



# Digital Television: Enabling New Services

Facilitating efficiency on DTT

Statement

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## Foreword

This is a time of intense innovation and change in UK television. Digital technologies are bringing choice and variety to viewers as never before. Digital platforms, like cable, satellite and broadband, are developing rapidly. They are making new types of content available and new ways of experiencing it, from High Definition (HD) to video-on-demand.

Digital Terrestrial Television (DTT) is one very important part of this new television landscape. Digital switchover (DSO) will mean that DTT services are available throughout the UK – allowing DTT to become the way in which we ensure that the whole country has access to Public Service Broadcasting (PSB), free-to-air.

Parliament has given Ofcom important responsibilities for the regulation of DTT. These are wider and deeper than our responsibilities for other television platforms, reflecting the role that DTT has in making PSB content available to all.

We think it is very important that the regulation of DTT allows it to stay at the forefront of broadcasting - adopting new technologies, so it can offer new services, and make the very best use of valuable spectrum. This document sets out our conclusions on how we believe the DTT platform could evolve over the next few years.

In brief, it describes how we can realise a tremendous opportunity - to begin upgrading DTT by embracing the latest technologies. These have the potential to bring huge increases in capacity to the platform, enabling it to offer richer and more varied services, including HD.

Our statement describes how, subject to decisions by the Government, this huge prize can be achieved without needing more spectrum, and, while protecting viewers' access to existing PSB services.

I encourage all those who support the development of the DTT platform – broadcasters, multiplex operators and consumer groups – to work with us to turn this prize into reality.

Ed Richards, Chief Executive

## Section 1

# Executive Summary

## Introduction

- 1.1 This Statement concludes our consultation process initiated in November 2007<sup>1</sup> in response to a request by the Government for advice on how the MPEG-4 and DVB-T2 technologies could be introduced to the DTT platform and the potential use of regulatory powers by the Government and Ofcom to bring this about.
- 1.2 Our consultation set out Ofcom's statutory duties and policy objectives with specific reference to our spectrum and broadcasting duties and objectives. It also made reference to our own general regulatory principles, including that we operate with a bias against intervention - but a willingness to intervene firmly where necessary. Our consultation invited views on a range of issues and, in particular, on proposals to clear services from and upgrade one public service (i.e. universal coverage), DTT multiplex.
- 1.3 **Section 2** recaps on our proposals and provides an overview of recent developments. **Section 3** summarises our statutory duties and the particular policy objectives that we are pursuing in relation to the proposals that we set out in our consultation. **Section 4** provides a summary of responses to our consultation together with our views on them. In **Section 5**, we set out our conclusions and recommendations to the Government in response to its request and we then propose a series of next steps in **Section 6**, if those recommendations are accepted.

## Our conclusions and recommendations to the Government

- 1.4 We received 88 responses to our consultation. Those responses and extensive dialogue with stakeholders have helped us test and improve our proposals. We thank respondents and other parties who have contributed in other ways over recent months. We have also worked closely with the BBC Trust to ensure that our recommendations to the Government take account of the respective roles of Ofcom and the BBC Trust in regulating commercial PSB and the BBC. As a result, we have been persuaded to adopt certain changes to our proposals, but we do not consider they represent fundamental differences to those on which we consulted.
- 1.5 We have particularly considered an alternative proposal for bringing about the reorganisation, upgrade and allocation of capacity made by several PSBs. We have concluded that, for the reasons set out in **Section 4**, the proposal is less likely to secure the greatest benefits for viewers and the platform generally. Rather, we consider that firm and targeted intervention would lead to substantially greater benefits for citizens and consumers, including helping address short term capacity constraints and – crucially – provide a clear path to meet longer term growth in demand for higher bandwidth services on DTT.
- 1.6 We believe, in particular, that the industry-led approach proposed by the PSBs would not allow for an open and transparent process of allocating what is a valuable capacity on a public service multiplex; it does not take full account of the level of regulatory intervention that we believe would still be required to implement the proposals; it is more likely to increase the risks that the implementation would be

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

delayed, which in our opinion, would be likely to result in a significant loss of value to consumers; and finally, in the absence of further information and evidence, our view is that it lacks measures to maximise the public value from the use of the capacity.

1.7 In contrast, we believe that the proposed reorganisation (with some changes as a result of views expressed during our consultation) would bring significant benefits to both citizens and consumers through the wide availability of new and innovative services and the more efficient use of valuable spectrum by the broadcasters, reinforcing the UK's leading position in the adoption of digital television services. Indeed, our consultation noted that the overall benefits to the UK economy from the adoption of these proposals could be substantial. The wide support shown by all sections of the industry to the underlying proposals reinforces our assessment of the credibility of the proposals and the potential benefits they should bring to the UK.

1.8 Therefore, our recommendations to Government on the key issues include that:

- The MPEG-4 and DVB-T2 technologies should be introduced to one universal coverage multiplex (Multiplex B as currently operated by BBC Free to View Limited); this should enable carriage of three HD (or up to 15 standard definition (SD)) sized services from 2009 and a fourth service available from 2012.
- Capacity should, in principle, be reserved for core PSB services on universal coverage (PSB) multiplexes, including Five and S4C, TG4 and the Gaelic Digital Service (GDS) - if approved for DTT carriage by the BBC Trust.
- The reorganisation should be linked to DSO and should start in the Granada region in late 2009. The first three blocks of Multiplex B capacity should become available at that point with a fourth expected in 2011 or 2012.
- The BBC Trust should retain oversight of the use of one of the first three blocks. The other two of these blocks should be available for award by Ofcom through a comparative selection process later this year with the fourth block awarded by Ofcom, if appropriate, sometime in 2009/10 after conclusion of the PSB Review.
- These changes should be brought about through the use of both Ofcom's and Government's respective regulatory and statutory powers – in particular, we are recommending that the Secretary of State considers using those vested in him by section 243 of the Communications Act 2003 (CA03).
- A working group should be established to manage the reorganisation and launch of services on Multiplex B and the dovetailing of this process with the existing DSO programme. The group would consist of broadcasters, commercial and consumer equipment manufacturers, transmission infrastructure and multiplex operators, Government, Ofcom and other parties as appropriate for implementing the proposed policy (see **Section 6**).

### Next steps & implementation

1.9 The interim timetable for implementing our recommendations is set out in **Section 6**; this is subject to decisions by the Government. The next steps outlined below reflect our understanding from our discussions with the Department of Culture, Media and Sport (DCMS) of a way forward following the Government's consideration of our recommendations:

- Decisions by the Secretary of State in response to Ofcom's recommendations including, if adopted, the potential issue of a section 243 Order enabling implementation of those recommendations.
- Publication by Ofcom of a draft Invitation to Apply (ITA) for the initial two blocks of Multiplex B capacity which would serve to assist interested applicants with their preparation of any applications to any formal ITA that may be published subsequently.
- Ofcom will consider whether any amendments are needed to the draft ITA to reflect the provisions of such an order, before publishing our formal invitation for applications for the relevant capacity. We expect to give not less than four weeks but no longer than six weeks for applications to be made upon publication of the notice.
- Establishment of the implementation working group, with initial meeting to be held after the publication of the draft ITA.
- Publication by Ofcom of a notice of the ITA, inviting formal applications for the Multiplex B capacity, following any decision by the Government on the use of its statutory powers in light of its consultation.
- Determination by Ofcom whether (or not) to reserve any of that capacity to any proposed service offerings by reference to our selection criteria and, as soon as reasonably practicable after that decision, either publish the names of successful applicants (together with granting or varying relevant multiplex and content licences) or publish our reasons for not reserving capacity.
- Modifications to Technical Codes
- Technical trials (of transmission and reception equipment).
- Launch of services (Granada region at DSO).

1.10 The steps above are set out in more detail in **Section 6**, together with our initial estimates of dates for each step. We propose that an implementation plan is published in draft after the initial meeting of the working group and once a decision has been made by the Government.

## Section 2

# Introduction & recent developments

## Background

- 2.1 DTT services were launched in the UK in 1998. They currently cover around 73% of UK households compared with 98.5% coverage for the existing analogue public service broadcasters<sup>2</sup> (PSBs) - BBC1, BBC2, ITV and Channel 4/S4C. The six DTT multiplexes currently carry over 30 television channels, and a number of radio, digital text and interactive services (see **Annex 5**).
- 2.2 The completion of DSO in 2012 will result in the coverage of the three PSB DTT multiplexes (Multiplexes 1 and B operated by the BBC, and Multiplex 2 operated by Digital 3&4) matching that of the analogue television services. The three commercial multiplexes (Multiplex A operated by SDN, and Multiplexes C and D operated by National Grid Wireless (NGW)) will also increase their coverage from 73% to around 90% at DSO.
- 2.3 It is expected that two of the multiplex operators (BBC and NGW) will be able to increase the capacity on their four multiplexes at DSO through a change in the transmission mode. This will result in an increase in the capacity of the DTT platform of around 24M/bits, equivalent to more than an additional multiplex, while still enabling the multiplexes to achieve the coverage set out above.

## Our consultation

- 2.4 In November 2007, Ofcom published a consultation document entitled “The Future of Digital Terrestrial Television: Enabling new services for viewers”<sup>3</sup>. Our consultation set out our proposals on how the DTT platform could begin to evolve over the next few years. In brief, it described a tremendous opportunity to begin upgrading DTT by embracing the latest technologies. We set out our belief that they have the potential to bring very large increases in capacity to the platform, enabling it to offer richer and more varied services - including HD television services<sup>4</sup>.
- 2.5 In particular, our consultation proposed a means of implementing a reorganisation of the existing services to clear one PSB multiplex that could then be upgraded to use two new technologies: MPEG-4 and DVB-T2. We considered that their use would boost the capacity of the multiplex by up to 160% and thus enable it to carry, for example, three HD services from late 2009 or early 2010 and four HD services by 2012. Our consultation also considered whether these changes would occur without any direct intervention by Government or Ofcom. We believed that, for a variety of reasons, this was unlikely to occur in a timescale that would bring the most benefits (and least costs) to citizens and consumers.

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<sup>2</sup> Unless the context otherwise suggests, references throughout this Statement to PSBs are references to the BBC, ITV, Channel 4 and Five. However, in terms of responses discussed in Section 4 of this Statement, it is to be noted that the actual PSB respondents are: the BBC Trust (who also included the views of the BBC Executive); ITV plc together with SMG, UTV and Channel Television; Channel 4 Television Corporation and Channel 5 Broadcasting Ltd.

