Three's Response to Ofcom's Consultation on Spectrum Pricing for Terrestrial Broadcasting
23 May 2013

A Hutchison Whampoa Company

Registered Office: Star House, 20 Grenfell Road, Maidenhead, Berkshire, SL6 1EH
Registered Number: 3885486 England and Wales

Executive Summary

Hutchison 3G UK Limited ('**Three**') welcomes the opportunity to respond to Ofcom's consultation on Spectrum Pricing for Terrestrial Broadcasting, published on 23 March 2013.

Three welcomes Ofcom's efforts to secure the most efficient and beneficial use of spectrum. Whilst there may be a number of peculiar circumstances related to public service broadcasting that have informed Ofcom's proposal, Three believes that these have led Ofcom to reach the wrong conclusions. In particular, we are surprised that Ofcom is again proposing to delay the application of AIP for national terrestrial broadcasting until 2020, for reasons that do not appear to us to have been adequately justified.

Digital Terrestrial Television ('DTT') currently occupies some of the most valuable frequencies in the entire radio spectrum. Those frequencies provide an ideal mix of coverage and capacity that makes them particularly well suited for mobile communications, broadcasting and defence, as well as a number of other valuable social uses. Three notes that spectrum scarcity is particularly acute in UHF bands IV and V (470 to 862 MHz), which are evidently in excess demand from a variety of highly valuable uses, including mobile.

Three understands that Ofcom is consulting on its long-term approach to releasing the 700MHz band for mobile and reallocating broadcasting to the 600MHz band. However, there is no need to forego short-term efficiency gains from AIP pricing incentives in order to secure greater longer term gains from a coordinated approach. These approaches are not mutually exclusive and Ofcom has not presented evidence to indicate that they are.

It is 11 years now since Professor Martin Cave recommended the introduction of AIP in terrestrial broadcasting as a means of ensuring that spectrum is used efficiently. Introducing AIP now would provide incentives for broadcasters to consider their short term choices efficiently, potentially releasing valuable spectrum that may be used for local TV and new applications based on white-space technology in the near future. Doing so would not delay the transition to more efficient DVB-T2 and MPEG-4 technologies if these prove necessary in the future. It would also send a clear message that <u>all</u> UK users should pay for access to scarce spectrum.

For that reason, we ask that Ofcom introduces AIP in terrestrial broadcasting now or, at least, provides better arguments to justify the delay in its application. The remainder of this response contains Three's more detailed comments on the Consultation, with responses set out against a number of the questions Ofcom has raised. We focus on Ofcom's proposals in relation to spectrum used by national DTT broadcasting.

<u>Three supports the principle of applying AIP to spectrum used for DTT broadcasting</u>

Question 1: Do you agree that the principle of applying AIP remains relevant to spectrum used for broadcasting?

Yes. Three understands that Ofcom grants a licence under the Wireless Telegraphy Act 2006 where it judges that an exemption is not appropriate for the purposes of spectrum management. Where spectrum use is licensed and has been allocated administratively (i.e. not via auction), Ofcom has traditionally set spectrum fees according to two alternative methodologies:

- **Cost Recovery** – to recover Ofcom's costs of administering and managing the radio spectrum; or

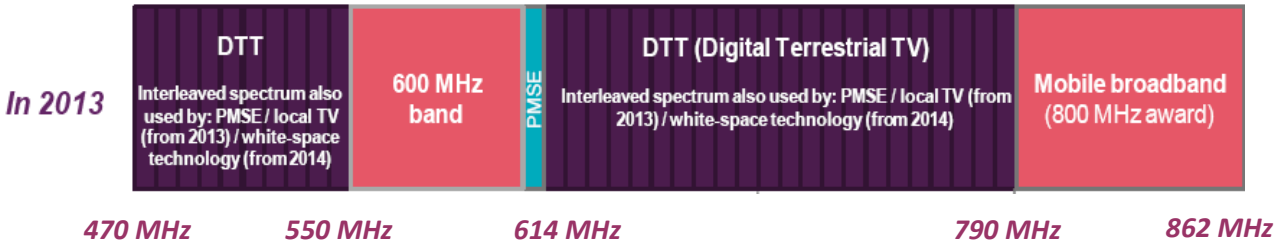
- **Administered Incentive Pricing ('AIP')** – i.e. fees set by reference to the market value or "opportunity cost" of the relevant spectrum, to encourage licensees to take into account the value of the spectrum to other users and uses in deciding how much spectrum they use.

