Radio - Spectrum and Licensing Policy for VHF Band III, Sub-band 3

Appendix B2: Summary of responses to "Opportunities for Future Use of Spectrum within VHF Band III and in the 1.5 GHz Band"

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Introduction

1. The legacy regulators, the Radiocommunications Agency and Radio Authority issued a joint consultation exercise on 17 October 2003 seeking views on opportunities for future use of spectrum within VHF band III and the 1.5 GHz band. The following is a summary of the responses received on VHF Band III i.e. questions 1 to 7.

2. The responses regarding the 1.5 GHz band (L-band)(i.e. questions 8 to 11) have been discussed in the Spectrum Framework Review Implementation Plan (SFR IP) and in the SFR IP interim statement, both documents are published on the Ofcom website[1]. Further consultation on the use of this band will be undertaken during 2005-06.

3. 75 responses were received in total. Responses were received from 21 organisations ranging from trade bodies, to government departments, and commercial organisations.

4. 54 individual responses broadly held the opinion that more spectrum should be made available to T-DAB in Band III to improve what they regarded as the currently poor audio quality. A petition of 253 signatories stated that the BBC should obtain a second DAB multiplex so that improved audio quality might be achieved.

5. Of the responses,six relate specifically to Private Business Radio systems whilst the remainder are in direct response to spectrum for T-DAB/multimedia services/Programme Making and Special Events (PMSE).

6. Following the close of the consultation Ofcom made the following statement[2].

   "Ofcom will carefully consider all responses to this consultation as it develops its policy for these, and other bands.

   In light of the conflicting demands for spectrum in these bands, and in the context of Ofcom's statutory obligation to undertake a review of digital radio later this year (the Digital Radio Review), Ofcom does not intend taking any immediate decisions on the future allocation or assignment of these bands. Ofcom will be investigating various options for the future allocation, assignment and management of these bands over the coming months, and will consult again on any proposals before implementation.

[1] These documents can be found at http://www.ofcom.org.uk/consult/condocs/sfrip/
[2] http://www.ofcom.org.uk/consult/condocs/ra_rau/

In the mean time Ofcom will continue to assign spectrum in VHF Band III sub-band II for the expansion needs of private mobile radio (PMR) and public access mobile radio (PAMR)"

Q1. Should available spectrum in LMS sub-band II and/or sub-band III be used to ease capacity restrictions in other PAMR/PMR bands?

7. There were mixed views from respondents on this question with those in favour feeling that more spectrum was required to ease current restrictions. Those opposed felt that the spectrum should not be used for PMR/PAMR at the expense of T-DAB or felt that the spectrum was not suitable. One respondent noted their desire that sub-band II be used to ease the pressure on PMR/PAMR and that sub-band III be used for T-DAB.

8. The Federation of Communications Services (FCS) said "As new assignments in the UHF1 and UHF2bands are currently not feasible… the available spectrum in Band III should be allocated to displaced PAMR and PMR from UHF 1 and possibly UHF 2. Some users of, for example Wide Area PMR could benefit by vacating the UHF bands for Band III".

9. JFMG agreed "in so much as use of these sub-bands will not be adversely affected by increased restrictions on their use imposed [due to the regional radio conference]"..

10. Motorola considered it "inappropriate to place PMR users (who by their very nature will rely on this service for mission-critical operations or at least to gain a very high economic benefit for the use of the system) in a band with a very questionable future".

11. GWR(now part of GCap Media plc), Christian Broadcasting Council said that, Band III spectrum should not be used to ease capacity restrictions on other PMR/PAMR bands at the expense of DAB. Emap said that the spectrum should be used for T-DAB, and felt that spectrum released by digital switchover in radio could eventually be used for PAMR/PMR.

12. NTL felt that there would be continued demand for more spectrum for PMR/PAMR they could not see how theses requirement could be effectively met using Band III spectrum.

13. The Traffic Management Division of the Department for Transport (DFT) said that "Use and demand of Band III PMR in local transport management is increasing rather than decreasing, and the opportunities for local spectrum efficiency are high. Any easing of PMR congestion would be welcomed".

14. The Real Time Information Group (RTIG) felt "some existing real-time systems are currently experiencing problems operating within the existing bandwidth allocation. Therefore the release of further spectrum to ease the capacity restrictions within bus real-time information systems is desirable. This may also facilitate any desired expansion of existing systems."