<sup>3</sup> See: <http://www.ofcom.org.uk/consult/condocs/dttfuture>

<sup>4</sup> Our proposal, as adopted by this statement is that there should be no preconditions as to which services (which may include SD, HD, text, interactive and potentially other services) may be carried on the Multiplex B capacity.

## Purpose of this document

- 2.6 The purpose of this Statement is to set out our policy conclusions in relation to how the DTT platform could take advantage of these technical developments. We received 88 responses to our consultation. We are grateful for all consultation responses, which we have carefully considered in reaching our conclusions. We summarise responses received, including our views on them, in **Section 4**.
- 2.7 Our view is that Ofcom does not have, at present, sufficient powers to fully implement our conclusions. We have some powers, but we believe that it is also necessary for Government to empower us to (among other things) reserve any capacity on the public service multiplexes for new service offerings, by appropriate modifications to existing primary legislation. Accordingly, any implementation of our conclusions will be dependent on the Secretary of State exercising his powers in a way that takes account of our recommendations to him as summarised in **Section 5**. In making these recommendations, we believe that they address the matters that the Secretary of State has specifically asked Ofcom to take into account in responding to his request for our advice.
- 2.8 To recap, we focused on the following two new, more efficient technologies in our consultation:
- **MPEG-4:** this is an improved video and audio coding compression standard the use of which will result in more efficient compression of video and audio services. MPEG-4 is based upon the existing MPEG-2 standard but includes some additional tools which mean that services coded using MPEG-4 are not backwards compatible with existing MPEG-2 receivers. It is projected that, over time, services coded using MPEG-4 will be able to operate at up to twice the efficiency of those using the current MPEG-2 standard. This means that, in principle, a multiplex could carry up to twice as many services using MPEG-4 as can currently be achieved using MPEG-2 whilst maintaining a similar picture quality. It is possible to mix MPEG-4 and MPEG-2 coded services on a single multiplex. MPEG-4 is used on the satellite and cable platforms in the UK and is increasingly being used on DTT internationally.
  - **DVB-T2:** this is a broadcast transmission standard, which is currently undergoing final development and approval by the Digital Video Broadcasting (DVB) Project in Geneva<sup>5</sup>. It is expected to be finalised in spring 2008. This is an update of the current DVB-T standard which has been used in the UK since 1998. The use of DVB-T2 is expected to give at least a 30% increase in multiplex capacity over the current standard whilst maintaining the same coverage. To adopt this standard, a complete multiplex would have to be converted. A key issue in our considerations has therefore been that, if the upgrade occurs in the near future, the capacity boost at mode change would allow one multiplex to be upgraded to use DVB-T2 with minimal disruption to both broadcasters and viewers as the services currently carried on that multiplex could be carried on other multiplexes.
- 2.9 We remain of the view that the process of introducing these new technologies to the platform is one that will need to be managed carefully for several reasons, namely:
- Coordination of a number of different parties including multiplex operators, broadcasters and broadcast infrastructure providers each of whom have their own, sometimes competing, objectives and incentives. Further, the benefits of

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<sup>5</sup> See: <http://www.dvb.org>



introducing these new technologies may not necessarily accrue to these parties and the interests of these parties may or may not coincide with those of consumers.

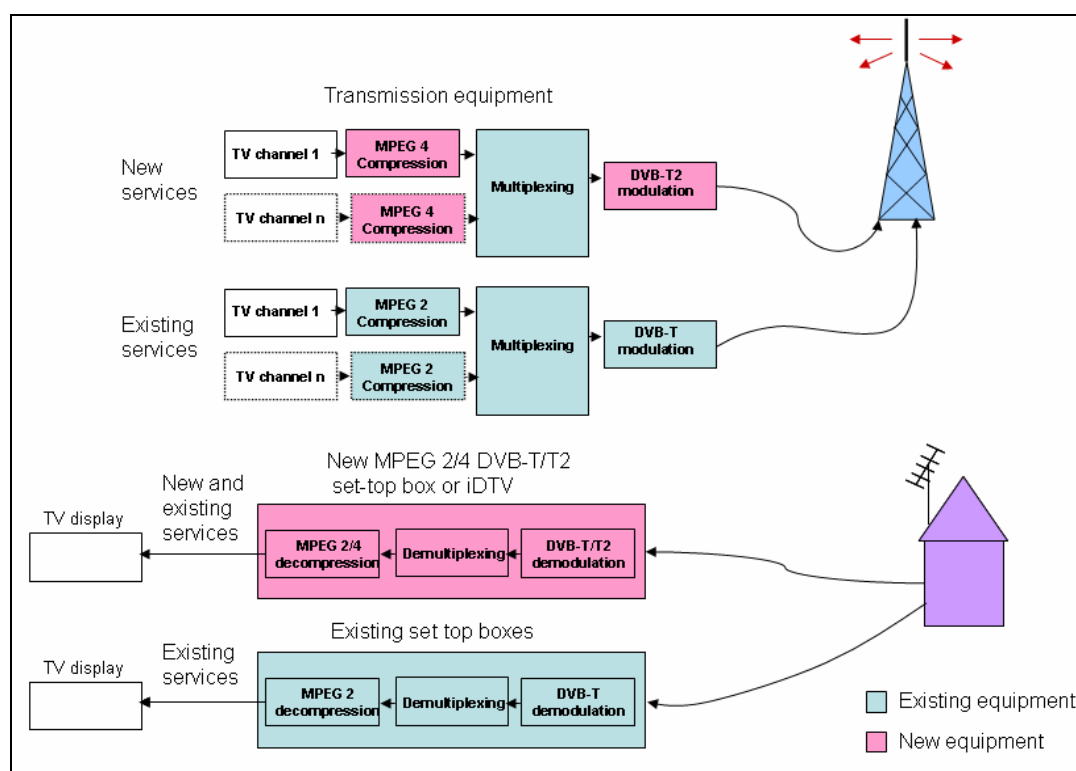
- It is very important that the existing PSB services continue to be available universally to existing Freeview viewers. This means that, for the foreseeable future, we think that the multiplexes carrying existing PSB services (Multiplexes 1 and 2) must be required to continue operating on current technologies, namely DVB-T and MPEG-2.
- In relation to the commercial multiplexes, we believe that any further adoption of these new technical standards, either jointly or individually, will need to be evaluated carefully on a case-by-case basis. We are very interested to hear of proposals which would extend the use of these more efficient standards. However, we also wish to ensure that their use does not unacceptably diminish the range, variety and quality of services available to DTT viewers.
- Our regulatory functions under the enactments relevant to these proposals were explained in our consultation. We, as the regulator, already provide oversight of any technical changes to the DTT platform to promote the best interests of viewers as a whole. We note that certain respondents (NGW and Sky) have proposed that they should be able to adopt MPEG-4 and DVB-T immediately. We are not yet in a position to take a final view on this matter. We will therefore carry on discussing these proposals with both parties with a view to gaining a better understanding of how this variation could be adopted without causing a detrimental impact to DTT viewers.

2.10 It should be noted that viewers will have to purchase new consumer reception equipment (set top boxes (STBs) or integrated digital televisions (iDTVs)) for reception of services using either or both of these standards<sup>6</sup>. The diagram below (**Figure 1**) sets out where in the TV production chain new equipment would be required as a result of an upgrade to DVB-T2 and MPEG-4, for the transmission and reception of new services.

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<sup>6</sup> However, we expect new MPEG-4 and DVB-T2 receivers will be backwards compatible with existing MPEG-2 DVB-T services meaning they will pick up all free to air services on DTT.

**Figure 1: System changes needed to deliver MPEG-4 and DVB-T2 services**



- 2.11 We continue to believe there could be very significant benefits to the DTT platform from the early introduction of MPEG-4 and DVB-T2. Respondents to our consultation generally supported this belief. Taken together, we anticipate that these technologies would allow at least 2.6 times more services to be delivered (x2 for MPEG-4; x1.3 for DVB-T2; = 2.6 times more services). This increase in capacity would enable the DTT platform to continue to develop and offer UK viewers a very wide range of television services, including the potential introduction of HD services to the DTT platform.
- 2.12 In developing these proposals, we conducted discussions with the PSBs and multiplex operators as well as many other relevant stakeholders, including manufacturers of both professional and consumer equipment and industry groups. We also sought expert technical advice on compression technology and published a report<sup>7</sup> on these matters alongside our consultation.
- 2.13 We also considered the potential impact that these proposals could have on the DSO process which is just starting to roll-out across the UK. We note that there is a risk that any changes to the options faced by consumers at DSO will increase the risk of consumer confusion. If our recommendations are adopted by Government, we will work closely with the DSO campaign, specifically with Digital UK and the Digital Switchover Help Scheme (DSHS) to ensure that clear and consistent information about any changes is made available to viewers as soon as is practicable – we discuss this further in **Sections 5 and 6**. A summary of our analysis of this issue is included in the Impact Assessment contained in Annex 7 of our consultation (as now adjusted in **Annex 1** following our consideration of the responses).
- 2.14 Our consultation also set out our proposals for the reorganisation of services required in order to clear one public service multiplex (i.e. Multiplex B) for upgrade and for allocating capacity on the upgraded multiplex. We proposed that services would be

<sup>7</sup> See: <http://www.ofcom.org.uk/consult/condocs/dttfuture/report.pdf>

migrated from Multiplex B to the other PSB multiplexes, Multiplexes 1 and 2. We proposed that the capacity on Multiplex B would be awarded by Ofcom pursuant to a comparative selection process (a beauty contest).

2.15 We now believe there is general support for the scale of efficiency improvements that these technologies can offer and for the potential timing of their adoption. There is also a measure of support over how one multiplex could be cleared and how its services could be carried on other multiplexes. This is discussed in more detail in **Sections 4 and 5**.

2.16 Accordingly, we have decided to adopt the proposals that we set out in our consultation. We have, however, made some modifications to our proposals after considering the responses. They concern:

- We proposed that Multiplex 2 carry nine services from DSO. We have revised this proposal in light of responses and further technical analysis by the multiplex operators. We have now concluded that the multiplex operators are better placed to take this decision and, following their recommendation, we accept that only eight services should be carried on Multiplex 2. We hope that it will be possible that this will increase to nine services in future.
- Our proposed reorganisation of services was premised on nine services being carried on Multiplex 2. We have therefore revised this proposal in light of the above and conclude a modified reorganisation taking account of responses from affected parties.
- We also proposed that Ofcom should allocate all the capacity on Multiplex B and set out our reasoning for this proposal in our consultation. Following a detailed response from the BBC Trust, we consider on reflection that this approach creates too great a risk of overlapping areas of responsibility between Ofcom and the BBC Trust. We have therefore decided to change that proposal so that the BBC Trust will continue to oversee the use of one of the four blocks of capacity on Multiplex B. We make this revision for several reasons (see **Section 4**), but in particular to ensure there is a clear delineation between Ofcom's regulation of commercial broadcasters and the BBC Trust's regulation of the BBC's services.
- We also proposed that the right to use the capacity should be limited to 2014. We have been persuaded that this relatively short licence duration may create uncertainty for broadcasters, infrastructure providers, manufacturers and consumers. We therefore conclude the capacity should be linked to the holding of a DRL, but should not have an explicit termination date in 2014.

