set out specific dates by which both applications for Interim Licences and applications to participate in the joint spectrum award process would have to be made, the times at which the various steps in the joint spectrum award process will occur, and the specific date at which the 800 MHz band will be required to be vacated by terrestrial broadcasters. Vodafone notes that the current lack of clarity in relation to the exact timing of these key milestones, in the context of the very limited time now remaining to expiry of two of the existing 900 MHz licences, is inhibiting the ability of operators to make efficient business planning and investment decisions.

It is important that this issue is directly addressed through the provision of detailed and specific timelines for the conclusion of each of the steps, and satisfaction of each of the conditions, necessary for the timely award of new liberalised licences in the sub-1 GHz and 1800 MHz bands.

Spectrum Usage Fees for Interim Licences

Vodafone maintains its position, as set out in our response to ComReg document 10/71, that it is neither appropriate nor necessary to apply spectrum usage fees (SUFs) for Interim Licences that are upwardly adjusted in line with the change in an index of prices in the period since Vodafone's existing 900 MHz licence was originally granted. Spectrum usage fees for the Interim Licences that are no higher than those charged for the existing 900 MHz licences are sufficient to ensure efficient spectrum use. Consequently the same SUF structure and level as currently in place should continue to apply for the short duration of the current licences.

Vodafone considers that the unchanged annual SUFs to be paid by Meteor over the remaining term of its current 900 MHz licence to mid 2015 clearly indicates that the SUFs currently applied to existing licences are no less appropriate for the Interim Licences. Vodafone agrees with ComReg's view that it would not be appropriate to index the fees paid by Meteor under its existing licence term. This is the case as the SUFs applied under all existing 900 MHz licences were, at the time that these licences were originally awarded, set at a level consistent with ensuring efficient

spectrum use over the full term of those licences. However as the current level of Meteor's SUFs are sufficient to ensure that it uses its existing 900 MHz spectrum usage rights efficiently over the remaining licence term, ComReg cannot credibly claim that much higher SUFs are required to be applied to Vodafone and O2, over the same time period, in order to ensure that this same objective is met in their case. In the context where ComReg has itself acknowledged, in consultation document 10/71, that the evidence indicates that existing licensees in the 900 MHz band are currently making efficient use of the spectrum on the basis of the fee levels established under the terms of their current licences there is no objective justification for ComReg's proposed approach to the setting of Interim Licence fees.

If ComReg, notwithstanding the absence of a justification for its current proposed approach, nonetheless determines that SUFs for Interim Licences should be adjusted in line with the changes in price indices in the period since the existing licences in the 900 MHz band were assigned then Vodafone remains firmly of the view that the most appropriate index to use is the communications sub-component of the consumer price index, not the overall consumer price index. The reasons cited by ComReg in the current consultation for not adopting Vodafone's recommended approach are not valid, and appear to rely on an unsupported implicit assumption that changes in the general price level of the overall economy have a direct impact on the incentives for efficient spectrum use, and therefore the level at which SUFs should be set.

Vodafone considers that, to the extent that changes in the prices faced by consumers since 1996 may be argued to have impacted on the level of SUFs that are optimal to ensure efficient spectrum use it is the changes in the prices of communications services specifically, with their relatively closer linkage to the revenues and profits of mobile operators and consequently the valuation placed by the latter on spectrum, that are most relevant for indexation purposes. ComReg's apparent position that use of the communications sub-index for indexation purposes would be flawed because it relates only to a 'very limited' part of the economy, is therefore without merit as it is this part of the economy (the communications sector) that is of primary relevance to any proposed indexation of SUFs. The issue of whether the change in the overall CPI or only the change in its communications sub-component should be used would not have a material practical impact on the level of SUFs if changes in both the overall index and the communications sub-index since 1996 had been similar. However the overall CPI has increased by substantially more than the latter index over the period and the difference in outcome for SUFs applied under the Interim Licences therefore also differs significantly.

ComReg argues that the selection of an appropriate measure for indexing prices should take into account the item which is being updated, and that it would not be appropriate to index these fees to the changes in prices for a basket of goods which does not contain the item itself. Clearly if spectrum usage fees are included within a particular basket of goods or services which form the basis for a price index, then this index should be used in place of other price indices that do not include this element. However if the communications sub-index of the overall consumer price index is inappropriate to use for indexation on the basis that it does not include spectrum usage fees within the basket, then the overall consumer price index is similarly unsuitable on the same grounds as it also omits spectrum usage fees from the basket being measured. Moreover the fact that ComReg has in the past used the overall CPI in updating spectrum usage fees does not, in itself, validate ComReg's current proposed approach.