We agree with Ofcom that, in principle, it is appropriate to apply AIP to spectrum used in terrestrial broadcasting. In fact, Ofcom reached the same conclusion back in 2007.[1] As Ofcom rightly sets out, AIP should be applied where the spectrum in question is in excess demand. It is evident that spectrum currently used for broadcasting is particularly scarce and in excess demand from broadcasters, MNOs and many other users.

In particular, broadcasting currently uses some of the most valuable frequencies in the entire radio spectrum. Low frequency spectrum (including that used in broadcasting) provides an ideal mix of coverage and capacity that makes it particularly well suited for mobile communications, broadcasting, defence and many other highly valuable uses.

Spectrum scarcity is particularly severe in respect of the highly prized UHF bands IV and V (470 to 862 MHz). Following digital switchover, DTT occupies 256MHz or 65% of bands IV and V (as shown in Figure 1), which represents 25% of all sub-1GHz spectrum. DTT spectrum is also used on a secondary interleaved basis by high power services (e.g. local TV) and low power, local uses (such as PMSE).

Figure 1 – Spectrum uses in UHF band IV and V



Source: Ofcom

By contrast, UK MNOs use 72MHz (18%) in UHF bands IV and V, and a total of 130MHz (13%) of spectrum below 1GHz. The value of that spectrum in mobile use is well understood. Due to its propagation characteristics, sub-1GHz spectrum provides better in-building penetration and superior coverage than higher frequencies. This raises the question of whether broadcasting is the most valuable use for the frequencies it occupies, and also about the incentives that broadcasters (and their multiplex operators) face to use that spectrum efficiently.

For instance, if MNOs had access to the 700MHz band used in broadcasting, they would cover indoor locations and rural areas with fewer base stations. Competition between network

[1] Future Pricing of Spectrum Used for Terrestrial Broadcasting Statement (June 2007).

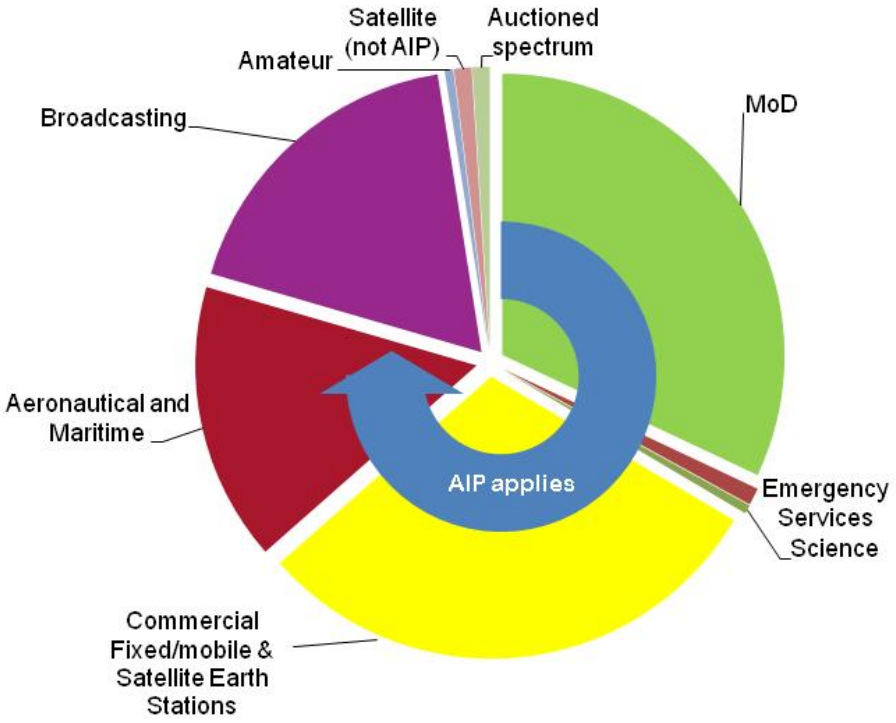
operators would ensure that cost savings are passed on to consumers in the form of lower prices and higher quality services. In addition, the 700MHz band would go some way to meeting the explosive growth in consumer demand for high speed mobile data, driven by the rapid uptake of smart-phones, tablets and other connected devices.

