

**Digital Dividend Review: band manager award
Consultation on detailed award design**

The BBC's response

The BBC welcomes this consultation, and is grateful to Ofcom for listening to the key concerns raised by the industry on the availability of spectrum for programme-making and special events. The BBC considers that the licensing of secondary use spectrum for PMSE by JFMG has proven a great success, and favours the continuation of such a system.

The proposals made by Ofcom in this document go a long way in alleviating these concerns in the short-term. However, some of our concerns remain for the mid to long-term, and we are looking forward to further discussions with Ofcom on the matter. Should it become impossible to find suitable spectrum at a reasonable cost, there could be a significant loss of public value : for instance the BBC might have to stop some news gathering operations in the UK where the use of wired cameras is not an option (floods, major emergencies, difficult or crowded locations); for programmes requiring the simultaneous use of many radio microphones, the difficulty or cost of access to spectrum might even be a factor contributing to the delocalisation of productions.

In particular the BBC is concerned by the fact that the band manager will be incentivised to finding non PMSE users to use these bands, and that the pricing system might end up preventing PMSE users from using these bands. In addition, a significant increase in fees risks leading to an increase in unlicensed use, which would be particularly damaging for professional users who require high quality, interference free spectrum management.

Executive summary

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

Topics	Ofcom proposals	BBC response
Available spectrum		
Spectrum included in the band manager award	<i>We propose to include most of the spectrum currently allocated to PMSE in 75 distinct bands between 47.55 MHz and 48.4 GHz</i>	The BBC agrees
Licence conditions		
Type of technical licence conditions	<i>We propose to define the available spectrum in the</i>	The BBC agrees

	<i>form of block-edge masks (BEM)</i>	
Multiplex ownership and interoperability	<p><i>We propose to include certain restrictions on ownership in relation to use of interleaved spectrum to operate new DTT multiplexes. These would reflect the similar regime under the Broadcasting Act 1990 as amended (e.g. preventing religious or political bodies from holding licences for this purpose)</i></p> <p><i>We also propose to facilitate technical interoperability between any new DTT services using interleaved spectrum and existing DTT services</i></p> <p><i>These proposals are mirrored in our consultation documents on the detailed design of the cleared and geographic interleaved awards.</i></p>	<p>The BBC supports the principle that rules applied to any operator using cleared spectrum to provide a television multiplex should be those provided for by the Broadcasting Act.</p> <p>The BBC believes that technical interoperability between all DTT services brings significant benefits to viewers. Therefore, the new operators should be required to operate within the existing framework.</p>
Licence term	<i>We propose that the licence should have an indefinite duration.</i>	The BBC agrees in principle but believes it essential that Ofcom retains sufficient powers to revoke licences for spectrum management or essential public interest reasons.
Period of notice	<p><i>For bands that are currently used for PMSE, we propose that we would have the right to vary or revoke the licence on spectrum-management grounds subject to giving the band manager one year's notice.</i></p> <p><i>For other bands, where there is no current PMSE use, we propose that we would have the power to vary or revoke the licence on spectrum-management grounds subject to giving the band manager five years' notice.</i></p>	The BBC agrees

Licence fees	<i>We propose that the band manager should be subject to AIP and pay an annual licence fee based on the economic value of its spectrum. The fee will be calculated on a band-by-band basis.</i>	The BBC reiterates its opposition to spectrum pricing. Ofcom's proposals will lead to a three to ten-fold increase in fees with no link to the ability for PMSE users to move to other bands or to select wired alternatives.
Award process		
Award process	<i>We propose to award a single package of spectrum by means of a beauty contest.</i>	The BBC agrees
Selection criteria	<i>We propose to base the selection on:</i> <ul style="list-style-type: none"> • <i>the extent to which each applicant will secure efficient use of the spectrum to be awarded for both PMSE and other uses;</i> • <i>the extent to which each applicant demonstrates an understanding of, and a commitment to, the needs of PMSE users; and</i> • <i>the financial, managerial and technical ability of each applicant to establish and maintain efficient systems and procedures to secure efficient use of the spectrum to be awarded for both PMSE and other uses</i> 	The BBC agrees but suggests some further clarification of the criteria, so as to give greater weight to the needs of PMSE users. It also suggests ways of fully taking the views of users in selecting the band manager. More generally, the performance review of the band manager should not be mainly focused on its ability to free up additional spectrum, as this would be inconsistent with the rationale for setting up a specific framework for PMSE in the first place.
PMSE protection measures		
The band manager's commitment to PMSE users	<i>We propose that each applicant should make specific commitments to PMSE users to be incorporated in the licence awarded:</i> <ul style="list-style-type: none"> • <i>on pricing policy in light of our stated policy that prices to PMSE users should be FRND;</i> • <i>on allowing PMSE users to access spectrum for which they are prepared to pay;</i> • <i>on the service levels that</i> 	The BBC broadly agrees.