Vodafone notes that spectrum usage fees could not be included even in principle within the basket of goods and services, changes in whose weighted average price is measured by the CPI, as spectrum usage fees are paid by producers (communications operators holding spectrum usage rights), not consumers. Indexation to the wholesale/producer price index (PPI), rather than the CPI would therefore be the appropriate index to use in theory. However to Vodafone's knowledge,

spectrum usage fees are not included in the wholesale price index, which is focused on changes in selling prices received by manufacturers, and this index could not therefore be used on the grounds set out by ComReg, by reason of not including the spectrum usage fees element whose price is to be updated.

As SUFs are not, to Vodafone's knowledge, included in any published price index compiled in Ireland, ComReg's overall proposed approach of indexation in general, and use of the change in the overall CPI specifically, is not objectively justified on ComReg's own reasoning. The only option for setting the level of SUFs for Interim Licences on the basis of historical price changes that has some theoretical support is to use the communications sub-component of the CPI, for the reasons set out previously in this response. Therefore if indexation of SUFs to price changes is to be implemented then Vodafone would recommend that ComReg revise its current proposed approach accordingly in its final decision.

Proposed Conditions of Interim Licences

Vodafone is in general agreement with ComReg's proposal to set licence conditions for Interim licences on the same basis as those currently in place for the existing 900 MHz licences of Vodafone and O2. However Vodafone disagrees with a proposed amendment relative to the billing condition in existing 900 MHz licences, as set out in section 5 of Schedule 4, Part 4 of the Draft Statutory Instrument text (p125 of the consultation). We note that ComReg has amended the table in section 5.1 on billing requirements for the paper medium to specify 'prior' agreement of the customer before the alternative of delivery of bills on computer media or on-line can be implemented by the licensee. Unlike the other variations of the text of the draft statutory instrument from that of the current 900 MHz licences, which mainly omit now obsolete requirements (such as the original obligation in licences to provide a TACS mobile communications service), this amendment represents a material change relative to existing 900 MHz licence conditions. However this change was not referred to in ComReg's discussion of proposed Interim licence conditions in section 4 of the consultation, even though it is inconsistent with ComReg's stated position in section 4.2.2 of the consultation, as already stated above, to the effect that licence conditions for Interim licences would be set on the basis of existing GSM 900 MHz licence conditions for each of Vodafone and O2.

Vodafone considers that, irrespective of the particular merits and/or drawbacks of this proposed amendment, it is wholly unacceptable and contrary to established practice for ComReg to fail to identify, or provide any objective justification for, a proposed change that would materially alter the licence obligations faced by operators. If ComReg intends to implement this proposed variation from the text of current 900 MHz licences in the final Interim Licence text, then it must set out its justification for this decision and include it in its regulatory impact assessment. Vodafone does not however believe that there is adequate justification for this proposed text.

In section 4.2.2 of the present consultation ComReg states that its proposal to set Interim Licence conditions on the same basis as existing 900 MHz licences is non-discriminatory as:

> *"…it proposes the same treatment for both Vodafone and O2 in respect of their existing licence conditions,* ***and would not distort the existing position between these licensees and the remaining GSM 900 MHz operator or operators in other bands****."* [Vodafone emphasis]

However Vodafone considers that the inclusion of the proposed text in relation to mandatory billing service standards in Interim Licences is discriminatory as it would apply only to the holders of Interim Licences, but not to Meteor, H3GI, or MVNOs. If it is determined that this requirement is necessary, which has not been determined to be the case, then it would be appropriate to implement it in a manner that would apply symmetrically to all authorised operators, for example through an amendment to the General Authorisation, rather than its inclusion in the text of spectrum licences.

ComReg's proposed licence conditions would lead to requirements being imposed on only some market participants (holders of the particular spectrum licences in which the conditions are included) but not on others (those who do not hold licences for the spectrum). Vodafone also notes that MVNOs are not subject to the licence conditions of their hosts and that any licence conditions beyond those that can be directly imposed on a MVNO would be discriminatory.

