Commission for
Communications Regulation

The Introduction of a Licensing Framework for VHF and UHF Telemetry Systems, Changes to Current Frequency Assignments and Spectrum Release Proposals

Response to Consultation 13/13

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An Coimisiún um Rialáil Cumarsáide
Commission for Communications Regulation
Abbey Court Irish Life Centre Lower Abbey Street Dublin 1 Ireland
Telephone +353 1 804 9600 Fax +353 1 804 9680 Email info@comreg.ie Web www.comreg.ie

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Content

Section Page

Annex

Section **Page**

1 Introduction

1 In Consultation 11/94[1], the Commission for Communications Regulation ("ComReg") proposed to introduce a new licensing scheme for scanning telemetry and telecontrol systems in the VHF and UHF frequency bands. The proposed scheme would comprise of four categories of wireless telegraphy licence catering for telemetry networks ranging in size from small single site systems to large nationwide networks.

2 A telemetry and telecontrol system ("telemetry") is a wireless telegraphy system by which automated measurements are made and other data collected at remote or inaccessible locations, and transmitted to receiving stations for monitoring, recording or remote control purposes. The use of telemetry systems has increased in recent years (mainly from utility operators and also from the manufacturing and food & beverage production industries).

3 ComReg noted in Consultation 11/94 that it currently licences telemetry under its Business Radio licensing framework, which is intended to facilitate mobile services. It is also noted that the increased demand for telemetry, which is a fixed wireless service, has made it more difficult to provide interference free channels for this purpose. The incompatibility of fixed and mobile users also means that significant tranches of spectrum are left unused as they must serve as guard-bands between these two user groups.

4 ComReg thus set out its view that a new licensing framework specifically for telemetry was desirable and Consultation 11/94 proposed four new licence categories, with each licence category aimed at the needs of particular telemetry users.

5 The four categories are:

- On-Site Licence,
- Local Area Licence,
- Wide Area Licence, and
- National Telemetry Licence.

[1] Introduction of a Licensing Framework for VHF and UHF Telemetry Systems, Changes to Current Frequency Assignments and Spectrum Release Proposals. ComReg Doc No 11/94

6 In order to give effect to the new telemetry licensing framework, ComReg also proposed to re-allocate up to 2 x 1.2625 MHz of paired spectrum and 1 x 25 kHz of unpaired spectrum in the 163 – 174 MHz and 450 – 470 MHz bands, specifically for telemetry use, noting that this would require the relocation of some existing licensed users.

7 In Document 13/13[2] ComReg amended some of the proposed frequency arrangements, which were set out in Consultation 11/94, in order to protect existing users in the particular bands. In light of these amendments, ComReg also updated its draft Regulatory Impact Statement and consulted further on same.

8 Two respondents submitted comments on the further consultation in Document 13/13.These were:

- ESB Networks Ltd. (ESBN)
- Joint Radio Company Ltd. (JRC)

9 This document provides a response to the further consultation set out in Document 13/13.

10 Following consideration of all responses received to Consultations 11/94 and 13/13 and having regard to ComReg's statutory functions, objectives and duties as regards the radio frequency spectrum[3], ComReg sets out in Chapter 4 its final position on the proposed new telemetry licensing scheme.

[2] Response to Consultation and Further Consultation: Introduction of a Licensing Framework for VHF and UHF Telemetry Systems, Changes to Current Frequency Assignments and Spectrum Release Proposals. ComReg Doc No 13/13

[3] See, in particular, Sections 10 and 12 of the Communications Regulation Act 2002, Regulations 16 and 17 of the Framework Regulations (SI 333 of 2011) and Regulations 9, 10 and 11 of the Authorisation Regulations (SI 335 of 2011).

2 Responses to Further Consultation in 13/13

11 Following amendment of the channel plan proposed in Consultation 11/94, ComReg asked the following question:

Q. 1	Do you agree that the revised channel plans outlined in Annex 1 of this document are suitable for current telemetry requirements? If not, please give reasons with your answer.

The amended channel plans are restated in Annex 1 of this document for reference.

2.1 Views of Respondents

12 One respondent, ESBN, offered views on this question.

13 ESBN stated that "*the channel plan is a welcome advance for telemetry systems".*

14 ESBN also restated its reservations (previously raised in its submission to consultation document 11/94) with regard to the amount of spectrum being made available for telemetry systems. In support of its view it provided details of the arrangements in other EU States for clarification, citing specific examples of the UK and the Netherlands where, it suggests, larger amounts of spectrum are being made available.

2.2 ComReg's Position

15 ComReg welcomes ESBN's views on spectrum availability but having reviewed the information provided does not propose to amend its position on this matter.

16 Spectrum is a scarce and valuable natural resource and, as there is a limited amount of spectrum available in the VHF and UHF bands, ComReg is proposing a balance between the amount of spectrum being made available for National Telemetry Licences and other telemetry licence types in the interest of efficient use of the radio spectrum. ComReg notes that assigning more spectrum to National Telemetry Licences would result in less spectrum being available for other telemetry licensees and for other purposes. ComReg also notes that the proposals in Consultation 11/94 will entail a significant overall increase in the amount of spectrum allocated to telemetry, thereby bringing it in-line with practice elsewhere. ESBN does not address either of these important points in its submission and does not provide any supporting evidence which would justify the allocation of additional spectrum to ESBN or to National Telemetry Licences over other actual or potential users. Indeed, ESBN acknowledges that any alleged difficulties would not, in any case, arise in the short term (the next 2 years).

17 ComReg does not therefore consider that the allocation of additional spectrum to ESBN alone or to National Telemetry Licences would, at this point in time, be objectively justified, non-discriminatory and proportionate or accord with its statutory objectives in terms of management of the radio frequency spectrum, and so does not propose to amend its position in this regard. Notwithstanding this, ComReg intends to monitor developments in this area and may revisit this position in the future.

3 Other Issues Raised

18 As part of the further consultation in Document 13/13, ComReg stated it would review any information that could be provided that was not available at the time of publication of Consultation 11/94, given the period of time that had elapsed since its publication. As well as providing comments on the question posed in Document 13/13, both respondents took the opportunity to provide additional comments on issues that were to a large extent already dealt with in Document 13/13.

