

# Temporary assignment of UHF analogue interleaved frequencies

Statement

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## Section 1

# Introduction

## Background

- 1.1 Digital terrestrial television (DTT) in the UK remains an integral part of the broadcasting environment and increasingly so as digital switchover (DSO) begins in earnest. However, even as DSO commences, the terrestrial landscape continues to evolve to enable higher bandwidth services through the adoption of new, more efficient digital broadcast technologies such as MPEG-4 and DVB-T2.
- 1.2 Our consultation of 21 November 2007<sup>1</sup> highlighted the opportunities presented by the new MPEG-4 and DVB-T2 technologies and our Statement of 3 April 2008 (the April Statement)<sup>2</sup> proposed a roadmap to realising these opportunities. In July this year legislation<sup>3</sup> came into force which empowered Ofcom to implement that roadmap; that is, to upgrade Multiplex B (operated by BBC Free to View Ltd), and to enable the launch of three high definition (HD) services on the multiplex. Implementation led by the BBC is now well underway with the launch expected to commence with the Granada television region in late 2009 and rollout thereafter following the DSO timetable (completing in 2012). However, a consequence of implementing alongside DSO is that some parts of the UK will not have access to the new HD services for up to three years after they first launch – a concern noted in our April Statement.
- 1.3 This statement concludes our technical consultation published on 22 October 2008<sup>4</sup> (the Consultation). The Consultation considered whether additional frequencies could be temporarily assigned to the Multiplex B operator to enable the new HD services to launch ahead of DSO in some parts of the UK.

## Our consultation

- 1.4 The Consultation noted the BBC's request for Ofcom to make temporary frequency assignments to Multiplex B which would increase the proportion of the UK's population with access to the new services while DSO rolls out. We considered the effects of assigning frequencies as the BBC requested and concluded it would be likely to:
  - make more efficient use of currently underutilised spectrum;
  - foster innovation and competition among equipment manufacturers; and
  - drive take-up, creating more choice and lowering receiver prices for consumers.
- 1.5 The Consultation also outlined our spectrum management and other duties and set out the approach that we intended to adopt in responding to the BBC's request. We also outlined the frequency assignment framework (see Annex 3) within which temporary assignments could be made across the UK. In summary, that framework:
  - considers the compatibility of such assignments with Ofcom's duties and objectives and wider spectrum management framework,
  - assesses the availability of suitable frequencies, and

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<sup>1</sup> <http://www.ofcom.org.uk/consult/condocs/dttfuture/dttfuture.pdf>

<sup>2</sup> <http://www.ofcom.org.uk/consult/condocs/dttfuture/statement/>

<sup>3</sup> SI 2008/1420 The Television Multiplex Services (Reservation of Digital Capacity) Order 2008, available at [http://www.opsi.gov.uk/si/si2008/pdf/uksi\\_20081420\\_en.pdf](http://www.opsi.gov.uk/si/si2008/pdf/uksi_20081420_en.pdf)

<sup>4</sup> <http://www.ofcom.org.uk/consult/condocs/interleaveduhf/interleaved.pdf>

- investigates the technical feasibility of making assignments.
- 1.6 We applied the proposed frequency assignment framework to a case study for the potential use of Channel 31 in London, one of the areas identified by the BBC and one of the UK's most congested geographic areas. The case study assessed impacts on existing spectrum users and concluded that, in this instance the impacts would be minimal and that an assignment could be made (see Section 4 of the Consultation).
- 1.7 Our analysis suggests that the benefits to citizens and consumers of assigning a frequency in this case would be significant and are likely to outweigh the costs. The benefits, which accrue mainly to consumers, include earlier access to the new services and increased competition between receiver manufacturers<sup>5</sup> (likely to lead to a wider range of products at lower prices). We believe there are also likely to be producer benefits to equipment manufacturers and broadcasters. Our full impact assessment of the costs and benefits of the London case study can be found at Annex 1.
- 1.8 That, if a formal request was received from the BBC, we intended to apply the frequency assignment framework to other areas nominated for early launch and we provided a worked example of how this would be applied in practice – the London case study.

### The legal framework

- 1.9 In preparing this statement, we have considered the responses in light of the legal framework under which we operate (and as summarised at Annex 2), including our general duties, together with our policy objectives. Annex 2 also introduces the Limitations Order which limits the use of the relevant UHF frequencies being considered under this proposal to broadcasting and programme-making and special events (PMSE) use and to certain specified broadcasting and PMSE parties.
- 1.10 One of our primary duties is to secure the optimal use of the radio spectrum. In particular, we draw attention to our specific spectrum duties which require that we have regard to the extent to which spectrum is available for wireless telegraphy us or further use, and the existing and likely future demand for use of that spectrum for wireless telegraphy. We must balance this against our duty to take account of the different needs and interests of everyone wishing to use the spectrum for wireless telegraphy. In addition, we would expect to consider consistency with our general duties – the most relevant of which are also set out in Annex 2.

### This document

- 1.11 This document is structured as follows:
- Section 2 – Provides a summary of the responses we received to the consultation and our assessment of issues raised by respondents.
  - Section 3 – Sets out our conclusions and next steps.

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<sup>5</sup> A larger initial market through an early launch in some areas is likely to stimulate faster development of receivers by more manufacturers than would be the case if services launched only alongside the DSO timetable.

## Section 2

# Assessment of consultation responses

## Overview

- 2.1 The Consultation closed on 19 November 2008 after a four week consultation period.
- 2.2 We received ten responses from a range of stakeholders covering broadcasting, transmission operation, manufacturing and PMSE interests. Three responses were confidential and the remaining seven are published on our website<sup>6</sup>.
- 2.3 We summarise the responses to each question below along with our assessment of them, taking account of our policy aims and objectives as discussed in Section 1.

## Summary of responses and our assessment

*Question 1: Do you agree that our assessment of the technical impacts of the proposal to use Channel 31 in London is appropriate?*

## Responses

- 2.4 All respondents who commented on this question agreed with our technical assessment for the use of Channel 31 at low power in London (from Crystal Palace if available given it further reduced likely interference impacts). One respondent (JFMG) provided additional analysis which supported our technical assessment of impacts on PMSE users. Most respondents (especially those with a broadcasting interest) emphasised the importance of preserving DTT quality to ensure viewer satisfaction was not affected. Those representing PMSE interests signalled the need to carefully gauge transmission power levels (proposing a ceiling of 20kW) so as not to interfere with talkback devices<sup>7</sup>, also noting that at levels of up to 20kW the range of such devices may be reduced. There was also some concern that the proposal could reduce spectrum available for talkback services, particularly outdoors.
- 2.5 The BBC agreed with our framework for assessing interference to existing users and to follow Joint frequency Planning Project (JPP) procedures, indicating they would work closely with Arqiva in doing so. They also suggested that any such assessment should take account of the temporary nature of the assignments (ending at DSO), and balance the strategic benefits with any marginal analogue television viewing impacts (while ensuring the protection of acceptable service quality for existing viewers remains a priority). Manufacturers thought that on balance, and considering the potential benefits of early launch, a small amount of interference to analogue services was acceptable.

## Our views

- 2.6 As we set out in our consultation, we believe the impacts of using Channel 31 in London are minimal. Our view remains that the JPP process is appropriate for assessing the technical parameters for using this frequency in London, including setting suitable transmission power levels. These would be set so as to avoid harmful interference to existing ATT and DTT broadcasting and PMSE users. We would expect the JPP to take into account the views of existing broadcasting and PMSE licensees in taking these decisions. We also consider that the Code of Practice on Changes to Existing

<sup>6</sup> The 7 non-confidential respondents were the BBC, Freeview, BEIRG, JFMG, Intellect, Arqiva, and 1 individual <http://www.ofcom.org.uk/consult/condocs/interleaveduhf/responses/>

<sup>7</sup> As we noted in the Consultation, talkback equipment used in Channel 31 is only able to tune over Channels 31-33

Transmission and Reception Arrangements (the Code of Practice)<sup>8</sup> provides sufficient protection and remedies for viewers who may experience interference to their television signals as a result of this proposal. We note that there were no objections raised by PMSE users to the use of Channel 31 in London at the proposed power levels.

- 2.7 We will work with the BBC and others in undertaking necessary technical analysis prior to review by the JPP, and on other application requirements (see below).
- 2.8 Although use of Channel 31 in London may reduce the amount of spectrum available for talkback devices over Channels 31-33<sup>9</sup>, Channel 31 will remain available for indoor use (as is currently the case with Channel 32) until DSO. Given that DSO places a limited timeframe on the use of these frequencies by PMSE users, we consider it unlikely that new investments in equipment in this frequency range will occur for use in London within the period that the temporary assignments are being used. We note that our analysis of licensing data identified no outdoor talkback licensees in Channel 31 in the last 12 months.

