

Title:

Mr

Forename:

Ben

Surname:

Steinitz

Name and title under which you would like this response to appear:

Ben Steinitz - Audio Engineer

Representing:

Organisation

Organisation (if applicable):

Royal National Theatre

Email:

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What do you want Ofcom to keep confidential?:

Keep nothing confidential

If you want part of your response kept confidential, which parts?:

Ofcom may publish a response summary:

Yes

I confirm that I have read the declaration:

Yes

Ofcom should only publish this response after the consultation has ended:

You may publish my response on receipt

Question 1: This executive summary sets out Ofcom's proposals for the release of the digital dividend. Do you agree with these proposals?..:

No.

1.41 mentions Local TV's possible delivery alternatives. There is no indication of PMSE's alternatives when delivering radio microphone content. Please state your findings on the delivery alternatives available for professional radio microphone users. If, as I and my fellow licence holders already know, you find that there are none, please state this clearly.

1.32 mentions the inability to value individual uses of the spectrum. This is not true. Though Ofcom may be unable to value some uses, they are capable of calculating accurately the value the existing users mentioned in 1.53 have for the spectrum. The PMSE sector is a fundamental component of the British Entertainment Industry, which is worth £15-billion per year and employs 150,000 people. It is immensely valuable to society, since low power use enjoys 100% coverage. Ofcom should state the values that CAN be calculated, rather than avoiding such important facts, simply because some uses can not be valued accurately.

1.27 recognises the need to prevent one use of spectrum interfering harmfully with another. Paradoxically, whenever PMSE's need for interleaved spectrum is mentioned (see 1.15; 1.33; 1.61; 1.75), there is no acknowledgement that PMSE requires sole use of interference-free spectrum in its receiver-range in order to function. It is important to stipulate in 'Usage rights and obligations' (1.75) the obligation to make sufficient interleaved capacity solely available for PMSE services. Please amend all the other cited sections to acknowledge this requirement.

1.65 I agree with your suggestion for holding back an innovation reserve for unanticipated eventualities, since this spectrum will be useful for the PMSE industry after market-failure.

1.61 explains the effect of the transition period up to 2012 on professional wireless microphone users. Though, there is clear indication of how much interleaved spectrum will be available up to 2012, there is no detail as to how much interleaved spectrum will be available to these users after 2012. I would also like to know how and when Ofcom will work closely with the user community regarding the development of these proposals. Ofcom's current proposal doesn't allow sufficient time for the PMSE sector to adapt to the proposed changes. Nor does it allow enough time for manufacturers to produce a sufficient quantity of equipment to utilise any new spectrum made available.

1.76 Please provide much more detail relating to your considerations of how this spectrum award should take into account the 2012 London Olympics and Paralympics. If no detail is available, provide information about how and when consideration of this will take place.

Question 2: Do you have any comments on our analysis of the essential constraints that will apply to the available UHF spectrum?..:

Yes.

There are regular comments in sections 2 & 3 highlighting the need to protect existing users: Astronomy, DTT and PMSE (see 2.23; 3.3; 3.30; 3.34; 3.38). Though the document acknowledges that PMSE is an existing user, like Astronomy and DTT, PMSE is not given the benefits given to Astronomy and DTT. Please explain the reason for this distinction.

3.39 makes clear the need to ensure PMSE does not affect DTT, but there is stipulation about protecting PMSE's, and other interleaved services', requirements. Please mention that PMSE users can not function without interference free systems. As PMSE is comparatively low-power, it would be a small step for Ofcom to ensure the current system continued post 2012. This is necessary, since Ofcom's current proposal doesn't allow sufficient time for the PMSE sector to adapt to the proposed changes. Nor does it allow enough time for manufacturers to produce a sufficient quantity of equipment to utilise any new spectrum made available.

2.13 needs to mention that the six DTT multiplexes also have the stipulation (see 1.75) regarding provision for PMSE use in the interleaved spectrum, if this is the case. If this is not the case, it should be made so. Again, it is important to stipulate in 'Usage rights and obligations' (1.75) the obligation to make some interleaved capacity solely available for PMSE services.

Fig 2.3 is wrong. Channel 69 isn't the only spectrum reserved for PMSE. PMSE also has spectrum interleaved among many of the other channels. In fact, professional users rarely use channel 69. Please acknowledge that there are over 600 organisations and individuals with over 32,000 individual spectrum assignments, none of which are channel 69.

3.31 implies that PMSE has secondary or non-priority use of spectrum. Actually, PMSE requires, and will continue to require, sole use of interference-free spectrum within their receiver-range in order to function.

Question 3: Do you agree with the more detailed analysis and proposals regarding these technical constraints as set out in Annex 10?..:

No.

A10.6 and figure A10.1 are incorrect: Channel 69 isn't the only spectrum reserved for PMSE. PMSE also has spectrum interleaved among many of the other channels. In fact, professional users rarely use channel 69. Please acknowledge that there are over 600 organisations and individuals with over 32,000 individual spectrum assignments, none of which are channel 69.

A10.30 highlights PMSE as an appropriate service for the interleaved spectrum but does not specify that PMSE users would require sole use of that spectrum within their receiver range.

A10.33 stated the expectation that a high level of error coding would be expected on devices using the interleaved spectrum. It should be noted that PMSE equipment can

not do this, as the latency created would be too great.

A10.34 There is no information about what alternative is available to PMSE in areas of high demand, such as London - where most business critical PMSE use exists ? if retained spectrum is used for additional multiplexes. Please provide this information.

A10.35 PMSE capacity is already being reduced by the DSO. Further reductions would be best avoided.

A10.53 gives a description of how Small Area Networks operate. This is extremely similar to how PMSE radio microphone systems operate. Therefore they are ideally suited to work in an interleaved spectrum. Please note that any PMSE user needs sole use of their frequencies within the range of their receiver.

A10.82 makes dangerous assumptions about the capabilities of radio microphones to function on the same channel as a DTT receiver. I think this is most unlikely, should not be relied upon and should be discounted as an option.

A10.83 and A10.84 sound fine.