19 ESBN noted that a number of improvements to the scheme originally proposed in Consultation 11/94 were being made that will "*make it more flexible and permit more and better services to be provided with the spectrum in question*". Changes to ComReg's preliminary position on the use of repeaters, as set out in Consultation 13/13, increased flexibility in the national cellular plan and an increase of the permissible ERP limits were also welcomed.

20 ESBN noted in its submission that ComReg attributed to ESBN a statement which was contained in the Annex to its submission to Document 11/94. ESBN points out that this quote "*is not directly from ESBN*". The Annex to ESBN's submission is entitled "*Notes from JRC to ESBN regarding the technical content of the ComReg Telemetry Consultation Document (ComReg 11/94)*". ComReg accepts that these comments were not "*directly from ESBN*" and were instead intended to be attributed directly to JRC. However, given their non-confidential attachment to ESBN's submission, ComReg must assume that ESBN agrees with the comments contained therein and that they form part of its submission to the consultation. ComReg was therefore entitled to reasonably attribute such views to both JRC and ESBN.

21 ESBN also made the observation that its proposal regarding licence duration was not addressed in Document 13/13. In its response to Document 11/94, it proposed that there be a 4-year 'rolling licence' after the initial 6 years of the licence. It argues that this would allow appropriate notice to users should they be required to relinquish spectrum licences, while meeting ComReg's requirements on future allocations of the radio spectrum.

ComReg notes that this proposal was not directly addressed in Document 13/13, but that the position taken by ComReg on the duration of licences was based on reflection of all submissions received, including ESBN's proposal. ComReg has set out its position on licence duration in section 4.3 of the Strategy for Managing the Radio Spectrum 2011-13[4]. ComReg's position on this issue, with regard to all categories of electronic communications services and networks and

[4] Strategy Statement: Strategy for Managing the Radio Spectrum 2011-2013 – ComReg document 11/89

associated wireless telegraphy licenses, is that granting wireless telegraphy licences of fixed, finite duration is beneficial as it enables ComReg to ensure that the spectrum at issue is used efficiently, through its periodic re-release. In this regard, it should be noted that ComReg has a statutory obligation to encourage the efficient use and ensure the effective management of the radio frequency spectrum.

22 ComReg is of the view that certainty for existing licensees can be achieved by holding an award process for the spectrum rights of use in question significantly in advance of licence expiry.[5]. This would provide existing licensees with early visibility of future spectrum assignments in the band and facilitate an orderly migration for any licensees that do not reacquire spectrum.

23 ComReg therefore proposes to issue all categories of telemetry licences for a maximum duration of 10 years in accordance with its Strategy Statement with the holding of an award process for the relevant spectrum significantly in advance of licence expiry. This will provide sufficient certainty for all users and allow them to recoup their investments. Licences will be issued on a first-come-first-served basis and all such licences, upon reaching their expiry dates, will expire immediately and in full and will not be renewed or extended while all associated spectrum rights of use shall likewise expire.

[5] This should not be interpreted as an undertaking by ComReg that the telemetry licensing scheme described herein will remain in force on substantially the same terms beyond the expiry of the new licences proposed under this scheme.

24 JRC made the following observations.

25 "*the rationale for NOT reserving spectrum for specific sectors is based on classical economic theory that this risks the spectrum not being used by those who value it most, thereby raising the prospect of spectrum being left underutilised.*

JRC could point to spectrum auctions in other countries where the spectrum has been awarded to the highest bidder, yet the spectrum has remained unused for long periods. Indeed, although administrations can be accused of allowing spectrum to remain unused for long periods through poor management, it is questionable whether market mechanisms have proven more effective than administrations in ensuring spectrum does not lay idle. In the case of specialist spectrum such as that under consideration for telemetry systems, it could be argued that experienced administrations such as ComReg can manage the spectrum more effectively in the national interest than commercial organisations investing in spectrum driven purely by profit motives rather than public interest".

26 The above comments were made in relation to paragraph 74 of Document 13/13. Paragraph 74 contained observations with regards to cross-border harmonisation of frequency allocation and the efficiency risks inherent in the reservation of spectrum to particular users or user groups over other actual or potential users.

27 ComReg notes that the above JRC comments relate primarily to market based mechanisms (i.e. auctions) used for the assignment of spectrum. However, ComReg is not proposing to apply a market based mechanism to the assignment of the spectrum in question and does not therefore entirely understand the relevance of the points being made here. Instead, ComReg is proposing a 'first come first served' assignment mechanism. ComReg also notes that JRC has not provided any additional evidence that would justify the reservation of spectrum for "specific sectors" or individual utilities.

28 Based on the information before it (see also comments in previous chapter on reservation of spectrum), ComReg has no reason to believe that the proposed number of National Telemetry Licences would be insufficient to meet reasonable and demonstrable demand for same. Also, under the proposed new licensing framework, all applicants will be treated equally and will have equal opportunity to apply for and obtain National Telemetry Licences on the basis of demonstrable demand. This will minimise the risk of prospective National Telemetry Licensee with genuine spectrum requirements failing to obtain a licence.

29 ComReg remains of the view that, in reserving spectrum for specific industrial or utility sectors there is a risk that other potential users, who may value it more, would be denied the opportunity to access it. This potentially raises issues with regards to discrimination against other potential users who are considered to have an equal entitlement to spectrum for telemetry purposes and who may also have an equal or even more pressing requirement for such spectrum.

30 ComReg does not therefore propose to amend its proposals in this regard. Notwithstanding this, and as noted previously, ComReg intends to monitor developments in this area and may revisit this position in the future.

31 With respect to cross-border harmonisation, ComReg notes that it has, as much as possible, harmonised its channel plan for National Telemetry Licences with the existing UK channel plan. This will minimise the need for relocation of existing licensed services and, in turn, any resulting disruption to them. It should also facilitate any entities requiring appropriate licences in both Northern Ireland and the State.

32 In its response to Document 13/13, JRC also comments that "*licensees deploying fixed links are normally expected to be able to undertake these calculations. Since telemetry systems are more akin to fixed links than mobile services, it would not be unreasonable to expect licensees to be able to undertake this task*". This is in response to ComReg stating in paragraph 135 of Document 13/13 that it felt that having licensees calculate the required ERP for 99.9% link availability would be too onerous to be practical in all circumstances.