**Question 2: Do you have any general comments which you think we should take into account?**

## Responses

- 2.9 Responses were all supportive of the general principle which the consultation document addresses, that of enabling the launch of new services to be brought forward in some areas<sup>10</sup>, provided protections were given to existing users. Specifically, PMSE interests noted that temporary frequency assignments in other areas would need to be assessed individually for PMSE impacts and requested that they be consulted in areas other than London, should a formal application for other areas be received. BEIRG also considered that compensation should be given to talkback systems users of Channels 31-33 whose equipment will be made redundant post-DSO and also to any users pre-DSO who are unable to use spectrum as a result of any temporary assignment.
- 2.10 Other themes which emerged were:

### Timing

- 2.11 Stakeholders across the board stated the importance of an early decision by Ofcom. They also sought clarity on the proposed timing and areas (including coverage data on number of households) for launch of the new services. This is important because:
- it is necessary to keep viewers informed and to develop coordinated advertising and media plans (Freeview), including an HD availability postcode checker (Intellect);
  - infrastructure investment decisions need to be planned appropriately and allow DSO communications to be clearly and effectively managed, and so that regulatory and commercial arrangements can be put in place (BBC); and
  - planning and coordinating product introduction and promotion is needed to ensure adequate supply, to better enable economies of scale (Intellect), and to reduce equipment legacy problems (BBC and Intellect).
- 2.12 The importance of synchronising the launch of the new services with key sporting events (eg. the 2010 World Cup) and the additional benefits this would bring was noted by most

<sup>8</sup> [http://www.ofcom.org.uk/tv/ifi/tech/codes\\_guidance/cop/cop.pdf](http://www.ofcom.org.uk/tv/ifi/tech/codes_guidance/cop/cop.pdf)

<sup>9</sup> We set out the tuning constraints of talkback devices (which can only operate in Channels 31-33) in the Consultation

<sup>10</sup> Our proposals enable early launch, but it will be for the broadcasters to decide where this is commercially viable

respondents, such that any launch should occur sooner rather than later, potentially in London in late 2009 at the same time as Granada.

### DSO

- 2.13 Arqiva stated it would work with the BBC to identify potential impacts on DSO and strategies to mitigate them. Other respondents noted the need for Digital UK involvement and to clearly distinguish between DSO and HD availability to avoid consumer confusion. Freeview pointed out that careful management of any viewers who lose their BBC1 analogue service would be needed (if that were to occur) so that this didn't adversely affect the wider DSO programme.

### Launch costs

- 2.14 The BBC highlights the need to complete a cost-benefit analysis for participant broadcasters (launching services on Multiplex B) to ensure the plan delivers good value for money before proceeding. Other respondents noted the need for all affected parties (ie. the broadcasters who will pay for carriage) to agree on the proposed early launch sites before final decisions were made.

### DTT platform

- 2.15 Broadcasters noted that the early launch of HD services would help foster inter-platform competition, increasing consumer choice and strengthening the DTT platform, which would be likely to suffer a competitive disadvantage otherwise and particularly during the 2010 World Cup if it was not available in HD. Freeview referred to recent qualitative research (from November 2008) which showed a strong negative reaction to London's proposed 2012 HD timeframe (and high potential for platform switching as a result).

### Spectrum pricing

- 2.16 Of the few respondents who commented on this issue, all agreed with our approach to charge on a cost recovery basis. The BBC noted the very low opportunity cost of this spectrum.

### Licensing

- 2.17 The BBC supported the licensing proposals in the consultation document, but sought to have applications considered in batches (ie. more than one frequency requested per application) and granted according to a faster timeframe (ie. three weeks). The BBC also expressed a view that the licence fees charged should reflect Ofcom's administrative costs. They further considered it was appropriate for Ofcom to retain the right to revoke a temporary Wireless Telegraphy Act (WTA) licence, should significant interference to existing services occur.

### **Our view**

- 2.18 We agree that steps should be taken to protect existing users wherever possible. We will liaise with PMSE representatives as appropriate regarding potential impacts on PMSE users of any application(s) from the BBC. As noted at paragraph 2.6, we expect the JPP process will take account of these views as well as of impacts on existing broadcasting transmissions, and that the Code of Practice will provide remedies to affected viewers (if any). In the case of PMSE, where a material impact does arise we will endeavour to identify alternative frequencies for the relevant geographic area and timeframe.
- 2.19 We do not expect this proposal (in the London case study) to materially disrupt existing PMSE licensees in Channel 31 as they will either be able to continue operating in



channel 31 without harmful interference to or from DTT or be able to tune to available adjacent frequencies. If either solution would not be possible we would consider the issue on a case by case basis with the relevant licensee(s).

- 2.20 We do not discuss the issue of compensation to PMSE licensees – who will not be able to access Channels 31-33 after DSO (though we note this issue is being considered as part of the Digital Dividend Review).
- 2.21 We agree that timing is an important component for realising the full benefits of this proposal, and hope that the timing of this statement helps in this respect. This is a unique and time limited opportunity and we encourage the launch broadcasters to move quickly. We also understand that the industry needs clarity on where and when services will launch therefore we also encourage the launch broadcasters to share plans with stakeholders as soon as possible.
- 2.22 We also agree that DSO impacts will require careful consideration, and that this should be managed by the BBC and launch broadcasters (supported by industry) alongside the wider DTT upgrade and reorganisation implementation.
- 2.23 As stated in the Consultation, it will be a matter for the BBC and other launch broadcasters to decide on the number and location of sites for which they apply for a temporary frequency assignment to enable an early launch of new services. We would expect this decision to be made prior to any application to Ofcom and would interpret any application to us as a commitment to proceed should an assignment be made.
- 2.24 With regards to the application and licensing process, we expect to discuss this further with the BBC. While we will endeavour to grant any temporary licences as quickly as possible, timing will need to take account of the JPP's technical review (to ensure impacts on existing users are fully assessed before any such licence is granted). We will adopt the spectrum pricing approach set out in our consultation.

*Question 3: Do you agree with the analysis carried out for this Impact Assessment?*

## **Responses**

- 2.25 Our impact assessment of the London case study was widely endorsed by those who submitted a response (six respondents). JFMG and BEIRG noted that further assessment would be required to assess impact in other areas (as this would differ for PMSE users in each area). Intellect provided further support for the benefits identified, particularly with regard to key sporting events driving take-up and the increased market size leading to lower prices, faster.

## **Our view**

- 2.26 Given the broad support for our original analysis, we have not amended the impact assessment for a London launch for this statement. We note JFMG and BEIRG's views on assessing impact in other potential areas and as we set out in our response to Question 2 above, we will discuss each request for a temporary assignment with them as part of the licensing process to ensure that frequencies in any potential launch areas do not unacceptably impact existing PMSE users.

## Section 3

# Conclusion and next steps

- 3.1 The Consultation was positively received, and respondents did not raise any significant issues which required us to reconsider or amend the approach set out in the Consultation.
- 3.2 We will therefore adopt the frequency assignment framework (as set out in Annex 3) in dealing with applications from the BBC Free to View Ltd for any such temporary frequency assignments made across the UK. Existing processes including the JPP process and Code of Practice provide sufficient safeguards for viewers and we will work further with the BBC and others on assessing the impact on existing spectrum users.
- 3.3 It will remain a collective decision for the launch broadcasters to decide which area(s) are suitable for early launch of the new services.
- 3.4 Should we receive a formal request to temporarily assign frequencies, we will, subject to the technical clearance process, grant a new WTA licence to BBC Free to View Ltd and vary its existing Multiplex B licence for the use of this spectrum. Spectrum pricing will be set on a cost recovery basis for the duration of these assignments.

## Next steps

- 3.5 This statement enables the BBC as the Multiplex B operator and the launch broadcasters to undertake any further analysis necessary and, subject to that analysis, for the BBC to apply to Ofcom for temporary frequency assignments.
- 3.6 We expect to engage further with the BBC, to resolve practical matters including:
  - undertaking an assessment of acceptable interference; and
  - the format that any application for temporary frequencies should take and other licensing related matters such as charges.
- 3.7 Once an application is received, we aim to respond as quickly as possible, but in any case within the six week period stipulated by the Wireless Telegraphy (Licensing Procedures) Regulations 2006. This timeframe will need to take account of any necessary technical assessment to be carried out by the JPP.
- 3.8 We encourage the BBC and other launch broadcasters to complete whatever further analysis they believe is necessary as quickly as possible. We highlight the significance that these decisions will have for the development of receiver equipment and encourage launch broadcasters to give an early steer to industry on their intentions in this area.