15. London Buses responded "Not if it wastes the spectrum unnecessarily, and at the same time leaves our industry with an uncertain future beyond UHF re-alignment, or lack of spectrum to encourage its development and ability to serve the nation properly."

16. The Highways Agency said that they wanted extra T-DAB multiplexes in sub-band III

17. As noted above Ofcom is continuing to assign spectrum in VHF Band III sub-band II for the expansion needs of private mobile radio (PMR) and public access mobile radio (PAMR), but will investigate further the question of the use for sub-band III as discussed in the main document

Q2. Is there an anticipated market for digital PMR in Band III?

18. The balance of responses could not see the case for a digital PMR market in Band III today. There were a number of respondents who felt that there was no current demand, but there may be demand in the future. Hurdles to be overcome include lack of an international market for equipment, no current standard (although FCS felt one would emerge) and the fact that it was not cost effective today.

19. The DfT said that "the opportunities for digital PMR are being kept under review. Traffic management users will follow this path if it becomes reliable and cost effective, but the demand is not yet there".

20. RTIG said "Given that many existing real-time systems are currently experiencing problems operating within the existing bandwidth allocation it is likely that there will be a demand for digital PMR within bus real-time information systems. In additional to providing more bandwidth, digital PMR offer the benefit of a logical migration path for the existing PMR users."

21. The Joint Radio Company (JRC) said, "Users like to see multi-vendor support for expensive new technology. Manufacturers like to see a large market before committing investment, on a regional basis or ideally globally. It is not clear at present whether a sufficiently large market exists for suppliers to want to make products available."

22. Motorola said it found it "very difficult to develop a credible business case for developing digital PMR products for this UK-specific band. Indeed, we would expect that all PMR users will gradually find their options of suppliers of equipment for this band to gradually diminish over time. This is a consequence of the business case for developing or maintaining any products in this UK-specific band being very challenging already and getting worse."

23. London Buses replied "A qualified yes if it enables us to move forward, but the band is unique to the UK therefore it may only develop slowly and may not flourish at all unless the life extends beyond 2015. There is a need for a better understanding of the emerging technicalities, but a system like Tetrapol, would be very interesting".

24. The Christian Broadcasting Council said that didn't "wish to see additional T-DAB capacity restricted by digital PMR."

25. Given the limited current demand no Band III spectrum was allocated to this, although, as mentioned above, spectrum was allocated to PMR/PAMR in sub band II of Band III.

Q3. Do PAMR operators foresee an increase in demand for spectrum in Band III to accommodate a growing customer base?

26. None of the respondents saw an increase in demand for spectrum in Band III for PAMR. As result no spectrum has been proposed to be specifically allocated to it at this time.

27. For example London Buses said “From a potential user viewpoint, they did not fulfil the past and unlikely to fulfil the future requirements except in a very limited way. So we would have additional demands for alternative spectrum.”

Q4. Is there anticipated demand for Band III spectrum by the bus and coach or rail industries?

28. All of the respondents to this question anticipated a strong demand for additional band III spectrum by the bus and coach or rail industries. There was seen to be an opportunity to develop management and information systems as well as benefits such as “improved service running, improved management of road capacity and road safety etc”

29. There is a significant increase in demand for VHF spectrum both in London and the rest of the UK. The currently available frequencies in the bus allocation in sub band I are so limited that allocating channels to match traffic levels on individual sites is almost impossible. If further spectrum is not released in Band III for PMR applications, an opportunity will be wasted for the market and the transport industry to develop management and information systems. In these circumstances there is, therefore, a need to know now that priority will be given to buses to have first place in the queue for UHF spectrum later in the decade. If spectrum is not to be made available in Band III, then it will need to come from somewhere else. The industry stated that auction participation was not an option.

30. The DfT said “There is strong long-term demand for Band III use by public transport operators, which will increase rather than decrease. This is increasingly joined up with traffic management and other local government functions, as this can achieve great business benefits for both (improved service running, improved management of road capacity and road safety etc). Other technologies have been investigated as an alternative to Band III. However it has advantages because:

- It can be shared cost-effectively with other local authority communication needs, particularly in the public transport area.
- It offers longer hauls and better non-line-of-sight performance than higher frequency services such as WLAN and microwave.
- It offers much better latency than public data services.
- It involves much lower infrastructure costs than microwave or public data services.”

