



The release of spectrum within
the frequency ranges 143 MHz to
169 MHz

Statement

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About this document

This document sets out Ofcom's plans for the release and allocation of spectrum returned to civil use by the Emergency Services.

The statement sets out our decision for portions of the 5.875 MHz of Very High Frequency (VHF) spectrum in the 143 - 169 MHz band. We believe this spectrum will be of most interest to business radio users, such as utility and construction companies.

The spectrum will be made available on a first-come-first-served basis. However, it will also be released through a managed and gradual approach in order to maintain maximum flexibility for the band in the future, should new types of demand emerge.

As part of this process, Ofcom will also allocate and license spectrum to the Maritime and Coastguard Agency to replace channels no longer available due to changes in international frequency arrangements.

This approach will not require the use of all available spectrum immediately, therefore some of this spectrum will be made available, on a temporary basis, for amateur radio at 146 – 147 MHz and we will continue to provide short term access to Programme Making and Special Events users.

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Section 1

Executive Summary

- 1.1 This statement explains our decisions on how we plan to release and allocate portions of the 5.875 MHz of spectrum that has been returned to civil use by the Emergency Services in the 143 – 169 MHz band.
- 1.2 Ofcom is responsible for authorising civil use of radio spectrum and achieves this by granting wireless telegraphy licences under the Wireless Telegraphy Act 2006 (the “WT Act”) or by making regulations exempting users of particular equipment from the requirements to hold such a licence. In carrying out our general duties, we are required under the Communications Act to secure, in particular, the optimal use of electromagnetic spectrum for wireless telegraphy, and to have regard to the different needs and interests of all persons who may wish to make use of spectrum for wireless telegraphy.
- 1.3 On 24 March 2014 we published a consultation on our proposals on how we plan to release and allocate portions of the 5.875 MHz of Very High Frequency (VHF) spectrum in the 143 - 169 MHz band, which has been returned to civil use by the Emergency Services. The proposals were informed by the responses we received to our Call for Input (CFI) published in July 2012 regarding the potential uses of the VHF spectrum in England, Wales and Northern Ireland in the 143 – 156 MHz band¹.
- 1.4 We received a total of 114 responses to the consultation from a range of spectrum users. Non-confidential responses are listed in Annex 1 of this statement and are published on our website². Having considered these responses we have decided to:
 - make some spectrum in the 143 – 169 MHz range available on a first-come-first-served basis through our current Business Radio Technically Assigned and Area Defined licence products;
 - employ a graduated and managed assignment approach that makes new channels available in response to spectrum management needs. This approach is intended to avoid the fragmentation of contiguous blocks of spectrum and to maintain maximum flexibility for the band should new types of demand emerge in the future;
 - allocate 375 kHz of spectrum³ on an exclusive basis to the Maritime and Coastguard Agency (MCA) to protect its main search and rescue working channel, Channel 0 at 156 MHz, and to provide working channels for Land Based Search and Rescue (Land SAR) teams;

¹ The scope of our proposals are now UK-wide to reflect the release of spectrum in Scotland between 143 MHz and 156 MHz that has been returned by the Emergency Services since the closure of the CFI.

² <http://stakeholders.ofcom.org.uk/consultations/vhf-143-169mhz/?showResponses=true>

³ Since the publication of our consultation the MCA revised their spectrum requirements. Following extensive discussions with the MCA, we have agreed to allocate 375 kHz of spectrum in response to this.

