



## **Response to Ofcom Consultation: Digital Dividend Review: band manager award Consultation on detailed award design.**

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As the current PMSE band manager JFMG would like to thank Ofcom for the opportunity to contribute to the development of the DDR band manager licence terms and selection criteria. We are obviously uniquely placed in our ability to comment on the consultation questions as we can identify issues that are both important not only to the PMSE industry but also any potential band manager.

### **1. Consultation Questions**

**Question 1):** *The executive summary sets out our proposals for the DDR band manager award. Do you agree with these proposals?*

We broadly agree with Ofcom's proposals for the DDR band manager award as detailed in the executive summary of their consultation document of July 2008.

We believe that it is preferable to include the 75 distinct bands currently allocated to PMSE to the DDR band manager to ensure continuity for users. Where our opinions differ with regard the spectrum included in the award is in Ofcom's decision to allocate channel 38 to the band manager until 2012 only. In this response we explain that we believe the channel to be of considerable use to PMSE users in the long-term and ask Ofcom to reconsider including it in the 'cleared' auction in summer 2009.

We accept the inclusion of channels 61 and 62 in the 'cleared' award if Ofcom believe that it is in the best interests of UK plc. JFMG work has revealed that their loss would not have a substantial affect on locations with the most limited spectrum capacity. Although we continue to highlight that this will be of little comfort to those users who currently own equipment that operate in these frequencies.

We also agree with the inclusion of 2290 – 2300MHz within the band manager award but highlight that the corresponding AIP fee must take account any constraints on the band caused by adjacent channel use.

The continuation of the use of the block-edge mask approach to determining the technical licence conditions for the award is also supported by JFMG. The existing arrangements have worked well and we find no reason to doubt they will continue to do so in the future.

An indefinite licence duration is also supported by JFMG. However we have some reservations regarding the absence of initial terms and notice periods for bands currently used by PMSE in particular. This response recognises no initial licence term and a one year notice period is intended to protect users from an ineffective band manager. However, we also believe that it means Ofcom could vary or revoke the licence on other spectrum management grounds, and this means that PMSE users would only have one year to vacate the spectrum. We believe that this appears to be counter to Ofcom's announcement regarding PMSE access to the interleaved spectrum in December 2008, where it was stated that users would be protected until 2018. It appears that this protection only really applies to protection from the band manager and not a guarantee of the spectrum itself. If our interpretation is correct then we would ask Ofcom to clarify this with users as we believe that the original statement may have been misunderstood.

We also agree with the proposal to charge the band manager an annual licence fee based on the economic value of its spectrum. We strongly support Ofcom's proposed band-by-band approach to calculating the fee as the range of frequency bands, their usage and value vary widely. We have chosen not to comment on the indicative opportunity costs detailed within the consultation as we believe it would be of little value at this juncture. The accurate calculation of the band manager's licence fee is pivotal to any business decision to take part in the beauty contest. We therefore eagerly await Ofcom's winter consultation that will provide real proposals for AIP.

Regardless of the level of AIP it is clear that PMSE users' fees will necessarily increase to cover the band manager's spectrum and operational costs. It is therefore likely that phasing of AIP in the most used bands will be required for the PMSE industry to adjust to the changes.

The award of a single package to a band manager is supported as the industry has indicated this was their preferred option. The proposed beauty contest with its selection criteria appears to be focussed on the right areas; those of technical expertise and PMSE understanding. We believe that selection under these criteria should provide the PMSE sector with a robust band manager capable of meeting their needs. If this is not the case Ofcom propose to have mechanisms in place to resolve the issue in a relatively quick fashion.

We agree with the proposed PMSE obligations to be included in the band manager's licence. We believe that this should provide users with the comfort that whoever the band manager is, they cannot prevent users from accessing valuable PMSE spectrum. The installation of annual audits and reviews of both AIP and performance all contribute to an environment that should be able to identify and resolve major issues.

We believe that the proposals within the consultation create a good foundation for the band manager award. However, there is still some way to go before the details are fleshed out fully. The level of AIP, technical licence conditions and mechanism for authorising spectrum access are all pivotal to the success of this initiative. JFMG believe that it is these issues and the detailed guidance regarding FRND terms that will decide the feasibility of the business model for any potential band manager.

**Question 2): Do you agree with our proposal to award access rights to channel 38 that will last as long as we sustain the protection of radioastronomy in the UK?**

We agree with Ofcom's proposal to award access rights to Channel 38 to the band manager. However, we would suggest that the rights continue to be awarded past the date when UK radioastronomy vacate the band.

Whilst the current level of PMSE use within the channel (35 licensees and 240 assignments in the past year) may seem negligible in comparison to those in the upper band it could prove invaluable to PMSE users come switchover.