31. RTIG said “Given the recent escalation in investment in PMR systems in the last year Band III based equipment will be in use for a significant number of years, with additional capacity being required as existing systems are extended. Investment in such systems is typically based on a 10 to 15 year asset life, and the majority of current systems are quite young. Therefore there is a strong anticipated demand for Band III spectrum by the local authorities and the bus industry. Currently, within the bus industry there is an existing

capacity problem with existing PMR bandwidth allocation. This is compounded further in areas where PMR users are using the bandwidth for voice and data to operate a RTI system."

32. A number of respondents made general comments in relation to questions 1 to 4.

33. SMG, GWR and Digital One all acknowledged that there were a number of uses for the spectrum. GWR acknowledged " that there may be public policy or commercial reasons to allocated spectrum for use by particular public service organisations or to non-broadcast business interests". While SMG contended that "…many of these other uses can today utilise existing technologies". Digital One felt that "There may be pressing non-radio needs for the spectrum…and Ofcom will have to decide what priority to give to such an allocation of spectrum. However all felt that sound broadcasting had a strong claim on the spectrum.

34. NTL felt "…there is and will continue to be demand for more spectrum for PMR/PAMR applications it is difficult to see how these requirement can be effectively met using Band III spectrum."

35. Following this consultation it has become increasingly likely that the capacity of sub band II of Band II is likely to be affected by the Continent's switch from analogue to digital broadcasting, increasing the capacity shortage for PMR and transport applications. Existing users in sub-band 2 may be re-located in sub-band 1, where there appears to be spare capacity. In making our spectrum allocation decisions we have considered the potential cost of not allocating spectrum to these services.

Q5. Is there anticipated demand for more VHF spectrum for Terrestrial Digital Audio Broadcasting (T-DAB)? On what timescale is this needed, and, in general terms, what should the development priorities be?

36. The key reason for the support given to the allocation of the spectrum for further digital radio by many of the respondents can be summarised in a quote from the joint submission from the Commercial Radio Companies Association and the BBC that said "additional spectrum allocation would enable several important limitations of digital radio…to be tackled, such as completion of local digital coverage and the introduction of new, innovative data services which would further drive take-up of digital sets".

37. Digital One supported the allocation of further spectrum for T-DAB, although it accepted that there may be non-radio needs for spectrum and said that it was for Ofcom to prioritise. It also considered that in order of priority Ofcom should allocate Band III spectrum to enable Digital One to complete its national coverage, then to complete local and regional multiplex coverage (where practical to enable equivalent digital coverage for all current and future analogue stations). It also wanted capacity for access/community radio on L Band or Band III, and wanted some L-Band "to allow digital radio coverage of geographic areas too small to justify a Band III allocation".

38. Digital One also thought that the national digital radio market was fragile, and that therefore the consumer would benefit most if "consideration of the need for another national commercial multiplex, or part multiplex, is deferred until the

sector is markedly more mature". Finally it felt that "a new national commercial digital multiplex established now would be likely to set back the digital radio sector as a whole".

39. Emap considered that there was "clear demand for an immediate expansion of T-DAB from the radio industry, advertisers and listeners". It also felt that early advertising of a national general multiplex would "promotes innovation and competition within the market, and … maximise public revenue from spectrum".

40. MXR, which holds five local radio multiplex licences (each of which provides coverage of a region), said that allocating additional spectrum to DAB would "both add to audience choice and also go some way to helping meet consumer expectations"

41. The Community Media Association (CMA) noted that it had concerns about "the efficacy of Eureka 147 DAB technology particularly for local services" but recognised the importance of industry and government support if DAB were to succeed. However, it supported the use of additional Band III spectrum for DAB. It also considered that the success of broadcast radio would require multiple standards in addition to DAB (e.g. DRM, DTV, broadband wireless internet and mobile technologies).