- make spectrum that is not currently being used for other purposes in this range available for Amateur Radio at 146 – 147 MHz on a temporary basis; and
 - continue with our practice of providing short term access to Programme Making and Special Events (PMSE).
- 1.5 Whilst we anticipate that use of VHF spectrum by narrowband Private Mobile Radio (PMR) will continue, there is the possibility of use of spectrum by new types of applications and technologies which have not been present in these bands previously. A number of responses to the CFI identified the emerging requirements for broader-band applications, particularly among the utilities sector for telemetry, Machine-to-Machine (M2M) and possible 'LTE' type applications.
- 1.6 It is our view that these bands may in the longer term permit the use of such new technologies and applications. We are mindful that it is also rare for significant blocks of contiguous bandwidth to become available in this range. Our approach attempts to balance the immediate needs of spectrum users with the possibility that new types of use and demand may emerge by preserving future flexibility through a managed and graduated release of spectrum. If demand for wideband access or from new technologies should emerge, or if there are stakeholder requirements which need significant amounts of spectrum (which may limit future flexibility), we may decide to consult on alternative models of spectrum allocation prior to permitting such access.
- 1.7 Ofcom is also considering how to ensure that PMSE continues to have access to the spectrum it requires in the future. With growing demand for spectrum in the UHF range from non-broadcast services, it may be necessary to identify additional allocations for certain types of PMSE use, such as talkback and radio microphones in the VHF range. We are currently examining this question as part of our strategic review of PMSE. This review may conclude that spectrum in the range covered by this consultation could be a possible candidate for this type PMSE. Ofcom plans to publish for consultation its conclusions on future spectrum arrangements for microphones and talkback use in early 2015; the consultation may include proposals relevant to this band. In the meantime, the current practice of facilitating temporary and ad-hoc access to spectrum in this range for PMSE will continue.
- 1.8 The decisions set out in this document will come into effect from 31 October 2014.

Section 2

Background

- 2.1 On 24 March 2014 Ofcom published a consultation on our proposals for the release and allocation of portions of the 5.875 MHz of Very High Frequency (VHF) spectrum in the 143 - 169 MHz band⁴ (VHF band), which has been returned to civil use by the Emergency Services.
- 2.2 The proposals took into account the responses we received to a Call for Input (CFI) we published in July 2012 regarding the potential uses of the VHF spectrum in England, Wales and Northern Ireland in the 143 – 156 MHz band⁵.
- 2.3 The consultation sought views on the following:
 - 2.3.1 Making spectrum in this range available on a first-come-first-served basis through our current Business Radio Technically Assigned and Area Defined products.
 - 2.3.2 Employing a graduated and managed assignment approach that would make new channels available in response to spectrum management need. We explained that this approach was designed avoid the unnecessary fragmentation of the band and so preserve future flexibility for the band should new types of demand emerge.
 - 2.3.3 Allocating 400 kHz of spectrum to the Maritime and Coastguard Agency to meet the demands of Land search and rescue (Land SAR) and to protect safety of life channels from adjacent channel users in this band.
 - 2.3.4 Making spectrum in this range not currently used for other purposes available on a temporary basis for Amateur Radio at 146 – 147 MHz.

Structure of this document

- 2.4 This document details our decisions taken in light of the responses received from our consultation on our proposals for the planned use and release portions of the newly available spectrum at the 143 – 169 MHz VHF bands.
 - Section 3 summarises the responses received to the consultation and details our response to the key issues that were raised by respondents.
 - Section 4 sets out our decisions and next steps for allocating the VHF spectrum based upon the responses we received.
 - Annex 1 is a list of the non-confidential respondents to the consultation.
 - Annex 2 is a glossary of terms and acronyms used in this document.

⁴ http://stakeholders.ofcom.org.uk/binaries/consultations/vhf-143-169MHz/summary/VHF_consultation.pdf

⁵ <http://stakeholders.ofcom.org.uk/binaries/consultations/call-for-input/summary/condoc.pdf>

Impact assessment

- 2.5 The analysis presented in this document constitutes an impact assessment defined in section 7 of the Communications Act.
- 2.6 Impact assessments provide a valuable way of assessing different options for regulation and showing why the preferred option was chosen. They form part of the best practice policy-making.
- 2.7 We are required to carry out an impact assessment where our decisions would be likely to have a significant effect on businesses or the general public, or when there is a major change in our activities. However, as a matter of policy, we are committed to carrying out impact assessments in relation to the great majority of our policy decisions. For further information about our approach to impact assessments, see the guidelines 'Better policy-making: Ofcom's approach to impact assessment', which are on our website⁶.

Equality Impact assessment

- 2.8 We are required by statute to assess the potential impact of all our functions, policies, projects and practices on the following equality groups: age, disability, gender, gender reassignment, pregnancy and maternity, race, religion or belief and sexual orientation. Equality Impact Assessments (EIAs) also assist us in making sure that we are meeting our principal duty of furthering the interests of citizens and consumers regardless of their background or identity.
- 2.9 We have not identified any particular impact of our decision to authorise the spectrum in the manner which we have described, in relation to the identified equality groups. Specifically, we do not envisage the impact of any outcome to be to the detriment of any particular group of society. Nor have we seen the need to carry out separate EIAs in relation to the additional equality groups in Northern Ireland: religious belief, political opinion and dependants. This is because we anticipate our decisions will not have a detrimental impact in Northern Ireland compared to consumers in general.