	<p><i>PMSE users will receive; and</i></p> <ul style="list-style-type: none"> <i>• on dispute resolution, covering both internal processes and the use of alternative dispute resolution (ADR) where internal processes do not satisfy PMSE users</i> 	
Annual audit of the band manager's performance	<p><i>We propose to put in place an independent annual audit of the band manager's performance, comparing this with the commitments given by the band manager to PMSE users. We will publish the results of each audit on our website</i></p>	<p><i>The BBC welcomes this proposal but would suggest that the auditors are requested to consult duly with the PMSE users.</i></p>
Review of the band manager's performance	<p><i>We propose to conduct formal reviews of the band manager's performance, with specific reference to the progress that the PMSE sector has made to a market-based approach for spectrum access. These reviews would probably be held every three years and include a review of the band manager's AIP-based licence fee</i></p>	<p><i>The BBC agrees that Ofcom should periodically review the band manager's performance and believes it is essential during this review to consult PMSE users. This review should heavily draw upon the views expressed by PMSE users through appropriate consultation.</i></p>
	<p><i>We consider that it may be appropriate for us to vary or revoke the licence in circumstances where there is clear evidence that the band manager is failing to meet its obligations to PMSE users effectively</i></p>	<p><i>The BBC agrees.</i></p>

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 radio astronomy in the UK?

First, it should be noted that it is important to mobile news teams and touring shows to have access to a single UHF channel that is available across the entire UK; current equipment operates over narrow tuning ranges, typically 24MHz wide, and cannot tune over the entire interleaved spectrum.

The BBC shares Ofcom's analysis that, for many years to come, the value of channel 38 will be dictated by the international protection requirements. The BBC therefore agrees that the rights to use channel 38, under the same conditions as currently apply to

PMSE users, be awarded to the band manager. However, we believe this allocation should be maintained for as long as international protection remains, rather than for as long that the UK radio astronomy use in this channel is protected, i.e. until 2012. The opportunity cost of that longer allocation will be very low as the need to protect international radio astronomy use will very seriously constrain any potential other uses. This would allow PMSE users to continue to access this channel on a non protection, non interference basis.

Ofcom has recently signalled its desire to find an alternative to the use of channel 69 for PMSE. It is unlikely that channel 38 could act as a direct substitute for channel 69, partly because it is already used for radio microphones, and certainly if channel 38 were to become available for other uses (e.g. DTT).

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

The BBC agrees in principle with the proposal to include the interleaved spectrum in channels 61 and 62 in the cleared award but reiterates its view that all appropriate measures should be taken to ensure full protection of existing DTT services. As Ofcom is aware, the BBC has provided further comments in response to previous consultations. In summary, as channels 61 and 62 are used extensively in the digital switchover plan, the BBC would be grateful if Ofcom could confirm any winner of interleaved spectrum in channels 61 and 62 would be required to protect all the DTT assignments and not only those for the main stations.

Additionally, both the Joint Planning Project and Ofcom (in their DDR interleaved consultation¹) stated that Spectrum Usage Rights (SURs) as currently formulated are not appropriate to protect co-channel reception of digital broadcasting. As stated by Ofcom, "in the case of geographic interleaved lots, the relatively narrow range of likely uses tilts the balance in favour of transmit masks and propose that technical licence conditions should be presented in this form." The BBC strongly supports this view, and believes that it is essential to apply this conclusion to the spectrum in channels 61 and 62.