In February 2008 we held a whitespace forum where we presented the results of our post-switchover analysis work. We aimed to help users identify the best channels and frequency bands to use post-2012. Our work focused on over 1700 location points across the UK designed to represent real PMSE activity. We believe that basing our work on actual locations as opposed to UK area is the best test of real world availability.

Our work found that Channel 38 was by far the best individual channel as it would be available for indoor use in just over 80% of our test locations. The next best was Channel 50, but this would only be available in 65%.

We also looked at identifying a complementary pair of bands. Whilst many wireless microphone users stay in one location, there are others that need to travel the country. This means that they need to have kit that can provide them with the fullest coverage possible. It therefore makes sense to try to identify how the most coverage can be secured using the minimum amount of equipment. Our work focused on professional equipment that has a 32MHz (4 x 8MHz) switching range. We identified 750 – 782MHz (Channels 56 - 59) paired with 606 – 638MHz (Channels 38 and 41) as the best pair of bands, providing availability at 99% of indoor and 98% of outdoor test locations. Whilst there were other complementary bands the loss of Channel 38 would reduce the choice for users considerably.

Since this analysis Ofcom have announced a number of new changes, such as a possible increase in the number of channels that may not be available because of the geographic interleaved award. They have also explained that they believe the new 'median' approach to protecting DTT should also improve the amount of whitespace available for PMSE. Whilst Ofcom haven't yet released the information necessary to analyse the impact the 'median' approach will have on available whitespace,

we have been able to re-run work to see how the loss of Channel 38 and 71 sites of Local TV may affect availability in those same 1700 locations.

Table 1 provides an indication of how many PMSE test locations would suffer from limited availability of spectrum after switchover. It compares the number of locations that will have access to less than 5 TV channels based on three scenarios; the availability as detailed in Ofcom's January '08 DSO statement<sup>1</sup>, that same availability minus Channel 38, and finally the same availability minus Channel 38 and Local TV channels as proposed in Ofcom's summer '08 DDR consultation documents.

**Table 1: Availability of Interleaved Spectrum post DSO**

| Scenario                    | No of test locations with limited Interleaved spectrum available |        |        |        |        |        |
|-----------------------------|--|--------|--------|--------|--------|--------|
|                             | 0x8MHz   | 1x8MHz | 2x8MHz | 3x8MHz | 4x8MHz | 5x8MHz |
| Current position (2008)     | 0  | 0      | 2      | 6      | 13     | 21     |
| DSO (January '08 statement) | 11   | 16     | 39     | 43     | 92     | 201    |
| DSO (Jan '08) minus Ch38    | 16   | 34     | 37     | 70     | 94     | 251    |
| DSO (Summer '08 proposals)  | 25   | 40     | 37     | 69     | 93     | 264    |

The table above therefore indicates that the loss of Channel 38 and Local TV channels further exacerbates the issue of limited availability in our test locations. Whilst it is the loss of Local TV channels that appear to have the most significant impact on the number of locations where there is none or very little availability, the loss of Channel 38 has a greater impact on the number of locations that have 4x 8MHz or 5x 8MHz.

We recognise that radioastronomy's decision to vacate the band has nothing to do with Ofcom. However, it does not necessarily follow that the channel has to be included in the cleared award. The retention of Channel 38, which was previously expected, would be of considerable benefit to PMSE users after Digital Switchover. We would therefore ask Ofcom to consider this option going forward. The industry is extremely concerned about the possibility of needing to find alternative spectrum to Channel 69 in the future and the retention of Channel 38 would be a welcome concession.

We also believe that the nature of the restrictions in Channel 38 up to and beyond 2012 will only allow relatively low power use and PMSE will continue to be a perfect fit. It is therefore likely to be of limited interest and value to other users. It could therefore be more cost effective to include it in the package of spectrum intended for the PMSE band manager up to and after 2012.

**Question 3): Do you agree with our proposal to include the interleaved spectrum in channels 61 and 62 in the cleared award?**

The release of interleaved spectrum in Channels 61 and 62 was unexpected when it was announced in Ofcom's DDR statement in December 2007. Our first impression was that the loss of a further 16 MHz of interleaved spectrum for PMSE use may have a significant impact on availability throughout the country, not to mention the amount of current users that would need to vacate the channels altogether.

To determine the impact we carried out a detailed analysis of PMSE interleaved availability throughout the UK, post digital switchover. The loss of Channels 61 and 62 were factored into this analysis work.

As mentioned in question 2 our work focused on over 1700 location points across the UK designed to represent real PMSE activity. We then compared current capacity with that of 2012 at each location. We also looked at the impact retention of Channels 61 and 62 would have in this regard. Our results were presented to industry at our "WhiteSpace" forum back in February of this year.

