

BEIRG Response to Coleago Report - Future of the UHF band after 2034

The British Entertainment Industry Radio Group (BEIRG) is an independent, not-for-profit organisation working for the benefit of all those in the creative industries who produce events and create and distribute content using radio spectrum. BEIRG campaigns to maintain the provision of the Programme Making and Special Events (PMSE) sector's access to sufficient quantity and quality of spectrum for use by wireless production tools such as microphones, in-ear monitor systems (IEMs), and wireless communications equipment.

The UHF band (470 – 694 MHz) is the primary spectrum resource for wireless audio PMSE applications, used by the UK's burgeoning creative industries, including live music, film and television production, theatre, and live sport.

In its [Creative Industries Sector Plan](#) of June this year, government reinforced the importance of the sector to the UK economy,

'The UK's creative output, our creative history and our future creative are unmatched. The sector already acts as a dynamic growth engine for our economy across the UK's nations and regions, contributing 2.4 million jobs and £124 billion GVA to the economy, generating knowledge spillovers that drive innovation and activity across the economy.'

Though not explicitly mentioned in the plan, much activity in the sector is underpinned, and in many cases entirely dependent on, use of spectrum in the UHF band, a fact substantiated by BEIRG's recent [Spectrum Report and Impact Analysis](#).

In May, Coleago Consulting released a report, [Future of the UHF band after 2034](#), prepared for the UK Spectrum Policy Forum. BEIRG was interviewed by Coleago as part of the report's preparation and provided detailed written clarifications to Coleago post-interview. It is therefore regrettable that many of those important points were either omitted or misrepresented in Coleago's final report. BEIRG was also disappointed that at the report's launch event at King's College London on 16th May, the UK SPF, which bills itself as, 'the cross industry 'sounding board' to Government and Ofcom on future policy and approaches to spectrum', did not invite a PMSE industry representative to the panel discussion.

BEIRG cautions against referencing Coleago's report as an accurate reflection of PMSE's use of the band, PMSE working practices, and broader UK PMSE spectrum policy. We provide greater detail on the report's errors in the Annex to this letter, but its credibility is critically undermined by two central errors: a fundamental misunderstanding of spectrum policy in relation to wireless audio applications' use of the 960 MHz band, and flawed reasoning about the likely effect of technological advances in PMSE equipment on spectrum demand.

It therefore fails to adequately answer central spectrum policy questions repeatedly posed by government, most recently in DSIT's consultation on its [Statement of Strategic Priorities](#), about PMSE spectrum requirements technological trends, and the means of ensuring that PMSE, which delivers significant value to the UK creative sectors, continues to have suitable access to spectrum.

Annex: Analysis of Coleago's Report, Future of UHF band after 2034

1. The UHF band, as defined by Coleago, does not currently support Mobile Communications in the UK and remains the primary spectrum resource for wireless audio content creation

In the very first paragraph of its Executive Summary, Coleago claims that the UHF band supports three key sectors in the UK: Digital Terrestrial Television, Mobile Communications, and Programme Making and Special Events. That is incorrect. PMSE shares the band with DTT on an interleaved basis. Unlike DTT and PMSE the band is not used by Mobile Communications in the UK.

Grouping Mobile Communications, DTT and PMSE together in this way is misleading, not least because sharing has existed between DTT and PMSE for decades and sharing by either of those services with Mobile Communications is extremely challenging (evidenced by previous 800 MHz and 700 MHz band clearances of both DTT and PMSE to make way for Mobile Communications).

We also take issue with Coleago's suggestion that decisions made about the future of the band carry equal weight in terms of impact. When mobile operators claim that network densification is not practicable or prohibitively expensive, what they mean is that they expect to have the costs of disruption borne by other incumbent spectrum users. BEIRG has already illustrated the severe consequences to many of the UK's major events that would result from a further loss of spectrum for audio PMSE. The impact on PMSE is therefore an order of magnitude greater than the arguably marginal impact of denying mobile operators another portion of the band (they already hold spectrum in the 700, 800 and 900 MHz bands). Any cost-benefit analysis of an auction of the 600 MHz band to IMT must include a comprehensive analysis of the consequential costs to the UK's cultural and creative industries.

As Coleago notes, 'the UHF spectrum (470 – 694 MHz) remains optimally suited for professional, body-worn PMSE applications'.¹ PMSE's spectrum requirement and the revenue it generates are growing, evidenced by the inclusion of the Creative Industries as one of only eight growth-driving sectors named in the government's [Modern Industrial Strategy](#). Notably, there is an increase in the number of venues and events of high spectrum demand, some of which, such as the new Sky Studios Elstree, will see high channel counts in near-constant operation to cater for the UK's flourishing TV and film production.