The BBC would therefore support Ofcom's proposal that channels 61 and 62 be included in this award, but only provided their protection being dealt with identically to the protection of broadcast reception in the interleaved award.

The BBC would also argue that, before a final decision on the interleaved spectrum in channel 61 and 62 is made, it would be necessary to have a clear view of the spectrum which will remain available for PMSE uses, and whether that will be sufficient to meet their needs.

The BBC believes that were channels 61 and 62 to be cleared of DTT to produce a harmonised band for mobile telecommunications, then this would require extensive consultation on how best to make good the impact on DSO network coverage.

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

¹ [Digital Dividend Review: geographic interleaved awards 470 - 550 MHz and 630 – 790 MHz, A13.15](http://www.ofcom.org.uk/consult/condocs/ddrinterleaved/)

The BBC understands that the decision to relax protection of DTT to the preferred multiplex would have some benefits in that it would release additional radio microphone channels at a time where PMSE users are to lose a number of bands they currently use. However such channels will suffer from significantly elevated noise levels due to co-channel interference from the non-preferred DTT multiplexes and might therefore not be very usable. While these channels may have some utility in low performance applications, they are unlikely to meet the requirements of professional users. In addition, a relaxation of the protection offered to DTT could have a very significant impact on all DTT viewers, who, for often very good reasons, receive signal from a multiplex which is not the preferred one.

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

These bands are lightly used and are co-channel with Band E of the Astra 2B transponder operating between 11.7- 12.1GHz. Typical PMSE use of these bands can cause significant interference to BSkyB and FreeSat services and it is perhaps appropriate to remove them. It should however be noted that similar arguments apply for the PMSE band 12.2- 12.5GHz which potentially causes identical co-channel interference to Band F and Band G of the Astra 2B transponder (12.1 – 12.7GHz).

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?

The BBC agrees with this approach.

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

The BBC agrees with this proposal.

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?

Yes. This channel will be essential to compensate for the partial loss of channel 2200-2210MHz, where PMSE users will be subject to damaging out of band interference from CGC services.

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

AND

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

The BBC agrees with these two proposals. The PMSE community greatly benefits from a single point of contact for spectrum licensing and it is therefore sensible to award the low demand and no-demand PMSE bands to the band manager. There is increasing congestion in some PMSE bands and low demand bands will become important as technology develops to reliably access them.

Should Ofcom persist in charging AIP, the fees for these bands should only cover administrative costs so as to reflect the absence of demand, and therefore the absence of opportunity costs.

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?

At this stage, cognitive radio devices are still at a research phase. The potential value that such devices may offer to consumers is unknown. Mesh networks, using cognitive access, have been proposed for fixed and mobile internet access but the performance of such systems is unknown. Since significant spectrum is already being targeted for internet access, the additional value of unproven cognitive access technology to the UK economy is questionable.

The protection of DTT and PMSE services is of absolute paramount importance. Therefore the BBC supports the decision to protect fixed DTT reception, both DVB-T and DVB-T2, from roof-top and loft-mounted antennas. Since a significant proportion of viewers also make use of set-top antenna reception, often for their main TV set, the BBC would also advocate for some protection of portable reception but it is recognised this may not be possible in all cases.

Ofcom should also consider detection difficulties particularly relevant for the rugged DVB-T and DVB-T2 modes. Correlation and detection of DVB-T2 pilot patterns at negative C/N will prove particularly challenging for the cognitive receiver, and until these issues are solved, the use of cognitive devices should be limited.

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?

The BBC would like Ofcom to also consider the potential use of radio cameras in interleaved spectrum and the protection requirements of these from cognitive devices. Ongoing work is shortly expected to make feasible transmission from a radio camera in an 8 MHz RF channel.

Digital radio microphones from a number of different manufacturers are now emerging using a variety of transmission techniques. As such devices potentially offer improved spectrum efficiency to traditional analogue radio microphones, their development and deployment should be encouraged. However, the deployment of cognitive radio could prevent some further coding and modulation developments. Ofcom should therefore consider protecting emerging digital radio microphone technology from cognitive interference, to address the concerns of radio-microphone users.