<sup>1</sup> <http://www.ofcom.org.uk/consult/condocs/ddr/statement/statement2/statement.pdf>

Our analysis showed that whilst the current interleaved spectrum ensured that 99% of our test locations had access to 5x 8MHz channels, only 89% would after switchover. We then ran the analysis again, but this time we assumed PMSE would have access to interleaved capacity in Channels 61 and 62. The results showed that their inclusion would only improve capacity in 1% of our locations.

We then looked at the opposite end of the scale – the number of our test locations that currently have access to less than 5x 8MHz of interleaved spectrum versus those in 2012. Our results showed that whilst the addition of Channels 61 and 62 could reduce the number of test locations where between 2x 8MHz and 4x 8MHz were available, they did nothing to improve the lot of those locations where there was access to only 1x 8MHz channel or less.

We therefore concluded that if you ignore current usage of the band and only concentrate on the future state of PMSE availability, the inclusion of Channel 61 and 62 would have only marginal benefits to PMSE interleaved capacity overall.

However, the loss of Channels 61 and 62 would have a significant impact on those 68 licensees who currently have some 489 annual assignments within the range. Not to mention the 113 temporary users who have used 2500 assignments in the past year. Our previous responses to DDR consultations have illustrated that many users will have difficulty in re-tuning their equipment, and will therefore need to invest in new kit. This will be costly for some, especially for community users (schools and places of worship account for around 20% of annual licensees in these channels).

We fully recognise that Ofcom has to comply with any mandatory measures to do with DDR spectrum, most specifically with Channels 61 – 69 for more flexible mobile use. Therefore the release of Channels 61 and 62 may be unavoidable in order to comply with the wider European goal. In addition long term PMSE usability would be limited if the channels were utilised for mobile use throughout Europe. We also recognise that the release of Channels 61 and 62 could bring significant benefits to UK plc and that the impact to PMSE users may appear insignificant in comparison.

It follows that if Ofcom are certain of releasing the interleaved spectrum in Channels 61 and 62 it would appear sensible to include them in the cleared award.

**Question 4):** *Do you have any views on our proposed approach to protecting reception of DTT services?*

We are not yet in a position to provide full comment on Ofcom's proposed approach to protecting DTT services and the potential impact it could have on PMSE use of the interleaved spectrum. The new whitespace data which has been created using the proposed 'median' approach was not publicly available for analysis at time of writing. We therefore believe it would be unwise to comment until such time as we have had the opportunity to fully analyse the new data.

**Question 5):** *Do you agree with our proposal not to award the bands between 11.7 GHz and 12 GHz to the band manager?*

**Question 6):** *Do you agree with our general approach of awarding the remaining 49 Ofcom-managed bands allocated to PMSE but lying outside the digital dividend to the band manager?*

We agree with Ofcom's proposal to include the remaining 49 Ofcom-managed bands allocated to PMSE to the band manager. The industry as a whole has demonstrated their preference for a single organisation to manage and coordinate their spectrum access in the past and we strongly believe that this will provide users with the consistency they require. The existence of multiple band managers providing access to different frequencies would prove more complicated and time consuming for those organising multi-equipment licensing.

**Question 7): Do you agree with our proposal to award key PMSE bands to the band manager?**

We agree with Ofcom's proposals to award key PMSE bands to the band manager, although we note that future access to some of these bands could change due to their MoD ownership.

In addition we would like to suggest that Ofcom consider adding VHF channels between 175 – 210 MHz to their list of key bands. Our database indicates that there were over 400 assignments within this range between January and September 2008, and around double that amount for the whole of 2007. In addition there were 188 VHF UK Wireless Microphone Licences (providing access to 15 frequencies within the 175 – 210 MHz range for UK wide use on a light-licensed basis) issued in the year to 31<sup>st</sup> March 2008.

We note Ofcom's intention to discuss with industry stakeholders the possibility of identifying alternative spectrum for Channel 69 now that it will be left in isolation after switchover. We would like to take this opportunity to indicate that for many users of Channel 69 this is not an issue. However, we encourage this dialogue with users to ensure whatever decision is reached it is a satisfactory one for the industry.

**Question 8): Do you agree with our proposal to award 2290-2300 MHz to the band manager on the same terms as other wireless-camera channels at 2 GHz?**

Demand for wireless camera spectrum is growing year on year and the recent loss of 2500-2690MHz means that programme makers will find it increasingly difficult to access sufficient spectrum for their operations. Both factors are resulting in greater demand for the bands 2025-2110MHz and 2200-2290MHz. Ofcom recently made 2290-2300MHz available on a temporary basis for PMSE and it is already being used for short term frequency assignments. We therefore welcome its inclusion within the band manager award. However, if it is to become available on a more permanent basis issues regarding adjacent spectrum use above 2300MHz need to be better understood.

It is not clear what type of use is currently in the band or what plans there are for it in the future.