⁶ <http://www.ofcom.org.uk/about/policies-and-guidelines/better-policy-making-ofcoms-approach-to-impact-assessment/>

Section 3

Responses to the consultation

- 3.1 In this section we identify and provide response to the key elements from respondent feedback received during the consultation.
- 3.2 We received a total of 114 responses to the consultation (of which 52 were confidential), from a range of sectors. Non-confidential responses are listed in Annex 1 of this statement and are published on our website.
- 3.3 Some respondents objected to our proposals but did not provide any further comment. We have therefore not been able to respond in any detail to these responses. To note, we felt that certain issues raised by respondents to certain questions would be better addressed in our responses to other questions. We have therefore dealt with such issues under those questions.

Ofcom proposals and responses

Question 1) Do you agree with the proposed approach for spectrum management?

- 3.4 The majority of respondents were broadly in favour of our proposal for implementing a graduated and managed release of spectrum in response to spectrum management needs.
- 3.5 The Telecommunication Association of the UK Water Industry (TAUWI) highlighted that a managed release of spectrum will meet stakeholder needs as well as preserve flexibility for meeting future requirements. Joint Radio Company (JRC) announced that they would likely be using Ofcom's existing Technically Assigned and Area Defined licence products to expand their portfolio of mid and high VHF radio systems. Furthermore the Mountain Rescue England and Wales (MREW) highlighted the benefits the release of spectrum will bring to new and existing users.
- 3.6 Overall, respondents were in agreement with the proposal. We did not find any support for a competitive release of the band via an awards process, or for the retention of spectrum.

Ofcom Response

- 3.7 Based on the responses received, we remain of the view that a graduated and managed release of the returned spectrum would be in line with our duty to ensure the optimal use of spectrum.

Question 2) Do you agree with the proposed approach for Business Radio assignments?

- 3.8 The majority of responses were in agreement with the allocation of spectrum to the Technically Assigned and Area Defined licences of Business Radio on a first-come-first-served basis. TAUWI noted that this will address the issues of congestion identified at the mid-VHF Band and the high-VHF Band.
- 3.9 However, issues were raised against this proposal among some respondents.

- 3.10 The Critical Messaging Association (CMA) raised the need for the protection of existing users against interference that may arise from new users of spectrum in the band. In order to reduce the risk of interference between new and existing users, they advised against Ofcom considering the addition of new spectrum to Business Radio licence classes other than Technically Assigned and Area Defined if there is demand for spectrum (we noted this potential course of action in our consultation), and suggested that new users should be directed to our Technically Assigned and Area Defined products. While they acknowledged that it is unlikely for existing users to be suffering from interference caused by new users, the CMA argued that any interference issues should be resolved by new users at no cost to existing users.
- 3.11 Radio Amateur's Emergency Network (RAYNET), who operate in the Business Radio (Simple UK) licence category along with other voluntary networks in the emergency response sector, argued that they have observed increasing congestion in the Business Radio mid-band frequencies during major public events. They have suggested that additional spectrum may be required in the future to alleviate the congestion in this licence category.

Ofcom response

- 3.12 Our assignment methodology for both Technically Assigned and Area Defined is designed to reduce the risk of interference to existing radio users. Our approach is detailed in the document Technical Frequency Assignment Criteria⁷. In our consultation we stated that there are no plans to introduce technologies that will share spectrum with Business Radio services that would have a harmful impact on existing radio services.
- 3.13 We do not currently plan to allocate additional spectrum in this range to other Business Radio licence types (such as the Business Radio Simple UK or Simple Site licence products). However, if we did decide to reconsider this decision in light of identified demand it is our normal practice to make different channels available to our Simple (commonly referred to as "light") licence products than to our Technically Assigned and Area products. In this way we are able to ensure that licensees in each product type are afforded appropriate protection from interference. As stated in our consultation and in this document, our approach to spectrum allocation is designed to preserve flexibility for the band in order to meet potential future demand, such as that observed by RAYNET for mid-band Business Radio.