In addition a question arises as to the extent of the proposed licence conditions. It is unclear whether they would apply only to end-user services using the licensed bands or whether they would apply to all similar end-user services offered by the licensee with spectrum allocations in multiple bands irrespective of the spectrum over which the service actually is provided. If the latter is intended then it is not clear whether there is a basis for ComReg to impose a condition in one spectrum license which has effect for services carried in separately licensed spectrum. However if the proposed conditions would apply only to end-user services using these licensed bands then clearly there would be a differentiation in obligations pertaining to equivalent end user services provided by an operator based solely on the band in which they might be carried from time to time. ComReg has not provided any objective justification for such a potential differentiation.

In light of these issues, Vodafone believes that the proposed amendment (relative to the text of existing licences) to the table in section 5.1 of Schedule 4, Part 4 of the Draft Statutory Instrument should be withdrawn.

Draft Regulatory Impact Assessment

Vodafone is in broad agreement with the general approach to the Regulatory Impact Assessment (RIA) adopted by ComReg in section 3 of the consultation. We consider that the 4 options set out in the RIA are reasonable to consider, albeit that Vodafone maintains its view as set out previously above that Option 1 (ComReg's current Interim Licence proposal) should provide for licence expiry when a defined set of minimum conditions are achieved, rather than on a specific end date of 31 January 2013 as currently proposed. Vodafone is also in strong agreement with ComReg's conclusion that the potential 'do nothing' scenario of declining to undertake an interim licensing measure is not a feasible regulatory option in light of the severe disruption to the provision of services to consumers that would result.

Vodafone can confirm ComReg's interpretation that the option previously proposed by Vodafone – the issuance of Interim Licences on a liberalised basis (Option 3) provides also for the liberalisation of Meteor's existing 900 MHz licence for the remainder of its term.

In relation to Option 1, as currently framed, Vodafone welcomes the introduction of the element whereby liberalisation of the 900 MHz band could commence earlier than 31 January 2013 and 800 MHz availability in the case where all the transitional activities of the existing licensees were completed earlier (among other conditions). Vodafone considers that this additional flexibility is positive in principle and addresses, in part, our previously expressed concerns around delays to

liberalisation of the 900 MHz band arising from the formulation of Option 1 set out in ComReg document 10/71.

Vodafone has reviewed the analysis of the 4 regulatory options considered in ComReg's RIA and the reasoning for ComReg's conclusion that Option 1 is the optimal approach to achieve ComReg's statutory functions and objectives. Vodafone remains of the view that Option 3 is the optimal regulatory option of those considered as, similarly to Option 1, it ensures continuity of service on the part of all of the existing 900 MHz licensees (to their customers, those of MVNOs, and to customers of those operators availing of service on the basis of national roaming agreements) for the period until 800 MHz availability but with the advantage of being more closely aligned to the intent of the GSM Amendment Directive of introducing earliest licensing of the 900 MHz band on a technology neutral basis. Vodafone also maintains its view that ComReg has not effectively established that Option 3 would materially distort competition in the market, or that any such distortion of competition would outweigh the benefits of this potential approach.

However Vodafone considers that while Option 3 is the optimal approach of those assessed in the RIA, Option 1 as currently framed (in particular with its provision for a potential earlier liberalisation of the 900 MHz band than previously proposed, under certain conditions) is a reasonable approach that is also broadly consistent with the achievement of ComReg's regulatory objectives.

Text of Draft Interim Licence Decision and Draft Statutory Instrument

Vodafone has a number of comments on, and suggested amendments to, the text of the Draft Decision (Annex 2) and the Draft Statutory Instrument (Annex 3) that we believe ComReg should take into account in the text of the final Interim Licence Decision and S.I.

In relation to the Draft Decision, Vodafone considers that text on page 94: "(iv) the new Framework Directive" should read "(iv) the ***N***ew Framework Directive" in order to conform to the definition contained in Article 1 of the Decision.

Also on page 95 in Article 3.3, Vodafone notes that ComReg uses the word "foreshorten". This is not a word which appears in relevant legislation and might be regarded as being open to ambiguity in its meaning. ComReg might consider its replacement with another formulation, perhaps relying on the words used in Article 15 of the Amended Authorisation Directive, "restrict" or "withdraw".

In relation to the Draft Statutory Instrument, on page 100 the word *"Licence"* is defined in the following terms*: "means a* ***licence under, or as the case may be, of the type described in section 5*** *of the Act of 1926, to keep, have possession of, install, maintain, work and use Apparatus in a specified place in the State".* Vodafone considers that the meaning of the highlighted part of the definition is not clear; this may result from an error of punctuation.

