

Royal National Theatre

**Additional comments:**

General Note:

This stakeholder is a member of BEIRG and fully supports the responses by BEIRG and the PMSE Pro User Group to this consultation. Anything contained in this response which is contradictory to BEIRG's or the PMSE Pro User Groups responses may be discarded and this stakeholder's opinions can be considered the same as that of BEIRG and the PMSE Pro User Group.

**Question 1: Have we correctly identified and characterised the potential costs set out above, and what other costs ? if any ? should be taken into account in our assessment?:**

There will be a cost to consumers as a result of further reduction of available spectrum for an already squeezed PMSE industry. This is because there will be an increase to the cost of creating the content that other stakeholders rely on. 4.43 notes that the Treasury will profit from an auction of spectrum. The proceeds from this will be more than is required to compensate the evicted PMSE industry for the move to another band but will not repair the damage of reducing the spectrum available.

**Question 2: What evidence, whether qualitative or quantitative, should we obtain and/or take into account in assessing each of these potential costs? Please identify any sources of specific evidence to which we should have regard.:**

This stakeholder believes that information on the costs to consumers of reduction of PMSE spectrum has already been submitted to Ofcom in previous consultations. The cost of enforced migration of the PMSE sector is also well-known to Ofcom and should be considered an expected expenditure by the treasury. Some PMSE users have replaced equipment originally in the 800MHz band with equipment operational in the 700MHz band. Ofcom will need to compensate these users for having to move twice. 2.4 and 4.15 mentions the need to pay for modification and 4.4 acknowledges that this will be the principal cost of clearing the 700MHz band. 4.44 acknowledges the potential cost to PMSE users but fails to offer compensation for their eviction - please acknowledge this. Ofcom should also gather evidence on the amount of spectrum required for common large PMSE events and by large PMSE organisations to ensure that sufficient spectrum remains available.

**Question 3: Have we correctly identified and characterised the potential benefits set out above, and what other benefits ? if any ? should be taken into account in our assessment? :**

Ofcom should consider further the benefit to consumers of ensuring sufficient interleaved space is available for PMSE use in the UK and of ensuring a smooth migration into this spectrum by those occupying the 700MHz band.

**Question 4: What evidence, whether qualitative or quantitative, should we obtain and/or take into account in assessing each of these potential benefits? Please identify any sources of specific evidence to which we should have regard. :**

This stakeholder believes that information on the costs to consumers of reduction of PMSE spectrum has already been submitted to Ofcom in previous consultations. The cost of enforced migration of the PMSE sector is also well-known to Ofcom and should be considered an expected expenditure by the treasury.

**Question 5: In particular, what is your view of the likely future demand for additional sub 1 GHz spectrum for the provision of mobile data services, and what evidence supports this view?:**

There is future demand by all current occupiers of the sub-1GHz spectrum for more spectrum in order to improve quality of service. Ofcom is biasing its questions towards mobile data services. In 4.19 Ofcom explains why sub-1GHz is useful but should acknowledge that this evidence applies to all users, not just mobile data.

**Question 6: Should we place different weights on some costs and benefits than on others, for example depending on whether costs would be borne by consumers, DTT operators, or mobile operators? :**

Yes.

Ofcom should ensure that there is no cost to consumers as a result of its decision to auction more spectrum. 3.14 misses PMSE out of the list of equipment in need of modification. There should be no cost to any existing users of the spectrum that Ofcom have forced to migrate from the 700MHz band. Those bidding on the spectrum should absorb the cost of modification or replacement of equipment, which cannot be borne by the disparate, diverse and diffuse community of existing PMSE users. Naturally, unless Ofcom can prevent it, these costs will be passed by bidders onto their customers. Ofcom has demonstrated its allegiance to market strategy in the past, so is expected by this stakeholder to be comfortable with this strategy again.

Ofcom should place the greatest weight on the benefit to consumers of ensuring that those who are unable to bid for spectrum have sufficient space to provide the quality of service currently enjoyed by those consumers.

**Question 7: Do you have any other comments on the work we are currently undertaking on potential costs and benefits? :**

More detail is required on the impact to the PMSE industry of eviction from the 700MHz band and of the interference to PMSE and DTV equipment if mobile data were to occupy the band. Also, International use of PMSE frequencies should be considered as part of this consultation.

Ofcom says in 5.1 "An important part of our work in the context of a potential release of the 700 MHz band is to explore opportunities for reducing and potentially avoiding costs and disruption to citizens and consumers, such as those related to the need to

modify or bring forward the replacement of equipment". Ofcom should honour this by compensating the enforced migration of PMSE users.

**Question 8: Have we correctly identified the costs and benefits that could vary depending on the timing of release, and the impact of those factors? Are there other costs and benefits which would vary depending on the timing of release of the 700 MHz band which we should take into account?:**

4.29 is correct in saying that an early release maximises the net benefits to citizens, but does not include that this also requires greater compensation for existing PMSE users who have to replace equipment sooner than its expected life. Please include this consideration.

4.37 explains the need to allow PMSE users to migrate from one area of spectrum to another but needs to acknowledge the need to compensate these existing users for eviction within their equipments' life.

4.35 please provide evidence that TV aerials are replaced within 'several years'. This stakeholder doubts that more than 30% of household TV aerials will be replaced between now and 2018. Most analogue and digital TV aerials are perfectly capable of receiving DTV across a wide band.