42. GWR recommended that a minimum of four additional frequency blocks of Band III is required for continued development of DAB. The company proposed that this spectrum should be used to:
    - Ensure that all existing local analogue commercial services have the opportunity to broadcast in digital.
    - Boost coverage and field strength of existing multiplexes to ensure robust reception
    - License a further tier of local and regional multiplexes
    - Allow Digital One to extend its coverage to Northern Ireland

43. GWR also stated that if another national multiplex is to be added this should be the lowest priority as it would "add little or no impetus to DAB development", and recommended that the 20% cap on the amount of spectrum that can be allocated for data as opposed to audio should be removed.

44. The submissions from the two transmission providers supported additional spectrum for DAB. Crown Castle said "we see clear evidence of demand for DAB capacity both for public service and commercial radio broadcasters. We would support the release of additional Band III spectrum for this application at the earliest opportunity….. The diversity of programming available to the digital listener is limited by existing multiplex capacity ". While NTL (now Arqiva) said that it believed "that there is a very strong case for extending the allocation of spectrum within Band III to provide a growth path for digital radio and further opportunities for the market to expand through increased coverage and services"

45. SMG, owner of Virgin Radio, said that "new Band III spectrum will make a real difference to the development of the UK radio broadcasting industry resulting in greater investment, more multiplexes, increased variety of services and higher audio quality for consumers". Although it wanted both to be made available, it stated a preference for national multiplexes over local ones.

46. Lincs FM, which was one of only a few of the smaller local radio groups to respond to the consultation, wanted additional Band III spectrum and felt that the priority should be local multiplexes and that the "mirroring of existing 'heritage' analogue service coverage should continue".

47. CN Group wanted Ofcom to "ensure that a way forward is plotted for Britain's truly local stations to continue to thrive in the digital era"

48. Although there was widespread agreement amongst this group of respondents that further spectrum in Band III should be allocated for T-DAB, there were differences of opinion as to the priorities for how any such spectrum should be assigned, i.e. whether for local or national services, the proportion that should be used for data, and the licensing regime for the spectrum.

49. A number of individuals pointed out that they would like the BBC to be given additional DAB spectrum, and expressed concerns about the bit rate used for DAB. A petition with 253 signatories was submitted in support of more DAB spectrum for BBC services.

50. Despite these expressions of support there were also dissenting voices. London buses said "With the advent of digital technology and huge memory devices it is now possible to carry around sound and vision devices that will affect people's demand for broadcast media. With these there is ample scope for entertainment and knowledge media, with almost infinite choice, and which makes little demand and what we see as a very scarce resource".

51. FCS said "we see undue expansion of T-DAB should be curtailed in order to preserve sub band III allocations for new technology digital mobile radio."

52. The issues raised by the respondents to this question, including the potential non-DAB uses of these blocks of spectrum are discussed in section 6 of the *Radio – Licensing policy for VHF Band III, sub-band 3* consultation document.

Q6. Is there anticipated demand for VHF spectrum for mobile portable and fixed data/multimedia services?

53. The respondents to this question were had mixed views with no consensus emerging. The concerns included the lack of sufficient spectrum to create a viable business model, antenna engineering restrictions, no anticipated public sector requirements, high bandwidth requirements of video, lack of a global market and the availability of other spectrum that was better suited to data/multimedia services (e.g. 1.5GHz L- band spectrum).

54. Those in favour felt that "This could provide for better integration and management within the business and passenger information", demand for passenger information displays and information for bus operators' mobile inspectors, and broad-based public service orientated multimedia content services which are receivable on portable and fixed devices.

55. Since this consultation, the BT Livetime project has trialled television services in this spectrum.

56. London Buses said this could provide for better integration and management within the business and passenger information.

57. DFT said “For traffic management, demand for communications between street side and vehicles in the VHF band is likely to focus on short range devices.”

58. Data over VHF will increase, but there is little expectation that public sector traffic management services will need to use multimedia datacasting at the present.

59. RTIG said “There is an increasing demand for transmitting data to and from vehicles as well as to passenger information displays, as detailed elsewhere in this document. It is anticipated that other radio technologies will be used to provide information and multimedia services to the public and bus operators’ mobile inspectors.”

60. FCS said “Band III should not be used for these services because of the larger antenna requirements compared to the GHz bands, and for the potentially high bandwidth requirements of video.”

61. GWR said “There is and will be increasing demand for using the BAND III multiplexes to provide broad-based public service orientated multimedia content services which are receivable on portable and fixed devices, and that in the long term, the current 20% limit on data should be removed.”