## Annex 1

# Impact Assessment

## Introduction

- A1.1 The analysis presented in this annex represents an impact assessment, as defined in section 7 of the Communications Act 2003 (the CA03).
- A1.2 Impact assessments provide a valuable way of assessing different options for regulation and showing why the preferred option was chosen. They form part of best practice policy-making. This is reflected in section 7 of the CA03, which means that generally we have to carry out impact assessments where our proposals would be likely to have a significant effect on businesses or the general public, or when there is a major change in Ofcom's activities. However, as a matter of policy Ofcom is committed to carrying out and publishing impact assessments in relation to the great majority of our policy decisions. For further information about our approach to impact assessments, see the guidelines, Better policy-making: Ofcom's approach to impact assessment, which are on our website: [http://www.ofcom.org.uk/consult/policy\\_making/guidelines.pdf](http://www.ofcom.org.uk/consult/policy_making/guidelines.pdf)
- A1.3 We do not normally carry out a consultation process or conduct an impact assessment for the assignment of new frequencies where there are existing procedures (for example, in assigning new business radio licences), and do not consider that the application of the assignment framework, as set out in Annex 3 of this document, will have a significant effect on businesses or the general public. However, we note that there may potentially be some impact on existing viewers and current PMSE licensees where temporary frequency assignments may be deployed in some areas (particularly London) and we reflect this below.
- A1.4 Comments received on the Consultation were in agreement with this impact assessment and no further issues were raised. We therefore believe that the original analysis holds and that there is likely to be little or no impact to existing users for an early launch on Channel 31 in London.

## The citizen and/or consumer interest

- A1.5 The launch of the new Multiplex B services in key areas up to three years earlier will likely be of high interest to consumers who wish to gain access to them, but who (by virtue of the DSO timetable) are unable to do so. Citizens more generally have an interest in this statement, as it seeks to further underline the importance of widely available, free to air television in the UK.
- A1.6 We note however that the temporary assignment of analogue interleaved frequencies may lead to some impairment of the television services currently enjoyed by viewers (where interference is observed), and also on the PMSE community and their existing use of equipment. It is therefore important to provide a satisfactory level of protection for these services and we believe existing procedures are in place to do this.

## Ofcom's policy objective

- A1.7 We have considered the BBC request in the context of our duty to secure optimal use of the radio spectrum. We believe that temporary assignments of UHF analogue interleaved spectrum (where requested) to enable an earlier launch of the new Multiplex B services in later switching DSO areas will help to secure this policy by

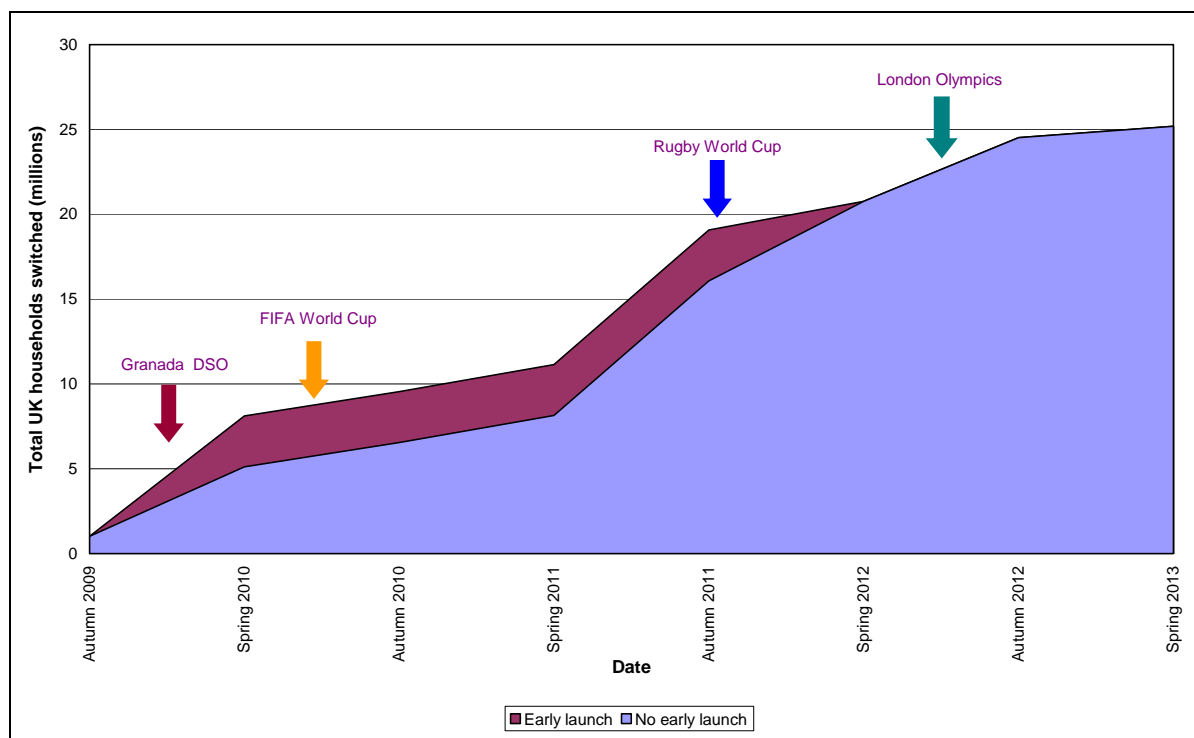
making efficient use of underutilised spectrum in London. In particular, early access to new public service broadcasting services is likely to result in a wider range and availability of consumer receiver equipment sooner than would otherwise be the case and at lower prices. This is likely to increase take up of the new services and lead to a larger base of equipment including the DVB-T2 and MPEG-4 standards, thereby increasing the efficiency of the DTT platform in the longer term.

- A1.8 A measure of success of this policy would be a more rapid take-up of the new services and subsequently, the earlier migration of additional DTT multiplexes to the new standards, and thereby increasing the overall efficiency of the DTT platform.

### Options considered

- A1.9 As set out in Section 1 of this document, the recommendations in Ofcom's 2008 Statement (and adopted by the Government's Order) are being implemented to bring about the adoption of DVB-T2 and MPEG-4 on Multiplex B (alongside the DSO regional implementation timetable) – ie. the no early launch option. An impact assessment was previously undertaken as part of that consultation process which examined the impact of intervening in order to bring about the reorganisation and upgrade on that multiplex. It concluded that intervention was necessary because of the risk that existing multiplex operators were unable to effectively coordinate this process within the necessary timeframe to secure the same level of benefits, which our analysis found to be significant.
- A1.10 To assess whether assigning frequencies as requested by the BBC to secure an earlier launch of the new Multiplex B services in some areas would be beneficial, we have considered the following two options:
- To take no further action with regards to the new services on Multiplex B beyond what has already been set out in the 2008 statement, ie. that the services will rollout following the DSO timetable (the no early launch or 'do nothing' option); or
  - To enable an earlier launch of the new Multiplex B services in some areas (by temporarily assigning underutilised analogue interleaved spectrum). For the purposes of this impact assessment and in line with our case study we have examined the impact of an early launch in London (the early launch option). We believe that an early launch is likely to affect existing users of the spectrum, take-up of the services and equipment used to receive the services, and the long-term efficiency of the DTT platform.
- A1.11 In considering these options, we take particular account of Ofcom's duties under the CA03 and WTA. Those which we believe to be most relevant are set out in Annex 3 (as read together with Annex 2), and in particular include our duty to further the interests of citizens and consumers in relation to communications matters, and our duty to secure the optimal use of the electro-magnetic spectrum.
- A1.12 A comparison of each of these options - showing the number of households that will have access to the new services over time, is shown at Figure 2 below. As shown in the diagram, the early launch option allows wider availability of the new Multiplex B services in time for key events such as the World Cup in 2010, which we believe may be important drivers of take-up for the new services.