The price that a band manager pays for access to 2290-2300MHz must reflect any additional constraints, whether geographical, temporal or in transmission parameter restrictions that result from ensuring compatibility with services above 2300MHz.

The consultation document also highlights the EU Decision which authorises a complementary ground component (CGC) for future mobile satellite systems in the range immediately below 2200MHz. If deployed a CGC is most likely to be used in urban areas where the mobile satellite signals can be shadowed or blocked. These locations are where programme makers' access to their satellite links can also be compromised by local clutter and they rely more heavily upon terrestrial link spectrum, both low power wireless cameras and higher power links to fixed receiver infrastructure. Therefore whilst we agree with Ofcom's inclusion of 2200 – 2210MHz in the band manager award we would suggest that the price paid by the band manager must reflect any additional constraints that subsequently apply to its use as a result of CGC in the frequency range below.

**Question 9): Do you agree with our proposal to award low-demand PMSE bands to the band manager?**

We agree with the proposal to award low-demand PMSE bands to the band manager. Whilst they are not used heavily at the moment there could be potential to increase this use in the future. However the initial price of these bands would obviously need to take into account the low activity at licence issue.

**Question 10):** *Do you agree with our proposal to award no-demand PMSE bands to the band manager?*

We agree with the proposal to include no-demand PMSE bands to the band manager. These could act as possible alternatives for PMSE users of higher demand bands in the long-term and could be an area of potential development for non-PMSE use.

However, we believe that these bands should only be included within the band manager award if the AIP at licence issue is nil.

**Question 11):** *Are there any other types of DTT transmission that should be protected from potential cognitive devices or other factors that we should take into account?*

**Question 12):** *Are there any potential future PMSE applications other than currently available wireless microphones, in-ear monitors and talkback systems that you consider should be protected from potential cognitive devices?*

Ofcom have engaged in a comprehensive programme of work to characterise the spectrum sensing requirements for cognitive radio systems and to consider how achievable these are in practical equipment. Existing wireless microphone equipment, predominantly analogue FM type devices, are being considered and given that digitally modulated equipment is now on the market this equipment also needs to be included. Manufacturers are participating in this work and they may additionally be willing to share the technical characteristics of their next generation of digitally modulated equipment. Although commercially sensitive there could be an acceptable means of sharing details with Ofcom and their contractors.

Clearly only current PMSE equipment can be characterised fully in terms of the requirements of spectrum sensing for cognitive radio systems. Every effort however should be made by the PMSE industry to share with Ofcom the most recent and imminent developments in wireless microphones, in-ear monitoring and talkback systems to determine the spectrum sensing requirements for cognitive radios.

**Question 13):** *Is there sufficient evidence to require protection for other services such as mobile television, bearing in mind the potentially negative implications of such protection for deploying cognitive devices?*

**Question 14):** *Do you have any views on the appropriate notice period for temporary PMSE access to channels 63-68 and/or on whether we should extend temporary access to channels 31-40?*

We agree with the proposal to increase the notice period for ending PMSE access to Channels 63 – 68 from 6 to 12 months. It will provide users with more time to work out how best to utilise the new digital interleaved spectrum for their individual needs. Allowing further time to source, order and finance alternative equipment.

We welcome the proposed extension of temporary access to Channels 31 – 40. It includes Channel 36, providing users a further 1 year's notice to vacate the band after its auction in summer 2009. However, this range is of less significance than the upper band as it is less popular due to relatively limited equipment availability.

**Question 15):** *Do you agree with our proposal that the licence to be awarded should have an indefinite duration?*

We agree with the proposal that the licence to be awarded should have an indefinite period. This is consistent with other licences to be issued as a result of the DDR.

**Question 16):** *Do you agree with our proposal that the licence to be awarded in respect of bands currently used for PMSE should be subject to no initial period?*

As a potential band manager we are not concerned about the absence of an initial period for the bands currently used for PMSE. We are confident that if we were the successful band manager no PMSE obligation issues would occur that would result in swift revocation or variation of the licence. However, a new band manager may need an initial period in which to establish themselves fully.

But we are also concerned from a PMSE users' perspective in so much as the protected access provided to PMSE users until 2018 (page 73, 9.28) appears only to protect them from the band manager's behaviour and not from Ofcom's decisions. If Ofcom decided to vary or revoke the band manager's licence on spectrum management grounds other than for a failure to meet PMSE obligations then they would also effectively be revoking or varying PMSE access.

We believe that this is not clear from reading the document and so would request that Ofcom clarify this issue with users as soon as possible.

If our interpretation is correct we would argue that an initial licence period may be necessary to provide further certainty of access to appropriate spectrum for PMSE users. This would expose PMSE users to the risk of an inefficient band manager being in place for longer than desired, but would provide them with certainty regarding the shortest period for which they could expect access to spectrum. This is especially important when considering that key PMSE bands including interleaved spectrum would only be subject to one year's notice of revocation.

