Should AIP be applied to broadcasting spectrum?

Report for the BBC and Channel 4

Final report

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0 Executive summary

On 13 March 2013, Ofcom published a consultation on the application of Administered Incentive Pricing (AIP) to spectrum used by digital terrestrial television (DTT). It made two key proposals that represented a change from its previous stated position, namely that:

- It would not be appropriate to introduce AIP for broadcasting spectrum from the end 2014 due to a *"unique combination of circumstances"*. These circumstances centre on the potential migration of DTT from the 700MHz to the 600MHz band, requiring a managed process to deliver significant efficiency benefits. Ofcom stated that it is unclear that any additional efficiencies could be realised by applying AIP in the short to medium term.

- Broadcasters will be better able to respond to pricing signals in the longer term once Ofcom has made material progress on its UHF strategy, and specifically the proposed clearance of DTT from the 700MHz band. Therefore, Ofcom expects that it will introduce AIP, based on the full opportunity cost, by 2020.

We agree very much with Ofcom's analysis of the constraints faced by broadcasters in responding to spectrum charges and in particular with Ofcom's conclusion that applying AIP **in 2014** is unlikely to have the desired effect of achieving greater spectrum efficiency and cannot be justified. However, we do not agree that AIP should be applied **after 2020** as the factors that prevent DTT from realising spectrum efficiencies now will very likely still be present then. Furthermore, we believe that applying AIP to DTT spectrum post 2020 will continue to conflict with Ofcom's statutory duties and the Government's policy objectives for public service broadcasting (PSB). The reasons are threefold:

- AIP is unlikely to have the desired effect of achieving greater spectrum efficiency for DTT after 2020 as broadcasters will still be prevented from releasing spectrum for alternative uses without regulatory intervention.

- The existence of a well-functioning market for DTT capacity already provides sufficient incentives to promote efficiency in "own-use", i.e. within DTT use. There is little evidence that AIP would provide further incentives.

- There is a serious risk that AIP would take resources from the delivery of PSB content.

This report considers whether Ofcom should apply AIP to spectrum used for DTT broadcasting, assessing whether spectrum efficiencies can be realised through its application both in the shorter term and in the longer term – i.e. post 2020. We conclude that the application of AIP to DTT spectrum in general – and spectrum used by PSBs in particular – either in 2014 or from 2020 onwards, would be neither proportionate nor justified.

0.1 Broadcasters' ability to release spectrum for other uses is limited both now and post 2020

We disagree that the existing circumstances which have led to the deferment of applying AIP to DTT are *"unique"* or time-specific. The three factors identified by Ofcom that prevent broadcasters from releasing spectrum are highly likely to remain in place after 2020, regardless of whether DTT migrates from the 700 MHz band or not:

- DTT will likely remain the only free-to-view platform capable of providing low cost, near universal access to PSB content.
- The release of an increment of spectrum of value to alternative uses will still require international coordination.
- The realisation of the efficiency benefits from new technologies will still require a managed process to upgrade legacy receivers.

PSBs have an obligation to provide content to circa 98.5% of the population and this has a direct impact on their spectrum requirement. Moreover, in its UHF Strategy Statement in November 2012, Ofcom stated that it expected the DTT platform to remain the **only** viable means of providing near-universal access to PSB content over the following decade. Hence, the DTT platform is likely to require a similar number of multiplexes, coverage and spectrum as today.

The need for international coordination to release broadcasting spectrum in a quantity and format that is potentially of value to other uses means that broadcasters have no direct control over the process of releasing suitable spectrum. Multi-frequency networks (MFNs) allow for only unilateral releases of spectrum in individual 8MHz increments and on individual transmitters. Such increments of spectrum are of very limited value to alternative uses, including for mobile services (which typically require nationwide, contiguous spectrum). Beyond 2020, these constraints will remain unchanged. Broadcasting spectrum will still be coordinated at an international level. Therefore, any release of broadcasting spectrum in increments that are of value to alternative uses would require intervention to manage the inevitable international replan of DTT assignments.

Finally, broadcasters are prevented from exploiting more efficient technologies without significant intervention from Government and Ofcom. This is because legacy transmissions can only be ceased once all (or nearly all) viewers' receivers are upgraded. Unlike Pay-TV broadcasters, the PSBs (by obligation) and most commercial broadcasters do not have a retail relationship with viewers. Therefore, they are unable to control consumers' receiver upgrade decisions. Beyond 2020 this constraint is highly unlikely to change as there will always be an issue of legacy receivers that are not compatible with newer technologies.

0.2 The DTT capacity market provides sufficient incentives for efficiency in own-use

There is already a well-functioning market for DTT capacity. This provides strong incentives for broadcasters and multiplex operators to use existing spectrum holdings more efficiently, thereby increasing their own capacity and enabling the trading of that capacity to higher value users. It is far from clear that AIP would add to incentives for efficiency in own-use of broadcasting spectrum.

The DTT multiplex capacity market provides incentives for greater efficiency in own-use by encouraging broadcasters and multiplex operators to:

- examine their own spectrum needs and release multiplex capacity to those who value it more, and
- deploy more spectrally efficient technologies (to the extent that they can unilaterally) in order to generate value from releasing more capacity.

There has been a significant level of activity in the DTT capacity market since Ofcom last looked at its effectiveness in 2007. Multiplex operators have improved the efficiency of the DVB-T platform - including

improved coding, compression and modulation techniques to create additional capacity. This has been released to the market or used for the operators' own needs. There have also been numerous trades of multiplex slots.

This makes a compelling case for an active and well-functioning DTT capacity market, indeed more so than in most spectrum markets.

0.3 Applying AIP risks damaging the delivery of public service obligations

Both now and from 2020, there is a serious risk that applying AIP to broadcasting spectrum would lead to significantly reduced spending on PSB content. This would run counter to Ofcom's statutory obligation to review ways to *"maintain and strengthen the quality of public service broadcasting"* and the Government's stated ambition to maintain or even increase the level of PSB provision.

Since broadcasters are prevented from avoiding AIP by releasing spectrum, costs will have to be borne through either increased revenues or reductions in the broadcasters' costs.

It is unlikely that PSBs would be able to increase revenues to fund AIP. For the BBC, the Government did not earmark additional funds to cover AIP in the last licence fee settlement despite the likelihood at the time that AIP would be introduced during the settlement period. Commercially funded PSBs do not receive Government funding and are unlikely to be able to increase advertising and DTT multiplex capacity revenue because they operate in a competitive market which limits their ability to raise charges.

The PSBs have achieved major cost savings through efficiency programmes in recent years. However, the evidence suggests that the scope for PSBs to realise further savings without significantly impacting content budgets is limited. When faced with funding cuts and falls in advertising revenue in recent years, PSBs were unable to limit their reaction to savings in non-content costs but were required to make reductions in UK original content budgets. The impact of AIP on UK original content spending would be significant – e.g. based on Ofcom's indicative estimates, BBC AIP charges could amount to GBP80 million, similar to the budget for the BBC's children's TV service CBBC.

Moreover, the impact on the wider economy and creative industries is also important. Reduced investment in UK original content could have a knock-on effect since it effectively reduces income for companies in the PSB supply chain and some of this income would have been spent more widely in the economy (economists term this a multiplier effect). Estimates for the multiplier effect of broadcast spend are within the range of 1.6 – 2, meaning that every pound spent on content generates GBP1.60 – GBP2.00 of economic value. We suggest that any impact assessment conducted by Ofcom regarding AIP for broadcasting spectrum should consider this effect on the wider economy.

1 Introduction

In its Statement on the 'Future Pricing of Terrestrial Broadcasting Spectrum' in June 2007 [1], Ofcom decided to introduce Administered Incentive pricing (AIP) to broadcasting spectrum. It defined a target date for the introduction of AIP towards the end of 2014, at the time of the expiry of the second set of digital multiplex licences. However, in its recent Consultation on 'Spectrum Pricing for Terrestrial Broadcasting' (March 2013) [2], Ofcom stated that it has decided not to introduce AIP in this time frame. Instead, Ofcom intends for AIP to be introduced by 2020, once progress has been made regarding the future use of the UHF spectrum and notably regarding a potential possible relocation of DTT use from the 700MHz band to the 600MHz band.

Aetha Consulting and Ade Ajibulu Consulting have been commissioned by the BBC and Channel 4 to carry out an independent review of the case for applying AIP to broadcasting spectrum. We have assessed whether AIP on broadcasting spectrum is likely to have the desired effect of incentivising more efficient spectrum use both now and post-2020, what unintended consequences (regulatory failures) it may cause, and the extent to which it could negatively impact on PSB and UK content investment.