33 Despite the renewed arguments of JRC, ComReg still considers that this approach would be too onerous to be practical in all circumstances. While acknowledging that the proposed solution would not put large operators at a disadvantage, ComReg must also be cognisant of small-scale operators of such systems that may not enjoy similar resources but, as licensees, will still be entitled to utilise telemetry systems. The proposed solution could risk discriminating against small-scale operators and, given the additional burden that this would impose on such operators, might not ensure that effective restrictions on maximum ERP are in place. In its view, ComReg would not be meeting its obligations to protect users in adjacent spectrum if appropriate and effective restrictions on maximum ERP were not in place as this could give rise to unacceptable risks of interference for some spectrum users. ComReg does not therefore propose to amend its proposals in this regard and the maximum limit of 50W ERP will be applied.

34 It is noted that in Document 13/13, paragraph 134 ComReg refers to EIRP when discussing permitted power; this should have read ERP in line with the rest of the document.

35 Finally, JRC noted that ComReg had implied in paragraph 156 of Document 13/13 that it was unable to reserve radio spectrum for specific users. This was based on ComReg's position, expressed in Document 13/13, on the suggestion by ESBN and JRC that utilities operating "*critical national infrastructure*" be given priority over other services. JRC further noted that "*in para 50 of the document, ComReg proposes reserving certain UHF channels for on-board vessel use, it being common practice for spectrum to be reserved for maritime and aeronautical use. Furthermore, other EU decisions such as those reserving spectrum for railways - GSM-R and Emergency services (380-385 MHz paired with 390-395 MHz) already reserve spectrum for state agencies or bodies. Since utilities are required to deliver national and EU energy policy objectives; and that spectrum to support smart metering and smart grids is specifically mentioned in the European Radio Spectrum Policy Programme, it is surprising that ComReg's legal advice should suggest that such allocation decisions could run counter to EU rules*".

36 Firstly, ComReg would point out that it did not propose in paragraph 50 of Document 13/13 *"reserving certain UHF channels for on-board vessel use".* ComReg merely observed that *"[t]hese channels have been removed from the national frequency plan for National Telemetry Licences, but may be assigned for non-national telemetry use in inland areas*". With regards to the suggestion that utilities operating "*critical national infrastructure*" be given priority over other services, ComReg has already set out in detail above its view on the reservation of spectrum for such utilities. ComReg does not propose to revisit the matter again here save to point out that, unlike the proposed telemetry licensing scheme, users of spectrum for maritime and aeronautical[6] use are not afforded any exclusivity. Such spectrum is reserved for specific uses rather than for specific users. Furthermore, this allocation was made in line with current ITU Radio Regulations[7].

37 ComReg also notes that the broad "national and EU energy policy objectives" to which JRC refers do not impose any binding obligations on ComReg or even provide specific guidance in relation to the treatment of smart metering and smart grids. In addition, ComReg notes that the European Radio Spectrum Policy Programme merely imposes an obligation on the European Commission, in cooperation with Member States, to "*conduct studies and examine the possibility to design authorisation schemes*" with regards to making spectrum available for wireless technologies including smart energy grids and smart metering systems. Notwithstanding this, ComReg will of course have regard to any such studies or schemes when devising its future radio spectrum policy.

[6] ComReg considers 'Maritime' and 'Aeronautical' to be types of use rather than specific industries. The spectrum has been reserved for a specific use, not user. In this regard it does not differ from the proposed scheme for telemetry systems.
[7] ITU Radio Regulations F/N 5.287

38 With reference to the GSM-R and Emergency Services (TETRA), this spectrum is reserved for a specific use, not user, and in this respect it also does not differ from the proposed telemetry licensing scheme. Any user, e.g. a privately operated railway, is entitled to apply for a licence for the abovementioned bands based on a ‘first come, first served’ basis.

39 In light of the above observations, ComReg does not, at this point in time, propose to amend its position with regards to the reservation of spectrum for specific users or industries. Notwithstanding this, and as noted previously, ComReg intends to monitor developments in this area and may revisit this position in the future.

4 Final Position

40 Following consideration of all responses received to Consultations 11/94 and 13/13 and having regard to ComReg's statutory functions, objectives and duties as regards the radio frequency spectrum[8], the following represents ComReg's final position on the proposed new telemetry licensing scheme.

Decision to award licences:

41 In accordance with Regulation 9(2) of the Authorisation Regulations, ComReg is proposing to grant individual rights of use for this spectrum by way of licences in order to avoid harmful interference and to safeguard the efficient use of spectrum.

Frequency Allocations:

42 The frequency allocations for all licence types can be found in Annex 1 and the cellular plan for the national licences can be found in Annex 2. No submissions received raised any issues with regards to the frequency plans contained therein.

43 The proposed National Channel Plan (Annex 1) is designed to be adaptable and flexible. Consideration has been given to the adaptability of reusing frequencies in adjacent cells. Further, channel frequencies have been chosen to correspond to those of the UK channel plan, where possible, as this will ease cross-border co-ordination and facilitate cross-border networks, if required. The assignment of frequencies to different blocks was chosen to prevent adjacent channels being present in the same block, as much as possible. Licensees may use their assigned frequencies outside of the assigned cells but only where it can be shown that interference will not be caused to other users

[8] See, in particular, Sections 10 and 12 of the Communications Regulation Act 2002, Regulations 16 and 17 of the Framework Regulations (SI 333 of 2011) and Regulations 9, 10 and 11 of the Authorisation Regulations (SI 335 of 2011).

Transition of Community Repeaters:

44 There are two Community Repeaters that currently operate on frequencies within the proposed national telemetry spectrum band. The frequency assignments under the new licensing framework may involve retuning costs for these licensees and may lead to some temporary disruption of service to Community Repeaters. ComReg is of the view that in most cases it should be possible to retune the equipment without incurring significant expense and this view was echoed by respondents to Consultation 11/94. However, the affected licensees will have three years in which to complete the transition, which should further minimise any disruption.

Permitted Power:

45 The maximum permitted transmission power for telemetry systems will be 50W ERP.

46 ComReg has taken into consideration all submissions made on this issue and has increased the maximum permitted power originally proposed (25W) in light of submissions received. It is considered that any further increase in permitted transmission power would increase the risk of disruption to services in adjacent bands to an unacceptable level.

47 It is noted that in paragraph 134 of Document 13/13 ComReg refers to “EIRP”, this was a typographical error and should be construed as ERP (effective radiated power), as referred to throughout the rest of that document.