**Figure 2: Households with access to new Multiplex B services with or without an earlier London launch**



## Analysis of the different options

### No early launch – do nothing

- A1.13 In the April Statement, we set out the benefits of reorganising services on DTT and upgrading Multiplex B to use the more efficient DVB-T2 and MPEG-4 technologies. The introduction of these technologies was consistent with our duties to secure optimal use of spectrum and increase choice for consumers. The April Statement concluded however, that consumer and producer benefits were strongly linked to the speed of take-up of the new receiver equipment.
- A1.14 The new Multiplex B services are already intended to be made available between late 2009 and 2012 as each region completes switchover, expected to begin with the Granada region (Manchester) in late 2009. By virtue of the DSO timetable, some of the most populous broadcasting regions such as London will not receive the new services for a number of years.
- A1.15 Our analysis suggests that while access to the new services in a no early launch scenario will eventually catch up to the early launch scenario as the services are rolled out, the smaller initial market is likely to have a slowing effect on equipment take-up, receiver equipment prices will likely not drop as quickly as a result, and therefore the overall timing of the next (and subsequent) multiplexes upgrading (ie. also converting to the new technologies) on the platform could well be delayed. We consider these to be the key costs of taking no action.
- A1.16 We do not expect stakeholders to incur any additional costs or experience further impacts as a result of this option.

## Early launch (assessment for London)

A1.17 Annex 3 of this document considered the legal and technical feasibility of temporarily assigning a frequency to launch the new Multiplex B services earlier, using London as a case study (as set out in Section 4 of the Consultation). The assessment concluded that a suitable frequency (Channel 31) is available and could be assigned within the existing assignment framework.

### Costs

A1.18 The costs involved in the early launch are principally:

- The financial costs to the broadcasters of using the additional frequencies;
- The impact on existing spectrum users during the period in which the additional frequencies are used; and
- The opportunity cost of using the additional frequencies during this period.

A1.19 We believe the financial costs of providing the services (incurred by broadcasters) will be relatively modest. Over the early launch period the transmission and multiplexing costs for broadcasting the new Multiplex B services at each site over the interim period are estimated to be no more than several million pounds.

A1.20 Section 4 of the Consultation set out our analysis of the impacts on existing users of the spectrum, both co-channel and adjacent channel. The impact on ATT and DTT broadcast services will depend on the location of the transmitter and power level at which it will broadcast – but is expected to be very limited and within acceptable interference levels under the Code of Practice<sup>11</sup>. In any case, we consider that the proportion of viewers whose services will be affected will be very small in comparison to the number of viewers who could gain access to the new services once launched. We also note the role of the JPP in managing interference complaints, and, if unacceptable interference was experienced, would expect power levels to be reduced. Other mitigation measures may also be employed if necessary – as provided for by the Code of Practice.

A1.21 We also need to assess the opportunity cost of temporarily assigning this spectrum. We have proposed to allow use of cleared digital dividend review (DDR) spectrum to new users after it is awarded to them and as DSO rolls out regionally (once existing uses cease), subject to giving notice to PMSE users. In London, exceptionally, we have consulted on whether to hold back DDR spectrum until after the Olympics (which takes place after the completion of London DSO). In light of this and that alternative uses for this spectrum are restricted pre-DSO (under the existing terms of the Limitations Order), we would expect the opportunity cost to be low. In other areas, we would assess the opportunity cost for each case as part of our application of the assignment framework.

A1.22 The impact on PMSE users is more difficult to assess given licences are temporary and frequently changing. We already know that DSO and the DDR will change the way UHF spectrum is used by PMSE licensees. In particular, existing assignments will terminate at DSO (regarding which, the PMSE community have been informed) and assignments made from the post DSO UHF band plan. Channel 31 in London is one such assignment (DSO is set for 2012).

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<sup>11</sup> [http://www.ofcom.org.uk/tv/ifi/tech/codes\\_guidance/cop/cop.pdf](http://www.ofcom.org.uk/tv/ifi/tech/codes_guidance/cop/cop.pdf)

- A1.23 As set out in Section 4 of the Consultation, we believe PMSE licensees should be able to retune equipment to operate in adjacent channels, provided spectrum is available. We believe retuning will be possible in the vast majority of cases. If frequencies are not available in adjacent channels we will consider alternative solutions on a case by case basis with JFMG.
- A1.24 It is also worth noting that previous DTT use of Channel 31 in 2006 (for an HD trial) did not result in any complaints relating to interference from other spectrum users.
- A1.25 Therefore, we believe that the costs of the early launch over two to three years are unlikely to be significantly greater than several million pounds.

### Benefits

- A1.26 Our analysis suggests that the temporary assignment of additional frequencies to enable an early launch of services is likely to have benefits for consumers and the businesses which are far in excess of the costs. These benefits flow from increasing the initial market size which will have knock-on effects for equipment range and availability, prices and take-up. We believe this option will create two linked effects:
- greater coverage in the early years of HD which is likely to lead to an increased number of adopters; and
  - greater numbers of adopters which is likely to lead to faster reductions in the price of compatible receiving equipment, which then feeds back into adoption levels (and subsequent multiplex conversions).
- A1.27 In assessing the benefits, we examined the impacts of an earlier launch in London (expected to be from late 2009 to DSO in 2012). We assume a London launch could double the initial potential audience, which has the potential to bring considerable consumer benefits. We have considered a simple example over this short period illustrating these benefits which we summarise in Table 1 below.

**Table 1: Consumer value of temporarily assigning a London frequency (2009-2012)**

		2009	2010	2011	2012	
1	Value of HD (£ per household per month)	5	5	5	5	
2	Months HD available	2	12	12	12 <sup>12</sup>	
3	Cost of STB (£)	150	110	90	80	
4	Additional HD adopters (million households)	0.2	0.4	0.6	0.8	
5	Incremental HD adopters (million households)	0.2	0.2	0.2	0.2	
6	Additional consumer cost of HD (£m) = Rows 3 * 5	30	22	18	16	
7	Additional value of HD (£m) = Rows 1 * 2 * 4	2	24	36	48	
8	Reduction in STB cost (£)	1	1	1	1	
9	Total HD adoption (million households)	0.2	0.7	1.5	4.0	
10	Incremental HD adoption (million households)	0.2	0.5	0.8	2.5	
11	Gain from lower STB cost (£m) = Rows 8 * 10	0.2	0.5	0.8	2.5	
12	<b>Total Consumer Surplus (£m)</b> <b>= Rows 7 + 11 - 6</b>	<b>-27.8</b>	<b>2.5</b>	<b>18.8</b>	<b>34.5</b>	<b>NPV 20.6</b>

Source: Ofcom assumptions

<sup>12</sup>Although services are expected to launch in London in mid 2012 regardless, our assumptions take account of the benefits over a full year period because the impact that earlier adoption will have on set top box prices and take-up, which would not occur under a no early launch scenario, are expected to persist for a period after 2012.

- A1.28 We believe that the assumptions used in the example for the level of take-up, consumer value and set top box costs are all plausible. In addition, we note that the example is likely to understate the size of the benefits as it only includes the benefit of the lower set top box costs up until 2012, and fails to factor in that the set top box costs incurred by the additional adopters in London are really just brought forward albeit at a higher per unit cost. Even on this basis, our analysis suggests that the consumer benefit will significantly outweigh the costs during this period (NPV of £20.6m using 3.5% discount rate).
- A1.29 The benefits illustrated above also fail to capture the knock on effects of an early launch in London on the rest of the DTT platform. It is likely that the impact on the range, availability and crucially the price<sup>13</sup> of receiver equipment (lowering prices more quickly) would be likely to further stimulate equipment take up. We believe this will have other knock-on effects for the platform as a whole, with additional multiplexes likely to convert to the new technologies sooner than under a no early launch scenario, unlocking additional capacity on DTT for new services. This view is informed by our discussions with market participants including broadcasters and manufacturers; it takes into account key take up drivers such as the 2010 Winter Olympics and FIFA World Cup, followed by the London 2012 Olympics. This suggests that the actual benefits could be much higher over time, than are shown in the simple example set out in Table 1.
- A1.30 Our analysis also suggests that broadcasters and equipment manufacturers will also benefit from the early launch of services – through increased viewing share where the new HD services are broadcast and increased consumer equipment sales. We have not sought to quantify these benefits for the purposes of this impact assessment.