This report summarises the findings of our study and discusses why we consider that an application of AIP to broadcasting spectrum is unwarranted, whether its introduction be now or post-2020.

Please note that for simplicity we use throughout this report the term 'broadcasters' to refer to users of broadcasting spectrum, which includes both broadcasters and multiplex operators.

The remainder of this report is structured as follows:

- Section 2 summarises the policy framework surrounding an introduction of AIP to broadcasting spectrum and analyses Ofcom's published strategy for the future of the DTT platform.
- Section 3 discusses why broadcasters are unable to respond to AIP and unilaterally release spectrum or change spectrum use, and evaluates evidence of capacity trading on the DTT platform and its role in incentivising broadcasters to use spectrum efficiently.
- Section 4 explains why AIP is unlikely to work beyond 2020, when Ofcom intends to introduce AIP.
- Section 5 outlines some questions regarding Ofcom's calculations of the opportunity cost within broadcasting spectrum.
- Section 6 outlines why AIP would lead to a reduction in funding for PSBs and highlights a number of unintended consequences that could result from the introduction of AIP.
- Section 7 concludes this report and summarises our key findings.

2 The policy framework surrounding AIP

A number of Ofcom's statutory duties under the Communications Act (2003) are relevant to the question of whether to apply AIP to broadcasting spectrum. Ofcom's principal duty to further the interests of citizens and consumers is broken down into a number of other duties, the most relevant of which are:

- to secure the optimal use of the radio spectrum,
- to secure the availability throughout the UK of a wide range of TV and radio services which (taken as a whole) are both of high quality and calculated to appeal to a variety of tastes and interests, and
- to have regard to the desirability of promoting competition.

These underpin both Ofcom's duties with regard to public service broadcasting and Ofcom's general principles for the application of AIP. Together with the obligations on the public service broadcasters (PSBs), these form the policy framework for assessing whether to apply AIP to broadcasting spectrum. Therefore, in order to make the discussion as clear as possible, we summarise the relevant areas of this policy framework below, setting out:

- the principles governing when and how AIP should be applied as set out in Ofcom's Strategic Review of Spectrum Pricing (2010) and the Government's Cave Review (2002),
- Ofcom's key arguments and proposals from its recent Consultation on Spectrum Pricing for Terrestrial Broadcasting (March 2013),
- Ofcom's proposals on the future of the Digital Terrestrial Television (DTT) platform as set out in its UHF Strategy Statement (2012), and
- Ofcom's duties relating to public service broadcasting and the obligations on the broadcasters.

2.1 Principles for applying AIP

Spectrum pricing is one tool at Ofcom's disposal for promoting optimal spectrum use. Ofcom is able, under the Wireless Telegraphy Act [4], to charge spectrum fees above cost to promote "*the efficient management and use of the spectrum*" among other reasons.

Ofcom set out its current view of the general principles for applying AIP in its Strategic Review of Spectrum Pricing in 2010 [5]. In this section we summarise the principles relevant to the question of applying AIP to broadcasting spectrum. We also set out four key guidelines from Professor Martin Cave's 'Review of Radio Spectrum Management' (Cave Review) (2002) [6] as they provide additional clarity on how spectrum pricing should work in practice and the benefits it can bring.

2.1.1 The SRSP and Ofcom's current view on the principles for applying AIP

Ofcom set out its revised framework for spectrum pricing in its Strategic Review of Spectrum Pricing in 2010. It codified a set of principles for the application of AIP to spectrum, while acknowledging that there could be specific reasons to diverge from them in certain circumstances.

Principle 2 is the key principle, as it sets out when AIP should be applied – i.e. when spectrum is expected to have excess demand from existing and/or *feasible* alternative uses[1]. The relevant timeframe, any national

[1] We note that in its 2009 Consultation on applying AIP to aeronautical spectrum, Ofcom phrased this somewhat differently. It states that AIP should be applied if either (or both) of the following criteria is met; demand exceeds supply among current spectrum users or spectrum can be freed up for other uses in the short/medium term.

or international regulatory constraints, and equipment standards, availability and cost should be taken into account in the decision to apply AIP.

The other principles that are relevant to our discussion of the case for applying AIP to broadcasting spectrum are as follows:

- Principle 1 states that the role of AIP is to provide long term signals of the opportunity cost of spectrum in the commercial and public sectors.
- Principle 4 states the view that many spectrum markets are not sufficiently effective to promote efficient use of spectrum (e.g. limited liquidity and price information) hence there is a complementary role for AIP in such markets.
- Principle 5 states that discounts on AIP should not be used to secure wider social value and direct subsidies or other regulatory tools are likely to be more effective.
- Principle 8 states that where a feasible alternative use does not currently exist or is not capable of using the frequency band in question, Ofcom would need to assess the implications very carefully, in consultation with stakeholders.

2.1.2 The Cave Review

The remit of the Cave Review was to advise on radio spectrum management and how all users could be subject to incentives to use spectrum efficiently. The Cave Review recommended that AIP should be applied to broadcasting spectrum, as part of a wider extension of the application of AIP. The rationale for applying AIP was to provide pressure to promote efficient spectrum use in the absence of fully-fledged markets. In particular, the Cave Review suggested spectrum pricing should encourage users to:

- examine spectrum needs, and release unused spectrum,
- use spectrum to provide alternative services,
- use less congested parts of the spectrum, and
- implement more spectrally efficient technologies.

However, in the long term, once spectrum trading had developed sufficiently in a particular market, the Cave Review envisaged that spectrum pricing would cease to be necessary.

2.2 Ofcom's DTT platform strategy and its implications for AIP

In November 2012, Ofcom published its UHF Strategy Statement [7], outlining its long term strategy for UHF bands IV and V (470-862MHz), large parts of which are currently used by terrestrial broadcasting. The document primarily focussed on the future of:

- The 600MHz band (550-606MHz) - which previously was used for analogue broadcasting, but was cleared as part of the digital switchover.
- The 700MHz band (694-790MHz) – which is currently used for DTT, but Ofcom is considering the merits of clearing it in order to make it available for mobile services.

One of Ofcom's key conclusions was that, if the UK were to mandate clearance of DTT from the 700MHz band, the 600MHz band should be assigned to DTT, so that the DTT platform could continue to deliver the same level of consumer and social benefits as today. The rationale for Ofcom's argument is set out below.

The DTT platform is uniquely placed to deliver Ofcom's objectives for PSB

The DTT platform fulfils an important public policy role, as it *"represents the default platform for providing UK viewers with low-cost, near universal access to PSB services"*[2]. It is uniquely placed to perform this role as, according to Ofcom, "*it is unlikely that alternative TV delivery platforms could replicate the DTT platform's role in providing low cost near-universal access to PSB content over the timeframe we are considering for the release of the 700 MHz band*"[3] (i.e. by circa 2018).

This is because a small but significant number of households would not be able to switch to satellite TV platforms due to the need for a line-of-sight to the satellite, and Ofcom expects that neither cable TV coverage (currently 50% of households) nor IPTV coverage (over superfast broadband) will be able to match DTT coverage over the next decade. Indeed, Ofcom suggests that IPTV might only be a viable substitute for the DTT platform post 2030.

To remain competitive in the long term DTT is likely to continue to need similar capacity to today

Consumer research conducted by Ofcom identified that the most important characteristic valued by DTT viewers was access to a sufficiently large number of free-to-view TV channels. This suggests that *"maintaining a similar number of free-to-air channels as are available today is likely to be important in ensuring [the DTT platform's] on-going sustainability and attractiveness to viewers and hence its wider roles in providing low cost near-universal access to PSB channels, and in sustaining consumer choice of TV content, platforms and consumer equipment"*[4].

Ofcom's view was that two competing effects in the supply and demand for DTT capacity will cancel each other out so that – to provide a similar number of channels as today – *"the DTT platform is likely to require a number of multiplexes and levels of coverage similar to today"*[5]:

- Improved technologies, including DVB-T2 and MPEG-4, could enable more TV channels to be delivered using the same amount of spectrum.
- *"Spectral efficiency gains achieved by the use of more efficient technologies might be offset in the future by changing viewers' preferences for high capacity broadcast TV formats"*[6].

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2 Ofcom 2012, UHF Strategy Statement, paragraph 4.9, page 39

3 Ofcom 2012, UHF Strategy Statement, paragraph 4.20, page 42

4 Ofcom 2012, UHF Strategy Statement, paragraph 4.21, page 42

5 Ofcom 2012, UHF Strategy Statement, paragraph 4.22, page 43

6 Ofcom 2012, UHF Strategy Statement, paragraph 4.21, page 43

DTT would need additional spectrum to remain competitive in the long term if 700MHz were cleared

Given the importance of DTT to its PSB objectives, on balance Ofcom considered it appropriate that *"the DTT platform should retain access to an **amount of spectrum** that enables the ongoing delivery of the important benefits it provides to citizens and consumers should a change of use at 700 MHz take place"*[7].