48 ComReg notes that the proposed level is the maximum limit and not a guideline on the power level that should be used. In all cases, the appropriate transmit power level should be determined on a site-by-site basis, taking into consideration factors such as propagation loss, local topography and the need to coexist with other users. In the case of On-Site, Local Area and Wide Area Telemetry Licences, ComReg will determine the permitted transmit power level while holders of National Telemetry Licenses will be expected to take these factors into consideration when deploying sites. In all cases, power levels may have to be revised downwards if interference results.

49 ComReg notes the submissions of respondents on this matter and notes that the antenna characteristics set out in Consultation 11/94 should be considered as guidelines. Regardless of the antenna deployed, in no circumstances can the stations transmit a power level exceeding the ERP limits prescribed in the licence conditions. All users are to be mindful of the efficient use of the radio spectrum assigned to them and to use antennas appropriately, i.e. the maximum practical antenna gain should be chosen.

Duration and Expiry of Licences:

50 It was originally proposed that National Licences would be issued on a 10 year licence with all other licences being issued on a 5 year licence.

51 Taking into account the submissions received on this issue it was decided to allow all licence types a 10 year licence period, primarily this is to reflect that investment decisions are likely to be made on the basis of a 5 to 10 year cycle depending on the licensee in question.

52 It was also suggested that licences did not need a finite duration. ComReg's position on this issue, with regard to all categories of electronic communications services and networks and associated wireless telegraphy licenses, is that granting wireless telegraphy licences of fixed, finite duration is beneficial as it enables ComReg to ensure that the spectrum at issue is used efficiently, through its periodic re-release.[9] In this regard, it should be noted that ComReg has a statutory obligation to encourage the efficient use and ensure the effective management of the radio frequency spectrum.

53 Having taken into consideration all submissions in relation to the duration and expiry of licences, ComReg has decided that all licences will be issued for a maximum period of 10 years on a first-come-first-served basis. This will provide sufficient certainty for all users and allow them to recoup their investments. All such licences, upon reaching the expiry date, will expire immediately and in full and will not be renewed or extended while all associated spectrum rights of use shall likewise expire.

Use of Repeaters:

54 In its original proposal in Consultation 11/94 ComReg suggested that the use of repeaters be precluded from On-Site and Local Area licences. Further, it was proposed that only single frequency repeaters be permitted.

55 Following consideration of all submissions received on this issue, ComReg's final position is that repeaters may be used by all classes of licensee and that the use of repeaters that utilise a second channel be permitted. A Licensee must hold a valid licence for any additional channels used by repeaters.

56 Repeaters of any type, as with any other station, may not be operated outside the geographic area within which the user is licensed and will be subject to all other conditions of that licence (e.g. transmit power, antenna height etc.).

[9] This is set out in greater detail in Strategy for Managing the Radio Spectrum 2011-13.

Compliance with International Commission on Non Ionizing Radiation Protection (ICNIRP) Limits:

57 Equipment covered under all classes of licence must adhere to the limits set down in the guidelines published by ICNIRP.

Licence Award Mechanism:

58 In Consultation 11/94, ComReg set out its view that a 'first come, first served' licence award mechanism is appropriate for all four proposed licence categories.

59 It was noted that the majority of submissions received did not agree with the 'first come, first served' approach; rather, they advocate a system of spectrum being reserved for specific users and industries.

60 However, ComReg has set out in detail in Chapters 2 and 3 above why, at this point in time, it considers it inappropriate and/or unnecessary to reserve some of this spectrum for specific users or industries. Notwithstanding this, and as noted previously, ComReg intends to monitor developments in this area and may revisit this position in the future.

61 ComReg has, therefore, decided to implement a 'first come, first served' licence award mechanism. Licences will be awarded on a demonstrable needs basis in order to reduce the risk of frivolous applications or spectrum hoarding. With the exception of the National Telemetry Licence there will be no limit on the maximum number of licences that any one user could hold. A single licensee may hold a maximum of two National Telemetry Licences.

Licence Fees:

62 In Consultation 11/94, ComReg set out its proposed fee structure for the four proposed categories of telemetry licences, as set out in Table 1 below.

63 ComReg proposed in Consultation 11/94 to link the licence fees with the Consumer Price Index (CPI). No objections were raised against this proposal.

Telemetry Licence Category	Number of 2 x 12.5 kHz Channels[10] Assigned in a Licence	Annual Licence Fee (to be adjusted for CPI)
On-Site	1	€109
Local-area	1	€436
Wide-area	1	€872
National	12	€39,240 [per 12 channels]

Table 1 - Proposed Fees for Telemetry Licences

64 ComReg has therefore decided to proceed with the licence fee structure as set out in Table 1 above. The fees will be on a per licence basis and will be payable annually.

[10] The fees are based on a duplex 12.5 kHz channel (2 x 12.5 kHz). If a 2 x 25 kHz channel is required then two adjacent 12.5 kHz channels may be aggregated. In such cases the fee charged will be as if two separate 12.5 kHz channels were assigned.

5 Final Regulatory Impact Assessment

5.1 Introduction

65 In Annex 4 of Consultation 11/94, ComReg carried out a draft RIA in accordance with its RIA Guidelines (Document 07/56a[11]) ("RIA Guidelines") as described therein and below. ComReg invited interested parties to review the draft RIA and submit any comments or information that they believed ComReg should consider in finalising its decision on the proposal to introduce a licensing framework for VHF and UHF telemetry networks and systems. As set out in Chapter 6 of this document, and as will be seen from the RIA below, ComReg has updated its draft RIA in order to take account of concerns expressed by certain respondents. ComReg, however, remains of the view that it has not received any further information which would cause it to amend its preferred option as set out in Consultation 11/94.

66 This Annex sets out ComReg's final RIA on its proposal to introduce a licensing framework for VHF and UHF telemetry systems. It has been prepared in accordance with ComReg's RIA Guidelines and having regard to the RIA Guidelines issued by the Department of An Taoiseach in June 2009 and the relevant Policy Directions issued to ComReg by the Minister for Communications, Marine and Natural Resources under Section 13 of the Communications Regulation Acts, 2002 to 2011, on 21 February 2003 (the "Policy Directions").