Question 3) Do you agree with the proposal to allocate spectrum for Maritime and/or Land Search and Rescue use?

- 3.14 There was overall agreement among respondents towards the exclusive allocation of spectrum to Maritime SAR and Land SAR use. The MREW highlighted the positive effects this would bring to the SAR sector in terms of improving equipment performance and allowing for better utilisation of SAR Team charity funds.
- 3.15 While there was no significant disagreement with this proposal, we noted that a number of issues were raised by respondents.

⁷ <http://licensing.ofcom.org.uk/binaries/spectrum/business-radio/technical-information/tfac/ofw164.pdf>

- 3.16 Concerns regarding the allocation were voiced by Tom Taylor, who stated that his comments were shared and agreed by communication representatives from Mountain Rescue organisations throughout the UK - MREW and MRC of S (now Mountain Rescue Scotland). He argued for a like-for-like allocation of spectrum in place of any removed Land SAR channels, and that such spectrum should be put to good use. He noted that channels 24a and 85a may be subject to change and further advised that the equivalent 25 kHz and 12.5 kHz channels should be available. He also suggested that use of adjacent Land SAR and Maritime channels should be by low power equipment. Furthermore, he expressed that the allocated spectrum to Land SAR should not be compromised with shared use.
- 3.17 The Mountain Rescue Committee of Scotland (MRCoS) advised that the allocation of spectrum to Land SAR should consider their existing antenna configuration, as a means of reducing hardware costs to voluntary SAR teams. They also cautioned that this reallocation should not result in a loss of channels to Land SAR and that there should be sufficient space remaining for repeater use.
- 3.18 The CMA felt that any existing spectrum users should be compensated for any costs and inconvenience should they be required to relocate from their current channels.
- 3.19 John Gilliver voiced the opinion that it is necessary for greater efforts to be put into the protection of Channel 0 from high power use in the adjacent frequencies.
- 3.20 SeaCall Limited suggested that provision of access to a simplex channel within this allocation, for Amateur Radio users, for international communication between maritime users and shore-based stations could benefit certain safety roles and allow for equipment testing.

Ofcom response

- 3.21 We can confirm that there will be a like-for-like allocation of spectrum to Land SAR in respect of the displaced channels due to changes to the international maritime VHF channels. Our approach had been the subject of detailed discussion between Ofcom and key stakeholders prior to the consultation. We have proposed to allocate some spectrum exclusively to the Maritime and Coastguard Agency (MCA) for the protection of the safety of life emergency channel, Channel 0 at 156 MHz, from adjacent channel users in the band. If there is to be shared use of the band, then access to spectrum will be coordinated by the MCA and access will be authorised via our standard Coastal Station Radio (UK) or Coastal Station Radio (Search and Rescue) licence products.
- 3.22 Providing that the licensee is compliant with the technical terms and conditions of the licence and conforms to relevant provisions of the R&TTE Directive the type of equipment employed depends upon the use that it is put to. It is ultimately a decision of the Land SAR community to decide how to best to use spectrum assigned to them in a way that ensures operational effectiveness whilst minimising the risk of causing or suffering harmful interference.
- 3.23 In response to the CMA, there will not be a displacement of incumbent users from their existing allocation in order to facilitate the additional spectrum for the MCA.
- 3.24 In response to SeaCall Limited, the spectrum covered in our consultation does not include any international maritime channels and so this would not allow

international communication between maritime users and shore-based stations. Should there be a need for additional communications in the VHF bands between ships and shore-based stations, then it would be discussed in the context of standing emergency response planning arrangements.

- 3.25 Since the publication of our consultation, the MCA has reviewed their spectrum requirements. This is in response to internationally agreed amendments made to Appendix 18 of the Radio Regulations at the WRC 12, which lead to the displacement of several Land SAR channels. It was agreed for spectrum to be assigned to accommodate the displaced channels. Spectrum will also be used to protect their main search and rescue emergency channel, Channel 0, at 156 MHz. Following discussions with the MCA, we have decided to allocate to them 375 kHz of spectrum on an exclusive basis.