2.17 We do not consider these changes represent fundamental differences to those on which we consulted and discuss them in more detail in **Sections 4 and 5**. As explained in our consultation, the Government and Ofcom agree that upgrading the platform needs to be approached in a co-ordinated way, and the Secretary of State has asked Ofcom for advice on how his powers might be exercised so as to promote the public interest. Our consultation process has helped inform our recommendations to the Secretary of State.

### Recent developments with DVB-T2

2.18 We recognised in our consultation that a key risk of our proposals was that either the DVB-T2 standard (and related receiver equipment) may not be available in time or

that it would not deliver the anticipated level of performance improvement assumed in our analysis.

- 2.19 The DVB group<sup>8</sup> (who are responsible for developing the DVB-T2 standard) have recently reported that the main DVB-T2 technical parameters have now been finalised and it is expected that final approval of the standard will be given at its Steering Board meeting in second quarter of 2008. Following this, it is expected that the DVB-T2 standard will be submitted to the European Telecommunications Standards Institute (ETSI) for final ratification as an official European standard, which is likely to be completed before its planned use under our proposals in late 2009.
- 2.20 We have also discussed with silicon chip manufacturers how soon products may be available which incorporate DVB-T2 receivers. Based upon their current development timetable for the DVB-T2 standard, they are predicting that the first evaluation DVB-T2 and MPEG-4 compatible silicon will be available in the first quarter of 2009 with saleable products available in the last quarter of 2009. A number of receiver equipment manufacturers have informed us that, based on this silicon chip development timeline, they would be able to make first consumer receiver equipment available in the market by the end of 2009, and in increasing volumes throughout 2010. However, some manufacturers, which are relying on their own in-house silicon receiver chip developments, have informed us that they would not be able to enter the DVB-T2 receiver market before 2011.
- 2.21 In summary, we believe that it can be reasonably assumed that, providing early certainty is given to silicon chip and receiver equipment manufacturers, services will be available for broadcasting using DVB-T2 and MPEG-4 standards by the end of 2009, with first generation DVB-T2 and MPEG-4 compliant receiver equipment being available from a number of different manufacturers.
- 2.22 The level of performance ultimately achieved by the DVB-T2 standard was also identified as a potential risk. We understand from the DVB-T2 technical working group, that DVB-T2 is likely to deliver more than the 30% improvement in data capacity assumed in our consultation, whilst achieving the same coverage level as the existing DVB-T standard using the same transmission power. Recognising the importance of ensuring a robust service, Ofcom intends to work closely with broadcasters, broadcast infrastructure providers and consumer equipment manufacturers to launch an early pilot trial aimed at confirming the performance improvements provided by DVB-T2 before it is used commercially. We discuss this further in **Section 6**.
- 2.23 We now understand that advanced techniques such as time frequency slicing across multiplexes will not form part of the DVB-T2 specifications – meaning that the standard adopted by the UK is expected to be the same as that adopted in other countries in the future; this should lead to greater economies of scale for the international receiver equipment market.

### Alternative proposals for DTT platform development

- 2.24 Four PSBs (BBC, ITV, Channel 4 and Five) issued a news release on 20 November 2008<sup>9</sup>. This stated that they had “*signed a non-binding memorandum of understanding that, if agreed, would deliver High Definition (HD) channels on Freeview by the projected completion of Digital Switchover in 2012*”. Three of these

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<sup>8</sup> See: [www.dvb.org](http://www.dvb.org)

<sup>9</sup> See: <http://www.itvplc.com/itv/news/releases/pr2007/2007-11-20/>

broadcasters have subsequently submitted confidential responses to Ofcom's consultation, which provide a limited amount of additional detail regarding this alternative proposal.

- 2.25 The BBC Trust has informed us that the BBC Executive has made an application for a non-service approval based on a proposal agreed between the PSBs which would, we understand, implement a similar set of changes to those we proposed leading to the upgraded multiplex being available by 2009. We consider this issue further in **Section 4** of this Statement.

### Other Ofcom projects

- 2.26 We note the proposals and issues which we discuss here have links to other ongoing Ofcom policy projects and activities – either in relation to DTT, spectrum or broadcasting policy. We mention them and their respective status below.

### *Sky picnic*

- 2.27 On 4 October 2007, we published a consultation document<sup>10</sup> on a proposal from Sky and NGW to replace Sky's free channels on the DTT platform with pay TV services. That consultation closed on 14 December 2007 and we are now considering options on how to proceed.

### *Digital Dividend Review*

- 2.28 In 2003, before Ofcom came into existence, the Government decided that 256MHz of the 368MHz of spectrum used by analogue television broadcasting should be used by the six DTT multiplexes at DSO. This left the remaining 112MHz of spectrum to be released for new uses once switchover has completed. It is this 112MHz that forms the core of the 'digital dividend'.
- 2.29 Our December 2007 statement on the Digital Dividend Review<sup>11</sup> (DDR) set out our policy approach of releasing the digital dividend spectrum via a market led process. We explained that we would release the spectrum in a way that would allow the widest possible range of technologies and services to be deployed. We expressed our preference to allow the market to decide how the spectrum should be used and create flexibility for users to change the use of spectrum over time, reflecting changes in technology and the preferences of citizens and consumers.
- 2.30 The DDR is now moving into the implementation phase. In particular, we are considering the mechanics of how to award the digital dividend spectrum and we intend to consult on the three digital dividend awards this spring. The consultations will be on:
- The award of the digital dividend cleared channels and interleaved channels 61 and 62.
  - The award of geographic interleaved assignments.
  - The award of a package of interleaved spectrum to a band manager with obligations to programme making and special events (PMSE).

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<sup>10</sup> See: <http://www.ofcom.org.uk/consult/condocs/dtv/>

<sup>11</sup> See: <http://www.ofcom.org.uk/consult/condocs/ddr/statement/>

## **PSB Review**

2.31 In light of changes in the broadcasting environment and the pressures on the delivery, reach and impact of PSB, we decided to bring forward our second PSB Review from its final possible statutory reporting date of 2010. In bringing the Review forward, we intend to re-examine and assess the key conclusions from the first PSB Review. The specific objectives of the second Review are:

- To evaluate how effectively the PSBs are delivering the purposes and characteristics of PSB, particularly in light of changes in the way TV content is distributed and consumed.
- To assess the case for continued intervention in the delivery of TV content to secure public service purposes.
- To consider whether and how the growth of new ways of delivering content to consumers and citizens might create new opportunities for achieving the goals of PSB, as well as posing new challenges.
- To assess future options for funding, delivering and regulating PSB, in light of these challenges and opportunities, and uncertainty about the sustainability of existing funding models.

2.32 Phase One of the Review setting out the analysis will be published in April 2008. Phase Two will consider in more detail policy options and recommendations for maintaining and strengthening the quality of PSB in the future. It will be conducted following publication of Phase One, with our consultation document published in early autumn 2008. A final statement setting out a summary of consultation responses and reporting on any new findings is expected to be published in early 2009.

## **Structure of document**

2.33 As noted in **Section 1**, the remainder of this document is structured as follows:

- **Section 3** summarises our relevant duties and policy objectives.
- **Section 4** assesses consultation responses, together with our views on them.
- **Section 5** sets out our conclusions and recommendations to Government.
- **Section 6** proposes a series of next steps, if our recommendations are adopted.
- **Annexes 1 to 5** include (among other things) our Impact Assessment and details of respondents to the consultation.

## Section 3

# Our duties and objectives

## Ofcom's statutory duties

- 3.1 Under the CA03, Ofcom's principal duty, in carrying out its functions, is to further the interests of citizens in relation to communications matters, and to further the interests of consumers in markets in relation to which Ofcom has functions, where appropriate by promoting competition.
- 3.2 In so doing, we are required to secure a number of specific objectives and to have regard to a number of matters, as set out in section 3 of the CA03. As to the prescribed specific statutory objectives, we consider that the following objectives are particularly relevant to this consultation:
- Our duty to secure the optimal use of the electro-magnetic spectrum.
  - Our duty to secure the availability of a wide range of television and radio services of high quality and wide appeal throughout the UK.
- 3.3 In performing our duties, we are also required to have regard to a range of other considerations, as appear to us to be relevant in the circumstances. In this context, we consider that a number of such considerations are relevant, in particular the desirability of promoting the fulfilment of the purposes of public service television broadcasting in the UK, and the desirability of encouraging investment and innovation in relevant markets. We have also had regard to the principles under which regulatory activities should be transparent, accountable, proportionate, consistent, and targeted only at cases in which action is needed, as well as the interest of consumers in respect of choice, price, quality of service and value for money.
- 3.4 Ofcom has a wide measure of discretion in balancing its statutory duties and objectives. In so doing, we have taken all relevant considerations into account, including responses made to our consultation, in reaching the conclusions set out in **Section 5**.

## Efficient and optimal use of spectrum

- 3.5 The radio spectrum is a valuable national resource of great importance in the modern world. It is estimated that activities directly dependent on the use of the radio spectrum contribute around 3% to the UK's GDP. Spectrum is also a key input that underpins many essential public services, such as defence and the emergency services.
- 3.6 It is generally agreed that the most useful spectrum is below 1GHz in frequency and, in particular, in the range 200MHz-1GHz. This is because these frequencies offer a combination of capacity (bandwidth) and coverage (signal penetration) that makes them useful for a very wide range of services. At present, analogue television is the primary user of just under half of this spectrum band.
- 3.7 Securing more efficient use of these valuable frequencies is a principal objective of DSO, and this objective has been reflected in decisions that Government and Ofcom have made about both the future use of spectrum and the DSO programme.