DTT is one of the very few remaining spectrum users not to pay AIP

UK users have to pay for access to scarce spectrum, either through AIP or via auction fees if spectrum has been acquired via auction. For instance, MNOs have recently spent £1.6bn in the 4G UK auction to secure access to the 800MHz spectrum band immediately adjacent to the DTT spectrum. AIP is also paid by government and public agencies, including the police, fire and ambulance services and the Ministry of Defence ("MoD").

By contrast, as shown in Figure 2 terrestrial broadcasters (and their multiplex operators) are amongst the very few remaining users that have not bought their spectrum via auction and do not pay AIP. Absent such purchase costs and, more significantly, payments for access to this valuable resource, it is unlikely that the value of this spectrum is maximised for citizens and consumers.

Figure 2 - AIP payable by different sectors (for 30 – 3300 MHz) [2]



Source: Three

[2] Following Ofcom's convention, the graph has been weighted such that a 1MHz allocation at 100MHz is given equal weighting to a 10MHz allocation at 1GHz

Ofcom has not adequately justified its proposal to delay the application of AIP for terrestrial broadcasting until 2020

Questions 2-5: Do you agree with our revised proposals to delay the introduction of AIP based on opportunity cost for national DTT multiplex operators until we have materially progressed our proposals for the future use of the UHF spectrum? Do you agree with our proposals to apply a fee for spectrum used for national DTT, in the meantime, based on the cost of administration instead? Do you agree that when full AIP is applied it should be applied gradually, rising over five years?

No. Three is surprised that Ofcom proposes to delay further the application of AIP for national terrestrial broadcasting until 2020. Ofcom has decided to do so because, in its view, there is little scope for broadcasters to respond effectively to AIP in light of changes affecting spectrum use in UHF bands IV and V.

In particular, Ofcom has recently set out its strategy for the UHF bands, committing to:

- Support the international process and seek to enable a harmonised release of the 700 MHz band for mobile broadband use; and
- Ensure that the DTT platform can access the 600MHz band, assuming change of use at 700 MHz takes place.

Ofcom reasons that if DTT operators start using the 600MHz band instead of 700MHz, the DTT multi-frequency network would need to be re-planned, involving coordination between many stakeholders and an internationally agreed band plan to avoid interference across borders. This, in Ofcom's view, means that there is far greater scope for multiplex operators to achieve efficiencies in spectrum use through a coordinated approach than by each of them acting individually in response to AIP pricing incentives.

Ofcom illustrates the potential spectrum efficiency gains from individual and coordinated approaches in Figure 4.1 of the Consultation (reproduced below).