Thus Ofcom implicitly specified a minimum amount of spectrum that is required for the DTT platform for the next decade, and this minimum is broadly similar to the amount of spectrum used by the platform today[8]. Ofcom concluded that if DTT use was to be cleared from the 700MHz band, the 600MHz band should be assigned to DTT so that the platform would be sustainable and would continue to deliver PSB benefits.

2.3 Ofcom's Consultation on Spectrum Pricing for Terrestrial Broadcasting

Ofcom's 2007 Statement on the Future Pricing of Terrestrial Broadcasting Spectrum stated the intention to apply AIP to terrestrial broadcasting spectrum from 2014. However, Ofcom's 2013 Consultation on Spectrum Pricing for Terrestrial Broadcasting makes a significant change to this position. It concludes that it would not be appropriate to introduce AIP charges for DTT broadcasting from the end 2014, because of a *"unique combination of circumstances"* that limits broadcasters' ability to respond to pricing signals in the short to medium term.

Firstly, Ofcom recognises that, in general, *"broadcast multiplex operators have less room for manoeuvre than other users of spectrum"* and puts forward three factors which it claims do not absolutely make it impossible to release spectrum, but collectively make it more challenging[9]:

- Broadcasters *"are subject to regulatory obligations imposed through licence conditions"*, e.g. public service broadcasting obligations, including population coverage obligations.
- Broadcasters are unable to cease legacy transmissions due to the *"risk that an uncoordinated transition to more efficient transmission technologies would leave significant numbers of consumers with obsolete receiver equipment"* and would *"reduce the reach of public service content"*.
- Broadcasters are unable to unilaterally release spectrum since *"broadcasters' use of particular spectrum frequencies in the UK is dependent on internationally agreed co-ordination because of the need to avoid cross-border interference"*.

Secondly, Ofcom considers that the current uncertainty over the future of UHF spectrum, given the possible international harmonisation of the 700MHz band for mobile broadband, also affects the case for applying AIP in the short to medium term. In particular, Ofcom considers that comprehensive frequency replanning might be needed to achieve its twin objectives of supporting the international harmonisation

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7 Ofcom 2012, UHF Strategy Statement, paragraph 6.39, page 58

8 Although the 600MHz band is smaller than the 700MHz band, Ofcom's assumption relies both on the coordination of a move to more spectrally efficient DVB-T2/MPEG-4 technology and on it being possible, as a result, to provide the same services as today over the reduced amount of spectrum.

9 Ofcom 2013, Consultation on Spectrum pricing for terrestrial broadcasting, paragraph 4.18

process for 700MHz while ensuring that broadcasters had sufficient spectrum to maintain the level of consumer and public value that the DTT platform brings. As a result, Ofcom concludes that a managed process might well be required to facilitate any transition and that AIP would be unlikely to deliver additional efficiency benefits.

However, Ofcom considers that broadcasters will be better able to respond to pricing signals in the longer term, once Ofcom has made material progress on its UHF strategy. Ofcom believes that it would be appropriate to apply AIP at full opportunity cost at this point and expects this would occur by 2020.

Finally, Ofcom reiterates the commitment it made in the 2007 Statement to consider carefully the impact of imposing AIP on PSB content and to consider options to mitigate any negative effects, which could include not introducing charges, or levying AIP at a reduced rate.

2.4 Ofcom's duties and public service broadcasters' obligations

Ofcom's key statutory duties with regard to public service broadcasting under the Communications Act 2003 are to secure:

- the availability throughout the United Kingdom of a wide range of television and radio services of high quality and calculated to appeal to a variety of tastes and interests, and
- the maintenance of a sufficient plurality of providers of different television and radio services.

Under the Communications 2003, Ofcom is also required to review public service broadcasting regularly and report with a view to *"maintaining and strengthening the quality of public service broadcasting"* in the future as well as reviewing the extent to which the PSBs have delivered the purposes of public broadcasting.

The duties of the PSBs under the Communications Act 2003 are to deliver programmes and services which cover a wide range of subject matter and which meet the needs and interests of many different audiences. There is a wide range of services and outcomes which they are expected to deliver as part of this including:

- to educate, to inform, to entertain, to meet high standards,
- to reflect and support arts and culture in the UK,
- to provide a comprehensive and authoritative news coverage,
- to reflect the lives and concerns of different communities in the UK, and
- to include an appropriate proportion of content made outside the M25 area.

Other requirements that apply to all PSBs are that services should be provided on a free-to-view basis[10] and that the coverage of digital televisions services should be broadly the same as that previously of analogue terrestrial television, which is generally taken to be 98.5% of the population.

For example, the Digital Replacement Licences (DRLs) require the PSBs to match the previous analogue terrestrial coverage. These obligations are reflected in the frequency assignments detailed in the multiplex licences for the three PSB multiplexes, which the licensees are required to use[11]. In addition, the BBC's Agreement [8] states that "*the BBC must secure the objective that substantially the same proportion of*

[10] As specified in the Communications Act 2003

[11] As detailed on Page 2 of Ofcom's Code of Practice on Changes to Existing Transmission and Reception Arrangements (May 2007).

households in the UK as can, at the date of this Agreement, receive the analogue television services in analogue form by means of terrestrial broadcasting […], can receive all the BBC's principal television services in digital form by that means".

The BBC's public service remit and obligations are set out in its Charter & Agreement [9]. In particular, the Public Purposes of the BBC require it to:

- sustain citizenship and civil society,
- promote education and learning,
- stimulate creativity and cultural excellence,
- represent the UK, its nations regions and communities,
- bring the UK to the world and the world to the UK, and
- in promoting its other purposes, to help deliver the benefit of emerging communications technologies and services.

The public service remit of Channel 4 is set out in statute in the Communications Act 2003 and the Digital Economy 2010, with specific obligations set out in its licence[12]. Channel 4's remit requires it to, among other things, provide a broad range of high quality and diverse programming which, in particular:

- demonstrates innovation, experiment and creativity in the form and content of programmes,
- appeals to the tastes and interests of a culturally diverse society,
- makes a significant contribution to meeting the need for the licensed public service channels to include programmes of an educational nature and other programmes of educative value, and
- exhibits a distinctive character.

Finally, Channel 3 services also have an additional requirement for regionality, i.e. to provide a range of high quality regional and/or local programmes, including news, specific to an area of a suitable level and during peak times as well as other periods.

[12] An overview of the latest version of Channel 4's licence as granted by Ofcom and all relevant variations to the licence is available at: http://licensing.ofcom.org.uk/tv-broadcast-licences/current-licensees/channel-4/

3 AIP will not improve the efficiency of broadcasting spectrum use

As discussed in Section 2.1, Ofcom's rationale for applying AIP to spectrum is to improve the efficiency of how that spectrum is used. In this section we explain why the application of AIP to broadcasting spectrum is highly unlikely to achieve this goal. This is for two reasons:

- Broadcasters, and particularly PSBs, are unable, without significant governmental or regulatory intervention, to release spectrum for other uses. Therefore, the application of AIP is unlikely to result in a reallocation of spectrum between broadcasting and alternative uses.
- The DTT capacity market provides sufficient incentives for the 'own-use', i.e. existing or prospective DTT broadcasters, to utilise the spectrum efficiently.

3.1 Broadcasters' inability to release spectrum prevents efficiency gains between uses

As discussed in Section 2.3, Ofcom stated in its recent Consultation on Spectrum Pricing for Terrestrial Broadcasting that broadcasters, and in particular PSBs, are limited in their ability to deliver efficiency improvements. Ofcom states three reasons for this:

- *"First, they are subject to regulatory obligations imposed through licence conditions".*
- *"Second, there is a risk that an uncoordinated transition to more efficient transmission technologies would leave significant numbers of consumers with obsolete receiver equipment".*
- *"Third, broadcasters' use of particular spectrum frequencies in the UK is dependent on internationally agreed co-ordination".*

According to Ofcom, these three factors hinder broadcasters from releasing spectrum so that it potentially could be used by another use. Ofcom also states that these factors *"do not absolutely prevent broadcasters from seeking to deliver efficiency improvements, but they collectively make it more challenging".*

In this section we discuss these three factors in detail. We explain why they are more than merely challenging, but in fact without significant regulatory intervention prevent broadcasters from releasing spectrum in increments that are of value for alternative uses. We also explain that in all likelihood these factors will persist after 2020, or indeed after a possible transition from the 700MHz band.