- 3.8 In 2003, the Government decided<sup>12</sup> that around 70% of the spectrum presently used for analogue television should be reserved for DTT at DSO (256 of 368MHz). This reservation of capacity will allow a significant increase in both the coverage and capacity of DTT. The Government also decided in 2003 that the remaining 112 MHz should be released for new uses.
- 3.9 In our consultation on the DDR in 2006<sup>13</sup>, we noted that, after DSO, the DTT platform would, if operated with maximum efficiency, be able to carry more services than at present, and that it would in total have significantly more capacity. We further noted that this increase in capacity offered the potential for the carriage of additional services in HD format as well as the option of carrying more SD services. This increase in capacity reflected the gains that could be achieved through optimising the use of existing technologies and adopting superior technical standards at DSO (mode change) as well as the benefits of adopting best practice in compression of the video and audio services.
- 3.10 We then further developed our understanding of how such efficiencies could be achieved, which resulted in the proposals contained in our consultation to which this Statement relates. We noted that our proposals could result in Ofcom and the Government implementing a range of regulatory actions. Specifically we could decide that:
- no further action is required;
  - minimal regulatory action is required to enable the use of the new technologies; or,
  - regulatory action is necessary to bring about the technical and structural changes are required to achieve certain objectives.
- 3.11 We have already noted in **Section 2** that we have received a significant number of responses to our consultation and that our consideration of the responses is set out in **Section 4**, which have assisted in reaching our conclusions set out in **Section 5**. Put broadly, we have concluded that regulatory action is needed to achieve the policy objectives discussed in our consultation.
- 3.12 This Section restates our duties and objectives that we have pursued in reaching those conclusions. In Annex 6 to our consultation, we also summarised potentially relevant legal powers, but noted their application would depend on any decision that the Secretary of State might take in light of any recommendations that we might make to him, pursuant to his request for our advice. We make reference in **Section 5** to such powers as we consider are relevant to our recommendations to the Secretary of State, including powers that already fall within Ofcom's (as opposed to the Government's) remit.

### Ofcom's policy objectives of our proposals

- 3.13 We believe that, for the reasons set out in our consultation, the proposals on which we consulted (and that we have now, with some modifications, adopted) are likely to be beneficial to citizens and consumers by securing our statutory objectives of making better use of the spectrum and enhancing the range, diversity and quality of television services available throughout the UK. We also consider that they are likely to promote investment and innovation, to serve the interests of consumers in respect of choice, price, quality of service and value for money, and to further the interests of

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<sup>12</sup> See: [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>13</sup> See: <http://www.ofcom.org.uk/consult/condocs/ddr/>



citizens, in part through promoting the purposes of PSB and minimising the impact of the upgrade on the availability of these services.

- 3.14 Our consultation was prepared in light of a number of important policy objectives, as set out below, which reflect our above-mentioned duties.
- 3.15 First, we believe that significant benefits for consumers, citizens and the DTT platform can be achieved through adopting more efficient technologies, MPEG-4 and DVB-T2, on the platform. The adoption of these technologies would substantially improve the efficiency with which spectrum is used by DTT in the short, medium and longer term. Our belief has been supported by consultation responses, our dialogue with stakeholders and our ongoing analysis.
- 3.16 Secondly, we believe that these new technologies could enable the platform to introduce new services, which will in turn assist in promoting the range, diversity and quality of services on the platform, and can assist in furthering PSB purposes. It is also expected to be in the interest of consumers and citizens, through promoting more choice of services. Again, our belief has been supported by responses we received to the consultation.
- 3.17 Given the wider context of DTT as the default platform for delivery of universal access to PSB content post DSO, an outcome which ensures that the upgrade can take place with the minimum impact on our stakeholders, while maximising the potential value it can create is consistent with our duties and objectives.
- 3.18 Therefore, in bringing about this improvement in spectrum efficiency, we also have as an objective to ensure that DTT viewers can continue to have access to the vast majority of services that are currently carried on the DTT platform using their existing DTT receiving equipment. In our consultation, we were not proposing to change the broadcast standards for the main public service channels (which would continue to be broadcast using MPEG-2 coding and thereby carried on multiplexes using DVB-T standards) for the foreseeable future. We remain of this view.
- 3.19 Accordingly, we have adopted our proposals to further the interests of citizens and consumers, through promoting efficient use of spectrum and ensuring the continued availability of a wide range of television services, in accordance with our principal duty and obligations, though their realisation is dependant on the Secretary of State accepting our recommendations in **Section 5**. The remainder of this Statement elaborates on Ofcom's reasoning in support of that view.

## Section 4

# Assessment of consultation responses

### Overview

- 4.1 This Section summarises the responses to our consultation together with our assessment of them. All responses received, views expressed and questions raised during our consultation have been assessed against our policy aims and duties as discussed in **Section 3**.
- 4.2 Our consultation set out a number of proposals on which we invited comments. Our consultation proposed that, in order to maximise the efficient use of spectrum and provide maximum benefit to citizens and consumers, Ofcom and the Government should act to:
- clear services from PSB Multiplex B and arrange carriage of these on other PSB multiplexes (Multiplex 1 or Multiplex 2);
  - take advantage of capacity gains from mode change at DSO to reorganise the carriage of services with the minimum possible impacts on broadcasters and viewers;
  - upgrade Multiplex B to utilise MPEG-4 and DVB-T2 technologies;
  - award Multiplex B capacity through a comparative selection process;
  - ensure that these changes are executed to a timescale compatible with DSO; and
  - implement this in such a way that would maximise the benefits accruing to citizens and consumers.
- 4.3 We received 88 responses to our consultation and would like to thank all those who contributed their views. We published the non-confidential responses on our website but have taken all comments received into account in our subsequent analysis. In addition, we have also held discussions with key stakeholders and a consumer workshop<sup>14</sup> in February which have helped inform our consideration of the issues raised by our consultation.

### Content and layout of this section

- 4.4 Our consultation contained 23 questions inviting views on issues relating to the proposals. In this Section, we have grouped the questions into four specific areas along the following themes: **technical matters**, **reorganisation of services**, **capacity allocation** and **other matters**.
- 4.5 **Table 1** below summarises the relevant questions and key issues raised in relation to each theme to assist readers with the navigation of the rest of this section.

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<sup>14</sup> See: <http://www.ofcom.org.uk/consult/condocs/dttfuture/>

**Table 1: Policy themes and key issues raised**

<p><b>A. Technical matters</b></p> <p><b>Questions 2, 3, 5, 7, 8, 10, 12 and 17</b></p>	<ul style="list-style-type: none"> <li>• That DVB-T2 and MPEG-4 are likely to provide the most efficient use of the spectrum but risks were highlighted that standards/ equipment may not be ready within anticipated timescales.</li> <li>• General agreement that the introduction of DVB-T2 and MPEG-4 standards should be implemented as early as possible.</li> <li>• Some concerns were raised over availability of consumer reception equipment by 2009. Some manufacturers believe it is credible that low volumes of equipment will be available by late 2009 with higher volumes in 2010.</li> <li>• Proposals made by some respondents to use DVB-T and MPEG-4 as an alternative / complement to using DVB-T2 and MPEG-4 together.</li> <li>• Concern that due to the reduced robustness of 64 QAM compared to 16 QAM its use should not be mandated and left to multiplex operators to decide.</li> <li>• Support for the use of progressive display formats (e.g. 720p, 1080p) but view that final choice of transmission format should be left to broadcasters to decide.</li> <li>• The carriage of nine as opposed to eight SD channels on Multiplex 2 may result in a reduction in picture quality.</li> <li>• Concern that the allocation of three blocks suitable for HD on Multiplex B now and moving to a fourth in 2012 risks not resulting in sufficiently high picture quality.</li> </ul>
<p><b>B. Reorganisation of services</b></p> <p><b>Questions 6, 9, 11, 13, 14 and 15</b></p>	<ul style="list-style-type: none"> <li>• Clearing Multiplex B was widely supported as the best option.</li> <li>• Most respondents agreed with our reorganisation process provided quality of existing services was not compromised.</li> <li>• Alternative proposal for reorganisation was made in the event that nine services are not possible immediately on Multiplex 2.</li> </ul>
<p><b>C. Capacity allocation</b></p> <p><b>Questions 16, 18, 19, 20 and 21</b></p>	<ul style="list-style-type: none"> <li>• Some respondents question the proposed capacity allocation method and proposed either a more open process allowing non-PSBs to compete or a purely commercial process involving the PSBs.</li> <li>• Many respondents thought HD should be mandated on the upgraded multiplex.</li> <li>• Concern was expressed over the short duration of the proposed licences and the time period available to pay back investment.</li> </ul>
<p><b>D. Other matters</b></p> <p><b>Questions 1, 4, 22 and 23</b></p>	<ul style="list-style-type: none"> <li>• HD was considered the most likely service to drive take-up but other services such to SD, local TV, interactive or other services may also affect take-up.</li> <li>• Various respondents raised the potential impact of the proposals on DSO and that awareness and management of potential risk to the DSO process was needed.</li> </ul>

## Our assessment of the responses

### A. TECHNICAL MATTERS

- 4.6 This part A sets out the technical matters covered by **Questions 2, 3, 5, 7, 8, 10, 12** and **17** of our consultation.

#### *Benefits of MPEG-4 and DVB-T2*

*Question 2: do you agree with Ofcom's assessment that it would be beneficial for the DTT platform to begin to upgrade to new technologies – DVB-T2 and MPEG-4 – to make more efficient use of spectrum and to allow for the introduction of new services?*

#### Responses

- 4.7 Most respondents agreed that the combination of DVB-T2 and MPEG-4 would bring about the most efficient use of spectrum by DTT and allow for the introduction of new services. The benefits of introducing these standards together as a single step change were also supported. A number of respondents (including Sky, Strategy and Technology Ltd, BECTU and Digital Television Group (DTG)) proposed some alternative ways of creating the capacity needed for high bandwidth services, such as HD. These generally comprised a combination of additional spectrum and less efficient technologies (e.g. MPEG-4 and DVB-T) but also included bolder proposals that might, for example that might involve a redesign of the transmission network and installed aerial base. EADS Astrium believes that greater focus should be given to satellite platforms as these have lower cost and environmental impact.
- 4.8 Many of the responses that supported our proposals also pointed out risks they believed should be taken into account – both in decisions now but also in implementing the policy. The main risks were whether the DVB-T2 standard (and associated consumer reception equipment) would be available within the anticipated timescales and whether the launch of new products and services would cause confusion for consumers, especially regarding DSO.
- 4.9 Some respondents also raised the issue of accelerated equipment obsolescence and the prospect of a potential second switchover – in particular BT who, with a large installed base of receivers, felt they would be particularly affected. It was noted that the future adoption of DVB-T2 on other multiplexes would be difficult to achieve due to the "step change" required to clear other multiplexes and the difficulty this could create for reorganising the carriage of existing services. It was felt that this could be a particular issue given that the multiplexes would be operating at nearly full capacity after DSO and the proposed reorganisation. Some respondents considered that additional spectrum would therefore be needed to implement further upgrades.
- 4.10 Some respondents also noted the importance of gaining support for European-wide standards – especially as the UK would be in the vanguard in adopting DVB-T2. DTG noted that a DVB-T2 "plug-in" upgrade may be possible. This would enable a low cost adaptor to be produced which would allow existing MPEG-4 and DVB-T consumer equipment (and STBs with a common interface) to be upgraded to MPEG-4 and DVB-T2.