Whilst an initial period creates an issue if the successful band manager does not fulfil its obligations or fails in any way. We believe that the selection process developed by Ofcom should be robust enough to ensure that this outcome would be extremely unlikely. An alternative would be for Ofcom to provide PMSE use with an initial period and not the band manager, although it is not clear how this would be achieved legally.

**Question 17):** *Do you agree with our proposal that the licence to be awarded in respect of bands currently used for PMSE should be subject to a notice period for variation or revocation on spectrum-management grounds of one year?*

We believe that providing the band manager with one year's notice of revocation in the event of a material failure in meeting its PMSE obligations would be perfectly reasonable. It would ensure that the PMSE industry was fully protected from any inappropriate behaviour from the band manager.

However, we are more concerned with this notice period when it comes to revocation based on other spectrum management grounds.

Firstly from a band manager's perspective it provides very little certainty with which to develop long-term business plans, although we accept that this is the nature of today's climate.

Secondly it means that Ofcom can serve the band manager with 1 year's notice to hand back spectrum in order to meet its statutory duties, such as *'to secure the availability of a wide range of electronic communications services throughout the UK'*<sup>2</sup>. It therefore follows that the removal of access to any spectrum revoked in this way is also de facto removed from PMSE users.

<sup>2</sup> <http://www.ofcom.org.uk/consult/condocs/bandmgr/condoc.pdf> page 76, 9.51

This is counter to what we believe the industry to have understood when Ofcom made their December 2007 statement announcing continued access to the interleaved spectrum until at least 2018. We would reiterate the need to clarify this clearly to ensure that all PMSE users fully understand the implications for their future use of spectrum.

We believe that a 1 year's notice period would be satisfactory if Ofcom introduced an initial period for the band manager licence. For instance, if an initial term was introduced until 2018 with a further 1 year's notice of revocation after that period, PMSE users of interleaved spectrum would have the length of access that they initially expected. As mentioned above an alternative would be to create a mechanism by which PMSE users could have an initial term but not the band manager.

Another solution would be to increase the notice period to one that would satisfy the PMSE industry more fully. Otherwise the industry would be subject to no more certainty regarding future access to spectrum, in particular interleaved, than they are today.

**Question 18):** *Do you agree with our proposed approach to allowing the new institutional arrangements for PMSE spectrum access to bed down?*

We agree that the new institutional arrangements for PMSE spectrum access should be given sufficient time to bed down. However, it is not clear how Ofcom intend to do this. We believe that if we were the successful band manager we would require little time to adapt. However the provision of an initial period would provide a new band manager with the comfort that they had a definite period in which to resolve any initial problems.

**Question 19):** *Do you agree with our proposal that the licence to be awarded in respect of bands with no current PMSE use should be subject to no initial period?*

We agree that the licence to be awarded in respect of bands with no current PMSE use should be subject to no initial period. We believe the longer notice period of 5 years provides the band manager with sufficient certainty to investigate commercial opportunities within the bands for both PMSE and non-PMSE users.

**Question 20):** *Do you agree with our proposal that the licence to be awarded in respect of bands with no current PMSE use should be subject to a notice period for variation or revocation on spectrum-management grounds of five years?*

We agree that the licence to be awarded in respect of bands with no current PMSE use should be subject to a notice period for variation or revocation on spectrum-management grounds of five years. We believe this notice period provides the band manager with sufficient certainty to investigate commercial opportunities within the bands for both PMSE and non-PMSE users.

**Question 21):** *Do you agree with our proposals for varying or revoking the band manager's licence during the notice period?*

We agree with Ofcom's proposals for varying or revoking the band manager's licence during the notice period.

**Question 22):** *Are there bands where PMSE users require earlier certainty about longer-term access in the interests of promoting spectrum efficiency than our timetable for the band manager award allows?*



**Question 23):** *Do you agree with our proposals for the three selection criteria by which we will assess applications for the licence to be awarded?*

We agree with Ofcom's proposed selection criteria by which applicants will be assessed. The three criteria ensure that the band manager not only fully understands the needs of PMSE users but is also knowledgeable of the spectrum to be awarded and its unique characteristics. This will ensure that sound technical considerations will be taken into account when determining how to make the best use of this valuable resource. It will also ensure that the successful applicant will have a stable financial footing and has the ability to provide PMSE users with the high level, responsive service they currently enjoy.

We believe that by using these selection criteria Ofcom should be able to identify a robust band manager able to deal with the diverse range of users and uses involved in the PMSE sector.

**Question 24):** *Do you agree with our proposal to enshrine the commitments to PMSE users made by the successful applicant in the licence awarded to it?*

We agree with enshrining the commitments to PMSE users made by the successful applicant in the band manager's licence. This means applicants would be foolhardy to promise things that they subsequently could not deliver or to make statements that they could not later justify.