A10.85 - please be specific as to how much the separation might change.

A10.127 makes a very good point about ensuring that existing users (like radio microphone users) are not affected by interference. I hope that sufficient interference-free spectrum will be provided rather than eradicating the interference problem by imposing heavy restrictions on the amount of spectrum made available for PMSE.

A10.136 and A10.137 state that radio microphones (among others) are ideally suited to interleaved spectrum and that there is a need to ensure that these uses do not interfere with the DTT multiplexes. Please acknowledge that the interleaved spectrum made available to radio microphone users also needs to be free of interference and PMSE users require exclusive use.

A10.141 and A10.142 mention Sagentia's study into PMSE services in Interleaved Spectrum. There are many inaccuracies in Sagentia's analysis, which are covered in the Additional Comments' section.

A11.42 should state that the long term fixed sites use most of channels 21 to 68 and avoid channel 69 wherever possible. It is also important to note that this use is exclusive ? i.e. the fixed site users have sole use of their frequencies within the range of their receiver.

A11.46 states that current use of the spectrum is very inefficient ? This is a generalisation, since, according to Sagentia, all geographic peaks are extremely efficient. In fact, the inefficient use of spectrum relates to a small number of isolated events.

A11.46 states that better analogue and digital microphones will make coordination easier. There is no information showing how Sagentia determined this. I would like Sagentia to define exactly what they mean by 'better' and explain how digital radio microphones will help. Sagentia's statement that digital microphones are 'more difficult to use' is not true. Further research from Sagentia, with leading manufacturers, will reveal that digital microphones are simply impractical and of poor

sound-quality.

A11.48 should include all professional PMSE users as business critical users. Also, please provide the calculations done by Ofcom or Sagentia showing that 16 microphones per channel is workable in business critical situations. It is not.

A11.49 Mentions the financial benefits to manufacturers but completely ignores the financial repercussions to the end users who do not have the finances to buy new equipment. These manufacturers will not sell (or even make) any of their new equipment if all the users who would buy it are out of business. Please note that manufacturers, like Sennheiser and Shure, are against your proposal as well, despite your claim that it will benefit them.

A11.49 needs to explain what is meant by a more understandable mapping and more accurate frequency selection [please add the missing bracket]

A10.143 needs to point out that channel 69 is not being used by many professional PMSE users, for whom the use of their current number of radio microphones is business critical. Please acknowledge that there are over 600 organisations and individuals with over 32,000 individual spectrum assignments, none of which are channel 69.

A10.154 mentions the need to protect radio astronomy on channel 38 but there is no similar paragraph mentioning the need to protect another important and larger existing user: PMSE.

A10.157 should make it clear that additional low power DTT services and PMSE can not use the SAME interleaved spectrum in the same area as this would cause interference.

Question 4: Do you have any comments on Ofcom's assessment of the potential uses of this spectrum? Are there any potential uses which should be considered that are not mentioned in this document? :

Yes.

4.6 includes wireless microphones in the group of potential users, though PMSE is actually an existing user. Please make this clear.

4.36 points out that Local TV can be delivered on other platforms. There is no alternative for PMSE and this fact needs stating clearly in the report.

4.38 suggests that local DTT services could co-exist with PMSE. This is wrong! The interference created on the radio microphone systems would render them useless for professional applications. Local DTT and PMSE could be awarded different interleaved spectrum but they can not use the same frequency.

4.42 Reducing the amount of spectrum available to PMSE, as seems to be the intention, will prevent PMSE from providing its current nationwide and multimedia service. The PMSE sector is a fundamental component of the British Entertainment Industry, which is worth £15-billion per year and employs 150,000 people. It is immensely valuable to society, since low power use enjoys 100% coverage.

4.42 acknowledges that the consumer value of PMSE is understated. Surely, having made this point, there should be a degree of caution when planning the digital dividend, to make sure that there is sufficient spectrum available to PMSE rather than risking serious problems. It would be wise to consider PMSE as more than a 'plausible use of the spectrum', since there is no other option available to PMSE users.

4.45 mentions PMSE need for assured quality of service to guard against the risk of interference. Please add the simple statement that PMSE requires exclusive use of the interleaved spectrum (just like the current arrangement which works) in order to guard against the risk of interference and to ensure quality of service.

4.47 expects the demand for PMSE spectrum to rise with time. Therefore, any reduction in the spectrum available to PMSE is hypocritical to this statement.

A 4.48 mentions PMSE stakeholders' views about retaining access to the UHF spectrum but does not mention Ofcom's response to these views. Please state your response.

4.51 mentions the value to society of community PMSE use. There is no mention of the value to society of professional PMSE use, though it has clear value: Performing Arts, Broadcasting, Film and Independent Production, Corporate Events, Concerts, Night Venues, Sports Events, the Health Service, Education, Local Government and Electronic News Gathering. This is a gross omission. Please add this to section 4.45-4.48.

4.52 - Professional PMSE users would also like current arrangements for access to UHF spectrum to be extended to cover the period post-DSO. Please add this to section 4.45-4.48.

4.95 - with what weighting have you considered the three sources of evidence?

Figure 4.2 suggests VHF as an alternative band for PMSE. Please state how much VHF would be available for PMSE's exclusive use. Please note that PMSE have already tried VHF but moved to UHF due to the poor quality inherent in VHF. PMSE requires interleaved spectrum at every DTT multiplex location - please correct this on the table.

4.104 onwards - How is it possible to create an accurate picture of the consumer market without including every relevant factor? For example, local TV has been included but PMSE hasn't and they are interested in the same interleaved spectrum. The PMSE sector is a fundamental component of the British Entertainment Industry, which is worth £15-billion per year and employs 150,000 people. It is immensely valuable to society, since low power use enjoys 100% coverage. How can a decision be made as to who is awarded the spectrum if one party hasn't been included in the analysis?