#### Our views

- 4.11 We have reassessed our initial proposals in the light of these responses and explored several potential alternative options – primarily involving the use of MPEG-4 and DVB-T standards but also more radical options.

- 4.12 We considered the various alternative technology combinations put forward by respondents, but we are not able to establish that any of them would be likely to match the benefits that would accrue from the introduction of the MPEG-4 and DVB-T2 combination at DSO. We believe that some of those options would also involve some substantial costs – most of which would fall to consumers though there are also some longer term costs to producers. In particular, we note:
- Additional spectrum is a very high cost solution relative to adopting DVB-T2 now – both to viewers and society as a whole. It is therefore important to ensure existing spectrum is used as efficiently as possible given that additional spectrum may have a high opportunity cost.
  - Equivalent standards are already used on satellite (MPEG-4 and DVB-S2) and cable uses MPEG-4 (with DVB-C2 under development) and it is likely DVB-T2 will be adopted on DTT internationally over time.
  - A two step upgrade (e.g. introducing MPEG-4 now and DVB-T2 subsequently) in relation to consumer equipment imposes significant unnecessary equipment costs on consumers and provides fewer benefits in terms of services on DTT now and in the future.
  - Avoiding a two stage upgrade and the substantial downsides that this involves requires the first upgraded multiplex to be both MPEG-4 and DVB-T2. This also plays an important role in fostering rapid adoption (to the benefit of both consumers and the platform) as this will allow a greater number of services to be offered using the new equipment. We discuss later in this Section the scope for subsequent multiplexes to pursue an MPEG-4 (without DVB-T2) approach which may ease the transition process.
- 4.13 We also note that mode change at DSO provides a unique opportunity to realise the benefits of MPEG-4 and DVB-T2 without material disruption to existing services; this opportunity will not exist if adoption of DVB-T2 is deferred.
- 4.14 Therefore, while introducing MPEG-4 without DVB-T2 may have some short term producer benefits (i.e. to equipment manufacturers, multiplex operators and broadcasters). We believe that it risks imposing significant additional cost and lost benefits for consumers and could impose longer term dis-benefits on producers through slower adoption of the new equipment by consumers. We conclude therefore that MPEG-4 and DVB-T2 is the optimal combination of technologies and they should be introduced at the same time - where possible at DSO.
- 4.15 We noted in our consultation that the potential impact these proposals could have on DSO was an issue of critical importance (see **Question 23**) and that the risks would need to be carefully assessed and managed. A large part of our consultation was devoted to outlining measures needed to give the best probability that the technical upgrade would occur as soon as possible, in coordination with DSO, and that take up of consumer equipment would be maximised. These issues and concerns remain valid and we will continue to closely monitor the development of the DVB-T2 standard and likely availability of compatible consumer equipment. We discuss how these issues can best be managed in **Section 6**.
- 4.16 We have discussed the timetable for confirming the DVB-T2 standard and the likely timescales for the availability of MPEG-4 and DVB-T2 consumer reception equipment in **Section 2** and they are also mentioned under **Question 5** below.

- 4.17 The purpose of introducing MPEG-4 and DVB-T2 services and equipment as soon as possible is to maximise the number of households who will have the choice to opt-in to access these services when purchasing their digital reception equipment for DSO. Those consumers who already own DTT reception equipment will need to purchase additional equipment if they wish to access the new services (although they will still be able to view existing services). We believe that, so far as is possible, new equipment supports both MPEG-4 and DVB-T2 and our proposals represent an opportunity to minimise the risk of these viewers needing to upgrade twice (once to MPEG-4 and then again to DVB-T2). We note that this would further be reduced if DTG's reference to a possible DVB-T2 plug-in upgrade to MPEG-4 enabled consumer equipment is feasible and we welcome this potential development as a way of further minimising the cost of accessing new services on Multiplex B. We propose that this option is considered further within the implementation working group (see **Section 6**).

### **Demand for new technologies**

*Question 3: Ofcom is particularly interested in hearing from multiplex operators and programme providers as to whether they are interested in using DVB-T2 and / or MPEG-4, and whether Ofcom should consider permitting their use on DTT?*

### **Responses**

- 4.18 The PSBs all gave strong support to combined use of DVB-T2 and MPEG-4. Some PSBs also raised concerns about permitting the use of MPEG-4 in isolation from DVB-T2 (i.e. using MPEG-4 on an existing DVB-T multiplex). This is because they felt this could undermine the upgrade of Multiplex B to MPEG-4 and DVB-T2 and risk increasing consumer confusion over which digital receiver products to purchase at DSO.
- 4.19 Other respondents (NGW, Sky and Teletext) contended that the use of MPEG-4 and DVB-T should be permitted as an alternative or in addition to MPEG-4 and DVB-T2 as it would allow for a faster introduction of new services and greater flexibility for future upgrades. This is because an upgrade from MPEG-2 to MPEG-4 is feasible on a channel by channel rather than whole multiplex basis as is required for an upgrade to DVB-T2. Those respondents argued that the adoption of MPEG-4 and DVB-T2 on multiplex B should not prevent other multiplexes from upgrading to MPEG-4 and DVB-T (see **Question 2** also) and that to do so would result in inefficient use of the spectrum.
- 4.20 We also received responses from local TV groups who are developing plans for SD services using existing consumer equipment.

### **Our views**

- 4.21 We note the interest from some commercial DTT multiplex operators and programme providers in using either or both MPEG-4 and DVB-T2 on DTT. In our consultation, we discussed the possible introduction of MPEG-4 without DVB-T2 and the possible risk that this would lead to a two stage upgrade process. In this context, we believe the key issue is whether the use of MPEG-4 (without DVB-T2) would adversely affect manufacturer and consumer confidence in the reorganisation and upgrade of Multiplex B and, if so, whether there are ways in which these risks can be managed.
- 4.22 We believe that these risks can fall into two areas.

- 4.23 The first concerns the potential for confusion among consumers who are faced with three types of digital receiver equipment (i.e. the current MPEG-2 / DVB-T receivers, MPEG-4 / DVB-T2 and also MPEG-4 / DVB-T equipment), or who, in the early stages consider buying MPEG-4-only equipment without being aware that DVB-T2 compatible equipment will be available in the near future.
- 4.24 The second relates to whether manufacturers will have less incentive to develop and support the DVB-T2 format if the existence of multiple receiver equipment types fragments the market.
- 4.25 Our current view is that these represent material risks – particularly in the lead up to DSO. However, we also note the strong arguments that a more flexible route to the adoption of MPEG-4 may encourage efficiency and result in commercial multiplexes adopting the new standards (MPEG-4 and DVB-T2) earlier than would otherwise be the case.
- 4.26 We propose, therefore, to consider any applications for new services using MPEG-4 with DVB-T on a case-by-case basis for the time being, taking into account the benefits and impacts that may arise. This should specifically include any possible impact on the development and take up of MPEG-4 and DVB-T2 equipment and communications to consumers around DSO.
- 4.27 In relation to an application by NGW to launch services using MPEG-4 and DVB-T on Multiplex C, we are not yet in a position to be able to take a final view on this matter, particularly as we need to understand and then evaluate any risks associated with such implementation. We will therefore carry on discussing these proposals with them with a view to gaining a better understanding of how this variation could be adopted without causing any detrimental impact to DTT viewers.

### **Availability of DVB-T2 / MPEG-4 receivers**

*Question 5: do you agree with Ofcom's view that DVB-T2 MPEG-4 reception equipment could be commercially available in time for DSO in Granada region in late 2009?*

### **Responses**

- 4.28 We received mixed views from a wide range of respondents who suggested timescales ranging from 2009 to 2011 for the likely availability of MPEG-4 and DVB-T2 compatible consumer reception equipment. A key determinant identified by respondents was the setting of the DVB-T2 standard and intentions with respect to use of DVB-T2 in the UK – which will trigger the development of silicon chips and then of the consumer reception equipment.
- 4.29 We note, in particular, responses from equipment manufacturers (which are supported by PSBs) some of whom predicted that suitable consumer reception equipment is likely to be available in limited volume (tens of thousands) from late 2009, and in higher volumes (hundreds of thousands or millions) in 2010. These predictions were presented as realistic but could be subject to delays due to unforeseeable events. It was noted that experience from the development of MPEG-4 and DVB-S2 silicon (used in Sky HD receivers) may be beneficial in compressing the MPEG-4 and DVB-T2 silicon development critical path.
- 4.30 A small number of respondents highlighted the importance of agreeing an approved profile of the DVB-T2 specification. They believed that the earlier we can confirm this, the more likely first generation products will contain all the 'bells and whistles' contained in this profile rather than a subset of these. It was considered very

important for the UK to avoid a repeat of the performance and receiver issues created through the early adoption of 2K over 8K which arose during launch of the DVB-T standard in 1998.

## Our views

- 4.31 As discussed below in **Question 4**, the timing for adopting these new technologies forms a very important consideration to the overall achievement of our policy objectives. In our consultation, we explained the significance in terms of consumer value of making reception equipment available at the earliest point possible – which we believe could be in time for DSO in the Granada television regions, scheduled for late 2009. We note these benefits under **Question 2**, particularly in linking them to the DSO process.
- 4.32 To achieve this, we explained that it would be necessary to provide certainty to broadcasters and manufacturers as soon as possible to enable appropriate planning and development to take place. We are monitoring developments with the DVB-T2 standard and expect this to be confirmed in the second quarter of this calendar year. We have also maintained an open dialogue with a number of consumer and professional equipment manufacturers. In particular (and consistent with the above DVB-T2 standard timetable), we understand that their predictions for consumer equipment availability are aligned with our view.
- 4.33 In light of the above, we conclude that it is likely that limited volumes of consumer products will be available from late 2009 and in higher volumes in 2010. We believe that taking an early but informed decision now to adopt MPEG-4 and DVB-T2 at the Granada switchover will create a strong incentive for manufacturers to ensure products are available in shops and for viewers to upgrade. We will monitor the situation closely and continue our dialogue with manufacturers, retailers, the DVB working group and other relevant stakeholders.
- 4.34 The timescales we propose are challenging and we note the risk that equipment will not be available when the Granada region switches over. However, we hope that this Statement will provide a high degree of certainty on our policy view to silicon and consumer equipment manufacturers to commence product development, if they have not done so already.
- 4.35 We also propose to establish a working group with the BBC, to coordinate the different activities required to execute the upgrade and promote new services. We propose that this working group develop a consumer communications plan – for example, by ensuring consumers making purchases have clarity on what services will be available when, what equipment will required to receive these and when it is likely to be available. We discuss possible next steps in **Section 6**.