Figure 3 – Spectrum efficiency gain options for multiplex operators

Spectrum efficiency approach	Estimated potential multiplex efficiency gain (%)	Potential timing	Can be made at a multiplex level without wider platform considerations	Comments
1. Reduce programme bit rate	Up to 3%	Now	Yes	Any significant reduction in PSB programme bit rates is likely to impact on picture quality and hence the overall attractiveness of the DTT platform. Ofcom's Technical Performance Code requires the PSB channels to provide a minimum quality level.
2. Use latest MPEG 2 compression transmission equipment	Up to 5%	Now	Yes	No impact on PSB picture quality or need for new receivers. Actual level of potential efficiency gains is dependent on type of MPEG 2 coder used by the PSB multiplexes today.
3. Reduce multiplex error correction	12.5% (Reduce coding rate from 2/3 to 3/4)	Now	No	Approximately 1 to 2% of households likely to lose PSB coverage. This would mean that the PSB multiplexes are unable to meet their public policy related licence obligations to provide 98.5% household coverage.
4. SD rather than HD on HD PSB mux	200%	Now	No	An SD only DTT platform could become less attractive to consumers, undermining its future viability as a platform. Likely to result in a slower platform transition to more efficient DVB T2 and MPEG 4 technologies
5. Use MPEG-4 and DVB-T2 rather than MPEG-2 and DVB-T	330%	Post 2020	No	Timing of adoption on PSB multiplexes likely to be set by the need for late adopters to purchase DVB T2/ MPEG 4 receivers to be able to continue to access the core PSB channels, and as such has an associated public policy dimension.
6. Use of HEVC and DVB-T2 on MPEG2/DVB-T muxes	590 to 660%	Post 2020	No	Timing of adoption on PSB multiplexes likely to be set by need for late adopters to purchase DVB T2/ HEVC receivers to be able to continue to access the core PSB channels, and as such has an associated public policy dimension. The HEVC standard has only recently been finalised and there are currently no mass market receivers available.
7. Use SFNs rather than MFNs	600%	Post 2030	No	Would require a radical re-negotiation of European frequency assignments and re-plan of the DTT transmitter network. New consumer aerials required. Unable to support regional or Nations programmes. Requires use of DVB-T2 on all muxes.

Source: Ofcom

In Three's view, Ofcom has not adequately justified its proposal to delay application of AIP in broadcasting until 2020. It is clear that a coordinated approach involving a new band plan and discussions between stakeholders will be required to enable a harmonised release of 700MHz for mobile and reallocation of the DTT platform to the 600MHz band.

However. Ofcom has previously made clear in its UHF strategy consultation documents that broadcasters may **not** require a coordinated move to DVB-T2 and MPEG-4 for DTT to meet Ofcom's objective of delivering near-universal PSB coverage without an increase in the number DTT multiplexes.[3] In particular, multiplex operators may be able to fit all programmes into the 600MHz band without needing to invest in more efficient technology (or for large numbers of consumers needing to replace their set-top boxes and TVs).

In any event, there seems to be no need to forego the short term efficiency gains from AIP that Ofcom has identified (e.g. reducing the programme bit rate or investing in the latest MPEG-2 technology) in order to secure greater longer term gains from a coordinated approach. In other words, longer term efficiencies from a coordinated move to more efficient transmission and compression technologies (such as DVB-T2 and MPEG-4) and short term efficiencies from individual responses to AIP can be simultaneously achieved.

[3] For the most recent pronouncement, see paragraph 4.9 of Ofcom's Future Use of the 700MHz Band, Implementing Ofcom's Strategy (April 2013) at http://stakeholders.ofcom.org.uk/binaries/consultations/700mhz-cfi/summary/UHF_SI_call_for_inputs.pdf,

In particular, the introduction of AIP would provide real incentives for broadcasters to consider their short term decisions more efficiently without delaying a future transition to more efficient DVB-T2 and MPEG-4 technologies. This would potentially release valuable spectrum that may be used for local TV and new applications based on white-space technology in the near future. Three firmly believes that this approach would deliver greater benefits to citizens and consumers than the approach proposed by Ofcom. It would also send a clear and unambiguous message that all UK users pay for access to scarce spectrum.

******

Hutchison 3G UK Limited
23 May 2013