Figure 4.3 shows the importance ranking for digital technologies. Since PMSE hasn't been included in the analysis (though it should have been), it would be fair to add a paragraph here, stating that PMSE users exist in all three of the top ranking digital

technologies: more DTT channels; Local TV; and HDTV. (This is confirmed by Sagentia's report) None of these will function without PMSE. Vast arrays of organisations are reliant on PMSE spectrum for the production of content: Performing Arts, Broadcasting, Film and Independent Production, Corporate Events, Concerts, Night Venues, Sports Events, the Health Service, Education, Local Government and Electronic News Gathering. This is a gross omission.

4.119 mentions many of the uncertainties over how the markets might develop. In section 4.47, PMSE demand was forecast to increase ? a certainty. However, there is no mention, in the following sections, about Ofcom's decisions in the face of such a certainty.

4.122 mentions the phrase ?willingness to pay?. There are many different forms of this; One is ?willingness to bid? and another is ?willingness to pay for a license?. PMSE users cannot afford to bid but are already paying for licences. This report should really use the phrase ?Willingness to Bid?. Ofcom need to acknowledge that the PMSE sector is unable to bid in the proposed auction, due to its disparate, diverse and diffuse community of content producers, manufacturers and rental organisations. As a large community of small companies and individuals, there is no possibility of entering the auction process, due to poor financial resources and the lack of a mechanism to coordinate a unified bid.

4.124 acknowledges that it can be difficult to fully appreciate some services but does not specify which ones and how the report intends to compensate for this problem. Please explain how Ofcom intend to ensure suitable compensations are made for the services (like PMSE) which are undervalued by the report.

Figure 4.4 estimates the spectrum requirements for PMSE incorrectly. PMSE requires more like 46 channels of interleaved spectrum. Please amend this error.

Figure 4.5 shows PMSE's spectrum allocation to be constant in every scenario, implying a calculation has already been postulated. How was this value calculated and what does it represent in terms of amount of spectrum?

4.141 concludes that demand is high for spectrum. Contrary to Ofcom's belief that there is limited interest in interleaved spectrum, there is also proven interest from Dell Corporation, Vodafone and Microsoft. Naturally, bids on these packages will be even greater than Ofcom have predicted. PMSE users, who are unable to bid anyway, would hard-pushed to compete with large corporations like Microsoft who see ?huge potential in the ?white spaces??. Ofcom need to ensure PMSE is awarded sufficient spectrum before the proposed auction, since it cannot afford to bid.

A level of uncertainty is also mentioned regarding the value different uses of the spectrum have to society. So, in terms of the existing users ? whose social value is historic rather than hypothetical, it is important to err on the side of caution and ensure sufficient spectrum is allocated. The PMSE sector is a fundamental component of the British Entertainment Industry, which is worth £15-billion per year and employs 150,000 people. It is immensely valuable to society, since low power use enjoys 100% coverage.

"Are there any potential uses which should be considered that are not mentioned in this document?"

Not to my knowledge.

Question 5: Do you have any comments on our analysis of the choice between a market-led and an interventionist approach to the release of this spectrum? Do you agree with the analysis of different mechanisms for intervening to remedy potential market failures?.

Yes.

This section makes no consideration for those who need spectrum but can not afford to bid for it. Ofcom, citing footnote 31, suggest that funding will be available for those without the finances to bid. The PMSE sector is not included in the cited document. Ofcom need to acknowledge that the PMSE sector is unable to bid in the proposed auction, due to its disparate, diverse and diffuse community of content producers, manufacturers and rental organisations. As a large community of small companies and individuals, there is no possibility of entering the auction process, due to poor financial resources and the lack of a mechanism to coordinate a unified bid. The need for Ofcom to discount intervention in this case is unfounded.

5.25 mentions Ofcom's duty to ensure a wide range of television and radio services of high quality is available. An additional sentence stating that this will not be possible without allocating interference-free spectrum to professional PMSE users is necessary here. Vast arrays of organisations are reliant on PMSE spectrum for the production of content: Performing Arts, Broadcasting, Film and Independent Production, Corporate Events, Concerts, Night Venues, Sports Events, the Health Service, Education, Local Government and Electronic News Gathering. This is a gross omission.

5.33 should note that some of the evidence-gathering and analysis deliberately ignores all of the relevant factors and, therefore, skews the results. (4.104 onwards is an example of this.) Alternatively, Ofcom could correct the current imbalance by including PMSE in all research.

5.35 states that Ofcom must understand the spectrum requirements of each potential service. Firstly, PMSE is an existing service, not a potential one. Secondly, Ofcom seems to be ignoring the fact that one of PMSE's requirements is exclusive access to spectrum, to ensure the harmful interference mentioned later in 5.36.

5.38 should be titled 'Willingness to BID' rather than the ambiguous 'Willingness to Pay'. This correction is necessary in many sections of the document e.g. 4.122

5.42 states that Ofcom has considered the appropriate timing of the proposed auction. This time may be appropriate for the intended DSO date of 2012, but the DSO date itself is inappropriately timed. The Olympic year is a poor choice of time for such a major change. Additionally, the PMSE industry needs more time to make its changes after DSO, before the winners of the auctions are permitted to use their awarded frequency. Upgrade of the equipment in question is restricted by the RoHS directive, and manufacture of a sufficient quantity of suitable new equipment will take longer

than Ofcom have estimated. It will take between 10 and 15 years for the large, business-critical companies to re-stock with new equipment to their current numbers. Therefore, a far more realistic completion of the transitional period would be between 2020 and 2025.

"Do you agree with the analysis of different mechanisms for intervening to remedy potential market failures?"

No.

6.20 and 6.22 refer to ensuring efficient use of the spectrum. In order to make this statement, there must be a template upon which Ofcom base this opinion. Why not simply award spectrum to the relevant parties based on this predetermined template? The only issue with this relates to money, but, as Ofcom states in 5.4, money is not a factor.

6.28, 6.34 and 6.69 mention the need to ensure that those who are unable to bid are provided with the funds to do so, but there is no more explanation of how this will be done. Please provide a summary of this. Footnote 31 is useless to PMSE, since the study does not analyse PMSE.

6.37 alludes to the cost to society of intervention without considering that intervention may actually benefit society.