Question 4) Do you agree with the proposal to make some spectrum not currently assigned to other applications available on a temporary for Amateur Radio use with these restrictions?

- 3.26 The majority of respondents supported our proposal for a temporary allocation of spectrum at 146 – 147 MHz for Amateur Radio, with some viewing this as an opportunity to allow for experimentation and innovation with digital communication systems. The JRC highlighted the measures Ofcom has taken towards reducing the potential harmful interference that use within this band may cause between the UK and neighbouring countries.
- 3.27 However, we noted that several common issues were raised by a number of respondents.
- 3.28 Leighton Davies, Tony Jones and Anthony Pugh all wanted a permanent additional allocation of around 1 MHz to the existing 144 MHz – 146 MHz band already allocated to licensed radio amateurs. Leighton Davies also argued for the band to be extended to at least 147 MHz. Wakefield District Radio Society expressed a preference for an extension of the band as well, but by an additional 2 MHz to 148 MHz in order to alleviate pressure and demand.
- 3.29 Wakefield District Radio Society and James Monahan both argued against the proposal of restricting temporary use of spectrum to only Full Amateur Radio licence holders, and called for the Notice of Variations (NoV) to be made available to all three classes of Amateur Radio licence (Foundation, Intermediate and Full).
- 3.30 John Gilliver raised the concern that the proposed restricted use of the additional spectrum may limit its use to the keenest Amateur Radio users and argued that temporary allocation could also be applicable to business users in other parts of spectrum.
- 3.31 However, Mark Elliot, Roger Laphorn and one other confidential respondent actually questioned the need for additional spectrum being allocated to Amateur Radio. They advised against our proposal, arguing that the existing frequencies were not being fully utilised nationwide by the community.
- 3.32 Roger Laphorn instead proposed that Amateur Radio should be given easy access to the sub 8.3 kHz bands, alongside renewed access at 73 kHz and a new allocation of 100 kHz at 400 MHz.

- 3.33 MRCoS, while in favour, raised the need to ensure that operational SAR channels did not suffer interference.

Ofcom response

- 3.34 We note that arguments for an extension to the Amateur Radio band at 144 - 146 MHz band and for the permanent allocation of spectrum to Amateur Radio were voiced by several respondents. As we said in our consultation, the 146 – 147 MHz band is allocated for Fixed and Mobile use throughout ITU Region 1 (Europe, Russia and Africa) and this is reflected in the UK Frequency Allocation Table (FAT)⁸. It is not allocated to Amateur Radio and we have no plans to amend this. However, as set out in the consultation, noting that not all available spectrum will be used immediately by other services, we feel we are able to provide temporary access to amateur radio. It remains our expectation that in the medium term this spectrum will be required by other services.
- 3.35 Our technical analysis (Annex 6 of our consultation⁹) found that Amateur Radio use could be permitted subject to the restrictions of the NoV. If use is shown to cause interference to neighbouring countries, access to this spectrum will be withdrawn with immediate effect. We therefore remain satisfied that spectrum can be allocated temporarily to Amateur Radio.
- 3.36 We acknowledge the views expressed about restricting use of the spectrum to Full Amateur Radio licence holders. In our earlier response (paragraph 3.35 of this statement), we note the risk of harmful interference to users of radio in other countries, given the international reach of Amateur Radio. In order to successfully manage and minimise the risk of interference to other users (notably those in other countries), licensed Radio Amateurs who use these additional frequencies need to possess an advanced level of practical ability and an advanced understanding of radio theory and radio operating techniques. This is demonstrated by passing the exacting examination required to hold a Full licence. We therefore remain of the view that the availability of the additional spectrum should be for Full Amateur Radio Licence holders only. Our decision is consistent with the availability of a number of the other variations available to licensed Radio Amateurs, which we also restrict to Full licences. Furthermore, the availability of an NoV to Full licence holders is in line with our standard policy procedures.
- 3.37 Any Full amateur licensee may apply for a time limited NoV for their licence, to use the additional allocation of spectrum. As mentioned in our consultation, and in line with our statutory duty to manage the spectrum efficiently, we retain the right to withdraw temporary access to this spectrum from Amateur Radio. We shall periodically review the use of the extra spectrum by Amateur Radio. We will endeavour to provide Amateur Radio users with a minimum of 12 months' notice prior to withdrawing temporary access to spectrum in this range. Such notice will be published on our website.
- 3.38 We note that several respondents questioned the need for the additional allocation of spectrum to Amateur Radio. Here we highlight representations made to us by the Amateur Radio community in preparation for this consultation that the additional