### ***Plans for MPEG-4 (using DVB-T) on DTT***

*Question 7: Do you have any proposals for launching MPEG-4 services on a DTT multiplex using DVB-T in advance of the proposed 2009 timetable and if so can you provide details of how such a service would not undermine the proposed MPEG-4/DVB-T2 launch in 2009?*

## Responses

- 4.36 Two respondents (Sky and NGW) noted that Ofcom is currently considering Sky's proposed "Picnic" DTT pay television service. Though this proposes to use MPEG-2 and DVB-T on NGW's Multiplex C in 2008, we understand there is an intention to deploy services using MPEG-4 and DVB-T at a later date. Both organisations argue



that it would be inefficient to prohibit adoption of MPEG-4 and DVB-T on DTT and that allowing adoption of these standards may aid faster migration to MPEG-4 and DVB-T2 (as it would foster demand and thereby encourage MPEG-2 broadcasters and multiplex operators to switch, and that an MPEG-4 only upgrade is easier to implement because MPEG-2 and MPEG-4 services can be combined on the same multiplex which is not the case with DVB-T and DVB-T2). The BBC noted in its response that it could launch an MPEG-4 and DVB-T HD service in 2009 if DVB-T2 was delayed. The DTG and Intellect also noted some of their members' interest in launching MPEG-4 and DVB-T HD services.

- 4.37 NGW argued that, since the Sky proposition (initially) only concerns pay TV services, it should have little effect on the reorganisation proposals and therefore should be permitted. They contend that this is because pay TV users typically have a faster equipment replacement cycle than viewers of free-to-air television and would expect to purchase separate equipment to receive the new services. They further argue that MPEG-4 and DVB-T is becoming the default European standard combination, and that (some) existing iDTVs and PCs can already be converted to receive MPEG-4 services. NGW included in its response a formal proposal to allow use of MPEG-4 and DVB-T on Multiplex C.
- 4.38 Sky stated that it does not view the availability of a range of MPEG-4 and DVB-T compatible equipment as constituting potential harm to the receiver market – pointing to the range of STBs and other DTT equipment already provided by a wide range of manufacturers. Sky further argued that introducing new technologies on only one multiplex, while restricting their application on commercial multiplexes, risks being inconsistent with our duties to act proportionately and target regulation only where required.

## Our views

- 4.39 We noted in **Questions 2 and 3** above the arguments made by NGW and Sky and the potential benefits accruing from the use of MPEG-4 and DVB-T on DTT multiplexes – including potentially accelerating adoption of MPEG-4 and DVB-T2 reception equipment. We are concerned that the desire to secure these potential benefits does not adversely affect the development and uptake of consumer reception equipment for MPEG-4 and DVB-T2 services.
- 4.40 In relation to an application by NGW to launch services using MPEG-4 and DVB-T on Multiplex C, we are not yet in a position to be able to take a final view on this matter, particularly as we need to understand and then evaluate any risks associated with such implementation. We will therefore carry on discussing these proposals with them with a view to gaining a better understanding of how this variation could be adopted without causing any detrimental impact to DTT viewers.

## **Addition of SD & HD MPEG-4 and DVB-T2 profiles**

*Question 8: do you agree with Ofcom's proposed approach for adding SD and HD versions of MPEG-4 and DVB-T2 profiles to the list of permitted standards for DTT in the spring, and that Ofcom's consent must be sought prior to adoption of these standards?*

## Responses

- 4.41 Respondents were largely in favour of adding both SD and HD versions of the MPEG-4 and DVB-T2 profiles to the list of permitted standards; although a small number of respondents did not consider the SD version necessary. Those in favour of adding both versions stated that this would enable greater flexibility for

broadcasters and enable a mix of HD and SD services. The importance of thorough testing of the new technologies was also raised. A small number of respondents felt that Ofcom should consider mandating receiving equipment standards from a certain date to help reduce consumer confusion about equipment; they also believed that, at a minimum, all equipment should be required to be backward compatible (i.e. able to receive existing services broadcast using MPEG-2 and DVB-T standards).

- 4.42 Very few people responded on the need to seek Ofcom's consent prior to adopting standards. The BBC felt that this additional layer of regulation was unnecessary once Ofcom had deemed it appropriate to approve the standards. Several respondents noted regulatory approval would help ensure consistency between adopted standards across the DTT platform.

## Our views

- 4.43 In light of the responses, we believe that it would be appropriate to add both SD and HD versions of MPEG-4 and DVB-T2 to the list of permitted standards for DTT. We intend to amend the list of permitted standards to include MPEG-4 and DVB-T2 following the expected approval of the DVB-T2 standard by the DVB working group later this year.
- 4.44 Due to the nature of the MPEG-4 and DVB-T2 standards, we would expect that all equipment would be fully backwards compatible with existing standards and services. We believe that allowing the adoption of both SD and HD versions will provide greater flexibility and reduce the delay and administrative cost that adding only one of these versions would require.
- 4.45 We note the BBC's view that Ofcom's consent on the adoption of these standards on other multiplexes would be unnecessary. We believe, however, that the consent provides an important safeguard for viewers in an environment where no coordinating body exists, other than Ofcom. For example, where it may be beneficial for a multiplex operator to change the technologies it employs but doing so may have a negative impact on some viewers, the consent process requires the multiplex operator to satisfy Ofcom that any negative impacts are both necessary and minimised. We note this approach to the approval of new technologies is consistent with the existing regulatory framework for the platform which has been proven effective and serves an important role in protecting viewers' interests. Therefore, in the absence of any compelling new reasons as to why this safeguard is no longer necessary, we do not propose to change this.

## Mode change at DSO

*Question 10: do you agree with Ofcom's proposal that all multiplexes should be required to upgrade to 64QAM at DSO in order to make the most efficient use of spectrum (i.e. that the mode change should not merely be optional)?*

## Responses

- 4.46 Most responses supported the proposal that multiplexes still operating using 16QAM (the BBC and NGW multiplexes) should be required to move to 64QAM. They agreed that the additional capacity a move to 64QAM would yield is a necessary component of the proposals (to provide sufficient capacity for the reorganisation process to work). Some did, however, express concern about the relative fragility of 64QAM compared to 16QAM, noting earlier problems with picture quality and interference using 64QAM. A small number of respondents (including most PSBs) thought that

the upgrade should be voluntary, especially for the NGW multiplexes. NGW, however, was supportive of Ofcom mandating an upgrade and, we note, the BBC reported that it is already planning the upgrade of its two multiplexes to 64QAM.

## Our views

- 4.47 We believe that the fragility issue with 64QAM is an historical issue partly related to the poor performance of early receivers and partly due to the lower transmission powers at which DTT multiplexes currently operate (pre-switchover). We believe the quality of receivers has improved significantly since the products available in 1998/99 and that this, coupled with higher transmission powers post-switchover, should resolve this issue.
- 4.48 We note the responses favouring a voluntary approach to upgrading to 64QAM. However, we believe mandating mode change is necessary to avoid unnecessary delays to the upgrade or implementation of DSO. We believe that, absent a regulatory requirement, this may not happen as (a) multiplex operators themselves may not have incentives to change mode or (b) multiplex operators may be prevented from changing mode due to contractual obligations. We would also note that the frequency planning and international coordination for DSO has been carried out using the assumption that all of the multiplexes are operated using the 64QAM operating mode. Further, given the additional capacity which can be gained (around 6Mbps per upgraded multiplex), we consider it appropriate to mandate mode change from 16QAM to 64QAM to ensure efficient use of spectrum.
- 4.49 In reaching this view, we have taken account of the importance of mode change to the proposed reorganisation of services and to DSO. We are also assisted by the broad support of respondents and the operators of the multiplexes still operating on 16QAM (we note that Multiplexes A and 2 are already operating on 64QAM). Subject to decisions by the Government, we anticipate the upgrade and reorganisation of services would occur on a regional basis coinciding with the rolling DSO programme, commencing with the Granada region.

## Scope for nine services on Multiplex 2

*Question 12: do you agree with our assessment that nine SD services can operate on Multiplex 2? If not, do you have an alternative proposal?*

## Responses

- 4.50 A number of respondents noted the risk to picture quality in the proposal to accommodate nine services on Multiplex 2. Many respondents, including most individuals, noted that some of the services carried on Multiplexes A and 2 already suffered picture quality problems. However, on balance, and provided tests showed that picture quality was not reduced, the majority of respondents were open to this proposal.
- 4.51 The PSBs all expressed some concerns with this proposal, particularly because Multiplex 2 would carry four PSB services which would all require equal (and high) priority. The BBC felt that the multiplex operator should be left to decide how best to use its capacity, given it has clear financial incentives to maximise utility with the responsibility for balancing picture quality and the number of services carried. The PSBs argued that, while it may be possible to accommodate nine video streams on Multiplex 2 in the future, it would, in the short term, create an unacceptable risk to service quality. In our recent discussions with them, they pointed to the results of

recent service simulations carried out by ITV and Channel 4 which they believe demonstrated degradation to services. These simulations were carried out in February 2008 to assess the impact of carrying nine services on Multiplex 2.

- 4.52 Some PSBs proposed an alternative reorganisation (which assumes only eight service on Multiplex 2), whereby both ITV and Channel 4 would each carry an additional nationwide service (for Five and the BBC, respectively) using ITV and Channel 4 capacity on Multiplex 2. It also proposed that ITV should carry the S4C service in Wales and that Channel 4 should carry the TG4 service in Northern Ireland (as outlined under **Question 13** below). The BBC proposed a different variation: that the Nations services should be carried on Multiplex A with SDN rolling out additional relay transmitters to achieve the necessary level of coverage. All the PSBs agreed that any displacement resulting from the reorganisation should fall equitably between the PSBs.
- 4.53 S4C further noted that it has digital text services which also need to be carried that were not specifically mentioned under our proposals.