6.41, 6.42 and 6.43 make the dangerously incorrect assumption that all of the considered uses of spectrum have suitable new technology available. PMSE users do not have an alternative to their current methods at the moment, nor do they have the money to invest in developing any. Local television does. Please note that Ofcom needs to provide a timetable for spectrum release that is sufficiently long to allow the manufacturing industry to produce in sufficient quantity, equipment capable of utilising newly available frequencies in such a way as does not disrupt their production. It would take between 10-15 years for a company in the industry to build up an inventory of stock to match current levels. Therefore 2020- 2025 is a more suitable date to complete the transitional period of the DDR.

6.46 Competition and innovation continue naturally and without the help of the DDR, as there is always the urge to improve technology. Therefore, neither is likely to be severely affected by intervention on the DDR. However, this natural course of competition and innovation will take more time than Ofcom has allowed, in the case of the PMSE industry. Upgrade of PMSE equipment is restricted by the RoHS directive, and manufacture of a sufficient quantity of suitable new equipment will take longer than Ofcom have estimated. It will take between 10 and 15 years for the large, business-critical companies to re-stock with new equipment to their current numbers. Therefore, a far more realistic completion of the transitional period would be between 2020 and 2025.

6.49 and 6.59 cite uncertainty as a reason not to intervene in spectrum. PMSE is not an uncertainty (it is not listed in 6.50 to 6.57), so intervention does not need to be cautious.

6.61 Ofcom are taking a large risk in saying that intervention is not a good idea whilst stating that the other options (see 6.33 and 6.34) are not within their remit. The other options are extremely important and require equal consideration by Ofcom. Since Ofcom's methods of spectrum allocation are changing, so is its remit. Please add a section explaining the possible options that exist, and include the facts presented by the PMSE industry in your research. Please also provide details of possible funding and finance management options for the PMSE sector, since footnote 31 does not cover it.

6.74 states that Ofcom are ready to help ensure that all stakeholders can bid in the proposed auction, since the PMSE industry is unable to bid. Please provide detail regarding how this will be done and when.

Figure 6.1 needs several corrections:

In the Award Process row, stating that the "Highest bid wins" without explaining how some stakeholders will be able to achieve this bid is unprofessional. Please provide this detail.

In the Incentive for Efficient Use of Resources row, please add the "assumption that other delivery options are available to all users" to the Market-Led column. Please note that the PMSE sector has no delivery alternatives.

In the Potential Effects on Competition row, please elaborate the dependence on circumstance with relation to the different users. Also, please note that my opinion is that the proposed auction is far from well-designed and is fundamentally flawed.

In the Risk of Regulatory Failure row, please note that none of the risks of intervention stated are the case with PMSE.

In the Risk of Market Failure row, please provide more information (preferably a whole section) explaining the financial and institutional framework to be provided to those, like PMSE, who can not afford to bid.

Question 6: Do you agree with our proposals to continue making available channel 69 for use by low power PMSE devices? Do you agree with our proposal to make some or all of the spectrum available for use on a licence-exempt basis? :

Yes, though I believe that channel 69 should continue to be available for PMSE use alone, as you have stated in 6.88.

"Do you agree with our proposal to make some or all of the spectrum available for use on a license-exempt basis?"

No.

In response to 6.87: I am opposed to the deregulation of Channel 69 because existing professional PMSE users, as well as amateur users, require interference free use of spectrum. If the PMSE sector continued to use Channel 69, following its deregulation, it is certain that sound production will suffer from interference. It is an absolute fundamental that the spectrum used by the PMSE community is licensed and coordinated by the successor to JFMG. There is no scope to move the users of channel 69 to alternative bands.

6.89 is a ridiculous explanation of Ofcom's actions, since it could be extruded to make all spectrum licence-exempt, completely eliminating any administrative costs for Ofcom. It appears that this decision has been taken for the PMSE industry, because there is little money to be made from this sector in comparison to others.

In 6.92, Ofcom comments on its commitment to work closely with the PMSE community to develop its proposals. I consider these proposals unworkable and, therefore, am not interested in developing them. I would like Ofcom to draft a new proposal, allocating sufficient interference-free interleaved spectrum to the PMSE sector and continuing licensed PMSE use of channel 69.

Question 7: Do you agree that there should be transitional protection for professional PMSE users to ensure that they can continue to access interleaved capacity until at least the end of 2012? Do you have any views on the mechanism for providing future access to this spectrum?..:

No. I think that there should be transitional protection for professional users to ensure that they can continue to access the current interleaved capacity BEYOND 2012.

"Do you have any views on the mechanism for providing future access to this spectrum?"

Please define 'future access', giving detailed chronological information and specific access details.

6.94 states our requirement for high-quality access with guaranteed uninterrupted use of the spectrum but fails to mention our inability to bid. As a result, we must be allocated sufficient spectrum to complement our current usage. I suggest that spectrum is awarded to a single band manager (the successor to JFMG) on an annual basis. They would be committed to their consumers needs and would free Ofcom of this responsibility. Spectrum for Local TV and PMSE could be licensed and managed jointly by the band manager.

6.96 considers there to be sufficient interleaved spectrum for PMSE use after the DSO. This is not the case for all productions, even if there is efficient use of the spectrum - an important point that needs addressing. Additionally, the PMSE industry is unable to bid on this interleaved spectrum and will therefore have little to no spectrum available for use after DSO no matter what Ofcom makes available in the proposed auction.

6.97 directly contradicts Sagentia's conclusions regarding licence pricing. In section 7 of their report, Sagentia state that 'current pricing for access to PMSE spectrum seems to be appropriate for the service offered' whereas this report states that 'the prices paid by users do not reflect the opportunity cost of using the spectrum'. Please use the statement provided by your consultant, and explain the reason for the mistake.

6.99 suggests allowing services other than PMSE to bid on interleaved spectrum but does not acknowledge that this suggestion is likely to result in a reduction in quantity of the already valuable spectrum available for PMSE use. Contrary to Ofcom's belief

that there is limited interest in interleaved spectrum, there is also proven interest from Dell Corporation, Vodafone and Microsoft. PMSE users, who are unable to bid anyway, would hard-pushed to compete with large corporations like Microsoft who see 'huge potential in the 'white spaces'?. This inflated competition for interleaved spectrum will price any hypothetical PMSE bid out of the market.