We look forward to hearing more about the form the commitments will take in guidance notes accompanying the Invitation to Apply.

**Question 25):** *Do you agree with our proposed approach to assessing applications?*

We agree with Ofcom's proposals for assessing applications based primarily on selection criteria 1 and 2. Whilst it is vital that the successful applicant has the operational and financial ability to take on the band manager role, it is important to ensure that spectrum efficiency and PMSE commitments are valued over and above wealth and resource.

We agree that a specially composed committee from Ofcom should be created to assess applications. We also agree with the publication of non-confidential sections of applications as it appears consistent with Ofcom's approach to other awards such as digital multiplex licences. We are confident that Ofcom have the experience to ensure that no undue weight is given to any one sector of industry and will balance any comments with their wider policy objectives.

We also agree with publishing the reasons for awarding the licence to the chosen band manager, and would hope that any reasons published for why applicants were unsuccessful would be considered carefully. The failure of an organisation to prove worthiness in one beauty contest should not damage any subsequent business ventures.

**Question 26):** *Do you agree with our proposal to use the block-edge mask approach to determine the technical licence conditions relevant to this award and to base these masks broadly on existing arrangements for PMSE spectrum access?*

We agree with Ofcom's proposal to use the block-edge mask approach to determining the technical licence conditions for the award.

Within the consultation Ofcom have stated their aim to avoid significant disruption to PMSE. In relation to technical licence conditions a continuation of the block-edge mask (BEM) approach fulfils this key objective and remains the most appropriate to PMSE. Some licensees have made significant investment in equipment and infrastructure for ongoing assignments. Moving to Spectrum Usage Rights (SUR) methods could cause unnecessary disruption and costs.

Managing compatibility between PMSE assignments themselves within PMSE bands requires novel and new approaches, particularly given the high demand and density that can occur at individual major events. Overall though, PMSE can be characterised as generally short term and low density compared to other radio use. Few benefits arise from the use of new Spectrum Usage Rights methodologies for compatibility of PMSE in relation to other spectrum users in adjacent bands. They would be an unnecessary burden for the future band manager and a further cost implication which would need to be passed onto the PMSE industry.

The SUR approach may become more appropriate in the future, perhaps for non-PMSE use of the awarded spectrum, but the BEM approach should remain as the basis for defining future PMSE spectrum access.

In addition we hope that Ofcom will consider the findings of the three technical studies they published alongside the 'DDR 550 – 630 and 790 – 854MHz' consultation in the technical licence conditions to be consulted on in winter 2008. Two of which were commissioned from ERA and Sagentia, the other being an internal Ofcom report. They indicated that a guard band of at least 1MHz would be required at the bottom of Channel 69 to protect wireless microphones from UMTS use, but this has not been factored into the 'cleared' award proposals. We hope that these reports will be taken into consideration in the next round of consultations as this will be important to safeguard wireless microphone use wherever they are situated (particularly if users have to vacate Channel 69).

**Question 27):** *Do you agree with our proposal to set a separate fee for each Ofcom-managed band to be awarded?*

We agree with the proposal to set separate fees for each managed band to be awarded. It appears the most appropriate way to reflect the diverse nature and opportunity costs of the bands included.

We believe that whilst it is appropriate to set a separate fee for each managed band it would be impractical for the band manager to set 75 different fees for PMSE access to the spectrum. Therefore some aggregation in the down-stream pricing model may be necessary.

**Question 28):** *Do you agree with our proposal initially to set fees for access to MOD-managed spectrum on a comparable basis?*

We agree that Ofcom should initially set fees for access to MoD managed spectrum on a comparable basis to the other spectrum under the band manager's licence. However there could be an argument for a reduction in the fee given the uncertainty regarding future access.

We understand that it is for the MoD to decide how they wish to proceed with regard sharing spectrum with PMSE in the future. We look forward to hearing their plans and have responded to their May consultation highlighting the obvious access and spectrum cost implications for the PMSE industry.

**Question 29):** *Do you agree with our proposal to determine the band manager's licence fee first by deriving estimates of the opportunity costs of the spectrum to be awarded and second by setting band-by-band prices that strike an appropriate balance between our objectives for this award?*

We agree with the proposal to determine the licence fee by first deriving estimates of opportunity costs of the relevant spectrum. Whilst the end result could be the application of a high fee, resulting in a challenging business case for the band manager, we hope that Ofcom's need to balance their objectives will moderate these prices in such a way that this will not occur.

It is therefore important that the fee derived from opportunity cost is also tempered by the need to take into account current demand, usage and revenue. We look forward to reading Ofcom's follow-up consultation on the band manager's licence fee in the winter.