67 ComReg's RIA Guidelines set out, amongst other things, the circumstances in which ComReg considers that a RIA might be appropriate. ComReg generally conducts a RIA in any process that might result in the imposition of a regulatory obligation or amendment of an existing regulatory obligation to a significant degree, or which might otherwise significantly impact on any relevant market or on any stakeholders or consumers.

[11] ComReg 07/56a – Guidelines on ComReg's approach to Regulatory Impact Assessment – August 2007.

68 ComReg's RIA Guidelines set out the five steps to a RIA:

- Step 1: Identify the policy issue and identify the objectives;
- Step 2: Identify and describe the regulatory options;
- Step 3: Determine the impacts on stakeholders;
- Step 4: Determine the impacts on competition; and
- Step 5: Assess the impacts and choose the best option.

5.2 Identifying the Policy Issues and Objectives

69 ComReg licenses scanning telemetry and telecontrol systems in the VHF and UHF frequency bands under the Business Radio licensing framework, which is intended to facilitate mobile services. This means that fixed telemetry users share the same spectrum as mobile users and it has become increasingly difficult to ensure that these two groups do not cause radio interference to each other. Significant tranches of spectrum have been left unused in order to serve as guard-bands for this purpose, which creates artificial scarcity of spectrum. This also represents an inefficient use of the radio spectrum. These factors undermine certainty regarding the future availability of spectrum for licensing new telemetry and Business Radio users.

70 The options considered in this RIA are assessed against ComReg's statutory functions and objectives,[12]particularly in relation to:

- the promotion of competition[13], which includes:
  - ensuring that there is no distortion or restriction of competition in the electronic communications sector;[14]
  - promoting efficient investment and innovation in new and enhanced infrastructures;[15] and
  - encouraging efficient use and ensuring the effective management of radio frequencies;[16]

[12] ComReg's relevant statutory functions are presented in Section 2.1 of Consultation 11/94
[13] ComReg has a broad discretionary power in relation to achieving this general obligation.

[14] Section 12(2)(a)(ii) of the 2002 Act.

[15] Regulation 16(2)(d) of the Framework Regulations.

[16] Section 12(2)(a)(iv) of the 2002 Act.

- promoting the interests of users in the community;[17] and
- safeguarding competition to the benefit of consumers and promoting, where appropriate, infrastructure-based competition.[18]

71 Accordingly, the principal policy issues and objectives that ComReg considers to be relevant to this RIA are:

- to create certainty for stakeholders regarding the future availability of spectrum for licensing both telemetry and business radio;
- to reduce the administrative burden on users when licensing multi-site telemetry networks; and
- to encourage the efficient use and ensure the effective management of the radio frequency spectrum by:
  - defragmenting existing telemetry spectrum assignments;
  - harmonising spectrum use with the UK and Northern Ireland to the greatest extent possible; and
  - segregating incompatible users (fixed and mobile) into separate spectrum bands.
- the impact of ComReg's proposal on competition and consumers.

5.3 Identify and Describe the Regulatory Options

72 ComReg considers that there is a need for two important changes to the current way in which telemetry is licensed:

1. Introducing a separate licensing framework which would be more suited to the needs of telemetry users; and
2. Changing the current frequency arrangement to ensure efficient spectrum use and on-going co-existence between telemetry and business radio users.

73 ComReg considers that two options are available to it in this regard:

- **Option 1:** Introduce a new licensing framework under which four different categories of telemetry licence could be awarded. This framework would be aimed at meeting the needs of a range of telemetry licensees, ranging from smaller licensees operating within a single premises to larger licensees operating regional or nationwide telemetry networks. Establishing such a framework would require amending certain current spectrum allocations, specifically in the 163 – 174 MHz (VHF) and 450 – 470 MHz (UHF) bands, so that they would be used for

[17] Section 12(1)(a)(iii) of the 2002 Act.

[18] Regulation 16(2)(c) of the Framework Regulations.

telemetry (by re-allocating up to 2 x 1.2625 MHz of paired spectrum and 1 x 25 kHz of unpaired spectrum). Both aspects of Option 1 are described in detail in Sections 4 and 5 of the Consultation.

- **Option 2:** Make no change to ComReg's current practice for licensing telemetry and to leave the existing frequency arrangements unchanged.

5.4 Determining the Impacts on Stakeholders

74 The impact upon two broad stakeholder groups are considered in this RIA, the two groups being:

- Current and prospective users of telemetry, including Irish Water;
- Business Radio Users including community repeaters and licensees under the established TPBR (Third Party Business Radio) licensing framework.

Telemetry users:

75 Option 1 would reduce congestion in the VHF and UHF spectrum bands and rationalise the use of these bands by all stakeholders, introducing frequency separation between fixed telemetry licensees and other mobile users of the bands in question. This would increase the quantity of spectrum available for new telemetry licences.

76 Option 1 would also involve the introduction of Wide-Area and National Licence categories. This could benefit larger telemetry licence users in the following ways:

- It would reduce the administrative burden on these licensees as fewer licence applications and renewals would be required;

- A National Telemetry Licence would indicate the channels to be used in each region of the State. Hence it would no longer be necessary for National Telemetry licensees to obtain an individual licence for each site in their network before they could know the precise frequencies of operation. This would provide greater certainty and would be beneficial when ordering telemetry equipment; and

- Telemetry licensees such as providers of water services would have the option to apply for either geographically confined licences (On-Site, Local-Area or Wide-Area) or a single National Licence, or a combination of both.

77 A potential drawback of Option 1 from the perspective of existing telemetry users would be the need to relocate from the channels they are currently assigned, into the proposed telemetry bands, within a period of five years. This may lead to some retuning costs and temporary disruption for existing telemetry services.

78 Under Option 2, there would be no relocation and consequently no retuning costs or disruption for existing telemetry users. However, future licensing of telemetry would remain under the existing Business Radio framework and operators of larger telemetry networks would still have to apply for individual Business Radio licences for each and every site in their network, with the associated administrative burden. Similarly, if no changes are made to the existing frequency arrangements then the fragmented spectrum holdings of existing telemetry users would persist, requiring such users to hold a larger inventory of replacement spare parts in case of equipment failure. This would likely have an impact on all telemetry users but it may be particularly onerous for larger telemetry network operators such as power or water utilities.