### Risks of factual case

- A1.31 The benefits are lower than forecast above: it is possible that the benefits will be more limited than our stylised example suggests. However, as the benefits even in this stylised example significantly outweigh the costs and given that the stylised example only captures a subset of the available benefits (e.g. only captures the impact of reduced set top boxes until 2012) we think there is little risk of the cost outweighing the overall benefits. We also note that discretion is retained by the broadcasters and manufactures over the costs they may incur in launching services or receiver products, and that, in the event that consumer interest is lower than predicted, consumers are unlikely to incur the cost of acquiring additional set top boxes (which is the key consumer cost in the benefits calculation).
- A1.32 The costs are higher than anticipated above: the analysis of impacts on existing users is considered to be robust and the contingency arrangements in place, should impacts be greater than anticipated, are proven and likely to be effective here. Discretion is retained by the broadcasters and manufacturers over costs they may incur in launching services or receiver products.
- A1.33 Some existing licensees may not be aware of and have an opportunity to respond to the consultation: in line with our usual practice, the document was brought to the attention of parties signed up for Ofcom's spectrum updates.
- A1.34 The BBC and other broadcasters may decide not to launch the services: decisions will need to be taken on a case by case basis by the BBC and other broadcasters and, we expect, will need to be commercially justifiable. Our consultation and this statement does not pre-empt these decisions.

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<sup>13</sup> Due to economies of scale associated with a larger market, reduced risk to manufacturers and retailers and economies of scale that can be realised from manufacturing for a large initial market.



## Equality impact assessment

- A1.35 A key part of the impact assessment process is to identify the impacts of our policies on different types of stakeholders, including different diversity groups. Under race, disability and gender anti-discrimination legislation, Ofcom has a legal duty to assess the impact of our policies on these three groups. However, in line with current good practice, Ofcom is also committed to assessing the impact of our policies on different age, religious and sexual orientation equality. We recognise that this assessment is a means to determine whether we are meeting our primary aim of acting in the interest of all citizens and consumers, regardless of their background.
- A1.36 Our assessment has taken account of this policy being an extension (ie. through an earlier launch) of an existing policy – the DTT upgrade and reorganisation. The process we will use for the temporary assignment of frequencies also forms part of Ofcom’s existing procedures.
- A1.37 We believe that the framework set out in the consultation document and confirmed by this statement will ensure consumers have more choice and increase access to the new Multiplex B services by its very nature, and will not have any differential impact on the equalities groups mentioned above, particularly with regards to race, disability and gender.
- A1.38 We also note that we have sought to ensure that the new services will take account of disability access issues so that viewers with a disability can also take advantage of them.

## Conclusion

- A1.39 We believe that, on the information presently before us, the benefits of an early launch outweighs the costs and risks associated - noting there are existing arrangements in place to address impacts on existing users of the UHF spectrum band. This analysis holds even under a pessimistic scenario where the initial larger market only has an impact on prices and doesn’t bring forward the conversion of additional multiplexes to the new technologies. Broadcasters and manufacturers retain significant discretion over whether to commit resources and would be expected to do so only if commercially justifiable.

## Annex 2

# Legal framework

## Introduction

A2.1 The main issue raised by the consultation and this statement concerns the possible assignment of frequencies in certain geographic areas on a temporary basis. Such assignment would involve the grant of individual rights of use for any relevant frequencies, which matter falls within the common regulatory framework harmonised across the European Community. This annex therefore explains the legislative framework of Community law, as implemented in UK law, within which the frequency assignment framework (as described in Annex 3) would operate.

## Regulatory functions

### Grant of wireless telegraphy licences

- A2.2 One of Ofcom's functions is to manage and regulate the use of the radio spectrum. This function is conferred on Ofcom under the WTA through a system of licensing. It is unlawful to establish or use a wireless telegraphy station or to install or use wireless telegraphy apparatus except under and in accordance with a wireless telegraphy licence granted by Ofcom. However, Ofcom is under a duty to exempt from licensing any such establishment, installation or use that it considers is not likely to involve undue interference with wireless telegraphy.
- A2.3 This system is therefore aimed at ensuring that individual rights of use for radio frequencies is granted where it is necessary to do so, as required by Article 5 of the Authorisation Directive.<sup>14</sup> If it is necessary to grant such rights, that Article provides that the grant shall be made upon request but subject to certain other provisions of the Directive (such as Article 7) and other rules ensuring the efficient use of the radio frequencies in accordance with the Framework Directive.<sup>15</sup> Member States are also required to grant rights of use through open, transparent and non-discriminatory procedures, with the exception that specific criteria and procedures may be adopted to grant rights of use to providers of television broadcast content services with a view to pursuing general interest objectives in conformity with community law.
- A2.4 In the UK, anyone may therefore apply for individual rights of use for radio frequencies in the absence of any exclusion. Availability will in essence depend on any limitations imposed by Ofcom on the use of particular frequencies for the purpose of securing the efficient use of the spectrum. Such limitations have been imposed, in particular, under the Wireless Telegraphy (Limitation of Number of Licences) Order 2003<sup>16</sup> (the Limitations Order), which implements Article 7 of the Authorisation Directive.

### Relevant limitations

A2.5 Pursuant to article 3 of the Limitations Order, Ofcom will grant only a limited number of wireless telegraphy licences at the frequencies and for the uses specified in Part 1 of each of Schedules 1 to 11 to this Order.

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<sup>14</sup> Directive 2002/20/EC on the authorisation of electronic communications networks and services.

<sup>15</sup> Directive 2002/21/EC on a common regulatory framework for electronic communications networks and services.

<sup>16</sup> The Wireless Telegraphy (Limitation of Number of Licences) Order 2003, as amended by the Wireless Telegraphy (Limitation of Number of Licences) (Amendment) Order 2006. This Order was made under section 164 of the Communications Act 2003, now repealed but replaced by section 29 of the WTA.

- A2.6 As discussed in Section 2 of the consultation document, the UHF bands IV and V range from Channels 21 to 69 (470-862 MHz). These frequencies are specified for the use of transmission of terrestrial UHF analogue TV services and digital TV multiplexes and PMSE in Part 1 of Schedule 1 (470.0-854.0 MHz) and in Part 1 of Schedule 3 (425.3-862.0 MHz), respectively.
- A2.7 In relation to those frequencies and uses, Ofcom shall by virtue of article 4 of the Limitations Order:
- apply the criteria relating to the persons to whom wireless telegraphy licences may be granted specified in Part 2 of the Schedule concerned;
  - apply the criteria limiting the number of wireless telegraphy licences specified in Part 3 of the Schedule concerned; and
  - take into account the ability of each applicant for a wireless telegraphy licence to meet the licence terms, provisions and limitations applying to that wireless telegraphy licence,
- in determining the limit on the number of wireless telegraphy licences to be granted and the persons to whom wireless telegraphy licences will be granted.
- A2.8 With regard to digital TV multiplexes, Schedule 1 provides that the frequencies are assigned only to the British Broadcasting Corporation (BBC) and persons who possess one of the Broadcasting Act licences specified therein, including digital TV multiplexes under Part I of the Broadcasting Act 1996. Two criteria limiting the number of wireless telegraphy licences apply, namely:
- the availability of wireless telegraphy licences is limited at these frequencies by the technical frequency assignment criteria set out in the Technical Frequency Assignment Criteria for Television and Sound Broadcasting published by Ofcom;<sup>17</sup>
  - applicants must undertake to use the assigned frequencies solely for the transmission and reception of signals as part of the broadcasting service as defined in Article 1.38 of the Radio Regulations.
- A2.9 For PMSE, no criteria apply as to persons to whom wireless telegraphy licences may be granted. With regard to the criteria in Schedule 3 to the Limitations Order limiting the number of wireless telegraphy licences, there are two:
- the availability of wireless telegraphy licences at these frequencies is limited by the technical frequency assignment criteria set out in Technical Frequency Assignment Criteria—Programme Making and Special Events published by Ofcom;<sup>18</sup>
  - all applications for licences are considered (and the technical frequency assignment criteria applied) in the order of receipt of each correctly completed application form except for the UK Wireless Microphone (Annual) Licence and the UK Wireless Microphone (Biennial) Licence for which the technical frequency assignment criteria do not limit the number of licences.
- A2.10 Accordingly, the frequencies in question may be licensed to the specified persons for both digital TV and PMSE, subject to satisfying the criteria discussed above.