More detail is required on the expected compensation to existing users for their eviction from the 700MHz band. Most of these existing users will be forced to modify or replace equipment BEFORE it reaches the end of its useful life. Ofcom acknowledges its commitment to this in 5.1 and needs to uphold it.

**Question 9: How quickly could the 700 MHz band be released? What would be the impact on DTT infrastructure costs of releasing at the earliest possible time compared to a later time? What would be the factors which affect these costs?:**

Existing PMSE users of the 700MHz band own equipment that will last for at least 15 years. A lot of this equipment was bought in the last few years as part of DDR migration. The 700MHz spectrum could be released by existing PMSE users within a few years provided that sufficient UHF spectrum was made available elsewhere in the UHF band. The earlier the release, the greater the cost of compensated PMSE migration incurred by the Treasury.

**Question 10: How, and to what extent, are the costs for existing (PMSE) and potential (WSD) interleaved users of the 700 MHz band likely to vary depending on the timing of release? What would be the factors which affect these costs?:**

Existing PMSE users of the 700MHz band own equipment that will last for at least 15 years. A lot of this equipment was bought in the last few years as part of DDR migration. The earlier the release, the greater the cost of compensated PMSE migration incurred by the Treasury for premature PMSE equipment replacement.

**Question 11: Should we consider any other cost-related arguments / evidence in favour of an earlier or later release date?:**

Please draw on the research done for the DDR with regard to the longevity and total value of PMSE equipment. Further research will be required on the extent of 700MHz occupation by PMSE. (It is noted that further research is now being undertaken by Ofcom as part of this consultation)

**Question 12: What would be the impact on mobile broadband delivery and competition of releasing the 700 MHz band later rather than sooner? :**

Mobile broadband is not an existing user of the 700MHz band. No supporting evidence has been provided by Ofcom for 4.39

**Question 13: Should we consider any other benefit-related arguments / evidence in favour of an earlier or later release date?:**

No comments

**Question 14: Is the range of potential dates for release likely to be wide enough to merit consideration of an incentive auction approach?:**

No comments

**Question 15: If so, what are the challenges to designing an effective incentive auction in this case, and how might these challenges be addressed? :**

No comments

**Question 16: If we followed an incentive auction approach, how should we take account of wider costs and benefits ? i.e. those not felt by participants in the auction?:**

No comments

**Question 17: Do you have any views at this stage as to the parameters of an incentive auction, such as the default date and payment mechanism?:**

No comments

**Question 18: Is there a version of the overlay auction approach which could be suitable for 700 MHz release?:**

No comments

**Question 19: What are the benefits and risks of conducting an overlay auction in this case?:**

No comments

**Question 20: Have we correctly identified and characterised the potential impact of 700 MHz release on consumers accessing DTT? What other impact ? if any ? should be taken into account in order to identify pre-emptive measures to reduce this impact?:**

Consumers accessing DTT would be very disappointed by the content they receive if there is insufficient spectrum available for PMSE equipment to support DTT programming.

**Question 21: Do you have any comments on the pre-emptive measures relevant to DTT identified above? Are there other pre-emptive measures we should be considering?:**

Ofcom should provide a detailed schedule for funding the migration of PMSE equipment to a new part of the spectrum.

**Question 22: Have we identified the correct measures to support consumer adoption of DVB-T2?:**

No comments

**Question 23: What regard, if any, should we have to wider technical evolution of the DTT platform, such as HEVC? :**

No comments

**Question 24: Have we correctly identified and characterised the potential impact of 700 MHz release on PMSE users? What other impact ? if any ? should be taken into account in order to identify pre-emptive measures to mitigate this impact?:**

An additional impact on PMSE users is the need to change their individual band plans to accommodate the equipment that was in the 700MHz band into a reduced amount of available spectrum. This would mean, in all likelihood, that some equipment outside of the 700MHz band would also need to be modified as part of the enforced band plan change to make the whole system work without interference. In 5.29 Ofcom has mentioned the potential impact on PMSE equipment of mobile devices that are 'close' to PMSE equipment. More information is required on the actual distances involved.

**Question 25: Do you have any comments on the pre-emptive measures identified above? Are there other pre-emptive measures we should be considering?:**

Ofcom claims that industry-messaging of the continued availability of the 600MHz band is sufficient to counterbalance the loss of the 700MHz band. The 600MHz band is ALREADY available and being used by some PMSE users as part of RF band plans spanning all available UHF GI spectrum. The industry message of the

availability of the 600MHz band is of no use to these organisations as it does not provide additional spectrum in exchange for the loss of the 700MHz band. Please correct this miscalculation, for example in 4.14 - already available spectrum does nothing to relieve the loss of the 700MHz band. Additionally, 3.19 mentions the possibility of the 600MHz band being part-allocated for mobile data use, a fact that is missed later in the paper when industry-message is mentioned. Is it wise that Ofcom is making suggestions on the availability of the 600MHz band before it has responded to the last 600MHz consultation?

Working with manufacturers is welcomed but the simple physics of how radio microphones require channel filtering prevents wideband use across a disparate GI spectrum.

**Question 26: Do you have suggestions for how we can assess the impact on PMSE users and equipment if 700 MHz is no longer available for PMSE use?:**

Ofcom will have to conduct another PMSE-specific consultation involving site visits and individual case studies. It is known that Ofcom has performed tests to establish the chance of potential interference of WSDs on PMSE equipment. The results of these measurements should be included in a consultation to allow stakeholders to comment.