6.100 Please quantify 'short-term?', since, under the current proposal, there will be potentially disastrous disruption to PMSE users after 2008.

6.101 There is an additional safeguard needed to ensure a smooth, failure-free transition into a profit-orientated market: the PMSE industry needs to be allocated spectrum, since it is unable to bid in the proposed auction. I, and my fellow PMSE licence holders, expect Ofcom to do this in adherence to their statement in 6.102

There is a discrepancy between 6.103 and 6.118. One proposes to auction packages to PMSE and the latter intends to offer packages to local television. Please explain the relevance of the different wording.

Additionally, please note that PMSE users require interleaved spectrum after 2012 as well, and are unable to bid for it.

6.104 please provide the details of any interested organisations, with sufficient funds to bid for spectrum, which are prepared to take on a role as commercial band manager for the PMSE industry. If you have no interested organisations, please explain exactly how the proposal, suggesting the PMSE industry bids as one, will be organised. I would like to suggest that spectrum is awarded to a single band manager (the successor to JFMG) on an annual basis. They would be committed to their consumers needs and would free Ofcom of this responsibility. Spectrum for Local TV and PMSE could would be licensed and managed jointly by the band manager. It is Ofcom's duty to find such a band manager and gift the spectrum to them before the auction process.

Please define 'future access?', giving detailed chronological information and specific access details.

6.105 highlights the need to design the award process to encourage PMSE users to bid. The PMSE industry is unable to bid and must therefore be allocated sufficient interleaved spectrum prior to the auction process.

Question 8: Do you consider that additional spectrum from the digital dividend should be reserved for low power applications? If so, please provide as much evidence as possible about the nature of the application and its potential value to society.:

Yes. I would like to suggest that channels 67 and 68 are reserved for low-power use. The potential for interference-free band sharing between PMSE and other low-power users is considerable and would be extremely spectrally efficient. It would also fit nicely with the need to prevent interference to the French Military, who also use this area of the spectrum.

Question 9: Do you consider that it would be desirable to hold back some spectrum from award with a view to its potential use for future innovation? If so, please provide comments on how much spectrum should be held back, and for how long.:

Yes.

"If so, please provide comments on how much spectrum should be held back, and for how long."

I think that a large portion of spectrum should be reserved for the extremely likely event of market failure.

Specifically, the reserved spectrum would be allocated to the PMSE industry after the auction process is complete, since the PMSE industry will not have any interference free spectrum in which to work.

Question 10: Do you agree with our proposal that we should package the interleaved spectrum in a way that would be suitable for use by local television services, but not reserve spectrum solely for this use?..:

No. I believe that Ofcom should package the interleaved spectrum in a way that would be suitable for PMSE users. Most importantly, and conversely to Ofcom's current intentions, spectrum should be reserved for this use, since PMSE users are unable to bid on the spectrum.

6.117 suggests that PMSE and Local TV 'coexist' but without the stipulation that we require interference-free spectrum and can not exist on identical frequencies in the same geographical location. Please add this important fact.

There is a discrepancy between 6.118 and 6.103. One proposes to offer packages to local television and the latter intends to auction packages to PMSE. Please explain the relevance of the different wording, which occurs again in 6.128.

6.122 uses incomplete research. The market research mentioned did not consider PMSE, which has very high social value, and therefore it should be discounted. The PMSE sector is a fundamental component of the British Entertainment Industry, which is worth £15-billion per year and employs 150,000 people. It is immensely valuable to society, since low power use enjoys 100% coverage. Vast arrays of organisations are reliant on PMSE spectrum for the production of content: Performing Arts, Broadcasting, Film and Independent Production, Corporate Events, Concerts, Night Venues, Sports Events, the Health Service, Education, Local Government and Electronic News Gathering.

How is it possible to create an accurate picture of the consumer market without including every relevant factor? For example, local TV has been included but PMSE hasn't, though both are interested in the same interleaved spectrum. How can a decision be made as to who is awarded the spectrum if one party hasn't been included in the analysis?

6.124 considers the option of intervention for Local TV, a subject which not even covered for PMSE in 6.78 to 6.106

Please analyse this option for PMSE or explain why Ofcom is giving preferential treatment to other services.

Question 11: Do you agree with our proposal to package the spectrum in a way which does not preclude mobile broadband use, but to take no further action in relation to this use?:

Yes.

Question 12: Do you agree with our proposal that we should not intervene in the award of this spectrum to reserve spectrum for DTT? Do you agree that we should package the spectrum in a way which is suitable for DTT use?:

Yes.

"Do you agree that we should package the spectrum in a way which is suitable for DTT use?"

No. I think that the spectrum should be packaged in a way which is suitable for PMSE use. Most importantly, and conversely to Ofcom's current intentions, spectrum should be reserved for this use, since PMSE users are unable to bid on the spectrum.

Question 13: Do you consider that we have included in our analysis the most material risks in relation to market failure?:

No. I think Ofcom continues to ignore the inevitable scenario, in which the PMSE industry is unable to bid in the proposed auction and will therefore be without any interference-free interleaved spectrum. Channel 69 will be overused and useless to professionals, due to the high levels of interference caused by the deregulation.

6.159 falls short of the mark, in only offering interleaved spectrum for PMSE up to 2012. The report makes no provision for PMSE after 2012, under the false impression that this industry will be able to bid in the proposed auction.

6.163 suggests that help will be given in obtaining spectrum through auction or the market but no details are provided of how this might happen. More research is needed, as this will determine that market failure is the only result of the current proposal, with regard to PMSE.

It should be noted that PMSE radio equipment is used for DTT, Local TV and HDTV. Therefore, figure 6.2 should state, in addition to the 'Importance of HDTV to Consumers and Society?', the importance of PMSE to consumers, society and the top three services in the diagram. It should also be noted that vast arrays of other organisations are reliant on PMSE spectrum for the production of content: Performing Arts, Broadcasting, Film and Independent Production, Corporate Events, Concerts,

Night Venues, Sports Events, the Health Service, Education, Local Government and Electronic News Gathering.