79 For these reasons, ComReg is of the view that telemetry users are likely to favour Option 1 over Option 2. This was the view expressed by respondents to the draft RIA in Consultation 11/94.

Business Radio users (including Community Repeater users)

80 Option 1 would reduce congestion in the VHF and UHF spectrum bands. This would increase the quantity of spectrum available for new Business Radio licences. The more efficient assignment of spectrum would also mitigate the risk of interference to Business Radio users from fixed telemetry.

81 There are two Community Repeaters that currently operate on frequencies within the proposed national telemetry spectrum band. Option 1 may involve retuning costs for these licensees and may lead to some temporary disruption of service to Community Repeaters. However ComReg is of the view that in most cases it should be possible to retune the equipment without incurring significant expense and this view was echoed by respondents to Consultation 11/94. It is also proposed that the affected licensees would have three years in which to complete the transition, which should further minimise any disruption.

82 Under Option 1, ComReg would assign channels close in frequency to existing TPBR users. Despite this assignment, there is a low risk that TPBR operators would have to upgrade equipment or employ filters on some of their sites. As such, the cost implications for TPBR operators, if any, would be limited.

83 There would also be no relocation or retuning costs for the two Community Repeaters concerned and no disruption to their services under Option 2. With the increasing uptake of telemetry, it is likely that demand for spectrum would be met by assigning the channels in close proximity to TPBR channels to telemetry services. In doing so, there is a low risk that existing TPBR operators would have to upgrade filter equipment on some sites in order to mitigate for this.

84 Overall, ComReg is of the view that Business Radio users are likely to favour Option 1, as it reduces the uncertainty associated with interference and with the future availability of Business Radio licences. The two Community Repeater licensees may be concerned about the relocation required under Option 1 and may therefore favour Option 2. However as stated above, ComReg is of the view that the incurred costs on these users would be low and they would also be given sufficient time in which to retune.

5.5 Impacts on Consumers

85 The telemetry systems used by organisations such as utility and industrial companies to provide “electronic communications networks” (ECN), do not constitute “electronic communications services” (ECS) as defined in the Framework Regulations, as they are not intended for third party remuneration. As such the licensing of telemetry systems is unlikely to affect consumers directly.

86 As already outlined, Option 1 would reduce congestion in the VHF and UHF spectrum bands. This would increase the quantity of spectrum available for new Business Radio licences. The benefit of defragmentation is that fewer channels would be required to serve as unused guard-bands. These channels could then be put to productive use by assigning them to licensees. As such, any new framework that provides for the more efficient use of spectrum is likely to benefit consumers.

87 Option 2 would provide for the continuation of the current licensing framework which would entail an increased likelihood of interference between channels which is likely to negatively affect the provision of services to customers. It is therefore likely that consumers would prefer Option 1 given that the new framework would provide for an increased likelihood of interference free channels.

5.6 Impacts on Competition

88 Telemetry users come from a range of diverse sectors, the majority of which are not in direct competition. Nonetheless these users all require access to radio spectrum as an input to their business. Radio spectrum is a finite resource and the right to use it is conferred by ComReg in accordance with its statutory functions. ComReg has a statutory function to "encourage the efficient use and ensure the effective management of the radio frequency spectrum" as a means of promoting competition. The inefficient use of spectrum would ultimately have a detrimental impact on competition.

89 Under Option 1, the separation of fixed telemetry and mobile users into separate spectrum bands would have a positive effect on competition as it would facilitate denser and more efficient reuse of frequencies. This would allow more users to operate in a given area without increasing the risk of interference. Segregation of these services would also allow assignments in the VHF and UHF spectrum bands to be de-fragmented, so that future assignments could be more efficiently structured. The benefit of this is that fewer channels would be required to serve as unused guard-bands. These channels could then be put to productive use by assigning them to licensees.

90 A negative impact of Option 1 is that the spectrum that ComReg proposes to reserve for telemetry use would no longer be available to other Business Radio users. However, ComReg is of the view that the spectrum in question does not offer any unique advantages to Business Radio users, who may be suitably accommodated elsewhere in the VHF and UHF bands. This view was echoed by most respondents to the consultation. Further, the more efficient spectrum assignment that would be possible under Option 1 may assist in making VHF and UHF spectrum available for alternative applications in the future.

91 Option 2 could have a negative impact on competition because spectrum assignments in the VHF and UHF bands would remain highly fragmented and reservation of unused guard-bands would still be needed to mitigate interference. This could lead to artificial spectrum scarcity which in turn could reduce the amount of spectrum available for current users and potential new entrants.

92 Overall, Option 1 is likely to have a greater positive impact on competition, by encouraging more efficient use and ensuring the effective management of the radio frequency spectrum.

5.7 Selecting the Preferred Option

93 Given the above, ComReg considers that on balance Option 1 is the most proportionate of the options considered in this RIA and accordingly is the preferred option for the reasons already given.

94 The stakeholder impacts set out above indicate that Option 1 is likely to be the preferred option for both telemetry users and Business Radio users, and the benefits of Option 1 are likely to outweigh the costs which relate to the short-term disruption to existing telemetry and Community Repeater services, that may occur during its implementation. Respondents to the consultation agreed that this option was preferable and suggested that the costs imposed on existing telemetry and community repeater operators would not be significant in the longer term.

95 Whilst the short-term costs would not arise under Option 2, there are some potentially significant disadvantages for stakeholders associated with this option. Option 2 could jeopardise the future efficient management and use of the VHF and UHF spectrum bands. If demand for telemetry licences continues to grow, Option 2 may also hamper the future productivity of industry, the utility sector and the Business Radio community, by reducing the quantity of spectrum available to grant new licences to these users.

96 With regard to the factors discussed above, ComReg is of the view that Option 1 will better address the policy issues set out above in accordance with its statutory functions, objectives and duties.

6 Next Steps

97 Following the publication of this document Regulations will be sent for Ministerial approval.

98 Once approved by the Minister the Regulations will come into force and the new telemetry licensing scheme will be launched in due course.

Annex: 1 Revised Frequency Plan and List of Channels

A.1.1 List of Channels for National Telemetry Licences

Table 4 below shows the revised channels proposed for national telemetry users.