Coleago's statement that, 'no future UHF band allocation can fully meet the needs of all three industry groups'² does not survive scrutiny. The statement presupposes a further allocation to Mobile Communications. Scarcity of spectrum for PMSE in the band exists solely because of previous spectrum policy choices, consciously taken in the face of predictable consequences. In the absence of the other two industry groups (Mobile Communications do not currently use the band and DTT in the long-term may have a reduced presence in it), the band would continue to perfectly support PMSE's needs.

2. The 960 – 1164 MHz band was made available to low power audio PMSE in the UK to complement the 470 – 694 MHz band, not replace it. The 960 – 1164 MHz band would not mitigate another loss of spectrum for PMSE in the 600 MHz band

¹ Section 2.4, p.7. See also s.4.7 p.21, 'In many ways, UHF is the optimal band for professional audio PMSE.'

² Bottom of p.7, under 'Risk of Socio-economic impacts'.

The 960 – 1164 MHz band was made available by Ofcom to low-power audio PMSE in March 2016. Accounting for the guard bands to protect aeronautical radionavigation services at 1030 and 1090 MHz, and GNSS above 1164 MHz, it effectively comprises 3 sub-bands (961 – 1015 MHz; 1045 – 1075 MHz; and 1105 – 1154 MHz).³

As Ofcom stated in its 2014 Cost-Benefit Analysis for the previous clearance of the 700 MHz band - a point made clearly and repeatedly to Coleago by BEIRG - the 960 MHz band was made available to mitigate the loss of the 700 MHz band and to **complement** the primary spectrum resource for audio PMSE in 470 – 694 MHz.⁴ It is not sufficient to mitigate further spectrum loss, as evidenced by BEIRG's impact analysis, which was provided to Coleago.

The band was one of only two viable alternative spectrum bands for audio PMSE identified by Ofcom using objective criteria. The UK remains the only country in the world to have authorised its use by audio PMSE. We note also that no comparable new spectrum bands have been identified by European administrations.⁵

Coleago's over-reliance on the 960 MHz band in its argument fails for several reasons. It assumes PMSE users all re-equip with 960 MHz equipment. Economies of scale apply equally to PMSE users and rental companies, who mostly still favour equipment capable of using the 470 – 694 MHz band because the band is authorised for use by audio PMSE across much of Europe.

Even assuming greater use of the 960 MHz band, following a 600 MHz band allocation to IMT, there would still be a net loss of spectrum in most locations, which would make many large PMSE events unviable in the UK and would certainly not accommodate the growth forecast in audio PMSE spectrum demand at those events. Recent and projected growth in PMSE is detailed in Section 4 of Coleago's report, and we are hard-pressed to name another sector which, having demonstrated the same sustained growth in spectrum demand and socio-economic contribution, has been rewarded with significant *reductions* in spectrum available to it on successive occasions. Lack of spectrum availability already creates event "not-spots" at some UK locations and would become markedly worse following further spectrum losses.

There also remains considerable uncertainty surrounding future spectrum availability in the 960 MHz band. New aeronautical technologies like LDACS⁶ are planned to be introduced in coming years and earlier this year Ofcom reduced spectrum availability for PMSE in the lower sub-band to accommodate airspace awareness for drones.⁷ For all of the above reasons, whilst an innovative and welcome additional spectrum resource for audio PMSE, the 960 MHz

³ Recent changes by Ofcom have prohibited outdoor use of 3 MHz in the lower sub-band surrounding UAT at 978 MHz (electronic conspicuity for drones) and offset the loss by reducing the guard bands around 1030 and 1090 MHz by 1 MHz on each guard band edge. See [Ofcom/CAA Joint Statement](#) of March 2025.

⁴ Ofcom '[Consultation on future use of the 700 MHz band: Cost-benefit analysis of changing its use to mobile services](#)' (see Section 7)

⁵ Neither the Radio Spectrum Policy Group (the RSPG is a high-level advisory group to the European Commission on the development of radio spectrum policy), nor the European Conference of Postal and Telecommunications Administrations (CEPT – 46 member countries including the UK) have identified any suitable new candidate spectrum bands for audio PMSE.

⁶ L-Band Digital Aeronautical Communications System (LDACS): <https://www.eurocontrol.int/system/l-band-digital-aeronautical-communication-system>

⁷ <https://www.ofcom.org.uk/siteassets/resources/documents/consultations/category-1-10-weeks/238648-spectrum-for-unmanned-aircraft-systems-uas/associated-documents/joint-comms-5-march.pdf?v=392468>

band should not be considered as a mitigation for further UHF band losses or viewed as an alternative home for audio PMSE.