3.1.1 The constraints from public service obligations

In Section 2.3 we identified that the PSBs have an obligation to provide content to circa 98.5% of the population, and in Section 2.2, we explained Ofcom's beliefs that:

- For the next decade, the only means by which PSBs can meet this obligation is through the use of the DTT platform.
- Maintaining a similar number of channels as today will be important in ensuring the sustainability of the DTT platform and its role in providing near-universal access to PSB content.

- To provide a similar number of channels, the DTT platform is likely to require a number of multiplexes and levels of coverage similar to today.

It follows that in order to meet their coverage obligations for the next decade, PSBs are prevented from either using the spectrum to provide an alternative service or releasing spectrum, which would lead to a reduction in coverage.

Even after the next decade it is far from clear PSBs could use other platforms to meet their obligations:

- The Satellite platform will not be able to provide similar levels of coverage, given the line-of-sight nature of its transmissions and restrictions on satellite receiver equipment in certain locations.
- Cable coverage is currently very low compared to DTT (about 50% of UK households) and is very unlikely to be expanded to DTT levels.
- IPTV is suggested by Ofcom in its UHF Statement as the most likely alternative platform, though Ofcom states that, even if increasing broadband speeds were to enable IPTV to become a viable substitute, an eventual DTT switch-off would only take place post-2030.

Therefore, Ofcom concluded that it is likely that PSBs will rely on the DTT platform post-2020 to deliver their obligations. We agree with this position.

3.1.2 The process of releasing broadcasting spectrum

This section explains that the release of spectrum in a format that is of value to alternative uses would inevitably require a major replan of broadcasting spectrum, and that such a replan would require the cooperation of regulators in neighbouring countries. Such a process is clearly out of the direct control of broadcasters and therefore prevents them from unilaterally releasing spectrum to alternative uses.

DTT multiplexes in the UK use a multi-frequency network topology. This means that the frequency channels used by each multiplex vary by transmitter station across the country. The set of frequency channels available for each transmitter (i.e. within a specific region) is defined on a European level and is only renegotiated in case of significant changes to the use of the relevant frequency range. For example, such a renegotiation was carried out as part of the Regional Radio Conference 2006 – which resulted in the Geneva 2006 agreement (GE-06). Further negotiations were required between national regulators to allow for a release of the 800MHz band to mobile services.

If a broadcaster were to release some of the spectrum it currently uses, possibly in response to AIP, it would have to cease transmissions over one (or more) of its frequency channels on one (or more) of its main transmitters. Therefore, any spectrum released would be in small regional ‘pockets’ of 8MHz. The broadcaster would not be able to reorganise its frequency holdings given the international negotiation process described above.

Such regional pockets of spectrum are of very limited value to alternative uses. Notably, mobile networks using the latest (4G/LTE) technologies in practice require at least 20MHz (or 2×10MHz in the instance of FDD technologies) of contiguous, (near) nationwide spectrum. Including the need for guard bands between uses, this would require broadcasters to free up at least 3 8MHz frequency channels nationwide.

Invariably a negotiation process on an international level would be required to convert any released 'spectrum pockets' from broadcasters into more valuable blocks of contiguous (possibly nationwide) spectrum.

Such negotiations are carried out between the relevant national regulatory bodies in Europe. Given the number of stakeholders involved, the negotiations are a highly complex task, relying on cooperation between the different international bodies and thus require time to reach a final agreement.

Whilst broadcasters may therefore be able to input into Ofcom's position in the negotiation process, the outcome of the process is clearly out of their direct control. Critically, this means that broadcasters cannot release spectrum increments such that they are of direct use to alternative uses. This lack of control from the side of broadcasters creates a stark conflict between:

- **The intended impact of AIP:** Namely, that the released spectrum can be used more efficiently within a reasonable timeframe by alternative use.
- **The actual impact of AIP:** Namely, that broadcasters are forced to release small regional pockets of non-contiguous spectrum which are of little value to other uses.

This is recognised by Ofcom in its recent Consultation, where it states that *"broadcasters' use of particular spectrum frequencies in the UK is dependent on internationally agreed co-ordination because of the need to avoid cross-border interference"*.

It also recognises that a transition of DTT use from the 700MHz band to the 600MHz band, which in essence would be a release of broadcasting spectrum in a contiguous unit compatible with mobile operators' requirements, would require a comprehensive replanning of the DTT network. Finally, it acknowledges that this would require international coordination and a replanning of all UK multiplexes.

Beyond 2020, or indeed after a potential transition to the 600MHz band, these constraints remain unchanged. Broadcasting spectrum will still be coordinated at an international level. Therefore, any release of broadcasting spectrum in increments that are of value to alternative uses would require intervention to manage the inevitable national and international replan of DTT assignments.

Finally, Single Frequency Networks (SFNs) are sometimes mooted as an alternative to Multiple Frequency Networks (MFNs) in order for DTT networks to use less spectrum. SFNs use the same frequency channel on all transmitters, and so could be used to provide nationwide coverage using just one frequency channel per multiplex. However, as identified by Ofcom in its recent consultation, the implementation of SFNs has many obstacles (e.g. the radical replan of European frequency assignments, inability to support regional programming) and is unlikely to occur until after 2030.

3.1.3 Broadcasters' ability to cease legacy transmissions

One desirable outcome from the application of AIP identified by the Cave Review is the implementation of more spectrally efficient technologies.

DTT's technological advancements can broadly be categorised into two:

- 'Within generation' advancements – i.e. within the scope of the existing generation of technologies e.g. DVB-T and MPEG-2. These are typically small advances in terms of increases in spectrum efficiency. Critically, they typically **do not** require viewers to update the televisions or set-top boxes.

- 'New generation' advancements – large step changes in technologies, such as DVB-T2 over DVB-T, and MPEG-4 over MPEG-2. These advances typically enable large improvements in spectrum efficiency (i.e. 25% or more). However, they typically require viewers to update the televisions or set-top boxes.

Broadcasters have been active in the introduction of 'within generation' technology improvements, and this is described further in Section 3.2.2. However, the efficiency gains from these technologies are limited. There have also been a number of 'new generation' technological advancements in the delivery of DTT services. These have included:

- more advanced transmission technologies – for example DVB-T2, and
- more advanced compression technologies – MPEG-4 is more efficient than MPEG-2, and even more advanced standards, such as HEVC, are under development.

Although broadcasters have been proactive in the use of such 'new generation' technologies in order to deploy new services (i.e. HD), they are unable to take advantage of the substantial spectral efficiency gains associated with the technologies. This is because they are limited in their ability to cease legacy transmissions and thus need to simulcast programming in both new and old technologies.

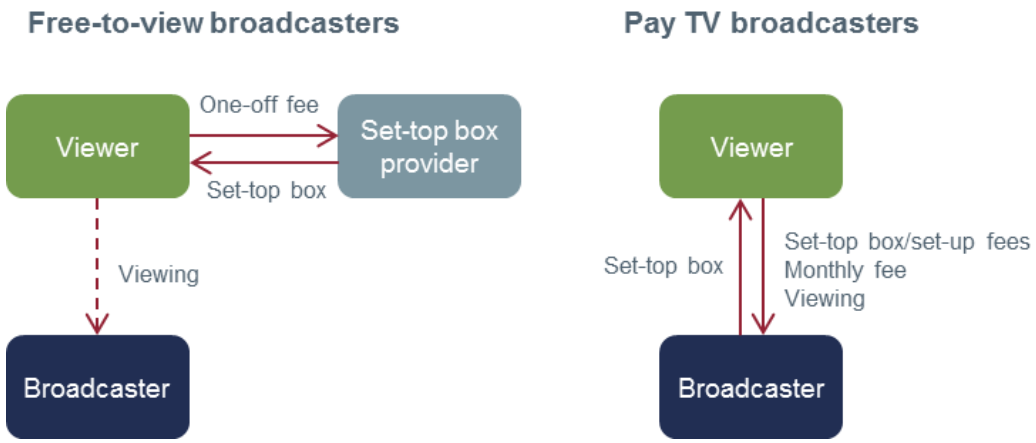
This is because the majority of viewers' receivers are only compatible with the older technologies. Hence, until **all** (or nearly all) viewers upgrade to receivers compatible with the new technologies, broadcasters, and particularly PSBs given their obligations, are required to transmit in legacy technologies, i.e. they need to 'simulcast' programming in both the old and new technologies. For PSBs, this requirement is sizable, as they need to transmit sufficient content using the legacy technologies to meet their PSB obligations.

Free-to-view broadcasters and multiplex operators do not have retail relationships with viewers, and as such, do not have control over which receivers viewers purchase. In particular, they are unable to subsidise receivers compatible with more advanced technologies.