Frequency before future release (MHz)		Frequency after future release (MHz)		Proposed Irish Channel # Before Future Release	Proposed Irish Channel # After Future Release
456.99375	462.49375	456.99375	462.49375	1A	1A
457.00625	462.50625	457.00625	462.50625	2A	2A
457.01875	462.51875	457.01875	462.51875	3A	3A
457.03125	462.53125	457.03125	462.53125	4A	4A
457.04375	462.54375	457.04375	462.54375	5A	5A
457.05625	462.55625	457.05625	462.55625	6A	6A
457.065625	462.565625	457.065625	462.565625	7G	7G
457.07500	462.57500	457.07500	462.57500	7	7
457.084375	462.584375	457.084375	462.584375	8G	8G
457.09375	462.59375	457.09375	462.59375	9A	9A
457.10625	462.60625	457.10625	462.60625	10A	10A
457.11875	462.61875	457.11875	462.61875	11A	11A
457.128125	462.628125	457.128125	462.628125	12G	12G
457.13750	462.63750	457.13750	462.63750	12	12
457.15000	462.65000	457.15000	462.65000	13	13
457.16250	462.66250	457.16250	462.66250	14	14
457.171875	462.671875	457.171875	462.671875	15G	15G
457.18125	462.68125	457.18125	462.68125	16A	16A
457.19375	462.69375	457.19375	462.69375	17A	17A
457.203125	462.703125	457.203125	462.703125	18G	18G
457.21250	462.71250	457.21250	462.71250	18	18
457.221875	462.721875	457.221875	462.721875	19G	19G
457.23125	462.73125	457.23125	462.73125	20A	20A
457.24375	462.74375	457.24375	462.74375	21A	21A
457.25625	462.75625	457.25625	462.75625	22A	22A
457.26875	462.76875	457.26875	462.76875	23A	23A
457.28125	462.78125	457.28125	462.78125	24A	24A
457.290625	462.790625	457.290625	462.790625	25G	25G
457.30000	462.80000	457.30000	462.80000	25	25
457.31250	462.81250	457.31250	462.81250	26	26
457.32500	462.82500	457.32500	462.82500	27	27
457.33750	462.83750	457.33750	462.83750	28	28

Frequency before future release (MHz)		Frequency after future release (MHz)		Proposed Irish Channel # Before Future Release	Proposed Irish Channel # After Future Release
457.35000	462.85000	457.35000	462.85000	29	29
457.36250	462.86250	457.36250	462.86250	30	30
457.37500	462.87500	457.37500	462.87500	31	31
457.387375	462.884375	457.387375	462.884375	32G	32G
457.39375	462.89375	457.39375	462.89375	33A	33A
457.40625	462.90625	457.40625	462.90625	34A	34A
457.41875	462.91875	457.41875	462.91875	35A	35A
457.43125	462.93125	457.43125	462.93125	36A	36A
457.44375	462.94375	457.44375	462.94375	37A	37A
457.45625	462.95625	457.45625	462.95625	38A	38A
457.46875	462.96875	457.46875	462.96875	39A	39A
457.48125	462.98125	457.48125	462.98125	40A	40A
457.49375	462.99375	457.49375	462.99375	41A	41A
457.503125	463.003125	457.503125	463.003125	42G	42G
457.51250	463.01250	457.51250	463.01250	42	42
457.52500	463.02500	457.52500	463.02500	43	43
457.53750	463.03750	457.53750	463.03750	44	44
457.55000	463.05000	457.55000	463.05000	45	45
457.56250	463.06250	457.56250	463.06250	46	46
457.57500	463.07500	457.57500	463.07500	47	47
457.584375	463.084375	457.584375	463.084375	48G	48G
457.59375	463.09375	457.59375	463.09375	49A	49A
457.60625	463.10625	457.60625	463.10625	50A	50A
457.61875	463.11875	457.61875	463.11875	51A	51A
457.63125	463.13125	457.63125	463.13125	52A	52A
457.64375	463.14375	457.64375	463.14375	53A	53A
457.65625	463.15625	457.65625	463.15625	54A	54A
457.665625	463.165625	457.665625	463.165625	55G	55G
457.67500	463.17500	457.67500	463.17500	55	55
457.684375	463.184375	457.684375	463.184375	56G	56G
457.69375	463.19375	457.69375	463.19375	57A	57A
457.703125	463.203125	457.703125	463.203125	58G	58G
457.71250	463.21250	457.71250	463.21250	58	58
457.721875	463.221875	457.721875	463.221875	59G	59G
457.73125	463.23125	457.73125	463.23125	60A	60A
457.74375	463.24375	457.74375	463.24375	61A	61A
457.75625	463.25625	457.75625	463.25625	62A	62A
457.765625	463.265625	457.765625	463.265625	63G	63G
457.77500	463.27500	457.77500	463.27500	63	63
457.78750	463.28750	457.78750	463.28750	64	64

Frequency before future release (MHz)		Frequency after future release (MHz)		Proposed Irish Channel # Before Future Release	Proposed Irish Channel # After Future Release
457.80000	463.30000	457.80000	463.30000	65	65
457.81250	463.31250	457.81250	463.31250	66	66
457.821875	463.321875	457.821875	463.321875	67G	67G
457.83125	463.33125	457.83125	463.33125	68A	68A
457.84375	463.34375	457.84375	463.34375	69A	69A
457.85625	463.35625	457.85625	463.35625	70A	70A
457.86875	463.36875	457.86875	463.36875	71A	71A
457.878125	463.378125	457.878125	463.378125	72G	72G
457.88750	463.38750	457.88750	463.38750	72	72
457.896875	463.396875	457.896875	463.39375	73G	73G
457.90625	463.40625	457.90625	463.40625	74A	74A
457.91875	463.41875	457.91875	463.41875	75A	75A
457.928125	463.428125	457.928125	463.428125	76G	76G
457.93750	463.43750	457.93750	463.43750	76	76
457.946875	463.446875	457.946875	463.446875	77G	77G
457.95625	463.45625	457.95625	463.45625	78A	78A
457.96875	463.46875	457.96875	463.46875	79A	79A
457.98125	463.48125	457.98125	463.48125	80A	80A
457.99375	463.49375	457.99375	463.49375	81A	81A
458.00625	463.50625	458.00625	463.50625	82A	82A
458.015625	463.515625	458.015625	463.515625	83G	83G
458.02500	463.52500	458.02500	463.52500	83	83
458.03750	463.53750	458.03750	463.53750	84	84
458.05000	463.55000	458.05000	463.55000	85	85
458.06250	463.56250	458.06250	463.56250	86	86
458.07500	463.57500	458.07500	463.57500	87	87
458.08750	463.58750	458.08750	463.58750	88	88
458.096875	463.596875	458.096875	463.596875	89G	89G
458.10625	463.60625	458.10625	463.60625	90A	90A
458.11875	463.61875	458.11875	463.61875	91A	91A
458.13125	463.63125	458.13125	463.63125	92A	92A
458.14375	463.64375	458.14375	463.64375	93A	93A
458.15625	463.65625	458.15625	463.65625	94A	94A
458.16875	463.66875	458.16875	463.66875	96A	96A
458.178125	463.678125	458.178125	463.678125	96G	96G
458.18750	463.68750	458.18750	463.68750	96	96
458.196875	463.696875	458.196875	463.696875	97G	97G
458.20625	463.70625	458.20625	463.70625	98A	98A
458.21875	463.71875	458.21875	463.71875	99A	99A
458.23125	463.73125	458.23125	463.73125	100A	100A