Question 14: Do you agree with our proposal to auction licences for the use of the available UHF spectrum?..

No.

7.5 allows anyone to bid against Local TV and PMSE (who are unable to bid anyway), ensuring that packages will not be awarded to either. Contrary to Ofcom's belief that there is limited interest in interleaved spectrum, there is also proven interest from Dell Corporation, Vodafone and Microsoft. Naturally, bids on these packages will be even greater than Ofcom have predicted. PMSE users, who are unable to bid anyway, would hard-pushed to compete with large corporations like Microsoft who see huge potential in the 'white spaces'.

7.10 Ofcom has made a conclusion based on incorrect, incomplete and poorly analysed information. Since there are serious arguments against a market-based approach, Ofcom's preference for an auction mechanism can only be attributed to financial gain.

7.11 incorrectly suggests that an auction winner is most likely to use the spectrum efficiently and value it the most, where, actually, the auction winner is simply the person who can bid the most money. Please correct this error.

7.15 states Ofcom's objectives and also those from which it disassociates itself. Please clarify where the significant amount of money raised by this auction will go and for what purpose.

The PMSE sector is a fundamental component of the British Entertainment Industry, which is worth £15-billion per year and employs 150,000 people. It is immensely valuable to society, since low power use enjoys 100% coverage.

Currently there are around 180,000 wireless units which utilise this spectrum, used at 45,000 different events ranging from those on a small scale using just one single frequency, to much larger live events, which excluding unique events such as the Olympics, might use up to 240 frequencies. There is also a growing trend in live entertainment towards much larger live events which require greater frequency capacity. On average, most typical professional live events will use between 16 and 30 TV bands.

Vast arrays of organisations are reliant on PMSE spectrum for the production of content: Performing Arts, Broadcasting, Film and Independent Production, Corporate Events, Concerts, Night Venues, Sports Events, the Health Service, Education, Local Government and Electronic News Gathering.

I suggest that spectrum is awarded to a single band manager (the successor to JFMG) on an annual basis. They would be committed to their consumers needs and would

free Ofcom of this responsibility. Spectrum for Local TV and PMSE could be licensed and managed jointly by the band manager.

Question 15: Do you agree with Ofcom's proposals as to the timing of any auction? If not, what alternative proposal would you make and why, and what evidence and analysis can you provide in support of your alternative proposal?:

No.

In 8.18 Ofcom consider the time required for new services to deploy their equipment, but there is no consideration of the time required by existing users to change to new equipment, and for the new equipment to be designed and manufactured.

Ofcom needs to acknowledge that even equipment, for which full depreciation has taken place, continues to hold value within the industry because of the longevity of the equipment itself and the rental nature of part of the PMSE sector. This means that equipment filters down through the industry. Proposed changes would abruptly end the life cycle of this equipment by making it entirely redundant.

The PMSE industry needs more time to make its changes after DSO, before the winners of the auctions are permitted to use their awarded frequency. Upgrade of the equipment in question is restricted by the RoHS directive, and manufacture of a sufficient quantity of suitable new equipment will take longer than Ofcom have estimated. It will take between 10 and 15 years for the large, business-critical companies to re-stock with new equipment to their current numbers. Therefore, a far more realistic completion of the transitional period would be between 2020 and 2025.

Question 16: Do you have any views on which of the packaging options identified for the cleared spectrum would be most suitable?:

Yes.

9.16 and 9.23 note the substantial demand for interleaved spectrum and how it is packaged. This highlights the problem faced by the PMSE community, since they are unable to bid and would not be able to match bids from the other interested parties. Contrary to Ofcom's belief that interest in interleaved spectrum is limited to Local TV and PMSE, there is also proven interest from Dell Corporation, Vodafone and Microsoft. Naturally, bids on these packages will be even greater than Ofcom have predicted. PMSE users, who are unable to bid anyway, would be hard-pushed to compete with large corporations like Microsoft who see huge potential in the 'white spaces'.

9.34 mentions the packaging options for the spectrum to be auctioned, when existing users are considered, but PMSE is not mentioned as an existing user. Please explain why not. The same problem can be found in figure 9.1: the table shows some, but not all, existing users. Please include PMSE on this table and show its use to be interleaved across most of the channels in question.

I feel that none of the packages mentioned are suitable for PMSE, since the auction process is fundamentally flawed.

Question 17: Do you have any views on which of the packaging options identified for the interleaved spectrum would be most suitable?..:

Yes.

There seems to be a great deal of focus on ensuring suitable packages for Local TV but not for PMSE. There is a distinct bias towards local TV despite the fact that they have many transmission alternatives available. For example, 9.50 proposes to 'offer packages' to local TV whereas PMSE will be offered 'a number of packages'. Please explain the reason for this difference in wording.

9.51 claims that there will be sufficient spectrum available for PMSE but does not explain under which scenario this would occur. The most likely scenario is channel 69 being the only available option for PMSE, since the industry is unable to bid at the proposed auction. Unfortunately, channel 69 will be useless due to the objectionable interference caused by Ofcom de-regulating it. Even in the best scenario (that PMSE, by some miracle, finds billions of pounds and makes a bid), there will still be insufficient spectrum for some larger productions in the UK.

9.52 acknowledges that PMSE users will have to buy new equipment. This is not good enough. As existing users, the PMSE community should receive the same scale of protection as astronomy and DTT. The only explanation for Ofcom's actions is that equal treatment of its existing users is inconvenient to their plans. Please remedy this transgression.

9.52 also contradicts the whole proposal by admitting that the frequencies available to PMSE will be more restricted.

9.53 and 9.54 acknowledges that PMSE use in London is actually quite efficient and that a reduction in spectrum would be detrimental. This section then fails to identify our inability to bid in the proposed auction, and that presenting a special London-based package is pointless for this reason.