This issue is further complicated by the fact that many DTT receivers are now integrated into TV sets. Even if broadcasters were able to subsidise TV sets with advanced DTT receivers, the proportion of the total TV set cost that is made up by the receiver is small. Therefore, such subsidies are unlikely to have a significant impact on the choice of TV set made by viewers.

In contrast to free-to-view broadcasters (including PSBs), pay TV broadcasters typically control the distribution of receivers to their customers. This is illustrated below in Figure 3-1.

Figure 3-1: Retail relationships of broadcasters and their viewers



This provides pay TV broadcasters with control over the receiver technologies used by their customer bases. For example, Sky now only distributes HD ready set-top boxes, even for customers that purchase an SD only package. The retail relationship between these TV broadcasters and their customers provides a model by which they can subsidise advanced set-top boxes – i.e. they can recoup any subsidy costs in the monthly subscription fees. This is not unlike the subsidy model used by mobile network operators (MNOs). However, even with this model available, MNOs are yet to cease GSM transmissions. The use of this legacy technology alongside newer, more advanced technologies (e.g. UMTS, LTE), is analogous to the simulcasting of DVB-T/MPEG-2 alongside DVB-T2/MPEG-4 DTT services, or in the future the simulcasting of DVB-T2/MPEG-4 alongside newly developed services, for example HEVC.

In summary, given that the spectral efficiency benefits of advanced technologies only accrue when legacy transmissions are ceased and that this can only occur when almost all receivers are upgraded, broadcasters are very limited in their ability to increase the efficiency at which they use broadcasting spectrum. Moreover, given that the introduction of new technologies leads to an interim increase in spectrum requirements, broadcasters are limited in the speed in which they can introduce new technologies. The relatively long upgrade cycles of DTT receivers means that this temporary requirement to simulcast is likely to be long lasting. In its UHF Strategy Statement, Ofcom quotes industry forecasts stating that only 80% of primary TV sets and 69% of secondary sets will be DVB-T2/MPEG-4 compatible in 2018. This lengthy transition to a new technology has also been observed with the digital switchover, and future transitions will be similarly constrained.

Beyond 2020, or indeed after a transition from the 700MHz to the 600MHz band, this constraint is highly unlikely to change. According to Ofcom proposals, the 700MHz to 600MHz band transition may involve a migration of the five DVB-T/MPEG-2 multiplexes to DVB-T2/MPEG-4. However, the recently upgraded DTT receiver base will not be compatible with ‘new generation’ technologies that are developed from that point onwards. Indeed, the nature of DTT receiver upgrade cycles means that there will always be an issue of legacy receivers that are not compatible with the latest technologies. Therefore, post-2020 broadcasters, and particularly PSBs, will still be constrained in their abilities to take advantage of new, more efficient ‘new generation’ technologies.

3.2 The DTT capacity market provides sufficient incentives for efficiency in own-use

In the previous section, we explained why we consider that applying AIP to broadcasting spectrum is unlikely to increase the efficient use of UHF spectrum in terms of its allocation between the current use (broadcasting) and alternative uses.

In this section we explain why we consider that AIP to broadcasting spectrum is also unlikely to increase efficiency in “own-use”, i.e. in terms of its current use DTT broadcasting and the allocation of spectrum between existing or prospective broadcasters. In our view, the existence of a well-established market for DTT multiplex capacity already provides sufficient incentives to promote efficiency in own-use. It does this by providing incentives for broadcasters and multiplex operators to:

- examine their own spectrum needs and release (possibly unused) multiplex capacity to those who value it more, and

- deploy more spectrally efficient 'within generation' technologies[13], in order to generate value from releasing more capacity – either for their own needs or by selling to another broadcaster if it values the new capacity more.

These incentives are very similar to the expected outcomes of spectrum pricing (pertaining to efficiency in own-use) that were set out in the Cave Review.

In the rest of this section we present evidence of how the DTT capacity trading market is functioning and of the extent to which broadcasters have been able to make 'within generation' efficiency improvements. This supports our contention that the DTT capacity market is effective. Therefore, it would not be appropriate to apply AIP with regard to own-use of the spectrum since DTT capacity trading is sufficient to secure efficient use of the spectrum in its own right.

3.2.1 Evidence of a well-functioning market through DTT capacity trading

In 2006, in response to Ofcom's Consultation on the Pricing of Terrestrial Broadcasting Spectrum[14], the BBC summarised the extent to which additional multiplex capacity had been created by deploying more efficient technology, as a result of the incentives that DTT capacity trading provided:

"Since the launch of Freeview[October 2002], efficiency gains have resulted in more services being transmitted on the platform, which has currently 35 channels and 24 radio stations, up from 24 television channels and 11 radio stations at the time of launch."

Some examples of the DTT capacity trades during this period that illustrate that broadcasters were being exposed to the opportunity cost of the spectrum, within broadcasting use, are:

- In 2005, new capacity streams were created on the then Crown Castle run commercial multiplex – ITV bought one stream and Channel 4 bought two streams.
- In 2006, Channel 5 engineered a restructuring of Top Up TV into a video-on-demand service enabling it to create two new capacity streams for its own new channels (Five Life and Five US).
- The BBC purchased capacity from SDN to carry additional services such as BBC Knowledge.

In 2007 Ofcom accepted that the DTT capacity market was effectively linked to the spectrum market for DTT use in its Statement on the Future Pricing of Broadcasting Spectrum, but did not accept that DTT capacity trading was sufficiently effective to eliminate the need to apply AIP (for efficiency in own-use).

However, since then, further activity has occurred which shows a consolidation and maturity in the market, even after some of the early technical efficiency gains, compatible with the current generation of receivers, had been exhausted:

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[13] We explained in section 3.1.3 that broadcasters are unable to take advantage of the spectral efficiency gains of technologies that require viewers to upgrade to a new generation of receivers. This is because broadcasters' ability to incentivise receiver upgrades is limited, so they are unable to cease legacy transmissions to the current generation of receivers until nearly all viewers have upgraded receivers.

[14] BBC response to Ofcom's Consultation on the pricing of broadcasting spectrum (page 13) available at: http://stakeholders.ofcom.org.uk/binaries/consultations/futurepricing/responses/bbc.pdf

- In October 2008, Discovery Communications acquired a slot on Multiplex A, SDN's commercial multiplex[15].
- In January 2009, gambling channel Super Casino launched in new capacity on Multiplex A, SDN's commercial multiplex[16].
- In 2010, BT Vision bought capacity to retail Sky Sports 1 & 2 over DTT using capacity on Multiplexes Arqiva C & D post switchover and BBC Multiplex B in pre-switchover regions (prior consent was necessary from Ofcom)[17].
- Arqiva advertised two new channel slots in January 2012 to be available nation-wide following digital switchover[18]. In March 2012, Channel 4 acquired one of Arqiva's new slots to launch its 4Seven channel[19].
- In November 2012, UK TV secured a fourth slot on Multiplex A, SDN's commercial multiplex[20].

Given the relatively long term nature of DTT capacity contracts (typically 5 years), we believe that the activity in the market since 2007 makes a compelling case that the DTT capacity market is active and well-functioning. Notably trading in this market has been significantly higher than in many spectrum markets

3.2.2 Broadcasters have been active in making efficiency gains for its own-use

In a well-functioning DTT capacity market, we should expect to see initiatives by broadcasters and multiplex operators to use spectrum more efficiently (e.g. by deploying new 'within generation' technologies) in order to deliver more of their own content as well as to trade capacity to others (where they are able to do so). The evidence we have found suggests that broadcasters and multiplex operators are indeed examining how they use spectrum and deploying more spectrally efficient technologies.

First, Channel 4 is funding the creation of a 9th capacity stream for its own-use on the Digital 3&4 multiplex to be launched shortly. The technical steps necessary to create the extra capacity include:

- First, the current "partition" in the D3&4 mux are removed to merge ITV and Channel 4 capacity. Creating one video pool allows more services to be squeezed into a given capacity. The change requires significant re-engineering because the regional structures of ITV and Channel 4 are not the same.
- Second, the existing coding and multiplexing equipment are upgraded to deliver efficiency improvements.

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15 MediaWeek (October 2008), "Discovery gains its first Freeview slot".

16 More information available at: http://en.wikipedia.org/wiki/History_of_Freeview_UK

17 http://licensing.ofcom.org.uk/tv-broadcast-licences/other-issues/letters/

18 a516digital (February 2012), "Arqiva advertises more Freeview slots - but will IPTV reduce demand and the price for a slot?"

19 BroadcastNow (March 2012), "More4+2 to precede 4seven launch"

20 Cable.co.uk (November 2012), "UKTV bags fourth Freeview channel slot"

Second, the BBC upgraded its coding techniques (compatible with the current generation DVB-T/MPEG2 technology) and extended the use of statistical multiplexing to significantly increase in capacity in 2009. The BBC gained an extra 2.7Mbit/s on Multiplex 1, on top of the existing 18Mbit/s capacity per multiplex.