There are also other PMSE applications, such as the reverse bearer circuits that operate from Crystal Palace; we suggest that Ofcom should also investigate the protection requirements of these from cognitive radio.

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?

At this stage, it might be too early to make a decision taking into consideration the potential needs of cognitive devices. Whilst cognitive devices could bring significant opportunities in the future, at this stage, we are yet to see such devices working in practice. Ofcom should therefore assess the impact of cognitive devices very carefully before deciding to allow their use, as the out of band filtering issue identified for mobile TV receivers is likely to affect mobile TV reception deployment both in the interleaved and cleared spectrum awards. This is an area which the BBC will continue to monitor and research, and we stand ready to work with Ofcom so as to review this position in the light of any technological developments in a few years.

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?

The BBC is grateful to Ofcom for listening to the concerns expressed by the industry and welcomes **the** proposal to extend to twelve months the notice period for temporary access to channels 63-68 and channels 31-40. The BBC considers that Ofcom's proposal to **extend** this notice after the cleared award has been concluded is a sensible one, and hopes that in making their decision, Ofcom will take into consideration **the** roll out plans proposed by the new licensee to **prevent** the spectrum lying fallow after the notice period has expired.

Licence duration

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

The BBC understands the benefits of indefinite licences for the licensees, but believes it is absolutely essential that Ofcom retains sufficient powers to revoke licences for spectrum management or essential public interest reasons.

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?

AND

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?

The BBC agrees with Ofcom that the initial period should be linked to the time required to earn an appropriate return in investment. We also welcome Ofcom's desire to ensure proper protection of PMSE users, should the licensee not meet its commitments.

However, it does not necessarily result from these two points that the band manager should not benefit from the tenure of an initial period but be offered a minimum notice period. If the rationale behind the choice of a minimum notice period is to protect PMSE

users in case the band manager does not behave properly, this should be dealt with by adequate licence conditions (and of course, by the use of clear and appropriate criteria for selection of the licensee). If there is a serious risk of damage to PMSE users as a result of the band manager's actions, this should be considered as a breach of its licence by the band manager, and should lead to a revocation of the licence.

However, we do not see the necessity to treat the variation or revocation of the band manager's licence on the grounds of spectrum management in a different way as for the other spectrum licences. In fact, this would lead to the opposite result as it would penalise PMSE users themselves at least as much as it would do for the band manager. It could lead to higher prices charged - as the band manager would try to amortise its investment over one year, but would also mean that there would be no security that the bands would be re-awarded to a new licensee for PMSE uses.

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

This approach looks sensible, and as a key spectrum user, the BBC will not expect to seek Ofcom's intervention before exhausting all amicable dispute resolution procedures. It is noteworthy that, under the present arrangements, there has been no instance where we have been forced to even consider asking the regulator to intervene. The present system has been proven very effective, and the current band manager has always found ways of accommodating our needs. We would therefore hope for the new arrangements to be at least as effective. However, should the new licensee have no experience of band management, a short period of bedding in, perhaps 3 months, will inevitably be needed. The BBC will stand ready to work with the licence winner to share its experience, and believes other PMSE users could be ready to do so. Beyond that "bedding in" period, Ofcom should be prepared to review band manager performance and intervene promptly to protect PMSE interests, if and when normal dispute resolution procedures have been exhausted.

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?

AND

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?

As regards bands with no current PMSE use, the BBC agrees with Ofcom's proposals that there should be no initial period, but rather a five-year notice period for varying or revoking the band manager's licence on spectrum-management grounds in respect of bands with no current PMSE use. However, should PMSE use on these bands begin, Ofcom should take into account the investments made to produce and buy new equipment as well as to train staff. Under these circumstances, Ofcom should consider extending the notice period for variation or revocation on spectrum-management grounds to ten years.

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

The BBC agrees with the reasons for varying or revoking the band manager's licence during the notice period, as set out in paragraph 6.29 of the consultation document, but would insist for a clear definition of consequences where the inability to meet reasonable demands from PMSE users will constitute a breach of the terms of the licence. In addition, it should be necessary to ensure that transitional arrangements are put in place to ensure continuity of service for the PMSE users.