On page 114, Vodafone believes that the words "Commencement date" should read "Commencement ***D***ate", in order to conform to the reference to "Commencement Date" on page 118. It is not clear whether "Termination date", highlighted by ComReg on the same page, is a defined term.

Correspondence provided by respondents (and ComReg written responses to same) in the period following publication of submissions to Consultation 11/11

1. Telefonica O2: “ComReg Document 11/11 Proposal and Further Consultation Interim Licences for the 900MHz Band” *(letter - dated 22 February 2011)*

22 February 2011

Mr. George Merrigan
Commission for Communications Regulation,
Abbey Court,
Irish Life Centre,
Lower Abbey Street,
Dublin 1

ComReg Document 11/11 Proposal and Further Consultation
Interim Licences for the 900MHz Band

Dear Mr. Merrigan

Telefonica O2 Ireland Limited (O2) welcomes the publication of the above document by ComReg clarifying ComReg's intention to issue an interim licence to O2 in advance of the expiry of the current 900MHz licence. O2 remains extremely concerned however that the process proposed by ComReg leaves little or no time to spare if this to be achieved.

ComReg itself acknowledges (in section 6.1) that there is limited time remaining to conclude the process and issue the licence:

> "ComReg notes that, unlike the situation in respect of earlier consultations within the broader spectrum liberalisation process, in light of the limited time in which its final decision on interim licences must be issued if serious consumer and market disruption is to be avoided and given the opportunity already afforded by Consultation 10/71 to provide comments and give relevant views, it is unlikely that ComReg will extend the consultation period in respect of this consultation."

O2 fully agrees with this statement by ComReg, and urges ComReg not to grant any request for an extension to the consultation on this document beyond the currently proposed response date of 18th March. There has already been extensive consultation on this matter and O2 is of the opinion that any extension would jeopardise ComReg's ability to deliver a decision and licence before 16th May.

Yours Sincerely

Tom Hickey

2. Ericsson: “ComReg 10 71” (email - dated 6 March 2011)

From: John Holland
Sent: 06 March 2011 20:52
To: Mike Byrne; Alex Chisholm
Subject: ComReg 10 71

Dear Mike & Alex,
Ericsson would like the opportunity to come in and discuss our responses to consultation ComReg 10 71. In particular we are still very concerned about the 70% coverage obligation. We would very much like the opportunity to meet and discuss this and any other aspects ComReg would like feedback or further input from Ericsson.

Kind regards John

John Holland

Head of New Business & Innovation

3. ComReg: Reply to Ericsson email of 6 March 2011 (email - dated 9 March 2011)

From: George Merrigan
Sent: 09 March 2011 14:30
To: John Holland
Subject: ComReg 10 71

Dear John,

Thank you for your e-mail of 6 March to Commissioners Byrne and Chisholm (attached below) in which you request a meeting to discuss ComReg's proposal for a 70% coverage obligation (and any other aspects ComReg would like feedback or further input from Ericsson).

ComReg notes Ericsson's previous submissions on this issue and is currently considering this and other relevant material before it.

ComReg will, in due course, publish a response to consultation and draft decision on its broader spectrum release proposals, which will include some final draft proposals and invite final submissions and information from interested parties. Included in that response-to-consultation will be an analysis of, and commentary on, Ericsson's submissions on this issue. ComReg will then consider and evaluate all of the material before it prior to making a final decision.

In these circumstances, whilst ComReg in no way wishes to restrict any party in making effective and full submissions, or in providing relevant information, during the course of a consultation process, it does not appear necessary in this instance to hold bilateral meetings with interested parties with regard to this issue. In principle, and in practice, it would appear that all relevant submissions and information can be adduced by way of written material provided to ComReg through the normal mechanisms. Unless, therefore, Ericsson can advance some further reason why it is necessary or desirable that these mechanisms be complemented by the holding of bilateral meetings in the current circumstances, ComReg is minded to decline to hold such meetings.

Finally, as is ComReg's usual practice, correspondence, such as your email of 6 March, 2011 are treated as submissions in response to consultation, and, subject to ComReg's guidelines on the treatment of confidential information and to any comments you wish to make in that regard, your e-mail will be published as a response. Accordingly, I would be grateful if you could let me know if there is anything in your e-mail that Ericsson considers is confidential, and ought not to be published, in order that these materials (or, as the case may be, appropriate versions of them) might in due course be published as consultation responses.