⁸ http://stakeholders.ofcom.org.uk/binaries/spectrum/spectrum-information/UKFAT_2013.pdf

⁹ http://stakeholders.ofcom.org.uk/binaries/consultations/vhf-143-169mhz/summary/VHF_consultation.pdf

spectrum would be useful to them for the experimentation and development of digital voice, data and video services. As previously stated, given that initial demand from Business Radio will not require the total use of spectrum, we have decided to respond to this request by facilitating temporary access to the band. We believe this approach balances the immediate needs of the amateur community with potential longer term demand for the band from alternative uses.

- 3.39 In response to Roger Laphorn, our consultation concerned a sub band of the VHF band and did not consider frequencies to at Very Low Frequency (VLF) or Ultra Low Frequency (ULF).
- 3.40 In response to MRCoS, we made it clear in our previous CFI¹⁰ that the spectrum is not available as a single contiguous block between 143 – 156 MHz, due to the retention of a few channels for Public Safety use. We also detailed the spot frequency ranges within which the released spectrum is to be allocated. We remain of the view that there is sufficient space between the proposed Amateur Radio allocation and the new SAR allocation to keep the risk of channel interference to a minimum. Furthermore, there are ample safeguards within the Amateur Radio licence to minimise the risk of interference to other users and channels.

Other points

Citizen Band Radio allocation

- 3.41 A total of 38 responses were received from Citizen Band (CB) Radio users, of which 15 were confidential. The majority of respondents raised the request for an allocation to CB use in the VHF band, with many stating that the current 27 MHz band is suffering from continental interference and noise. In addition, Delboy Enterprises and 5 other respondents suggested an introduction of a licence free or licence exempt band in the VHF range for CB Radio.

Ofcom response

- 3.42 In response to the issues raised by the CB community, our proposals did not include an allocation of spectrum on a licence exempt (like CB Radio) or free basis. We note that there are currently no European (both European Union or European Communication Committee (ECC)) decisions¹¹ or recommendations for CB use in the VHF band. Although the lack of a decision does not prevent Ofcom from allocating spectrum for this use we do not see that a specific UK only allocation would be consistent with our duties on the efficient use of spectrum. Furthermore, due to the non-harmonised nature of the band there is no availability of appropriate kit for use in the band.

Aeronautical use

- 3.43 We received one response from an Aeronautical user. While in support of each of our proposals, they suggested that Ofcom should consider allocation of spectrum for aeronautical sports and non-radio aviation use to allow for the transition of illegal

¹⁰ <http://stakeholders.ofcom.org.uk/binaries/consultations/call-for-input/summary/condoc.pdf>

¹¹ ECC Decision 11(03)¹¹ allocates 27 MHz for the use of CB Radio

use of random frequencies to a common frequency. They advised for an allocation of a single 12.5 kHz Narrow Band FM channel operating at 147 MHz, with maximum restrictions applied on RF power and antenna gain.

Ofcom response

- 3.44 We do not see that there is a case for making an additional frequency available for aeronautical sporting use. Allocating spectrum in response to the illegal use of frequencies does not represent the efficient management of the radio spectrum. Moreover, it could be seen to be condoning unlawful activity. Channels have already been set aside for Aeronautical sports use nationwide¹², including a channel for hang gliders (129.900 MHz). We also note that, at present, aeronautical use is not actively prohibited under our Business Radio licences.

Protection of existing allocations

- 3.45 We noted that some respondents found the consultation to be unclear on whether existing and exclusive allocations of spectrum would be protected or would also become available, and on whether we are proposing a complete revision of the spectrum between 143 – 169 MHz or only for certain blocks within this range.

Ofcom response

- 3.46 The only spectrum that is to become available and released between 143 -169 MHz is the 5.875 MHz of spectrum that has returned to civil use by the Emergency Services. We illustrated the current VHF configuration with the returned blocks of spectrum in Annex 5 of our consultation¹³. All other current existing allocations between 143 - 169 MHz will remain in place and protected.