**Question 30):** *What are your views on the options for phasing in AIP to full opportunity cost?*

We believe that phasing of AIP will be essential for both the PMSE industry and the band manager. We feel that for some bands, where there is an especially high AIP price or current low demand, a period of longer than 3 years would be required. The longer the phasing period is in these instances the easier it will be for the band manager to set reasonable fees that PMSE can adjust to over time. And in turn, the sooner the band manager could start realising a return on their investment and recover their operational costs.

**Question 31):** *Do you agree with our proposal to set the band manager's licence fee for three years and to review it after that period?*

We agree with the proposal to review the band manager's licence fee after 3 years. This will enable Ofcom to determine whether their initial levels were correct in relation to the success of the band manager's business and to alter them accordingly. However, in the event of fees going up or indeed down as a result of a review, we would hope that any changes would be implemented as smoothly as possible to allow PMSE and the band manager to adjust to them appropriately.

**Question 32):** *Do you agree with our proposal to review the band manager's licence fee periodically but no more frequently than every three years thereafter?*

We agree with Ofcom's proposal to review the band manager's licence fee no more frequently than every three years. Whilst the band manager could find that they would want a review sooner, they would still have the opportunity to reduce their costs by handing back spectrum to Ofcom.

**Question 33):** *Do you agree that where the interleaved spectrum to be awarded to the band manager is used for the operation of a DTT multiplex, we should replicate the ownership restrictions in the Broadcasting Act regime relating to (a) local authorities, (b) political bodies, (c) religious bodies and (d) bodies exerting undue influence but not replicate restrictions relating to (e) broadcasting bodies and (f) advertising agencies?*

**Question 34):** *Do you agree that we should facilitate interoperability between existing DTT multiplex operators and new operators using the interleaved spectrum awarded to the band manager?*

**Question 35):** *What are the merits of our proposed approach to providing spectrum information, in particular concerning the type of information that might be helpful and any impact that publishing information might have both on licensees and the wider spectrum market?*

**Question 36):** *Do you agree with our assessment of whether our approach to awarding this spectrum appropriately promotes competition and efficiency?*

We agree with Ofcom's assessment of their approach to the award. We agree with the rationale behind the decision to award a single package to a single band manager. It will provide a simplified access process for PMSE users and will ensure minimal disruption in the short-term. However the possible introduction of a spectrum management organisation for access to MoD spectrum may complicate matters in the not so distant future.

We also agree that it is not necessary to include any roll-out or use-it-or-lose-it obligations to the award in order to promote competition and efficiency. The only obligations that are necessary to address these concerns are those included in the licence to protect the PMSE sector.

**Question 37):** *Do you agree with our proposal that “reasonable” PMSE demand for the spectrum awarded to the band manager should be defined as the actual demand from PMSE users at FRND prices?*

We agree that “reasonable” PMSE demand for the spectrum awarded to the band manager should be defined as the actual demand from PMSE users at FRND prices. We agree with the analysis that to base “reasonable” access on current or indeed estimated future demand would be unlikely to provide a satisfactory outcome for PMSE users.

Whilst we agree with the principle we are not entirely sure how this will be implemented in practice. It implies that the band manager will have to provide access to spectrum if a PMSE user is willing to pay for it. However, if this was applied indiscriminately it could result in the band manager being unable to provide access to new users throughout most of the spectrum. For instance, it is not clear if a band manager would have to provide PMSE access to a particular piece of spectrum for 3 days a year in a particular area because a PMSE user is willing to pay for it, preventing year-long access to a new user.

In addition, we foresee an additional layer of complexity to this issue. In recent years the definition of PMSE use has become more and more blurred. This has resulted in JFMG being able to issue licences for uses that would have been turned down in the past. It has only been in recent years that we have been able to issue licences for wireless microphones for use in classrooms and school assemblies. Previously we could only licence them if they were used for a school play. The problem becomes more complex when an individual is using what could commonly be termed as programme-making equipment but not necessarily in the conventional way. This is especially difficult for communications equipment where the PMSE and Business Radio use at events can be hard to distinguish. The relatively recent addition of Audio Distribution Systems (ADS) use to our licensing remit further complicates things as users are also required to obtain a Broadcasting Act licence from Ofcom. With such ambiguity it may be difficult for a future band manager to know whether a particular use can be considered as PMSE or not. This could mean they would be unclear about who and what they should be providing reasonable access to. Therefore it may be necessary for Ofcom to provide a clear definitive description of what characterises PMSE use and users, paying particular attention to the blurred edges surrounding Business Radio and ADS.

**Question 38):** *Do you agree with our proposals for ensuring that the band manager meets reasonable PMSE demand on FRND terms?*

We recognise the need for Ofcom to ensure that the band manager does not exploit its unique position by introducing unreasonable pricing structures that prevent PMSE users from accessing spectrum. We also agree that it would be inappropriate for the band manager to make excessive profits in this manner.