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<sup>17</sup> <http://www.ofcom.org.uk/radiocomms/ifi/licensing/classes/broadcasting/tfac/>

<sup>18</sup> [http://www.ofcom.org.uk/radiocomms/ifi/glines/bas\\_cg/pmse](http://www.ofcom.org.uk/radiocomms/ifi/glines/bas_cg/pmse)

## Licence process and terms

- A2.11 Any application for a grant of a wireless telegraphy licence is, by virtue of section 10 of (and Schedule 1 to) the WTA, to be determined in accordance with procedures prescribed in regulations made by Ofcom. The present regulations<sup>19</sup> prescribe that Ofcom must make a decision (including notifying it to the applicant and publication) on an application for the grant of a licence not more than six weeks after the day of the receipt of the application.<sup>20</sup>
- A2.12 The regulations provide that Ofcom must grant licences either in relation to particular equipment or in relation to any equipment falling within the description specified in the licence and expressed by reference to such factors (including factors confined to the manner in which it is established, installed or used), as are described in the licence. They also require that an applicant must complete the licence application form which is appropriate for the class of licence being applied for and must, in particular, provide the information prescribed in the regulations.
- A2.13 The regulations also give particulars of the terms, provisions and limitations to which a licence is made subject, including those which are contained in the Wireless Telegraphy Act Licences (Terms, Provisions and Limitations) document published by Ofcom.<sup>21</sup> This publication details the terms, provisions and limitations which apply to each class of licence listed in it, and includes sample licences and, where applicable, the terms and conditions booklets which relate to those licences. However, the class of licence relevant in this context<sup>22</sup> does not appear on that list.
- A2.14 Therefore, in light of the specific characteristics proposed to be attached to the frequency assignments discussed in the consultation document (such as the temporary duration and geographical limitations), Ofcom intends to rely on powers contained in the WTA itself. Specifically, section 9(1) of the WTA gives Ofcom the power to grant wireless telegraphy licences subject to such terms, provisions and limitations as Ofcom thinks fit, provided that they are objectively justifiable in relation to the networks and services to which they relate, not such as to discriminate unduly against particular persons or against a particular description of persons, proportionate and transparent to what they are intended to achieve.
- A2.15 Such matters may include, for example, a description of the radio equipment that may be installed or used under the wireless telegraphy licence at specific places, the purpose for which, the circumstances in which and the persons by whom it may be used (such as providing the Multiplex B DTT multiplex service), together with any technical requirements (e.g. the frequency in question, the aerial heights and any maximum permitted radiated power). The licence may also contain broadcasting specific terms such as ensuring compliance with requirements in the Broadcasting Act licence for Multiplex B, specific parameters for transmitting sites, the Code of Practice on Changes to Existing Transmission and Reception Arrangements<sup>23</sup>, the Guidance Note on Test Transmissions<sup>24</sup>, the Technical Performance Code<sup>25</sup>, and the Reference Parameters for DTT Transmissions in the United Kingdom<sup>26</sup>.

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<sup>19</sup> The Wireless Telegraphy (Licensing Procedures) Regulations 2006, SI 2006/2785.

<sup>20</sup> This is because the licence would in this context relate to frequencies allocated for use in the United Kingdom Plan for Frequency Authorisation (<http://spectruminfo.ofcom.org.uk/spectrumInfo/ukpfa>): see 470-854 MHz, Broadcasting Services, Terrestrial TV Broadcast Transmission (UHF Analogue and Digital), and Non-tradable.

<sup>21</sup> <http://www.ofcom.org.uk/radiocomms/ifi/wtf/>

<sup>22</sup> i.e. Transmission of Terrestrial UHF Analogue TV Services and Digital TV Multiplexes.

<sup>23</sup> [http://www.ofcom.org.uk/tv/ifi/tech/codes\\_guidance/cop/cop.pdf](http://www.ofcom.org.uk/tv/ifi/tech/codes_guidance/cop/cop.pdf)

<sup>24</sup> <http://www.ofcom.org.uk/radiocomms/ifi/licensing/classes/noperational/ofw357nonopguide.pdf>

<sup>25</sup> [http://www.ofcom.org.uk/tv/ifi/tech/codes\\_guidance/tv\\_tech\\_platform\\_code.pdf](http://www.ofcom.org.uk/tv/ifi/tech/codes_guidance/tv_tech_platform_code.pdf)

<sup>26</sup> [http://www.ofcom.org.uk/tv/ifi/tech/codes\\_guidance/dttt\\_uk2.pdf](http://www.ofcom.org.uk/tv/ifi/tech/codes_guidance/dttt_uk2.pdf)

A2.16 With regards to the duration, the WTA also prescribes that a wireless telegraphy licence continues in force, unless previously revoked by Ofcom, for such period as may be specified in the licence.<sup>27</sup>

## Licence charges

A2.17 Pursuant to section 12 of the WTA, a person to whom a wireless telegraphy licence is granted must pay to Ofcom either such sums as Ofcom may prescribe by regulations or, if regulations made by Ofcom so provide, such sums (whether on the grant of the licence or subsequently) as Ofcom may determine in the particular case.

A2.18 This power therefore enables Ofcom to recover the cost of administering and managing wireless telegraphy licences. Section 13 of the WTA then permits Ofcom to recover sums greater than those necessary to recover costs incurred if Ofcom thinks fit in the light (in particular) of the matters to which it must have regard under section 3 of the WTA, including promoting the efficient management and use of the part of the electromagnetic spectrum available for wireless telegraphy. Ofcom's policy on spectrum pricing is discussed in Annex 3.

A2.19 In light of the above, the Wireless Telegraphy (Licence Charges) Regulations 2005 (SI 2005/1378) provide for fees to be paid to Ofcom but they do not prescribe any specific sums in relation to the class of (broadcasting) licence relevant in this context. However, regulation 6 of these Regulations provides that, where a sum is not prescribed by them (whether on the issue of a licence or subsequently), there shall be paid to Ofcom such sum as Ofcom may in the particular case determine.

## Statutory duties

### General duties

A2.20 The grant of a temporary assignment of the frequencies considered in the consultation document and this statement by means of granting a wireless telegraphy licence would involve Ofcom carrying out one of its functions. As such, it is Ofcom's principal duty under section 3(1) of the CA03 to further the interests of citizens and to further the interests of consumers in markets for any of the services, facilities, apparatus or directories in relation to which Ofcom has functions, where appropriate by promoting competition.

A2.21 In discharging its principal duty, Ofcom is required to secure a number of specific objectives set out in section 3(2). We consider that the following objectives are particularly relevant to the Consultation and this statement (for reasons set out in Sections 2 to 4 of the Consultation):

- to secure the optimal use for wireless telegraphy of the electro-magnetic 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.

A2.22 In performing these duties, Ofcom is also required to have regard to certain matters listed in section 3(4) as appear to us to be relevant in the circumstances. For the purpose of our consultation and this statement, we consider that the following matters are of particular relevance:

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<sup>27</sup> Paragraph 5 of Schedule 1 to the WTA.

- the desirability of promoting the fulfilment of the purposes of public service television broadcasting in the UK;
- the desirability of encouraging investment and innovation in relevant markets;
- the different needs and interests of everyone who may wish to use the spectrum for wireless telegraphy;
- the interests of consumers in respect of choice, price, quality and value for money.

A2.23 There is no hierarchy in the legislation between the two components of the principal duty in section 3(1), or between the objectives in section 3(2), or between the matters in section 3(4), of the CA03. Rather, Parliament has recognised that Ofcom's duties require it to pursue a range of objectives while taking a variety of matters into consideration and that this was likely to present Ofcom with a need to resolve conflicts between these duties and matters. Therefore, Ofcom has a wide measure of discretion in such circumstances within an overall framework. Thus, in making its present proposals, Ofcom has taken account of its principal duty, the specific objectives and some additional matters in order to arrive at a judgement on the most appropriate option going forwards by weighing the technological as well as economic considerations presently before it, as set out in our consultation document.

### **Specific Community law duties**

A2.24 Section 4 of the CA03 implements Article 8 (policy objectives and regulatory principles) of the Framework Directive.<sup>28</sup> This sets out the objectives that national regulatory authorities must take all reasonable steps to achieve. These include promoting competition in the provision of electronic communications networks and services by, among other things, encouraging efficient investment in infrastructure and promoting innovation, and encouraging efficient use of radio frequencies. For our consultation and this statement, nothing turns on these specific duties as we consider that they overlap consistently with the general duties discussed above.

### **Spectrum specific duties**

A2.25 In carrying out its spectrum functions, Ofcom is specifically required by section 3 of the WTA to have regard, in particular, to:

- the extent to which the spectrum is available for use or further use for wireless telegraphy;
- the demand for use of that spectrum for wireless telegraphy; and
- the demand that is likely to arise in future for the use of that spectrum for wireless telegraphy.

A2.26 Ofcom must also have regard, in particular, to the desirability of promoting:

- the efficient management and use of the spectrum for wireless telegraphy;
- the economic and other benefits that may arise from the use of wireless telegraphy;
- the development of innovative services; and
- competition in the provision of electronic communications services.