Third, the BBC was able to upgrade its modulation system from 16 to 64 QAM after digital switchover. This allowed the BBC to substantially increase capacity with little reduction in coverage due to the higher transmitter power possible after switchover.

Fourth, in 2008, the BBC carried out an in-depth public trial of reduced quality video coding to assess what level of picture quality was acceptable to viewers. This enabled the BBC to reduce bit rate in a controlled way in order to increase capacity and help clear Multiplex B for HD transmission in 2009. In parallel with the clearance of Multiplex B for HD, the BBC was able to increase efficiency by rationalising its two interactive channels into one, significantly increasing the overall utilisation of its interactive capacity.

Fifth, Arqiva (and its predecessors) has an established record of making available additional DTT capacity streams for use by existing and new broadcasters. For example, as shown in section 3.2.1, Arqiva has been able to create a number of additional capacity streams by deploying more efficient coding techniques which are compatible with the existing generation of DVB-T receiver technology.

4 AIP is unlikely to improve efficiency in broadcasting spectrum either now or post-2020

In its recent Consultation on Spectrum Pricing for Terrestrial Broadcasting, Ofcom proposed not to introduce AIP in 2014, but instead it intends to introduce AIP in circa 2020, once progress has been made regarding the future use of the UHF spectrum. In this section we explain that the reasons against introducing AIP are not only applicable now but will also be applicable beyond 2020.

Ofcom's rationale for not introducing AIP in the coming years is that the transition of DTT from the 700MHz to the 600MHz band is a *"unique combination of circumstances"* in which a managed process is required to deliver significant efficiency benefits. Indeed, such a transition would require a major national and international replan of DTT assignments and an upgrade of five multiplexes to DVB-T2 and MPEG-4 in order for broadcasters to continue to deliver content in line with their obligations. Ofcom goes on to state that *"it is unclear that any additional efficiencies could be realised as a direct consequence of the imposition of AIP in the short to medium term"*.

We broadly agree with Ofcom's position. As detailed in the previous section, since DTT was introduced, broadcasters have implemented some new technologies in order to use spectrum more efficiently (within the limits of what they can do individually). This has been driven by the 'own-use' incentives that broadcasters already face, notably the DTT capacity market. However, broadcasters have been, and continue to be, unable to achieve larger efficiency improvements due to their inability, without the assistance of regulatory intervention, to release spectrum or cease legacy transmissions.

We disagree, however, with the idea that the circumstances that lead Ofcom to conclude that AIP will not secure optimal use of spectrum in the period to 2020 are unique. The three factors that prevent broadcasters from releasing spectrum for potentially high value, alternative uses, as discussed in Section 3.1, are highly likely to remain in place after 2020, regardless of whether such a transition occurs:

- Firstly, it is credible that DTT will remain the only platform capable of providing PSB content beyond 2020.
- Secondly, the release of an increment of spectrum of value to alternative uses, such as the 700MHz band, will always require a managed process to replan DTT assignments both nationally and internationally.
- Thirdly, the realisation of the efficiency benefits from new technologies, whether it be DVB-T2/MPEG-4, HEVC or other technologies yet to be developed, will require a managed process to upgrade all (or nearly all) legacy receivers.

Ofcom states that it expects AIP to be in place by around 2020, *"once we have materially progressed our proposals for the future use of the UHF spectrum"*. However, Ofcom does not elaborate on how the above three constraints would change post-2020, or indeed after a 700MHz to 600MHz transition. In our opinion they will not change, and therefore any major increases in efficiency would remain out of the direct control of broadcasters and would require a managed and internationally coordinated approach. Therefore it appears highly unlikely that AIP would have any impact on the efficiency at which broadcasting spectrum is used after 2020.

5 Ofcom's opportunity cost calculations

As described in the previous sections, we do not believe that an application of AIP is warranted for broadcasting spectrum either now or post-2020. However, we note that in its recent Consultation on Spectrum Pricing for Terrestrial Broadcasting, Ofcom provides indicative levels for AIP in circa 2020, were it to be introduced. These are based on the results of a report conducted by Analysys Mason regarding the opportunity cost of broadcasting spectrum [10], and include two scenarios:

Figure 5-1: Indicative AIP in 2020 for broadcasting spectrum [Source: Ofcom, 2013]

Scenario	Indicative annual AIP per multiplex
DTT use in the 700MHz band is migrated to the 600MHz band	GBP10 million
DTT use remains in the 700MHz band	GBP40 million

We understand that these estimates are only indicative and that Ofcom would likely revise them prior to any introduction of AIP. However, there are questions regarding the approach taken by Ofcom / Analysys Mason when calculating these estimates.

In the scenario whereby DTT use is migrated from the 700MHz band to the 600MHz band, Ofcom indicates that in 2020 AIP would be set at circa GBP10 million per multiplex per annum. This is based on Analysys Mason's 'own-use' opportunity cost calculations.

Analysys Mason's approach is broadly as follows:

- Firstly, to establish whether there is excess demand either from the current use or an alternative use. In this scenario, the conclusion is that there is excess demand from the current use (i.e. DTT), but not from any alternative use.

- Secondly, to calculate the opportunity cost in own-use using two approaches, Least-Cost Alternative (LCA) and Discounted Profits (DP), for four potential reactions to a loss in spectrum:
  - a migration of users from DTT to the satellite platform,
  - a transition to DVB-T2 and MPEG-4 in order to provide increased capacity,
  - a transition to Single Frequency Networks (SFNs), or
  - a migration of DTT use to the 600MHz band (which is clearly not applicable to the scenario considered by Ofcom).

For its indicative AIP, Ofcom uses Analysys Mason's scenario in which all DTT multiplexes are transitioned to DVB-T2 and MPEG-4 in order to release a block of spectrum. We also presume that Ofcom uses the results of Analysys Mason's LCA approach, although this is not specified in the consultation document.

Our primary concern regarding this approach is that it is not possible for a broadcaster, and especially a PSB, to unilaterally execute any of the four LCA 'reactions' identified by Analysys Mason. In particular it is not possible for broadcasters to execute the reaction assumed by Ofcom for its indicative AIP figures - to unilaterally transition to DVB-T2 and MPEG-4.

Migration of users from DTT to satellite	As acknowledged by Ofcom in its UHF Strategy Statement, the satellite platform is not a viable alternative to DTT in providing near-universal low-cost access to PSB content. Therefore, PSBs obligations prevent such a migration.
A transition to SFNs	In its recent Consultation on Spectrum Pricing for Terrestrial Broadcasting, Ofcom acknowledges that a transition to SFNs couldn't be contemplated until *"post-2030".*
A migration of DTT use to the 600MHz band	This is clearly not an option given the scenario considered by Ofcom, whereby 700MHz use is already migrated to the 600MHz band.
A transition to DVB-T2 and MPEG-4 in order to provide increased capacity	The most important 'reaction' given it is the one used by Ofcom in its indicative AIP levels for 2020. However, as acknowledged by Analysys Mason in its report, such a scenario would require international coordination, (which would be *"non-trivial"*) as well as coordination between all UK broadcasters (to *"all jump together"*). As discussed in section 3.1.2, successful coordination is clearly out of the direct control of an individual broadcaster.

Both Ofcom and Analysys Mason are yet to identify a viable alternative to current DTT usage. Until one is found, the LCA approach should not be used as a method for calculating opportunity cost.

6 AIP would risk PSB content provision

In the previous sections of this report, we conclude that applying AIP to broadcasting spectrum is unlikely to have any additional impact on incentives for the efficient use of the spectrum. However, not only would AIP be unlikely to have its intended effect, but there is also a serious risk that it could do harm by weakening the delivery of public service broadcasting. Such an outcome would appear to be in conflict with Ofcom's duties in relation to PSB and the Government's ambition to maximise investment in UK original content.

According to a July 2012 report commissioned by the DCMS to inform its Communications Review[21], the PSBs together account for about 90%[22] of investment in original UK television content. Hence, in addition to the cultural and social benefits it delivers to UK consumers and citizens, public service broadcasting also delivers significant economic benefits to the creative economy.

In this section, we explain why AIP would be likely to lead directly to content spending cuts by the PSBs, due to the limited ability of the broadcasters to offset AIP by increasing revenue or reducing other costs. Finally, we explain that such a fall in PSB content spending is also likely to have a knock-on effect on the wider economy.

6.1 Government and Ofcom appear committed to maintaining the level of PSB obligations

Ofcom has recognised that applying AIP to broadcasting spectrum could have an impact on the funds available for public service broadcasting in its Statement on the Future Pricing of Broadcasting Spectrum in 2007. It suggested that this might be resolved by negotiation between PSBs and the Government either to revise PSB obligations or to secure financial compensation from the Government.