**Question 39):** *Do you agree with our proposal to incorporate a suitable licence condition to enable us to access the spectrum awarded to the band manager to meet the requirements of the London 2012 Olympic Games and Paralympic Games and the Glasgow 2014 Commonwealth Games?*

We welcome Ofcom’s decision not to retain a power of direction over the band manager for spectrum access and management of the 2012 games as previously muted. We believe a separate commercial arrangement to facilitate the smooth running of the Olympics would be a far better approach.

We accept that much of the spectrum owned by the band manager will be required for the running of the 2012 games and agree that a suitable licence condition may be necessary to make this absolutely clear. It therefore follows that we would also support the inclusion of the Glasgow 2014 Commonwealth Games within the licence condition.

Whilst we agree with the inclusion of a licence condition, we also believe that the band manager should be suitably compensated for the loss of commercial revenue during the games. It seems only

fair that there should be a reduction in the band manager's licence fee to make it commercially acceptable to the band manager.

**Question 40): Do you agree with our proposed approach to spectrum access for other major events?**

We broadly agree with Ofcom's approach to spectrum access for other major events. Significant changes to the current system would no doubt add an extra layer of complexity to the band manager award and would cause confusion for large event organisers.

We also agree that event organisers need to engage as early as possible with the band manager to ensure that their spectrum requirements are understood at the earliest possible convenience. This will allow the band manager to allocate necessary resources and to work on a mutually agreeable spectrum plan.

Whilst we agree with this approach in the first instance we believe that spectrum management issues surrounding major events will need to be looked into in more detail in the mid to long-term.

Demand for spectrum at events continues to increase, resulting in JFMG often requesting access to additional, non-PMSE spectrum to make up the short-fall. However, it isn't simply that there is insufficient PMSE spectrum available, in many instances it is because applicants' equipment cannot operate on the available frequencies. This is extremely common for events such as motor sports where visiting broadcasters and racing teams necessarily bring their own equipment.

It will therefore be important for both the band manager and PMSE users to know how they could gain access to this additional spectrum in the future. We understand that for spectrum already owned by an organisation it is expected that users or the band manager on their behalf could make commercial approaches for access. One would therefore expect that the user would be subject to whatever commercial pricing model the spectrum owner felt appropriate, and the band manager's obligations would therefore not apply.

In addition, it is not entirely clear how users would gain access to spectrum that is currently managed by Ofcom internally. The current model means that we approach the relevant Ofcom department for clearance to licence a particular piece of spectrum. Once clearance is received we issue a licence on the same basis as the PMSE spectrum that we manage. The licence documentation and the pricing model remains the same. However, it is not clear how a band manager could gain access to this same spectrum for PMSE users and then charge them for spectrum that it has not paid for. Indeed this seems wholly inappropriate, but how else would the users gain access to this spectrum? Asking users to apply for access directly to Ofcom would no doubt create an additional licensing burden.

Whilst we believe that in some instances requests for non-PMSE spectrum could be reduced there will continue to be a base level that will always require access to additional resources. We would be interested in discussing with Ofcom how they see arrangements working in the future.

**Question 41): Do you agree with our proposals concerning disputes between the band manager and PMSE users as a whole?**

We broadly agree with Ofcom's proposals concerning disputes between the band manager and PMSE users as a whole. Annual reviews undertaken by an independent third party would appear to be a good mechanism by which to test the band manager's success at meeting PMSE obligations etc.

We also agree with the principle of seeking evidence from PMSE users to assess whether any significant disruption has been caused by the band manager's actions. However we believe that the evidence collecting process should ensure a balanced view which does not add disproportionate weight to any particular set of users. Views should be sought by a representative sample of the industry and its different requirements.

**Question 42):** *Do you agree with our proposals concerning disputes between the band manager and individual PMSE users?*

We agree with Ofcom's proposals concerning disputes between the band manager and individual PMSE users. The band manager should make it absolutely clear how it intends to deal with complaints from PMSE users and the timescales within which they can expect a response.

For those disputes that cannot be resolved using the internal process independent alternative dispute resolution appears to be a reasonable solution. We agree that Ofcom should not be required to get involved in individual, one-off disputes between the band manager and PMSE users. They should instead only focus on large scale PMSE issues.

**Question 43):** *Do you agree with our estimate that the band manager will require six months from licence award until it begins operating?*

We believe it is difficult to estimate the time required for the band manager to begin operating without first knowing the spectrum authorisation process that they will be required to use. The complexity of this mechanism could dictate the processes and IT requirements of the organisation's day-to-day functions and therefore the time required to put them in place.

We look forward to Ofcom's winter consultation which should shed some light on this topic.