### **Our views**

- 4.54 We remain of the view, particularly after witnessing simulations by ITV and Channel 4 in February that nine services could be feasible on Multiplex 2 by adopting the latest generation of MPEG-2 compression equipment. However, we agree that the multiplex operator (of Multiplex 2) is better placed to make this judgement and will do so in light of service quality obligations as well as commercial considerations. In light of responses from several PSBs who would be most affected by this decision, it appears that (although a nine service statistical multiplex pool on Multiplex 2 is possible in the future) this should not be assumed at DSO. We have therefore been persuaded that the nine service statistical multiplex pool should not form part of the initial reorganisation process. We therefore proceed on the basis that Multiplex 2 should carry only eight video streams (as it currently does), together with the Teletext and radio services. This outcome necessitates certain changes to the reorganisation proposed in our consultation; we consider how this could be done under **Question 13** below.
- 4.55 With respect to text services provided by S4C, our proposals do not require these digital text services to be carried on a universal multiplex and so we would expect these to remain on the existing multiplex (i.e. SDN's Multiplex A), along with S4C2.

### **Video format: Progressive vs Interlaced**

*Question 17: do you agree with the proposal that HD broadcasting on the DTT platform should use the more efficient progressive format, rather than the interlaced format?*

### **Responses**

- 4.56 The vast majority of respondents who commented on this question agreed that the progressive format was superior to the interlaced format. A number of respondents discussed which variant of the format (720p50, 1080i25, or 1080p50) should be used and whether this should be mandatory. A majority of respondents felt that this should be left to the channel provider to decide.
- 4.57 There was some opposition from manufacturers, PSBs and other broadcasters and Voice of the Listener and Viewer, particularly on using 720p over 1080p. This was linked to a number of factors: a possible perception on the part of consumers of lower quality due to 720 being a lower number and 720p not being 'real' HD; the fact that

HD production in the UK does not use the 720p format (although we note that it is simple to down-convert 1080p content); and the need to ensure standardisation for equipment. Others proposed that this question should be left for resolution between the broadcasters and Ofcom at a later date.

## Our views

- 4.58 Following our consideration of these responses, we continue to believe that the evidence<sup>15</sup> strongly suggests that the progressive format is significantly more efficient in capacity usage than the interlaced format.
- 4.59 We remain of the view that HD services on DTT should operate initially at 720p to ensure that three HD services could fit on Multiplex B from launch in late 2009 or early 2010 and a fourth service from 2011/12. We would envisage this moving towards the 1080p format over time as efficiency gains allow. However, we also note that the broadcasters should have as much flexibility as possible and that there may be occasions when the use of 1080i is more appropriate. We are therefore minded to allow all three formats to be used; we will confirm our decision on this matter at the completion of the comparative selection exercise.
- 4.60 However, our view remains that, when we come to assess in the future the case for increasing the number of HD services that could be carried on Multiplex B or considering a reduction in the capacity that should be reserved on Multiplex B (see further in **Section 5**), we should only consider the use of progressive video formats.

## B. REORGANISATION OF SERVICES

- 4.61 This part B sets out **Questions 6, 9, 11, 13, 14 and 15** of our consultation relating to the reorganisation of existing services on the multiplexes.

### *The need for direct regulatory action*

*Question 6: do you agree that some form of intervention is required in order for the DTT platform to commence an upgrade to new technologies without delay?*

### Responses

- 4.62 Respondents generally supported the view that regulatory intervention is required to commence an upgrade to the new technologies without delay. EADS Astrium did not agree, arguing that other platforms did not require intervention to upgrade and therefore DTT should not be subject to intervention. In the main, respondents did not distinguish between the different forms of intervention possible – generally just indicating broad support for the proposed intervention.
- 4.63 The commercial PSBs (ITV, Channel 4 and Five) provided confidential responses to our consultation. However, they have consented to the inclusion of their comments in their submissions as they are published in this Statement. Two of the PSBs noted Ofcom's actions to date had brought about a major shift in thinking and made the prospect of HD on DTT without additional spectrum possible. They supported the approach proposed by Ofcom to reorganise the multiplex capacity and convert Multiplex B to DVB-T2 and MPEG-4. However, they further proposed that Ofcom should take the minimal intervention possible consistent with enabling an "industry-led approach" (which would be involve the PSBs).

<sup>15</sup> See, for example: [http://hdmasters2007.com/pdf/Presentations/HDM2007\\_Hoffmann-EBU.pdf](http://hdmasters2007.com/pdf/Presentations/HDM2007_Hoffmann-EBU.pdf)

- 4.64 In broad terms, they proposed that the upgrade, reorganisation and allocation of capacity should be done instead by mutual agreement between the BBC and other PSBs, under the oversight of the BBC Trust. The need for regulatory intervention would, they contended, be limited to Ofcom simply revising its Technical Code and Reference Parameters, together with making the necessary modifications to the BBC Free to View Limited's Multiplex B licence.
- 4.65 The BBC Trust in their response expressed concern over the implications that some elements of our proposals had for the BBC. They were especially concerned that the BBC would be required to compete for capacity on Multiplex B (which it was previously awarded as part of a competitive process) and that the BBC's HD service would be subject to further regulatory oversight despite having already undergone an approval process by the Trust and been subject to a MIA assessment by Ofcom. The Trust felt this would expose the BBC Executive proposal to double jeopardy - that is, being subject to a second regulatory clearance process.
- 4.66 The Trust also expressed concern that the proposals would leave the BBC without sufficient capacity to carry its existing services in addition to uncertainty over Multiplex B to transmit the BBC HD channel. They noted the proposal to limit the current allocation of capacity to 2014 might have an adverse impact on the business models for manufacturers and broadcasters who may not be able to recoup their investment. Also, there could be an adverse impact on viewers (licence fee payers) who would have to invest in HD compatible equipment with no guarantee that services would extend beyond 2014.
- 4.67 The Trust also noted that the BBC Executive were "*currently finalising the detail of a proposal with the commercial public service broadcasters*" which would provide an alternative, industry-led, approach. The Trust noted that the details were not finalised at the close of our consultation, but that the Trust expected to consider such a request as a non-service application.

## Our views

- 4.68 As explained in **Section 3**, our consultation proposals were framed with regard to (among other things) our statutory principles under which any regulatory activities should be transparent, accountable, proportionate, consistent, and targeted only at cases in which action is needed. We have also considered carefully and taken account of our own general regulatory principle concerning bias against intervention (but with a willingness to intervene firmly where necessary) by evaluating a number of options as to whether (or not) it would be necessary for us to intervene in order to achieve our policy objectives.
- 4.69 In so doing, we are particularly concerned to ensure that any upgrade of capacity on Multiplex B (see **Question 9** below) takes place to a timescale and in a manner commensurate with what is required to maximise benefits to citizens and consumers. Our view, as explained in our consultation, is that such upgrade should include consideration of choice, quality of service and value for money and it should aim to minimise any adverse impacts (for example, on DSO) of the upgrade. Our view remains that regulatory intervention is appropriate.
- 4.70 Our reasons for maintaining that intervention is required include, in particular, that:
- First, the proposed upgrade represents the need for a large step-change in the organisation of the DTT platform, whose implementation will require very effective coordination. However, the commercial and contractual mechanisms that are

available to the commercial PSBs and the BBC to implement their industry-led proposal are fewer than in a normal commercial context. This is because the DTT platform is, for important reasons, subject to significant regulation. DTT multiplex operators are also subject to regulation in varying degrees, which can affect their incentives and behaviour. Additionally, even if the parties were able to coordinate based on their own incentives, they may fail to fully internalise the benefits of the upgrade given that much of the benefits accrue to other parties which such as manufacturers and, importantly, consumers.

- Secondly, there is an important public interest in the use of the capacity on the DTT platform and the capacity that can be created through this process. This public interest may not in all cases be perfectly aligned with the interests of the parties who would need to coordinate.
- Thirdly, the issue is urgent. We need to resolve the path for future development of the platform quickly, if we are to maximise the benefits that can be delivered during DSO and to provide certainty to the many other parties with an interest, notably manufacturers, retailers, and consumers. We believe that, if we were not to intervene, this would create a material risk of delay and uncertainty.

4.71 We note the BBC Trust's response to our consultation; we have been in discussion, over recent months with the BBC Trust to, amongst other things, ensure any potential overlap between our respective regulatory duties and functions is identified and managed effectively. We believe, with respect the matters covered in this Statement, that we have reached a way forward that addresses the concerns raised by the Trust and allows the satisfaction of both Ofcom's and the Trust's duties and objectives. We discuss this in greater detail under **Question 16** below.

4.72 As we note above, we have not received a full version of the PSB proposal. We have made a preliminary assessment of their proposal based on our understanding of it, as provided to us. Our assessment has focused on issues arising in relation to our policy objectives that underpin our specific proposals. We also note that, while we make certain observations on this matter under **Question 16**, we have not carried out a review of this PSB proposal for purposes of competition law.

4.73 We observe, however, in relation to the PSBs' responses to **Question 6** that they seek to support their alternative proposal based on an assumption that few and limited regulatory approvals would be required for its implementation. We do not share this view; we set our reasons for this under **Question 16**.

### **Clearing and upgrading Multiplex B**

*Question 9: do you agree with Ofcom's proposal that Multiplex B should be cleared and upgraded to new technologies?*

#### **Responses**

4.74 Respondents predominantly agreed with our proposal to clear Multiplex B, some on the proviso that it resulted in HD services (rather than any other type of service) being made available on Freeview. Some respondents agreed with this view only if we had first decided not to provide any additional DDR spectrum for HD services. They also suggested a sense of urgency to do 'whatever it takes', contingent on the resulting reorganisation of services not leading to a degradation in the quality of current services; we discuss the impact on picture quality under **Question 12**.

## Our views

- 4.75 We welcome the general support for our proposal that Multiplex B should be cleared of existing services and upgraded to MPEG-4 and DVB-T2 on the basis of the criteria we set out in our consultation.
- 4.76 Specifically, those criteria were:
- **Least overall impact & simplest process:** The number of services currently carried on the upgraded multiplex should be as few as possible to ensure the reorganisation process is as simple as possible and to minimise the number of displaced services that would have to be carried elsewhere to give effect to it.
  - **Universal coverage:** The coverage of the upgraded multiplex is also an important consideration. Given the need for consumers to acquire new reception equipment to receive services on the upgraded multiplex, we believe there are a number of reasons which point to the benefits of the upgraded multiplex being available universally:
    - it would be simpler as it would reduce the potential for consumer confusion around availability of services as DSO progresses;
    - it would maximise the number of viewers able to receive the new services;
    - it would create the best opportunity to drive take up of receiving equipment to create a virtuous circle, where reducing equipment costs would further drive take up.
- 4.77 In our consultation, we explained that we had considered each of the six existing DTT multiplexes against these criteria in order to develop a view of which multiplex should be cleared and upgraded to DVB-T2 and MPEG-4. We noted that the multiplexes which currently carry the fewest SD services are Multiplexes B and C, three and five respectively. In order to choose between these two multiplexes, we assessed the coverage levels of the multiplexes. Multiplex B offers universal coverage, whereas Multiplex C does not.
- 4.78 For these reasons, we remain of the view (and supported by responses) that it is preferable to upgrade a universal coverage multiplex, and we conclude that Multiplex B is the most appropriate multiplex to be cleared and upgraded within this process. However, we observe that this can only be executed pursuant to the Secretary of State making a statutory order, which we believe should require the BBC to move its existing services to Multiplex 1 (as already operated by the BBC) and, for any remaining service, to Multiplex 2 (as operated by D3&4).
- 4.79 As regards respondents' views that this clearance should be contingent on it resulting in more HD services, we refer to our views on **Question 18** below. In brief, our view is that the provision of HD services should not be a precondition to any upgraded capacity (including clearance of Multiplex B); although we believe that provision of HD services may be the result of any competition for this capacity. As to the issue of additional DDR spectrum being allocated for HD services, we refer to **Question 15** below.