The BBC, as it supposes other PMSE users, will be ready to take part in any consultation Ofcom would like to undertake, on a regular basis, to review the Band Manager's performance.

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?

We have some concerns about the future availability of UHF spectrum for radio microphones and talkback facilities at key studio locations in the London area and for newsgathering and outside broadcasts around the UK. We are committing now to purchasing replacement equipment to cover the frequency changes caused by Digital Switchover and the DDR auction. It is therefore important to have early absolute certainty on the availability of interleaved spectrum post DSO, and this also includes certainty on access to Channels 38 and 69 that are currently heavily used for radio microphones.

We have been served notice to quit our usage of Band III for radio cars to make way for DAB expansion. It will be important to have early certainty over potential access to any bands that might be a suitable alternative.

We are also suffering interference to our Local Radio car operations at 446 MHz. It is important to have early certainty on access to any other bands that might be suitable as a replacement.

The loss of 2.5 – 2.69 GHz for radio camera use will increase congestion in other bands suitable for radio camera use. As investment decisions are being taken now on replacement equipment, it is important to have early certainty on the future availability of the 2 GHz bands, 3.5 GHz and 7GHz.

Award design and process

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?

The BBC broadly agrees with the three selection criteria as follows:

1. the extent to which each of the applicants is likely to secure efficient use of the spectrum to be awarded for both PMSE and other uses;
2. the extent to which each of the applicants demonstrates an understanding of, and a commitment to, the needs of PMSE users; and
3. the financial, managerial and technical ability of each of the applicants to establish and maintain efficient systems and procedures to secure efficient use of the spectrum to be awarded for both PMSE and other uses.

However, if the order in which they are presented corresponds to any different weighting in the decision, the BBC believes that priority should be given to the extent to which each of the applicants demonstrates an understanding of, and a commitment to, the needs of PMSE users.

Whilst we understand that it is important that the band manager should be able to respond to the incentives given to it to improve the efficient use of spectrum, it is essential that applicants can demonstrate their ability to meet effectively and at a reasonable cost the needs of PMSE users.

In particular, the items below (and especially criterion 2 and 4) are absolutely essential.

1. knowledge of the PMSE sector (both professional and community users), the equipment it uses, its operational characteristics and the major issues that affect it now and are likely to affect it in the future;
2. an approach to spectrum access for PMSE at major events, including advance communication with us where problems are foreseen;
3. appreciation of the issue of unauthorised spectrum access by PMSE users and plans for helping to address this; and
4. plans for communicating specifically with PMSE users.
5. a detailed business plan explaining how delivery of the commitments given in the application will be resourced;
6. operational information (e.g. staffing levels);
7. a detailed description of both internal and third-party dispute-resolution procedures;
8. plans of pricing structures and charges for PMSE use of the spectrum to be awarded;
9. proposed service levels for PMSE users, including key performance indicators;
10. a detailed description of governance, particularly decision-making and authority; and
11. information (e.g. recent accounts).

We would also suggest further clarification of the key performance indicators. In particular we would like the following elements to be given appropriate weight in the selection process:

1. an online booking system to enable quick and efficient licence purchase;
2. speed of response to on-line requests for bookings, and to manual (i.e. fax/phone) bookings;
3. performance targets for issuing licenses and offering alternatives should interference issues arise;
4. clarification on how costs will be controlled to ensure that spectrum remains affordable;
5. powers to investigate interference issues and equipment compliance problems.

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?

The BBC fully agrees that the commitments made to PMSE users by the successful applicant, including on pricing structures, should be enshrined in his licence as this would

provide security to PMSE users, and allow Ofcom to intervene effectively if these commitments were breached.

Question 25. Do you agree with our proposed approach to assessing applications?

The BBC welcomes Ofcom's desire to publish non-confidential sections of applications and to allow PMSE users and other stakeholders to comments on those in written form. We would suggest that the organisation by Ofcom of a seminar, in addition to this necessarily short consultation, could be an effective way for these stakeholders to make representations, and ensure their views and experience are appropriately taken into consideration in the selection process.