3. Technological innovation in audio PMSE equipment, such as WMAS, will often lead to greater use of spectrum through creative innovation

In its interview with BEIRG, Coleago were unambiguously informed that technological developments like Wireless Multichannel Audio System (WMAS) often lead to creative innovation within the cultural and creative sector. For example, new technologies often allow for greater simplicity, ease, and flexibility in deployment by end users. In turn, this spurs greater use of spectrum, for example in enabling more intricate or novel set designs that weren't previously seen as viable. It is accepted within our sector that audience expectations only increase. Shows become bigger and production values richer, such as greater numbers of headline acts on a roster, or more performers on stage. That inevitably brings an increase in wireless devices and spectrum demand.

BEIRG was surprised that Coleago ignored the points we made about technological advances leading to bigger shows, based on decades of industry experience and statistical evidence from Ofcom's licensing record that points to technological advances in PMSE equipment generating increased spectrum demand. Instead, Coleago focussed only on WMAS's increased efficiency in service of what appeared to be a predetermined narrative that current PMSE audio assignments could be satisfied in less spectrum.

4. The efficiencies in PMSE working practices advocated by Coleago are already employed by PMSE users

It is somewhat galling for PMSE professionals with decades of experience putting on some of the biggest and best events in the world to read opinions of those without any experience outlining how they might work more efficiently. Nevertheless, we find it in the Coleago report, with mitigations for further increases in the re-use of spectrum in time and location at large events.⁸

As BEIRG informed Coleago at interview, these are already well-established working practices in PMSE and there is limited scope for increasing temporal and spatial re-use that is not currently being applied to already spectrum-constrained operating environments.

Similarly, Coleago's proposal that professional PMSE users reduce redundancy in their event planning is simply unviable. There is no tolerance for failure in live events that are attended by thousands of paying customers, broadcast to audiences of millions, or both. Redundancy, in the form of pre-coordinated audio channels available for immediate use should another channel fail or experience interference, is a critical part of major PMSE event planning.

5. Leasing of the 700 MHz centre gap is unviable

Coleago's promotion of the 'idea of exploring leasing some of the currently unused 25 MHz within the 700 MHz duplex gap'⁹ reveals a lack of awareness of recent spectrum policy. PMSE equipment capable of operating in the 700 MHz centre gap was surrendered by PMSE users

⁸ Page 4 and p.46 (s.7.3.2)

⁹ Section 7.3.4, p.47. The duplex gap (733 – 758 MHz) is licensed to BT/EE for supplemental downlink (SDL).

and scrapped as part of the 700 MHz clearance scheme, administered by Ofcom and funded by HM Treasury, between 2019 and 2020.

Coleago's recommendation is odd. If the duplex gap is still unused by MNOs, years after it was auctioned by Ofcom, it is evidence that MNOs are not using their current spectrum holdings efficiently. Ofcom has a statutory duty to ensure optimal use of the radio spectrum. However, Coleago did not consider the possibility of Ofcom repurposing it directly to other users on spectrum management grounds. Instead, it proposed PMSE users pay an MNO to lease spectrum that it doesn't use, despite BEIRG explaining at interview that PMSE users require a direct licensing relationship with Ofcom and that third parties setting themselves up as gatekeepers to spectrum is unpalatable.

Coleago also holds Special Temporary Authorisations (STAs) up as an authorisation mechanism that might be applied in the UK. STAs are used in the U.S. and authorised by the Federal Communications Commission (FCC) to support PMSE demand at major events. STAs allow PMSE users to access spectrum in the 600 MHz and 700 MHz band that has been licensed for use by U.S. mobile networks but is not being used at an event's location. The use of STAs is not viewed by PMSE users as a viable long-term solution, principally because once mobile networks do decide to deploy, previously available spectrum can suddenly become unavailable. However, like Coleago's suggestion of using the duplex gap, it ignores the glaringly obvious conclusion that mobile networks are not using their existing spectrum holdings efficiently.

6. Coleago advocate for spectrum sharing via 'dynamic allocation mechanisms' and for international coordination, but there is a paucity of information about how that might be achieved

Recommendations are made by Coleago with little, if any, explanation about what they mean or how they might be achieved. For example, it does not explain how a 'dynamic allocation mechanism' between PMSE and IMT would work. For example, to be viable, PMSE would need 'Tier 1' status or higher priority/spectrum rights over IMT, any database interrogation and device/equipment mitigation mechanisms enabling Dynamic Spectrum Access would need to be incorporated on the IMT equipment side, and the whole arrangement would need to be rigorously enforced by Ofcom as regulator (with punitive measures applied swiftly for breaches by MNOs).