Having commented on PMSE in the previous paragraphs, there is then no mention of it in the proposed package in 9.55, instead local TV is given preference 'again'. The same exclusion is made in 9.68. Please give PMSE equal consideration and also remember that it is an existing user and should be protected as such.

Question 18: Do you have any views on which of the auction design options would be most suitable?..:

Yes.

All of the auction designs, by definition, assume that all of the services are able to bid. This is not the case and, therefore, no auction design is going to be suitable until this problem is addressed. Ofcom need to acknowledge that the PMSE sector is unable to bid in the proposed auction, due to its disparate, diverse and diffuse community of content producers, manufacturers and rental organisations. As a large community of

small companies and individuals, there is no possibility of entering the auction process, due to poor financial resources and the lack of a mechanism to coordinate a unified bid. Ignoring the PMSE sector's comments and continuing with the auction will result in Market Failure, leading to severe damage to the British Entertainment Industry, which will have a knock-on effect to the other stakeholders' businesses.

10.5 has one bullet point missing. The question of whether every interested party can afford to bid is an extremely important one, which seems to be missing here. Please add it.

10.10 Please provide proof of your consultation with independent advisors. If they were aware that one socially valuable service is unable to bid, they would not be suggesting an auction without intervention. Please explain when Ofcom will be giving more thought to the options for the interleaved spectrum. Please acknowledge that the award of spectrum to the PMSE community before any auction takes place is under consideration and is the only viable option.

10.17 claims in the last paragraph that 'no concerns about bidder asymmetries or competition have so far been identified?! Please note that I, and my fellow PMSE licence holders, am expressing my concern about bidder asymmetries. The PMSE community are unable to bid in this auction, which generates dangerous asymmetry and an inevitability that the industry is drowned by Ofcom and competition from other stakeholders in the auction.

10.35 cites the auctions of 3G and FWA as examples of how this process was successful, but ignores the fact that neither of these auctions had the same circumstance regarding an existing user being forced out of the market.

10.47 considers the factors for deciding which option is best. The first factor, for which PMSE is an example, concerns the problem of bidders not acquiring the spectrum they need. Having addressed this problem, why have Ofcom ignored it? The PMSE industry is unable to bid in the proposed auction and will therefore not acquire the spectrum it needs.

Question 19: Do you agree with Ofcom's proposals for the non-technical terms of the licences to be awarded for use of the UHF spectrum?..:

No.

11.5 does not cover the obligations of the existing DTT multiplexes to not interfere with PMSE and other low-power devices. Please provide this information.

11.24 is extremely vague about the licensee's obligation to make spectrum available for PMSE and for how long. Considering the depth of the research Ofcom are making a show of doing, this information should be extremely specific.

11.25 allows winners of spectrum to hoard it until it is more valuable. Those companies that can afford it are likely to use the spectrum as an investment.

11.32 is vague, again, about the obligations to protecting PMSE.

Question 20: Do you agree with the analysis of the options as set out in this Impact Assessment?:

No.

A5.5 Ofcom's conduct so far, regarding the interests of its stakeholders and citizens, has been poor. It should be clear to Ofcom from this response, that its stakeholders have found several major flaws in its proposal and expect major changes to be made in order to prevent market-failure.

A5.6 incorrectly states that the winners of spectrum will be most valuable to citizens, when it is simply a matter of who has the greatest financial backing.

A5.10 Ofcom's assessment of various services' social value is flawed for the simple reason that some of the services, including PMSE, are ignored in this assessment.

A5.12 states that the awards process does not inadvertently exclude potentially viable users when it quite clearly does this very thing to the PMSE sector. The PMSE community is unable to bid in the proposed auction and will therefore be excluded as a user.

In figure A5.1 there is still no mention of the funding and institutional framework that Ofcom suggest can mitigate the PMSE inability to bid. Please provide details and expand Ofcom's remit to encompass it, since it is such an important and relevant issue.

A5.17 mentions the importance of preventing inappropriate intervention. Please note that Ofcom is also currently ignoring some appropriate interventions that are required to prevent market failure.

A5.22 and A5.23 correctly identify the PMSE industry's problems regarding the spectrum required and unwillingness to bid, but the solutions presented in the following figure (A5.2) all ignore the requirement for un-auctioned interleaved spectrum as well as a licensed channel 69. These options would have been considered by Ofcom in an unbiased consultation. I suggest that spectrum is awarded to a single band manager (the successor to JFMG) on an annual basis. They would be committed to their consumers needs and would free Ofcom of this responsibility. Spectrum for Local TV and PMSE could be licensed and managed jointly by the band manager.

A5.24 demonstrates Ofcom's unwillingness to understand the requirements of the PMSE industry. Providing the industry with a small fraction of the spectrum it currently uses and expecting this to prevent market failure is unquestionably naive.

A5.27 states Ofcom's considered best option for resolving their market failure concerns. This option will fail for the simple reason that the PMSE industry is unable to bid in the auction. The only option available to Ofcom, if they wish to resolve any market-failure concerns, is to award sufficient interference-free interleaved spectrum to the PMSE industry prior to the proposed auction.

I suggest that spectrum is awarded to a single band manager (the successor to JFMG) on an annual basis. They would be committed to their consumers needs and would free Ofcom of this responsibility. Spectrum for Local TV and PMSE could be licensed and managed jointly by the band manager.

I would also like to suggest that channels 67 and 68 are reserved for low-power use. The potential for interference-free band sharing between PMSE and other low-power users is considerable and would be extremely spectrally efficient. It would also fit nicely with the need to prevent interference to the French Military, who also use this area of the spectrum.

Additional comments:

There seems to be a clear intention to ignore some extremely important points regarding the needs of PMSE users.

There is no consideration for those who need spectrum but can not afford to bid for it, and have no government funding. In the case of PMSE, intervention is unquestionably the only course of action for Ofcom.