Licence conditions

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?

The BBC agrees in principle but would like to add that the technical licence conditions should be compatible with the compliance specifications appropriate to PMSE equipment and CE marking.

For wireless video links, equipment must comply with ETSI EN302-064-2. This defines integrated OOB levels in adjacent and next adjacent channels.

For wireless microphones, equipment should comply with emission masks and spurious requirements set out in ETSI EN300 422 V1.2.1.

Licence fees and AIP

Before responding to the following set of questions, the BBC would like to reiterate its opposition to the application of pricing to the spectrum it uses in order to fulfil its duties as a public service broadcaster, as expressed in its response to Ofcom consultation on the matter².

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

The BBC's views with respect to AIP are set out above. If, nevertheless, Ofcom decides to go ahead with AIP, we agree that the band manager should be set a separate fee for each Ofcom-managed band awarded to it. Indication of the fees applicable to each band will aid investment decisions (and reduce the uncertainty associated with such decisions). It will also help spectrum users to determine at any point in time whether the fees they are being charged are fair, reasonable and non-discriminatory (and hence act as a deterrent against non-FRND pricing).

² available at <http://www.ofcom.org.uk/consult/condocs/futurepricing/responses/bbc.pdf>

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

Given that MoD intends in the near future to set out new arrangements for the management of its spectrum, we would urge Ofcom not to apply its proposals to MoD-managed spectrum at this time, such that spectrum users are not subject to two significant changes to the approach to charging for spectrum within a relatively short space of time.

If, nevertheless, Ofcom decides to apply AIP to MoD-managed spectrum, we agree that fees should be set on a comparable basis.

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?

In its response to the above mentioned consultation on spectrum pricing the BBC has explained why it very strongly disagrees with spectrum pricing, which is unnecessary, counterproductive and dangerous for the delivery of the public service remit.

The application of spectrum pricing, as shown by Ofcom's attempt at explaining how the charges will be calculated, reveals significant practical difficulties, which only reinforce the argument that spectrum pricing does not work for PSBs and should not apply. Ensuring that AIP reflects the true opportunity cost of spectrum use, and thus encourages more efficient spectrum use is by no means straightforward. The calculation of opportunity costs can be subject to errors which could have a very negative impact on the ability for PSBs to meet their obligations. Therefore, as recognised by Ofcom, a very cautious approach needs to be taken in setting spectrum charges so as to be sure they do not exceed opportunity cost.

More importantly, even if it were possible to estimate opportunity costs accurately, we believe that spectrum pricing fundamentally undermines public service broadcasting. In the absence of additional resources to pay for increases in spectrum charges, the introduction of AIP will reduce the amount of money available for programme making. As recognised by Martin Cave himself, "spectrum pricing could potentially result in inefficient outcomes since it could result in too little of the socially beneficial activity being provided".³

Finally, the calculations proposed by Ofcom would represent a very significant increase in the fees paid by the BBC in order to fulfil its public service obligations. This increase will at least correspond to a tripling of current charges, but might be much more significant. In particular, we are worried that any further work would lead Ofcom to increase the fees beyond the estimates currently provided. Indeed Ofcom seems minded to always use, after a short transitional period, the higher opportunity costs. Furthermore, the price will be linked not to the ability of PMSE users to move to other bands or to invest in more spectrum efficient equipment, but to the value of the spectrum for completely different services such as low-power business mobile radio or terrestrial television, or even mobile communications services. There is therefore no guarantee that the prices will continue to be affordable for PMSE users, and indeed there is a serious risk that they are priced out of the bands they use with no alternative.

³ See OFCOM, Spectrum Pricing – A consultation on proposals for setting wireless telegraphy act licence fees, September 2004, p 15 f

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

Whilst we welcome Ofcom's proposal to phase in the proposed increases, this only offers very short term security. There is absolutely no certainty that within a period of three years, PMSE users will be able to move to cheaper bands; it rather appears very likely that fees based on full opportunity costs will correspond to a net increase in fixed charges. The BBC will simply have less money for programmes and news if it has more to pay for access to spectrum it needs, without being able to mitigate those 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?