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<sup>28</sup> Directive 2002/21/EC on a common regulatory framework for electronic communications networks and services

A2.27 Where it appears to us that any of our duties under section 3 of the WTA conflicts with one or more of our general duties under sections 3 to 6 of the CA03, we must give priority to our duties under the latter. In Annex 3 (as read together with Annex 1), we discuss our reasons why the proposal set out in the consultation is consistent with Ofcom's statutory duties mentioned above, particularly by promoting the efficient management and use of the spectrum for wireless telegraphy.

### **Broadcasting Act licence implications**

A2.28 This annex discusses above the need for Ofcom to exercise its function to grant a wireless telegraphy licence to give effect to the decisions covered by this statement, subject to BBC Free To View Ltd submitting an application to Ofcom for the grant of such licence as a person possessing a relevant Broadcasting Act licence for the purpose of satisfying the criteria under the Limitations Order discussed above.

A2.29 Any decision to grant a wireless telegraphy licence would also require Ofcom exercising its separate functions to vary the Broadcasting Act licence granted to BBC Free To View Ltd, which authorises it to provide the television multiplex service under Part 1 of the Broadcasting Act 1996 (known as Multiplex B).<sup>29</sup> The extent to which that licence would need to be varied by Ofcom would be considered following the receipt of any application made by BBC Free To View Ltd for a wireless telegraphy licence following this statement.

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<sup>29</sup> The Multiplex B licence was granted by the ITC on 16 August 2002.

## Annex 3

# The frequency assignment framework

## Introduction

- A3.1 Our April Statement identified that because the reorganisation and upgrade of the DTT platform will follow the same timetable as the DSO regional implementation, this meant viewers in later switching regions could have to wait up to three years to receive the new Multiplex B services. The BBC has since requested that Ofcom consider making temporary frequency assignments for use in a number of late switching DSO regions. The BBC's request reiterated Ofcom's concerns about limited viewer access to these services in the early years and expressed further concern that the comparatively small post DSO market would result in limited receiver selection and increased receiver prices.
- A3.2 As a result, we have explored whether any additional frequencies could be used to carry the new services in pre-DSO regions in the period leading up to DSO. Our objective for doing so is to promote spectrum efficiency by making optimal use of existing UHF broadcasting spectrum in the run up to DSO.
- A3.3 This section sets out the process we intend to follow in response to the BBC's (and any future comparable) requests. In summary, we intend to adopt a three stage process:
- Consider whether making a temporary frequency assignment to the BBC Free to View Ltd for this purpose, would be compatible with:
    - the spectrum management framework we operate within; and
    - Ofcom's duties and objectives;
  - Assess whether suitable frequencies within the UHF band are available for assignment; and
  - Investigate the technical feasibility of assigning frequencies (ie. whether the assignment causes unacceptable interference to existing services).
- A3.4 We believe these are the relevant considerations and set out our reasoning below.

## Assignment of frequencies

- A3.5 Annex 2 sets out the legal framework under which Ofcom operates. It also introduces the Limitations Order which limits use of the relevant UHF frequencies to broadcasting and PMSE; the Limitations Order also limits assignment of these frequencies to certain specified parties, including licensed digital multiplex operators such as BBC Free to View Ltd.
- A3.6 Broadcasting is a primary user of the UHF band, with PMSE a secondary user.
- A3.7 Apart from the major reorganisation of broadcasting assignments necessitated by DSO (carried out administratively by Ofcom and explained further below), most recent assignments in the UHF band have been for PMSE use, where thousands of licences, both short and long term, are granted each year. PMSE licences are granted on a *first come first served basis* – ie. a licence will be granted unless to do so would cause unacceptable interference to existing users.



- A3.8 There are also a number of examples of broadcasting assignments being made at the request of a licensee, such as:
- to increase coverage of Channel Five's analogue service;
  - to extend the DTT coverage of all multiplexes but especially Multiplexes C & D during the period 2000 to 2002 (the so-called equalisation programme);
  - to make short duration or event restricted television service licences (RTSLs) available; and
  - to test and develop digital broadcasting for existing RTSL holders in advance of switchover.
- A3.9 In such cases, the process followed by Ofcom has been to grant a licence to use the frequency (or frequencies) to the broadcasting or multiplex licensee(s), unless doing so would be inconsistent with the legal framework we operate within - including abiding by international coordination agreements.
- A3.10 Therefore, provided a frequency assignment request would not lead to unacceptable interference to either existing UK use or conflict with our international agreements (the technical assessment typically undertaken by Ofcom to determine interference levels is set out later in this section), we are minded to assign these temporary frequencies on a *first come first served basis*.

### **Consistency with Ofcom duties and objectives**

- A3.11 As we note above, reassigning underutilised frequencies to secure more efficient use of the radio spectrum is one of our primary duties. We draw particular attention to our specific spectrum duties which require that we have regard to the extent to which spectrum is available for wireless telegraphy use or further use, and the existing and likely future demand for use of that spectrum for wireless telegraphy. We must balance this against our duty to take account of the different needs and interests of everyone wishing to use the spectrum for wireless telegraphy. In addition, we would expect to consider consistency with our general duties – the most relevant of which are set out in Annex 2.
- A3.12 Under this framework, assignments would be made on a temporary basis in order to improve coverage, help drive take-up of the new services where the benefits could be shown to outweigh the costs (see Impact Assessment at Annex 1 for further details).
- A3.13 We consider that the assignment process outlined is consistent with our duties and objectives in relation to citizens and consumers. We will consider the benefits of such an approach against any request received on a case by case basis, as we have done with the London case study (see Section 4 of the Consultation).

### **Availability of frequencies**

- A3.14 Initially the UHF 470-862MHz frequencies were only used for the broadcasting of analogue terrestrial television (ATT) services. However, following the legislative changes introduced by the Broadcasting Act 1996, the ITC licensed five DTT multiplexes to start broadcasting in this band in 1998 alongside a sixth multiplex operated by the BBC and existing analogue services.
- A3.15 In 2001, following discussions with the Government and the Radiocommunications Agency, the ITC ceased making new analogue assignments. In 2003 the

Government<sup>30</sup> decided that ATT services should be switched off and that around 70% of the spectrum currently used for analogue television should be reserved for DTT (256 of the 368MHz available). The remaining 112MHz is being released for new users and/or uses, and this forms the subject of the DDR process.

- A3.16 In 2005 the Government confirmed its DSO plans<sup>31</sup>; that ATT would cease broadcasting on a region by region basis and that the coverage of the PSB services on DTT would be increased to match analogue broadcasters 98.5% coverage level.
- A3.17 The UK's UHF broadcasting assignments are planned by the JPP<sup>32</sup> and are coordinated by Ofcom with our nearest European neighbours. Due to the nature of the broadcast services it is possible that some additional non-broadcast services can make secondary use of some of the frequencies between these broadcast assignments in a particular geographic area. These so called 'white spaces' (which are also referred to as the "analogue interleaved" spectrum) are currently licensed for use on a secondary basis for the PMSE community. PMSE users make extensive use of the UHF bands (currently operating in over 44 channels) which they access on a secondary basis to TV broadcasting.
- A3.18 Availability of analogue interleaved spectrum varies across the UK, depending on which channels are used for broadcasting in each region and other constraints on use, such as protecting foreign assignments. We know however, from DSO planning that there is some analogue interleaved spectrum which although currently available (on a secondary basis) for PMSE use, is only lightly used and therefore potentially available for further broadcast use (subject to the constraints imposed by DSO and the DDR).
- A3.19 Following DSO, the UHF spectrum will be reserved for DTT use, awarded to a band manager with obligations for PMSE users, or auctioned as part of the DDR (as nationally cleared or local interleaved spectrum) and made available for new uses. Ofcom announced its decisions on the use of this spectrum in the DDR in December 2007.<sup>33</sup> Ofcom has more recently issued detailed proposals for consultation on its proposed award process for the cleared and interleaved spectrum and for the appointment of a band manager to manage PMSE access to the interleaved spectrum post switchover.<sup>34</sup>
- A3.20 These decisions together effectively place a 'sunset' on the use of any analogue interleaved spectrum at the completion of DSO in 2012. As a result, and as DSO draws nearer, the opportunity to utilise this spectrum is declining and consequently the opportunity cost for its use is reduced over this shorter period.
- A3.21 We conclude that while additional frequencies in the UHF band are available throughout the UK, they differ by geographic location and availability, and may be further limited by existing PMSE use and DSO and/or the DDR process in neighbouring regions. Therefore, we believe availability should be considered on a case by case basis. We consider the specific example of London in Section 4 of the Consultation.