Yours sincerely,

George Merrigan I Director, Market Framework Division I
✉Commission for Communications Regulation, Abbey Court, Irish Life Centre,
Lower Abbey Street, Dublin 1, Ireland

4. Hutchison 3G Ireland: “COMREG DOC. NO. 11/11”(letter - dated 23 March 2011)

[redacted]

Hutchison 3G Ireland Limited
Registered office

3rd Floor
One Clarendon Row,
Dublin 2, Ireland

Registered Number: 316982
Place of Registration: Republic of Ireland

Three.ie

Mr Alex Chisholm, Chairperson
Commission for Communications Regulation
Irish Life Centre
Lower Abbey Street
Dublin 1
BY COURIER AND EMAIL: alex.chisholm@comreg.ie

23 March 2011

Dear Alex,

COMREG DOC. NO. 11/11

I refer to ComReg Doc. No. 11/11, *"Interim Licences for the 900 MHz band"* and the article that appeared on page 2 of the Business + Money section of the Sunday Times on 20 March 2011 entitled *"Phone firms get interim licences"* (attached)(the "Article").

In the Article, Mark Tighe, of the Sunday Times states: *"Vodafone and O2 are set to be granted 20-month interim licences at a cost of €4.2m each when their 2G digital licences expire in May"*; *"H3GI, the holding company for 3 Ireland, opposed the interim licences, describing them as anti-competitive"*; and *"A ComReg document says the temporary deals are needed to preserve the status quo"* [Emphasis added].

Hutchison 3G Ireland Limited ("H3GI") is deeply concerned about: (i) the implication of this article, namely that ComReg has decided to grant interim 900 MHz licences to Vodafone and O2, notwithstanding the fact that it has not yet concluded its consultation in respect of this matter; and (ii) the reference in this article to a *"deal"* between ComReg, Vodafone and O2 in respect of this matter. As stated in our response to ComReg Doc. No. 11/11, H3GI believes that ComReg's interim licence proposal unduly and disproportionately favours the interests of Vodafone and O2.

As the grant of interim 900 MHz licences is still subject to consultation, H3GI hereby calls on ComReg to clarify this matter and to write to the Sunday Times asking it to publish a correction in respect of the Article. H3GI reserves all rights in respect of this matter.

Sincerely

ROBERT FINNEGAN
Chief Executive Officer

[redacted]

5. ComReg: Reply to H3GI letter of 23 March 2011 (letter - dated 25 March 2011)

Commission for
Communications Regulation

25 March 2011

Mr. Robert Finnegan
Chief Executive Officer
Hutchison 3G Ireland
1 Clarendon Row
Dublin 2

Ref: ComReg Doc. No. 11/11

Dear Mr. Finnegan

Thank you for your letter to Alex Chisholm of 23 March 2011.

ComReg confirms that the proposed grant of interim GSM 900 MHz licences to Vodafone and O2 remains the subject of ongoing consultation, and that no decision has been made to date in respect of this matter.

No ComReg consultation document refers to the proposed grant of interim licences as a "deal" between ComReg and Vodafone and/or O2, nor does it describe the actuality.

ComReg reserves all rights in respect of this matter.

Yours sincerely,

Dr. Samuel Ritchie
Spectrum Operations Manager

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Commission for Communications Regulation
Abbey Court Irish Life Centre Lower Abbey Street Dublin 1 Ireland
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6. ComReg: Letter sent to the Sunday Times (letter – dated 25 March 2011)

Dear Sir,

I refer to the article entitled "Phone Firms get interim licences" which was published in the Sunday Times on 20 March 2011.

ComReg wishes to point out that:

- *The proposed grant of interim GSM 900 MHz licences to Vodafone and O2 remains the matter of consultation by ComReg and no decision has been made by ComReg in that regard.*
- *The article uses the word "deal" which is not stated anywhere in the ComReg documentation, nor does it describe the actuality.*

Sincerely

Tom Butler
Public Affairs Manager
Commission for Communications Regulation

7. Sunday Times: Publication of clarification (published 27 March 2011)

(*as published in Sunday Times, 27 March 2011*)

The proposed granting of interim GSM 900 MHz licences to Vodafone and O2 remains a matter of consultation by ComReg and no decision has been made ("Phone Firms get interim licences", Business, last week). The article uses the word "deal" which it is not.

Tom Butler
Public affairs manager, Commission for Communications Regulation, Dublin 1