Licence exempt use

- 3.47 One respondent expressed an interest to make VHF spectrum available to personal users.

Ofcom response

- 3.48 In regards to the availability of VHF for personal users or licence exempt use, please note our response to the request for a CB Radio allocation.

Programme Making and Special Events

- 3.49 Ofcom is also considering how to ensure that Programme Making and Special Events (PMSE) continues to have access to the spectrum it requires in the future. With growing demand for spectrum in the Ultra High Frequency (UHF) range from non-broadcast services, it may be necessary to identify additional allocations for certain types of PMSE use, such as talkback and radio microphones in the VHF range. We are currently examining this question as part of our strategic review of PMSE. This review may conclude that spectrum in the range covered by this consultation could be a possible candidate for this type PMSE. Ofcom plans to

¹² <http://www.caa.co.uk/default.aspx?catid=2004&pagetype=90&pageid=12108>

¹³ http://stakeholders.ofcom.org.uk/binaries/consultations/vhf-143-169mhz/summary/VHF_consultation.pdf

publish for consultation its conclusions on future spectrum arrangements for microphones and talkback use in early 2015; the consultation may include proposals relevant to this band. In the meantime, the current practice of facilitating temporary and ad-hoc access to spectrum in this range for PMSE will continue.

Maintaining future flexibility

- 3.50 As stated in our consultation and throughout this document, we intend to maintain and preserve future flexibility of the band. We will therefore manage and graduate the release of spectrum in the band in order to achieve this. By allocating spectrum incrementally from the edge of the band it will avoid fragmentation and the breakup of contiguous blocks, thus preserving future flexibility. This was acknowledged by TAUWI in their response to our consultation.
- 3.51 A number of responses to the CFI identified the emerging requirements for broader-band applications, particularly among the utilities sector for telemetry, Machine-to-Machine (M2M) and possible 'LTE' type applications. Our assignment approach is designed to accommodate the potential emergence of such applications as well as new demand and new use of spectrum that has not previously been present in the band. Whilst we did not receive any direct responses to the prospect of new technologies, we remain very interested in understanding if there are emerging requirements for VHF spectrum for such uses. We remain open for discussion on this use of spectrum and would welcome enquiries from all interested parties.
- 3.52 We are also considering use of the VHF band in the context of supporting M2M networks, especially those that might require spectrum for Network Relay Points (NRPs). NRPs are central nodes that are used in some networks to enable individual consumer devices to communicate with each other and with the network. Their use in M2M networks is seen as important to the development and deployment of the emerging Internet of Things (IoT). We are currently consulting on our approach to authorising these networks¹⁴. The VHF spectrum has been identified as a potential band for NRPs as its licensing framework will have the flexibility to support M2M networks with NRPs. Licences will be made available on a first-come-first-served basis. We will publish our statement later this year on our decision on the authorisation of NRPs.
- 3.53 Preservation of future flexibility of the band is also required to meet stakeholder demands which may need significant amounts of spectrum (which may limit future flexibility of the band). As we have signalled in our consultation, if such a request arises, we may decide to reconsider our current assignment approach and we may consult upon alternative models of spectrum allocation prior to permitting access.

¹⁴ <http://stakeholders.ofcom.org.uk/binaries/consultations/network-relay-points/summary/network-relay-points.pdf>