Ofcom are clearly unable to accurately calculate our social value. This is a very important problem that needs dealing with. The PMSE sector is a fundamental component of the British Entertainment Industry, which is worth £15-billion per year and employs 150,000 people. It is immensely valuable to society, since low power use enjoys 100% coverage. Vast arrays of organisations are reliant on PMSE spectrum for the production of content: Performing Arts, Broadcasting, Film and Independent Production, Corporate Events, Concerts, Night Venues, Sports Events, the Health Service, Education, Local Government and Electronic News Gathering.

In conjunction with my fellow PMSE licence holders, I am concerned about the lack of a JFMG replacement after 2008 ? who will coordinate how we use the spectrum up to 2012 and beyond? I suggest that spectrum is awarded to a single band manager (the successor to JFMG) on an annual basis. They would be committed to their consumers needs and would free Ofcom of this responsibility. Spectrum for Local TV and PMSE could be licensed and managed jointly by the band manager.

The suggestion by Ofcom that there is, at present, around £10 million worth of equipment that would become redundant as part of the DDR, is wrong and underestimates the figure by at least a factor of five. One single medium sized company Autograph Sound alone has around £7 million worth of possibly affected equipment. Any analysis of other major manufacturers, for example the companies Shure or Sennheiser, would show that Ofcom's estimates are entirely incorrect. Ofcom also needs to acknowledge that even equipment, for which full depreciation has taken place, continues to hold value within the industry because of the longevity of the equipment itself and the rental nature of part of the PMSE sector. This means that equipment filters down through the industry. Proposed changes would abruptly end the life cycle of this equipment by making it entirely redundant.

12.3 Can Ofcom confirm that, in addition to the cited publications, there will be an in-depth analysis of PMSE's financial options regarding bidding in the proposed auction? Please can Ofcom acknowledge that there will be a sufficient consultation period following this publication?

12.2 I did not receive an invitation to events I would like to have attended. I am on Ofcom's contact database and would like an explanation as to why I was not invited.

There are many inaccuracies in Sagentia's report (the grammatical errors have been omitted from this response):

There is no proof from Sagentia that their estimate of PMSE's spectral inefficiency can be alleviated by co-ordination and 'better' equipment. Please provide this analysis, using well-know manufacturers' opinions, and define 'better'.

They claim that 50% of pro equipment is 'believed' to use channel 69. Is this just a guess? Where is the proof? Professional users rarely use channel 69. Please acknowledge that there are over 600 organisations and individuals with over 32,000 individual spectrum assignments, none of which are channel 69.

There is a dangerous generalisation that current PMSE use is spectrally inefficient, when this inefficiency is actually isolated to the occasional special event.

Sagentia's research on digital radio microphones obviously comes from a company who are not responsible for the majority of equipment currently used by the industry. Their views do not reflect those of leading manufacturers, like Sennheiser and Shure. Sagentia's analysis completely ignores something mentioned in their appendices, and one of the most important factors when choosing equipment - sound quality. Digital radio microphones have poor sound quality and a latency which, no matter how small, will be a problem when the issues of fold-back to the wearer are considered. They make sweeping comments about how digital radio mics will 'greatly exceed the performance of current analogue microphones' without any real-world proof. Their view that the industry thinks they are 'difficult to use' is mistaken and unfounded (not mentioned in their interviews). Actually, the industry's opposition to them is mature and calculated.

Ofcom have chosen to ignore that PMSE users exist in all three of the top ranking digital technologies: DTT; Local TV; and HDTV. A fact that is corroborated by Sagentia. Vast arrays of organisations are reliant on PMSE spectrum for the production of content: Performing Arts, Broadcasting, Film and Independent Production, Corporate Events, Concerts, Night Venues, Sports Events, the Health Service, Education, Local Government and Electronic News Gathering.

Sagentia's study of the alternative spectrum for PMSE users does not take quality and quantity of channels into account. These factors are important and need addressing.

Sagentia's study into the concept of 'borrowing' spectrum is limited and needs further research. The details of this research should be subject to a period of consultation before they are approved.

Sagentia's forecast of PMSE demand for spectrum is vastly underestimated. They claim that current PMSE radio equipment is 'low cost', when it is actually worth a

high proportion of our income.

Sagentia regularly contradicts itself by admitting that 12 radio microphones per channel is the maximum possible for professional use but then advising that 16 radio microphones per channel is fine. Please correct this inaccuracy, explaining that 16-per-channel would result in objectionable interference.

Diversity receivers are claimed to be a future technology, when they are actually widely used by most professionals. This is a good indication of the poor quality of research Ofcom have received.

Sagentia highlight the problem the DDR causes to duplex talkback and provides no analysis in to the solution to this problem. Please research the options here. The details of this research should be subject to a period of consultation before they are approved.

They fail to acknowledge the problems digital radio microphones will cause with IEMs in terms of the latency inherent in the former. They claim it is a 'perceived issue' rather than a real one.

Sagentia claim that equipment will have better than current spectral efficiency by 2012 but provide no proof for this estimate. The word 'better' requires elaboration, again. It will actually be much longer before more efficient equipment is available. The PMSE industry needs more time to make its changes after DSO, before the winners of the auctions are permitted to use their awarded frequency. Upgrade of the equipment in question is restricted by the RoHS directive, and manufacture of a sufficient quantity of suitable new equipment will take longer than Ofcom have estimated. It will take between 10 and 15 years for the large, business-critical companies to re-stock with new equipment to their current numbers. Therefore, a far more realistic completion of the transitional period would be between 2020 and 2025.

Sagentia's conclusion on Licence structure (the one ignored by Ofcom) is actually longer than the original chapter (2.2) to which it relates: partly because it contains more unfounded guesswork about the number of microphones possible per channel.

Sagentia seem unaware of the implications relating to Ofcom's desire to auction off the spectrum. They wrongly predict that PMSE 'can easily be accommodated in the spectrum post switchover'. Since PMSE are unable to bid, they will have no available interference-free spectrum. Ofcom and Sagentia need to understand that the PMSE sector is unable to bid in the proposed auction, due to its disparate, diverse and diffuse community of content producers, manufacturers and rental organisations. As a large community of small companies and individuals, there is no possibility of entering the auction process, due to poor financial resources and the lack of a mechanism to coordinate a unified bid.