In the six years since Ofcom's Statement on the Future Pricing of Broadcasting Spectrum, PSBs have had a number of interactions with the Government and other regulatory bodies, including notably the BBC licence fee settlement in 2010, Ofcom's Second PSB Review and the Government's review of Channel 3 and Channel 5 licence renewal. These interactions have led to only modest reductions in PSB commitments despite difficult market conditions. Ofcom noted in its Second PSB Review that the level of the current obligations faced by the PSB was approaching a set of minimum requirements for contribution to public service purposes.

Moreover, the Culture Secretary announced last year, when deciding to renew the licences of ITV and Channel 5, that she was "*determined to see these [i.e. the PSB obligations] preserved (if not strengthened) in the next ten years*"[23] and mentioned "*the need to work with the licence holders to maintain, or even*

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[21] Mediatique (July 2012), 'Carriage of TV Channels in the UK: policy options and implications', Report for the Department for Culture, Media and Sport http://dcmscommsreview.readandcomment.com/wp-content/uploads/2012/07/120709-DCMS-Carriage-Consent-Report-FINAL.pdf

[22] The Mediatique July 2012 report found that in 2010 the PSB channels invested GBP1.87 billion in original content out of a total of GBP2.08 billion when the investment of the pay TV channels is included

[23] See the Department for Culture, Media and Sport's letter to Ed Richards, titled 'Channel 3 & 5 Licensing'. Available at: http://www.culture.gov.uk/images/publications/Maria_Miller_letter_to_ed_richards.pdf

increase, the current level of public service requirements, such as the amount of news or original content"[24].

6.2 AIP could lead to a significant reduction in PSB content spending

AIP could affect public service content spending directly through its impact on PSBs and indirectly through its impact on the DTT platform as a whole, including its impact on commercial broadcasters. We discuss the direct effects on the PSBs first, then the indirect effects on the DTT platform.

As demonstrated in Section 3.1, the PSBs have little flexibility to change their spectrum use which is, in large part, a function of their PSB coverage requirements and remits including regional commitments. As a result, they would not be able to materially reduce their liability for AIP by releasing spectrum. In the absence of being able to release spectrum, the only means for the broadcasters to avoid reducing their spending on PSB content would be either to increase revenues or reduce non-content related costs. We look at these two options in turn below.

6.2.1 PSBs' ability to offset AIP through increased revenues is limited

In this section we make a distinction between the BBC, whose public service activities are publicly funded, Channel 4, which is publicly owned but commercially funded, and ITV and Channel 5, which are commercially owned and commercially funded.

In the case of the BBC, the Government could in principle increase funding levels to compensate for the impact of AIP on the BBC's delivery of its PSB remit and obligations. However, as far as we are aware, the Government did not make any commitment to take AIP into account in policy statements in the years following Ofcom's declaration of intent to apply AIP to broadcasting spectrum in 2007. In particular, the Government did not appear to make any provision for the impact of AIP in the BBC's most recent licence fee settlement which covers the period from 2010/11 to 2016/17, in which Ofcom previously intended to begin levying AIP.

Without a commitment from the Government to take the impact of AIP into account, it is far from certain that the BBC could call on increased funding to mitigate the impact of AIP.

In Channel 4's case, it would have to seek to increase its revenues by increasing advertising rates. However, it should have already set its charges to maximise its revenues (within the constraints set by its public service remit and competition within advertising and DTT capacity markets). Hence Channel 4 has very limited scope to increase its revenue in this way. Moreover, Channel 4 operates as a not-for-profit broadcaster, in which commercial revenues are directly reinvested as far as possible into PSB content, and therefore is unable to reduce its profit margin to accommodate AIP costs.

ITV and Channel 5 are also constrained in their ability to increase revenues in response to AIP. Similar to Channel 4, they are unlikely to be able to increase advertising charges, as the market is competitive and their rates should already be set at the profit maximising level. They could accept lower profitability, but a reduction in profit could reduce their ability to continue investing in UK original content.

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[24] Department for Culture Media and Sport (November 2012), "Culture Secretary renews Channel 3 and 5 broadcast licences". Available at: http://www.culture.gov.uk/news/media_releases/9534.aspx

6.2.2 PSBs' ability to offset AIP by reducing non-content costs is limited

The PBSs would also find it difficult to offset the impact of AIP by making significant savings in their non-content costs, since they have already made cost savings and efficiency gains in response to the challenging economic conditions of recent years. Further, some costs such as network or distribution costs are largely fixed and difficult to reduce in the short to medium term.

For example, the BBC has implemented an efficiency programme which delivered annual savings of more than 3.5% on average from 2008. Subsequently, in response to the most recent licence fee settlement, the BBC set out plans in the document *Delivering Quality First* to deliver savings of 20% (equivalent to about GBP700 million per annum) by 2016/17. This set out plans for extensive changes to the BBC's operations (e.g. with the loss of up to 2 000 posts) through both efficiency gains and changes to the scope of BBC services.

Tellingly, despite more than half those savings being driven by efficiencies and reduced back office costs, the BBC has not been able to avoid making savings in its content budget to achieve the 20% target. Hence, the BBC aims to make annual savings of around GBP200 million in content spend by 2016/17 that may impact directly on its public service remit.

Channel 4 is in a similar position in having made efficiencies savings in recent years. Its headcount fell by nearly 200 people between 2007 and 2011. Channel 4's administrative expenses represent less than 3% of its total spend each year. Therefore, the extent to which it could protect its content budget in response to the introduction of AIP – by cutting discretionary spend, reducing overheads, making other savings and driving efficiencies across the organisation – appears limited.

This was demonstrated by Channel 4's response during the last downturn in the advertising market between 2007 and 2009. During this period TV net advertising revenue (NAR) fell by circa 12% to GBP3.1bn. Despite Channel 4 seeking to protect its content budget, it was unable to do so, and reduced its programme budget by circa 12%, from circa GBP625 million in 2007 to circa GBP550 million in 2009.

6.2.3 The impact of AIP on commercial broadcasters could impact the platform as a whole

Aside from the direct effect of levying AIP on PSBs in diverting funds from their content budgets, there would be an additional, indirect effect of AIP through weakening the DTT platform.

Commercial broadcasters that do not own multiplexes, but purchase DTT capacity on the open market, are likely to face increased prices for DTT slots. These broadcasters are unlikely to be able to increase revenues significantly, as they should already be setting prices at a profit maximising level. Therefore, AIP would negatively impact commercial broadcasters' financial case for using the DTT platform and marginal channels might leave the DTT platform for other alternatives, thus reducing the attractiveness of the platform as a whole. However, many of the costs of operating the DTT network would remain fixed (including AIP), so the departure of each channel weakens the financial case for the remaining channels.

A reduction in the number of commercial channels could in turn undermine the DTT platform itself – as Ofcom acknowledges in its UHF Strategy Statement, the range and breadth of channels on the DTT platform plays an important role in widening consumer platform choice and ensuring the on-going attractiveness and sustainability of the DTT platform. A weakening of the DTT platform (i.e. a fall in the number of viewers) would spill over onto the PSBs as well as reducing the public value delivered by the

platform. For example, commercial PSBs' advertising revenues could fall and, as we have already said, this is likely to lead directly to reductions in UK original content investment.

6.3 AIP risks PSB delivery and knock-on effects on the wider economy

We have illustrated above that there is a serious risk that AIP could directly reduce spending on UK original content by the PSBs. Ofcom's indicative figures for AIP are GBP10 million and GBP40 million per multiplex, depending on whether the 700MHz band was cleared or not.

As a result the BBC could be liable for circa GBP20m or GBP80m for its two digital multiplexes. This represents 1.5% to 6% of BBC television spending on PSB content[25]. The higher AIP estimate is clearly significant and the lower estimate, although smaller, is still significant given that the BBC is already committed to savings to its content budget. In this environment, any further cut in content spending could have a material impact on investment in UK original content. To put the indicative AIP charges in context, GBP80 million is broadly equivalent to the budget of the BBC's children's TV service, CBBC.

ITV and Channel 4 would jointly face costs of circa GBP10m to GBP40m per annum, for their jointly owned PSB multiplex, which would be equivalent to 0.7% to 2.7% of their combined expenditure on PSB content[26] in 2011. ITV would also incur charges for their commercial multiplex.

Reduced investment in UK original content could also have a knock-on effect on the creative industries and the wider economy since this effectively reduces income for companies in the PSB supply chain and some of this income would have been spent in the wider economy (economists term this a multiplier effect). We suggest that any impact assessment conducted by Ofcom regarding AIP for broadcasting spectrum should consider this effect on the wider economy.