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<sup>30</sup> [http://www.digitaltelevision.gov.uk/pdf\\_documents/publications/statement\\_on\\_availability.pdf](http://www.digitaltelevision.gov.uk/pdf_documents/publications/statement_on_availability.pdf)

<sup>31</sup> [http://www.culture.gov.uk/reference\\_library/media\\_releases/3059.aspx](http://www.culture.gov.uk/reference_library/media_releases/3059.aspx)

<sup>32</sup> The JPP is a spectrum planning group established by an MoU between the BBC, Ofcom, NGW and Arqiva, with multiplex operators D3&4, SDN, NGW and BBC as observers. Its purpose is to develop detailed frequency plans for the enhancement of the existing DTT transmitter network and for the future post-switchover network.

<sup>33</sup> <http://www.ofcom.org.uk/consult/condocs/ddr/statement/>.

<sup>34</sup> Consultations for the DDR cleared award (<http://www.ofcom.org.uk/consult/condocs/clearedaward/>), DDR interleaved award (<http://www.ofcom.org.uk/consult/condocs/ddrinterleaved/>) and DDR band manager award (<http://www.ofcom.org.uk/consult/condocs/bandmgr/>)

## Technical feasibility

- A3.22 As part of our analysis of whether a temporary frequency could be assigned (subject to it not causing unacceptable interference to either neighbouring UK or foreign assignments) we would conduct a technical feasibility assessment - looking at the impacts of in-band and adjacent band interference to existing users of the bands. Existing users include analogue and digital broadcasting and PMSE.
- A3.23 The requirement to undertake such an assessment is referred to in the technical frequency assignment criteria (TFAC) which have been developed for Television and Sound Broadcasting, and are published by Ofcom on its website (these criteria are referenced in the Limitations Order as set out in Annex 2). They are designed to ensure efficient use of the spectrum and avoid interference to other users, and therefore may limit (or prevent) the availability of a licence. The TFAC set out the procedures for obtaining national clearances and international coordination of frequencies used by television and sound broadcast transmitters in the UK (set out in the London case study in Section 4 of the Consultation). In this context, we consider that the criteria have been satisfied by that assessment.
- A3.24 The Code of Practice also sets out the acceptable levels of interference that may be caused to viewers as DSO upgrades take place. The Code provides licensees with guidance on the priorities that it expects them to adopt during DSO and the remedial actions they are required to take, as a result of any interference. This includes working closely with the JPP to handle any requests and/or complaints under the Code.
- A3.25 PMSE equipment can often make use of a range of channels within a particular frequency band and be retuned to operate in adjacent channels. We will work with JFMG (and once awarded, the new band manager with obligations to PMSE users) to minimise any disruption caused by migrating existing licensees where this is necessary.
- A3.26 In assessing the impact for specific areas, we would liaise with relevant broadcasters and JFMG before forming a view on technical feasibility. An example is provided in Section 4 of the Consultation in the context of a temporary frequency assignment to the BBC in London.

## Other issues

- A3.27 We also consider three further matters relating to the BBC's request; as these are generic we address them fully in this section.

## Spectrum pricing

- A3.28 We confirmed our general approach to spectrum pricing in our June 2007 Statement: 'Future pricing of spectrum used for terrestrial broadcasting'.<sup>35</sup> We concluded in that Statement that administrative incentive pricing (AIP) should apply to all terrestrial broadcasting uses of spectrum, but that in the case of spectrum used to broadcast the current DTT multiplexes, AIP should not be charged until 2014. Under our general approach, and confirmed in the Statement, we believe that AIP should apply immediately to any spectrum used for broadcasting any new terrestrial broadcast service, unless such spectrum is acquired through an auction. However, we noted that we would publish detailed proposals on the methodology and expected charges for AIP prior to its introduction in 2014, once better information about opportunity costs is known. For example, the DDR cleared spectrum award and other awards and pricing reviews in broadly comparable spectrum bands will have taken place before then.

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<sup>35</sup> <http://www.ofcom.org.uk/consult/condocs/futurepricing/statement/statement.pdf>

- A3.29 Since we are of the view that the BBC's request for the temporary assignment of analogue interleaved frequencies would require a further spectrum assignment for broadcasting, we have, in line with our general approach, considered the level of fee to set. In doing so, we have taken account of the specific circumstances of this case.
- A3.30 First, the very limited timescales of these assignments (ie. less than three years) will have a direct effect on whether AIP fees could be expected to contribute to efficient decisions on spectrum use. In our spectrum pricing statement, we recognised that many of the efficiency gains from AIP for spectrum used for terrestrial broadcasting would come in the form of long term investment decisions by broadcasters, and strategic decisions by broadcasters and regulators. The short duration of any temporary assignments, and the fact that they are designed to fit within the continuing broadcasting regulatory framework, including technical standards, both strongly suggest that opportunity cost-based pricing would be unlikely to drive efficiency improvements over the period of their use. The long term decisions mentioned above are much more likely to be taken looking at the platform (and other platforms available to broadcasters) as a whole, not this time limited use.
- A3.31 Second, given the high initial costs of launching the service, it is possible that the service itself would not generate sufficient commercial benefits over the period of the assignments to justify the total investment when including spectrum fees based on AIP. If the imposition of AIP at full opportunity cost level resulted in decisions by broadcasters not to launch the services in London (or other areas), there would be a loss of benefits to consumers (see Annex 1 for further analysis). As the spectrum will only be available in this format for a very limited time, it would be unlikely that such a loss of benefits would be offset by alternative uses with similar value for consumers.
- A3.32 For the above reasons, we think the scope for pricing to incentivise more efficient decisions in relation to the use of these assignments bringing benefits for consumers and citizens, is materially limited. In addition, our thinking and analysis on the opportunity cost of spectrum in the UHF broadcasting band, and appropriate fee levels, is still at a preliminary stage. We think it would be disproportionate, in comparison with the limited potential benefits, to devote time and resources – both stakeholders' and our own – to deriving an opportunity cost estimate for the spectrum in these assignments. We would in any case plan to run a full opportunity cost assessment and fee-setting consultation for spectrum in the UHF broadcasting band before implementing pricing for existing multiplex spectrum in 2014, with the benefit of information provided by the market following the DDR awards.
- A3.33 In light of these considerations and the specific circumstances of this assignment, we are minded on this occasion to set spectrum fees on a cost recovery basis for the duration of these assignments. We therefore do not propose to apply AIP to this exceptional case.
- A3.34 We note also the recent proposals in the DDR cleared award for charging PMSE users on an administrative cost basis for temporary continued access (of up to one year) to cleared spectrum awarded through the DDR, but prior to DSO and its subsequent clearance. We consider the charging approach outlined above is consistent with our proposals for PMSE access given the use of spectrum in question relates to the period before DSO in both cases.

## Licensing

- A3.35 We have considered the licensing implications of the BBC's request to launch Multiplex B services earlier in some pre-DSO regions. Our view is that since this is essentially a Broadcasting Act assignment within the remit of the current Multiplex B licence (which is exempt from payments until 2014), we consider that with regards to content

licensing, any additional temporary frequencies can be included within the existing Multiplex B licence. In light of this, we do not intend to apply additional broadcast licensing fees to the Multiplex B component of the assignment (held by BBC Free to View Ltd). We note that until the DSO programme is completed, the Multiplex B licence would comprise broadcast frequencies under a number of different power transmission levels, depending on the region and its DSO status. Content licensing for other comparable requests will be considered on a case by case basis.

- A3.36 With regards to spectrum licensing under the WTA, we propose to issue a new WTA licence to BBC Free to View Ltd to carry the new services for the temporary period up until DSO in the region(s) in which they launch. This is in line with the existing regulatory framework, although for the avoidance of doubt, our approach will differ in terms of the period for which the licence will be granted given the temporary nature of any assignment using this framework. Licence fees are dealt with under the Spectrum pricing section above.

### **Timing for launch**

- A3.37 It would be left to the BBC and other broadcasters to agree a launch date for any new Multiplex B services launched prior to DSO using temporary frequency assignments, but it is unlikely to precede the timeframe for service launch of the upgraded Multiplex B services in Granada, currently expected to be in late 2009. A number of factors may affect this timing, including DSO resourcing, progress with manufacturing of receiver equipment and the quantities of equipment available. Subject to the outcome of this consultation and to Ofcom receiving an application for a WTA licence, Ofcom would aim to make spectrum available as soon as practicable after receiving a request.