Section 4

Conclusions

- 4.1 Having considered the responses received, we have decided to implement the four proposals set out in our consultation.
- 4.2 We will make spectrum in the 143 – 169 MHz range available on a first-come-first-served basis through our existing Business Radio Licence products. Spectrum will be allocated to Technically Assigned and Area Defined licences and will follow the standard terms and conditions of those licences. The licence fees for this spectrum will be charged in line with the current Business Radio fee regulations. If there is need for additional spectrum from licence classes other than Technically Assigned and Area Defined, we will reconsider our current decision and seek to provide sufficient spectrum to meet that demand.
- 4.3 We will employ a managed and graduated release of portions of the 5.875 MHz of returned VHF spectrum to avoid the fragmentation of continuous blocks of spectrum and to preserve future flexibility. While we expect that spectrum will be assigned to systems using channel bandwidths of 6.25 kHz, 12.5 kHz and 25 kHz, this does not preclude requests for use of bandwidths greater than 25 kHz.
- 4.4 We remain of the view that there may be demand for future use of this band by new broader-band applications and technologies, such as M2M and 'LTE' type applications. We will welcome discussions with applicants who wish to obtain spectrum for such use, in order to determine their requirements and understand the potential demand for such spectrum. If we identify emerging demand for either wideband access or for other technologies, or if there are stakeholder requirements which need significant amounts of spectrum (which may limit future flexibility), we may decide to review our spectrum assignment approach and consult on alternative models of spectrum allocation, including availability of spectrum through an awards process.
- 4.5 We have noted that the MCA have revised their spectrum requirements since the publication of our consultation. In response to their revised request, we will now allocate 375 kHz of the available spectrum to the MCA. The allocation will serve to protect their main search and rescue emergency channel, Channel 0, at 156 MHz. It will also provide working channels for mountain rescue and other land-based search and rescue teams (Land SAR) in response to channel displacement arising from changes in international arrangements for VHF maritime channels.
- 4.6 We will continue with our practice of providing short term access to Programme Making and Special Events (PMSE). We note that there remains a possibility that the PMSE Strategic Review may identify spectrum in this range as a possible candidate for longer term access for PMSE. Such proposals would be subject to further consultation which we expect to publish in early 2015. As it is not our expectation that all the available spectrum to be required by alternative uses immediately we will make available additional spectrum on a temporary basis for Amateur Radio between 146 – 147 MHz, adjacent to the existing Amateur Radio allocation at 144 - 146 MHz. Access to spectrum will be authorised under a Notice of Variation, time-limited to 12 months and available to Full Licence holders only.

- 4.7 We retain the right to withdraw temporary access to spectrum at 146 - 147 MHz. We will not consult on this decision. We will endeavour to provide Amateur Radio users with a minimum of 12 months' notice before withdrawing temporary access. Such notice will be published on our website. Amateur Radio use of spectrum will be on a non-protection, non-interference basis and will be subject to some geographical restrictions to avoid interference to neighbouring countries. If use is shown to cause interference, the spectrum will be removed with immediate effect. The Notice of Variation will last for twelve months but can be re-applied for unless notice has been given on our website.

Next steps

- 4.8 The following arrangements will be available from 31st October 2014:
- additional PMR channels in the VHF range available for assignment through our normal licensing process;
 - 375 kHz made available to the MCA ; and
 - 146 – 147 MHz available by a Notice of Variation to holders of Full Amateur Radio licences. This will be available through the Radio Society of Great Britain (RSGB) website.

Annex 1

List of non-confidential respondents

Adam Brookes

Andrew Morgan

Andrew Thomas

Anthony Pugh

Bernard Park

Brian Downer

Charles Henry Brain

Critical Messaging Association

David Chislett

David Crump

David Sadler-Lockwood

Delboy Enterprises

Federation of Communication Services

Gareth Griffiths

Gerard McLaughlin

James Monahan

John Gilliver

Kenneth Thomson

Leighton Davies

Maritime Coastguard Agency

Mark Elliott

Martin Cook

Mountain Rescue England and Wales

Mountain Rescue Committee of Scotland

Murray Niman

Paul Pasquet

Peter Morys

Robert Dean

Robert Farey

Robert Russell

Rodney Owens

Roger Laphorn

Ronald Hamer

Ronald Swinburne

Ronald White

Sebastien Krawezzyk

Simon Pryce

Stewart Mason

Telecommunication Association of the UK Water Industry

Tom Taylor

Tony Jones

Annex 2

Glossary

CAA – Civil Aviation Authority

CFI – Call For Inputs

DMR – Digital Mobile Radio

ECC – European Communication Committee

EIA – Equality Impact Assessment

FAT – Frequency Allocation Table

FM – Frequency Modulation

ITU – International Telecommunication Union

kHz – Kilohertz

LTE – Long Term Evolution

MHz – Megahertz

NoV - Notice of Variation

PMR – Private Mobile Radio

PMSE – Programme Making and Special Events

SAR – Search and Rescue

ULF – Ultra Low Frequency

VHF – Very High Frequency

VLF – Very Low Frequency

WT Act – Wireless Telegraphy Act