Studies show that these knock on effects on economic activity may be substantial. For example, the DCMS commissioned a study by Analysys Mason on the impact of radio spectrum on the UK economy[27]. Analysys Mason found that total revenue in the broadcasting value chain was GBP16 billion in 2011.

We can derive a rough indication of a multiplier effect by dividing this total by broadcasters' spending on content. According to Ofcom's Communications Market Report 2012[28], UK television broadcasters' revenue was GBP11.7 billion in 2011. Subtracting Analysys Mason's estimate of producer surplus, GBP1.5 billion, gives an estimate for spending of GBP10.2 billion in 2011. Hence the overall multiplier is roughly 1.6, i.e. every pound spent by the broadcasters added a minimum of GBP1.60 in economic value to the UK economy. This is an underestimate because it does not take into account the effect of spending by the broadcasters' suppliers on the rest of the economy.

A study by Deloitte for the BBC[29] looked at the full multiplier effect, i.e. taking into account the spin-off effects on the wider economy of suppliers to the BBC. It found a multiplier effect of about 1.9, i.e. every

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[25] Total BBC spending on PSB content taken from Ofcom (July 2012), "Communications Market Report 2012"

[26] Ofcom (July 2012), "Communications Market Report 2012"

[27] Analysys Mason (November 2012), "Report for Department for Business, Innovation and Skills and Department for Culture, Media and Sport - Impact of radio spectrum on the UK economy and factors influencing future spectrum demand"

[28] Ofcom (July 2012), "Communications Market Report 2012"

[29] Deloitte (2010), "The Economic Impact of the BBC: 2008/09. A Report for the BBC"

pound spent by the BBC added GBP1.90 of economic value to the UK economy. The BBC updated the Deloitte study in 2013 and found an even higher multiplier of 2[30].

There are a number of other factors that may increase or decrease the multiplier effect for changes in PSB content investment which are not taken into account in these studies. The main factor that could reduce the multiplier and so lessen the harmful effect on the wider economy of a fall in PSB content investment is the so-called 'substitution effect' – i.e. if the original spending (on PSB content) had not taken place, something else (a substitute) might have partially replaced it. For example, suppliers could have won business from other broadcasters or companies in related sectors, which might have partially compensated for the reduced PSB content investment.

The factors that could increase the multiplier, and so increase the harmful effect on the wider economy of a fall in PSB content investment, are listed below. The scale of the impact is difficult to estimate for a number of reasons, e.g. there may be a threshold before a fall in PSB content spend has an effect, or the impact of a fall in PSB content spend may not be spread evenly.

- PSBs have particular obligations with regard to the independent sector, and many independents may be dependent on PSB content investment for their survival, hence their output is directly dependent on PSB content investment.
- By exporting both programmes and formats to other countries, PSB content sales can generate export earnings.
- PSBs, through their co-production partners, could bring valuable inward investment into the UK creative sector.
- PSB content spend can create more intangible effects, such as promoting innovation and knowledge transfer that can be used more widely in the creative economy.

On balance, we believe that these effects are likely to increase the multiplier effect and so increase the harmful effect on the wider economy of a fall in PSB content investment.

[30] The BBC (2013), The Economic Value of the BBC: 2011/12

7 Conclusions

We agree that Ofcom is right not to introduce AIP for broadcasting spectrum **in 2014**. However, we disagree with Ofcom, in that we believe there is also no justification for introducing AIP **after 2020**, regardless of whether there is a migration of DTT use from the 700MHz band.

Ofcom's recent Consultation on Spectrum Pricing for Terrestrial Broadcasting concludes that broadcasters are unlikely to be able to respond to the price signals provided by AIP in the short to medium term. Hence, AIP is unlikely to have the desired effect and cannot be justified under Ofcom's statutory duty to promote optimal spectrum use.

We agree with Ofcom's analysis that broadcasters are unlikely to be able to respond to AIP because of uncertainty arising from the prospective international harmonisation of the 700MHz band and because they are prevented from releasing spectrum for alternative use, without significant governmental or regulatory intervention, due to the following constraints:

- the constraints from public service obligations on the PSBs and for the DTT platform as a whole,
- the need for international coordination to release contiguous national blocks of spectrum suitable for alternative users, and
- broadcasters' inability to cease legacy transmissions due to their lack of influence over receiver upgrades.

However, we disagree that AIP is likely to have the desired effects identified by Ofcom in the long term, i.e. after 2020, when Ofcom expects to have materially progressed its plans for the future use of UHF spectrum.

Firstly, we believe that the constraints on the broadcasters' ability to release spectrum for alternative uses will clearly still apply after 2020. They are fundamental to the broadcasting ecosystem in both the UK and Europe. In our view they are much more than merely *"challenging"*, as Ofcom suggests. Hence AIP is unlikely to promote the optimal allocation of spectrum between broadcasting and alternative uses.

Secondly, AIP is unlikely to be necessary for promoting efficiency in 'own-use' of broadcasting spectrum. There is already a market for DTT capacity and demonstrable evidence that it provides strong incentives for broadcasters and multiplex operators to deploy more efficient technologies (to the extent that they can individually) to increase their own capacity and to trade capacity to higher value users.

Finally, there is a significant risk that applying AIP could actually damage PSB output, counter to Ofcom's and the Government's objectives to maintain or increase it. The PSBs will struggle to protect their content budgets from the impact of AIP given that their ability to find savings elsewhere now appears limited. Notably, when faced with funding cuts and falls in advertising revenue in recent years, PSBs were unable to limit their reaction to savings in other costs, such as management and administration, but were required to make reductions in content budgets.

As a result we consider that the application of AIP to broadcasting spectrum, either in 2014 or from 2020 onwards, would be neither proportionate nor justified.

Annex A Key reference documents

[1] Ofcom (June 2007), "Future Pricing of Spectrum used for Terrestrial Broadcasting"

[2] Ofcom (March 2013), "Spectrum Pricing for Terrestrial Broadcasting"

[3] Parliament of the United Kingdom (July 2003), "Communications Act 2003"

[4] Parliament of the United Kingdom (November 2006), "Wireless Telegraphy Act 2006"

[5] Ofcom (December 2010), "SRSP: The revised Framework for Spectrum Pricing. Our policy and practice of setting AIP spectrum fees"

[6] Professor Martin Cave (March 2002), "Review of Radio Spectrum Management"

[7] Ofcom (November 2012), "Securing long term benefits from scarce low frequency spectrum. UHF strategy statement"

[8] Department for Culture Media and Sport (July 2006), "An Agreement Between Her Majesty's Secretary of State for Culture, Media and Sport and the British Broadcasting Corporation"

[9] Department for Culture Media and Sport (October 2006), "BROADCASTING - Copy of Royal Charter for the continuance of the British Broadcasting Corporation"

[10] Analysys Mason (March 2013), "Opportunity cost of the spectrum used by digital terrestrial TV and digital audio broadcasting"

Annex B About the authors

Aetha Consulting helps players in the telecommunications industry develop creative and sustainable solutions to the challenges presented by a changing environment. We undertake rigorous, quantitative assessments to test our ideas, and collaborate with our clients to ensure that our tools and methodologies support their strategic and regulatory requirements.

Aetha provides strategic advice on issues including: market strategy development, radio spectrum policy, spectrum valuation and auction support. We are committed to delivering quality work that exceeds our client's expectations, as shown by our track record of successful assignments with operators, regulators, and manufacturers, as well as financial and legal institutions.

In the area of spectrum management, Aetha Consulting helps both operators and regulators to set their spectrum strategies, develop spectrum policy, value spectrum and prepare for auctions.

Ade Ajibulu is a highly experienced regulatory economist and business strategy analyst with over 20 years' experience in the telecoms sector.

Ade began working in telecoms as a Senior Consultant for Analysys Ltd (now Analysys Mason), advising senior executives in a wide range of organisations, e.g. fixed and mobile telecoms operators, ISPs, government departments and regulators.

Moving on to Ofcom, Ade led the economic analysis in many of Ofcom's key projects on spectrum, in particular auctioning spectrum for mobile communications, spectrum trading and a number of projects on the application of AIP. He also worked on wider competition issues in the mobile sector. His work involved auction design, policy development and cost benefit analysis.

Ade Ajibulu **Consulting**

In 2011, Ade left Ofcom to set up Ade Ajibulu Consulting Ltd., an independent consultancy focused on providing highly quality advice on economic regulation, business planning and strategy to players in the telecoms sector. While continuing to advise regulators and operators on matters related to spectrum and 4G mobile, Ade has also advised operators in other areas such as the regulation of wholesale broadband access.