And

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?

Three years seem a very short period, in particular in light of the lifecycle for investments in development, production and purchase of suitable equipment. Reviewing the fees (and most likely increasing them) after such a short period seems to stem from a desire to generate more income rather than from a willingness to take into consideration the business plans of operators, and their ability, or in that case inability, to make alternative decisions as far as their spectrum use is concerned. Whilst we understand that opportunity costs change over time, we welcome Ofcom's recognition that significant changes to licence fees can cause undue disruption to users. We would therefore urge them to phase in such changes appropriately and, where necessary, over a longer period, taking into account equipment investment life cycles.

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?

The BBC believes that similar rules should apply to all licensed multiplex operators, whether they have obtained their licence as the result of a selection organised by the then regulator, the ITC or as part of a spectrum award. In particular, the BBC believes that operators of a Television Multiplex Service, as defined by the Communications Act 2003⁴, should be required by their Wireless Telegraphy Act (WT Act) to hold a Broadcasting Act licence.

⁴ The Communications Act 2003 defines a Television Multiplex Service as "a service which is provided for broadcasting for general reception but otherwise than from a satellite, and (a) consists in the packaging together of two or more services which include at least one relevant television service and are provided for inclusion together in the service by a combination of the relevant information in digital form; or (b) is a service provided with a view to its being a service falling within paragraph (a) but is one in the case of which only one service is for the time being comprised in digital form in what is provided" (s.241(2))

In any case, the BBC believes that the same ownership restrictions should apply to all operators of a DTT multiplex, and that, in the event that the multiplex operator is not required to hold a BA licence, these restrictions should be included in its Wireless Telegraphy Act licence.

If Ofcom believes there is any reason to amend the existing media ownership rules, it should follow the mechanism provided by the Communications Act for doing so, and include in the licences specific competition clauses.

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?

The BBC believes that existing and potential new DTT multiplex operators should operate under the same framework; we fully agree that interoperability is essential to ensuring viewers benefit from a common service across all multiplexes. It is also essential to ensure that new transmissions streams are fully tested via DMOL and DTG to avoid any disruption to existing receivers. Should new DTT multiplexes be operated as a result of this award, they should comply with the same technical codes as the existing ones. There is no strong reason to justify a difference of treatment between existing and new operators.

Therefore, the BBC agrees with Ofcom's analysis that some action is necessary. However, it would favour mandatory approaches above facilitation. In any case, the BBC supports Ofcom's view that new operators should not be free to adopt some aspects of the technical code and operating parameters while rejecting others, where existing operators do not have a similar flexibility.

Should Ofcom accept that interoperability is the best option for the time being, it should adopt a mandatory approach, as it would always keep the ability to move to a less prescriptive approach afterwards if, at any point, it feels that this would allow market offerings that could deliver different, possibly greater benefits. This applies to both cleared and interleaved spectrum.

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?

The BBC supports Ofcom's proposal to include a standard condition in the licences to require licensees to provide it on request with general information regarding their equipment and use of frequencies, or the roll-out of their network, and from time to time to publish relevant aggregated information received on the number of base stations and frequency use in area across the UK.

The BBC welcomes Ofcom's decision to consult more widely on the issue of spectrum information provision more widely and will respond in due course to this forthcoming consultation.

PMSE protection

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

The BBC fully agrees with Ofcom's assessment.

As set out in the consultation document, introducing multiple spectrum suppliers would significantly add to costs and complexity of accessing spectrum for PMSE users. In addition as the spectrum bands offered by the different suppliers will not be substitutable, there would be very small benefit in competition. However, as the band manager will in fact be in a monopolistic position, it is essential that sufficient measures are taken to ensure it fulfils its remit.

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?