62. JRC said “New multi-media services need a global market, and it is unlikely that VHF spectrum will be made available in sufficient countries to make this attractive. In addition, VHF spectrum has a limited capacity for carrying multi-media services, which makes it an unattractive option”.

63. SMG said “DAB is not the best Band for data use, supported by the little use made of available data by existing multiplex operators. Most choose to use the space available for audio services. We believe that the higher frequencies such as the 1.5 GHz are more relevant to these types of uses as opposed to VHF Band III spectrum. This is particularly so with the statutory 20% data limit on “pure” sound broadcasting multiplexes. Other parts of the spectrum will have far greater flexibility because of this limit, which should remain at 20%.”

64. In paragraphs 6.45-6.74 of phase 2 of *Radio – Preparing for the future* we propose to recommend to the Secretary of State that the 20% data limit for Broadcasting Act radio multiplexes be replaced by a requirement on UK-wide radio multiplex operators to reserve capacity for a certain number of radio sound services. Over time this should increase the possibility mobile portable and fixed data/multimedia services.

Q7. Is there anticipated demand for more VHF spectrum for programme-making purposes?

65. There were mixed views on this question. There was a view that the uncertainty for PMSE in other bands would mean that demand in Band III would increase, community radio’s growth was expected to lead to an increase in demand. JFMG noted a “growing demand in band III for more low power reporter links, available for use over wide areas” and that ” With the very limited alternative UHF spectrum available for the specific area requirements of the News organisations and uncertainty regarding its long term availability, loss of these band III assignments would directly impact and curtail their activities. Significant costs would be imposed where alternative solutions exist”.

66. However FCS felt that they were “not certain that the existing assignments are used in a spectrally efficient manner. Their existing allocations are most generous” SMG said “given the normally low-range requirements of these uses, narrow-band channels can be better employed for these particular production communications throughout the UK”.

67. The BBC noted their concern that “PMSE spectrum is under pressure across the board” and that “as the value of PMSE to modern broadcasting increases, to ensure that PMSE continues to meet viewers expectation of modern broadcasting, the BBC expects there to be a need for more channels to be made available for PMSE, and certainly not fewer” and suggested that Ofcom should undertake strategic review of UK requirements for PMSE allocations across the board.

68. London Buses said “support is given for any professional PMR applications that are most suited to the characteristics of this spectrum rather than its loss to purely broadcasting”.

69. GWR said “There will not be significant increase in demand for VHF spectrum for programme-making purposes.”

70. FCS said “It is not appropriate to allocate further spectrum for these services in the VHF band, as we are not certain that the existing assignments are used in a spectrally efficient manner. Their existing allocations are most generous.”

71. JFMG said “At present there is a reliance on PMSE spectrum in Band III amongst a large number of licensees, ranging from high numbers of fixed site radio microphone users to news and broadcasting organisations which require the ability to use exclusive channels over wide areas. There is growing demand in band III for more low power reporter links, available for use over wide areas.”

72. Motorola said “It would seem appropriate that the UK align with other countries in the use of Band III rather more.”

73. SMG said “This is clearly an area of some demand for UK broadcasters and needs to be considered. However, given the normally low-range requirements of these uses, narrow-band channels can be better employed for these particular production communications throughout the UK.”

74. Ofcom has commissioned Quotient Associates Ltd and Spectrum Strategy Consultants to undertake a study into the current and future demand for spectrum (in Band III and elsewhere) among the programme-making and special events sector. Early work in this area is a contributory factor as to why we are currently now considering the issues relating to the release of four, rather than five, blocks of spectrum. The is discussed in more detail in paragraphs 3.11, and 5.33 of the *Radio – Licensing policy for VHF Band III, sub-band 3* consultation document.

List of respondents

Federation of Communication Services

Joint Radio Company

Transport for London - London Buses

Motorola

Real Time Information Group

CSS Spectrum Management Services

Depart for Transport – Traffic management

Highways Agency

BBC

BBC & CRCA

CBC

Community Media Assocation

CN Group

Crown Castle UK

Emap

GWR

JFMG

LincsFM

MXR

NTL

SMG

UBC Media

54 Individual Responses

Petition of 255 signatories