Frequency before future release (MHz)		Frequency after future release (MHz)		Proposed Irish Channel # Before Future Release	Proposed Irish Channel # After Future Release
458.24375	463.74375	458.24375	463.74375	101A	101A
458.25625	463.75625	458.25625	463.75625	102A	102A
458.265625	463.765625			103G	
458.27500	463.77500	458.26875	463.76875	103	103A
458.28750	463.78750	458.28125	463.78125	104	104A
458.30000	463.80000	458.29375	463.79375	105	105A
458.31250	463.81250	458.31250	463.81250	106	106A
458.32500	463.82500	458.31875	463.81875	107	107A
458.33750	463.83750	458.33750	463.83750	108	108A
458.35000	463.85000	458.34375	463.84375	1	1A15
458.36250	463.86250	458.35625	463.85625	2	2A15
458.371875	463.871875	458.36875	463.86875	3G	3A15
458.38125	463.88125	458.38125	463.88125	4A	4A15
458.39375	463.89375	458.39375	463.89375	5A	5A15
458.40625	463.90625	458.40625	463.90625	6A	6A15
458.415625	463.915625	458.415625	463.915625	6G	6G15
458.42500	463.92500	458.42500	463.92500	7	7
458.434375	463.934375	458.434375	463.934375	8G	8G15
458.44375	463.94375	458.44375	463.94375	9A	9A15
458.45625	463.95625	458.45625	463.95625	10A	10A15
458.46875	463.96875	458.46875	463.96875	11A	11A15
458.48125	463.98125	458.48125	463.98125	12A	12A15
458.490625	463.990625			1G	
458.50000	464.00000	458.49375	463.99375	1	1A16

Note: Where channels are not being used for SCADA, the channel name/number remains unchanged.

Key:

= Available channel (12.5kHz)

= Guard band channel (6.25kHz)

= Future release channel (12.5kHz)

"A" in channel name indicates 'alternate' frequency to normal channel #

"G" in channel name indicates guard band channel

Red lettering indicates future release channel

Table 1 - Proposed Channels for National Telemetry Users

A.1.2 List of Channels for Non-national Telemetry Licences

Table 5 below shows the revised channels proposed for On-Site, Local Area and Wide Area telemetry users. Table 6 shows VHF On-Site, Local Area and Wide-Area Telemetry Channel Assignments.

Table of VHF non-national frequencies

Channel number (VHF)	Sub-channel centre frequency (MHz)	Sub-channel centre frequency (MHz)	Channel type
1	165.25625	170.0625	2 x 12.5 kHz (Duplex)
2	165.26875	170.075	2 x 12.5 kHz (Duplex)
3	165.28125	170.0875	2 x 12.5 kHz (Duplex)
4	165.31875	170.125	2 x 12.5 kHz (Duplex)
5	165.33125	170.1375	2 x 12.5 kHz (Duplex)
6	165.38125	170.1875	2 x 12.5 kHz (Duplex)
7	165.39375	170.2	2 x 12.5 kHz (Duplex)
8	165.40625	170.2125	2 x 12.5 kHz (Duplex)
9	165.41875	170.225	2 x 12.5 kHz (Duplex)
10	165.43125	170.2375	2 x 12.5 kHz (Duplex)
11	165.44375	170.25	2 x 12.5 kHz (Duplex)
12	165.45625	170.2625	2 x 12.5 kHz (Duplex)
13	165.46875	170.275	2 x 12.5 kHz (Duplex)
14	165.48125	170.2875	2 x 12.5 kHz (Duplex)
15	165.49375	170.3	2 x 12.5 kHz (Duplex)

Table 2 - Revised Channels for Proposed On-Site, Local Area and Wide Area Telemetry

Channel number (UHF)	Sub-channel centre frequency (MHz)	Sub-channel centre frequency (MHz)	Channel type
1	455.7375	469.7375	2 x 12.5 kHz (Duplex)
2	455.75	469.75	2 x 12.5 kHz (Duplex)
3	455.7625	469.7625	2 x 12.5 kHz (Duplex)
4	455.775	469.775	2 x 12.5 kHz (Duplex)
5	455.7875	469.7875	2 x 12.5 kHz (Duplex)
6	455.800	469.800	2 x 12.5 kHz (Duplex)
7	455.8125	469.8125	2 x 12.5 kHz (Duplex)
8	455.825	469.825	2 x 12.5 kHz (Duplex)
9	455.83750	461.33750	2 x 12.5 kHz (Duplex)
10	455.85000	461.35000	2 x 12.5 kHz (Duplex)
11	455.86250	461.36250	2 x 12.5 kHz (Duplex)
12	455.87500	461.37500	2 x 12.5 kHz (Duplex)
13	455.88750	461.38750	2 x 12.5 kHz (Duplex)
14	455.90000	461.40000	2 x 12.5 kHz (Duplex)
15	-	463.98125	1 x 12.5 kHz (Simplex)
16	-	463.99375	1 x 12.5 kHz (Simplex)

Table 3 - VHF On-Site, Local Area and Wide-Area Telemetry Channel Assignments

Annex: 2 Cellular Structure of National Frequency Plan

The frequency reuse plan shown below replaces the map shown in Figure 5 in Annex A of Consultation 11/94.