The BBC welcomes Ofcom's desire to ensuring that the band manager met reasonable PMSE demand for spectrum on FRND terms and agrees that the definition of what is a reasonable demand is quite essential in this context. As PMSE demand could vary over time, in either way, such a definition should not be static but allow for some flexibility. However, we are worried that the option proposed by Ofcom, to require the band manager to define "reasonable" PMSE demand as the actual demand from PMSE users at FRND prices might not achieve a satisfactory outcome if FRND prices are determined not in relation to what other PMSE users are ready to pay, but in relation to what other types of users are. We would suggest that, in order to avoid pricing-out PMSE users, the definition of what is "reasonable" takes into account their existing demand.

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

The BBC welcomes Ofcom's commitment to consult further on their application of FRND rules. It agrees with Ofcom that the objective of requiring FRND terms for should be to avoid the opportunities for a single, dominant band manager to assign spectrum inefficiently and generate excess profits. It also agrees that prices should reflect the band manager's administrative costs and also allow for a reasonable return on the costs incurred that reflects the risk-adjusted cost of capital of the investment. However, it is important that the determination of an "appropriate" return on capital is be made by Ofcom rather than by the band manager himself.

In addition, we would welcome clarification of Ofcom's intention when stating that its "expectations are that the prices charged would reflect both AIP and the levels of congestion in the bands concerned"; if opportunity costs are dependent on the amount of spectrum available, then there is a risk that the levels of congestion in the relevant bands are double counted.

Where there is excess demand caused by competing PMSE use, we understand that prices could be increased from a pure cost-recovery level to help ration demand and hence to match demand with the supply of spectrum. However, there should be some form of protection to ensure that no user can, for anticompetitive reasons, buy more spectrum that it really needs, crowding out other users. The band manager should be required to share the spectrum when necessary for instance for major events, and not only to respond

to the demand placed by the operator willing to pay very high prices for the spectrum in order to gain exclusive ability to retransmit a major event.

The BBC agrees with Ofcom that there could be some price differentiation between PMSE users based on service offering or market conditions, such as variations in bandwidth or power; geographic area, particularly where there are differences in population coverage; duration or repeated pattern of assignment.

The BBC will respond in due course to Ofcom's forthcoming consultation on the application of FRND rules.

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?

The BBC agrees with this proposal. We believe that it is prudent to include in any licence awarded to the band manager a condition which allows the commitments the Government has made to the International Olympic Committee and others to be met (and at least cost).

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

The BBC welcomes Ofcom's recognition of the importance of major events to the cultural, economic and social life of the UK. It also welcomes Ofcom's acknowledgment that since accessing sufficient spectrum for these events will become more difficult over time, the regulator is likely to play an important role in ensuring that relevant needs are met. We remain yet to be convinced that at all times organisers of major events will be able easily to identify holders of relevant spectrum (that is, that there will be sufficient transparency), or that spectrum holders will be willing to act as band managers (given the potentially high transaction costs involved).

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

The BBC welcomes Ofcom's desire to ensure that there are appropriate dispute resolution procedures. There is indeed in theory a significant risk that a single dominant supplier to price its services at a level above what would be expected in a competitive market, or provide poor quality services.

The BBC agrees that enshrining commitments about pricing and service levels made by the successful applicant in the licences offers some protection but might not be sufficient in practice. Therefore, we support the proposal to put in place a focused annual audit of the band manager's performance against its obligations to PMSE users, and are happy with the suggested terms of reference of this audit.

We also support Ofcom's willingness to intervene earlier if there was compelling evidence that the relationship between the band manager and PMSE users had broken down to the extent that the band manager was failing to meet its obligations effectively, and agrees with the broad criteria set by Ofcom to decide when they would intervene

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

The BBC agrees with Ofcom's proposals concerning disputes between individual PMSE users and the band manager, through appropriate selection criteria and licence obligations. It also welcomes the recognition that whilst such agreed dispute resolution procedures should be sufficient to deal with nearly all the disputes, Ofcom would become involved in the most serious cases, where all other procedures have been exhausted.

Next steps

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

The BBC is not in a position to give detailed comments on the period which will be necessary for a band manager to prepare for operation, but would prefer a shorter period, in order to minimise risk of disruption for existing PMSE users. The BBC welcomes Ofcom's recent announcement to extend its contract with JFMG to coordinate and license spectrum use for PMSE until new band-management arrangements are set up.