## **Universal coverage for PSB services**

**Question 11: do you agree with our proposals for accommodating Five, S4C, TG4 and GDS on Multiplex 2?**

### **Responses**

- 4.80 Almost all respondents agreed that Five and the Nations' services (comprising S4C in Wales, TG4 in Northern Ireland and GDS in Scotland) should be carried on a universal multiplex at DSO. Some respondents also noted that, as Multiplex 2 is already regionalised, it could carry these services with little upgrading. Some respondents called for this proposal to be subject to thorough testing to ensure that the carriage of additional services does not result in a reduction in picture quality (see discussion of this point under **Question 12** above). One respondent wanted to ensure that PSB services were made available on all broadcasting platforms (see **Question 21** below).
- 4.81 Some respondents noted the BBC Trust's recent decision not to carry GDS<sup>16</sup> on DTT (subject to a review in 2010). One option, introduced under **Question 12** above, was that, on Multiplex 2, ITV should carry the Irish language service (TG4) on its capacity and that Channel 4 should carry the S4C service, and that the BBC should carry GDS (on Multiplex 1 or 2), if the BBC Trust approves its carriage on the DTT platform in the future, given that it will be a BBC approved service.
- 4.82 One PSB disputed our proposal that ITV should lose a full service, while Channel 4 would only lose one regionally, and the PSB questioned Ofcom's reasoning for this. Further, it was felt that any impact (for displaced services from Multiplex 2) should fall more equitably between the affected parties. One PSB also asked whether the proposals imply that Ofcom was prepared to forgo the FRND (fair, reasonable and non-discriminatory) requirements for SDN on Multiplex A by assuming a displaced service would be able to move to the space vacated by Five on Multiplex A.
- 4.83 There was significant support from respondents in Northern Ireland for the proposals to carry TG4 on a universal multiplex. Some of them noted that this proposal accords with the Government's commitments under the Good Friday Agreement and other International agreements. Some also expressed their concerns regarding the coverage of the Irish channel RTE in Northern Ireland post switchover and the need (politically) for more Republic of Ireland television services to be carried in Northern Ireland.
- 4.84 Teletext raised specific concerns regarding the potential impact of the proposed reorganisation; their main concern was that they did not have sufficient capacity allocated to them under the original Independent Analogue Broadcasting Order (made in 1998) to fully carry their existing analogue service in digital form and that was not addressed in our consultation, in which we proposed to increase the utilisation of capacity on Multiplex 2. They were also concerned that they would be required to pay a proportion of subsequent multiplex reorganisation costs, although there is no discernable benefit for Teletext.

### **Our views**

- 4.85 We note there was very little dispute among respondents over the objective of accommodating Five, S4C, TG4 and the GDS on PSB multiplexes from DSO.

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<sup>16</sup> See: [http://www.bbc.co.uk/bbctrust/news/press\\_releases/2008/gds\\_decision.html](http://www.bbc.co.uk/bbctrust/news/press_releases/2008/gds_decision.html)

Rather, the concerns expressed by respondents were about the manner in which this was achieved and the impacts on the various parties, including picture quality for viewers.

- 4.86 We note the concerns raised particularly about the fairness for ITV and Channel 4 and we address them in **Questions 12 and 13**.
- 4.87 In the consultation we set out our reasons for this proposal; specifically that in addition to the move of the Five service to a PSB multiplex the Government and Ofcom have similarly agreed that the S4C Welsh service should be carried on a PSB multiplex at switchover (S4C is currently carried on Multiplex A). Additionally the Government has committed to ensure that the proposed GDS and the Irish language service TG4 are carried on a universal coverage multiplex at switchover, respectively in Scotland and Northern Ireland. Our view remains that the Five, S4C and TG4 services should be carried on Multiplex 2 and that the GDS service should be carried on BBC capacity, if the BBC Trust subsequently approves its carriage on DTT.
- 4.88 We note the points raised in relation to the carriage of TG4 in Northern Ireland and the need for reciprocal access to PSB channels between Northern Ireland and the Republic of Ireland. We do not have the remit to take a view on this matter and have referred the matter to Government for further consideration.
- 4.89 We note the concerns raised by Teletext about possible increases in carriage costs on Multiplex 2. However, in light of our view that Multiplex 2 should now continue to provide eight services (not nine as proposed in our consultation – see **Question 12**) and therefore not require upgrading of existing operating standards, it is unclear whether there would be any substantive increase to Multiplex 2 operating costs over and above those which would be incurred due to DSO. We consider that any changes in carriage costs are a matter for negotiation between the operators of Multiplex 2 (who are subject to an FRND obligation) and Teletext.
- 4.90 As regards the point raised about waiving the FRND requirements on SDN so that it can accommodate the displaced services from Multiplex 2, we consider that no such waiver should be given. This is because the FRND condition was imposed on SDN to ensure that (among other things) it does not unduly favour the carriage of certain services over other broadcasters when allocating capacity on Multiplex A. This is of particular importance since ITV's acquisition of SDN in 2005.
- 4.91 In this context, we emphasise that our proposals were not intended to change the basis on which this capacity was previously reserved by the Government. We refer, in particular, to the Government's policy on the use of such capacity as set out in Lord Inglewood's<sup>17</sup> letter of 30 October 1996 to the Chairman of the ITC. Its purpose was to set out certain general principles that would apply in circumstances where the designation of frequencies might be revoked or the specification of digital capacity altered.
- 4.92 In our view, that letter establishes an assumption that, in the event that a broadcaster did not make use of their capacity (which we believe would be the case analogously if Five were to be reserved capacity on Multiplex 2 as a result of the reorganisation), the capacity released "falls to be reallocated by the multiplex operator (or prospective multiplex operator) concerned subject to the terms of the licence granted by the ITC", unless the Government decided otherwise.

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<sup>17</sup> At that time, Under Secretary of State at the Department of National Heritage, which subsequently became the Department for Culture, Media and Sport (DCMS).

- 4.93 While the spectrum functions previously carried out by the Government have now been transferred to Ofcom, we do not propose to change this position in the present context. Rather, we remain of the view that the reorganisation should be based on the fairness and equitable impact principles discussed in our consultation, taking into account also our revised view on the movement of services: see **Question 13** below. Contrary to the suggestion in its response above, we believe that our views on this matter should not affect the successful execution of the reorganisation, especially as each of ITV and C4 would forgo one nationwide video stream on Multiplex 2. We intend, however, to vary the Multiplex A licence to ensure that capacity currently reserved to Five on Multiplex A is reduced by a corresponding amount to that it would obtain on Multiplex 2. Such variation will, however, depend upon the Secretary of State's decision in light of our recommendations.

### **The reorganisation of services**

*Question 13: do you agree with our proposals for the reorganisation process for the existing multiplex services set out in the central case scenario?*

### **Responses**

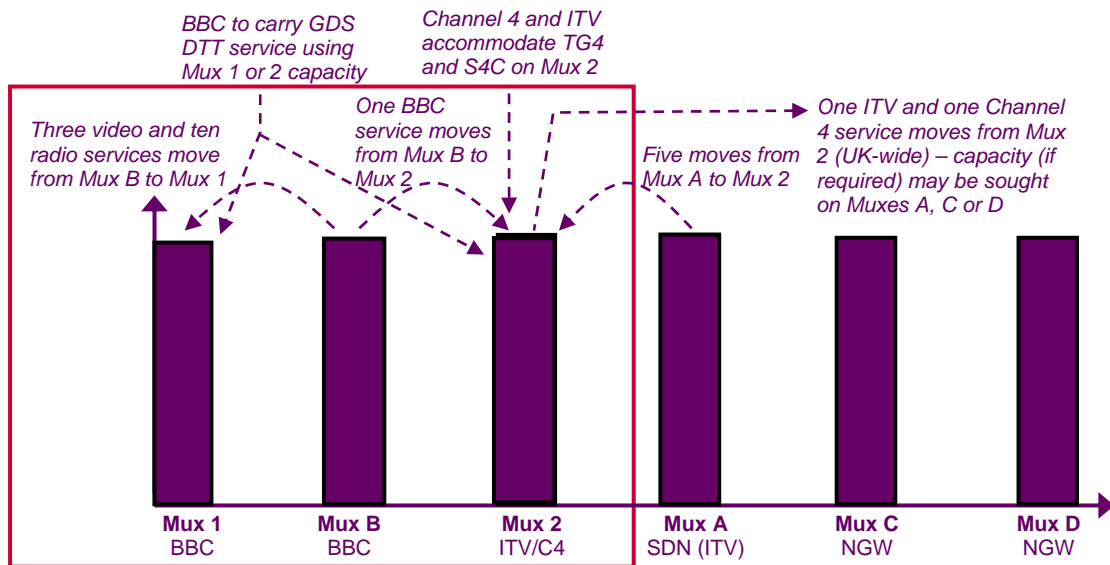
- 4.94 Most respondents supported our proposed central case scenario, subject to picture quality not being unacceptably compromised. Three respondents (S4C, GDS and QVC) wanted to be able to compare Ofcom's approach to any counterproposals put forward by respondents through a further consultation.
- 4.95 The Advisory Committee for Scotland (ACS) suggested that the displaced services should be accommodated on multiplexes which provide adequate coverage for the Nations, so as not to disadvantage viewers in these areas.
- 4.96 One broadcaster put forward its view of the potential impacts on competition as a result of the reorganisation. In particular, it was concerned that the proposed reorganisation would reduce the amount of new capacity released into the market (as it is being earmarked for the PSBs) and would create conditions for further inflation in the costs of DTT capacity as a result of the commercial PSBs seeking capacity for their displaced service(s).

### **Our views**

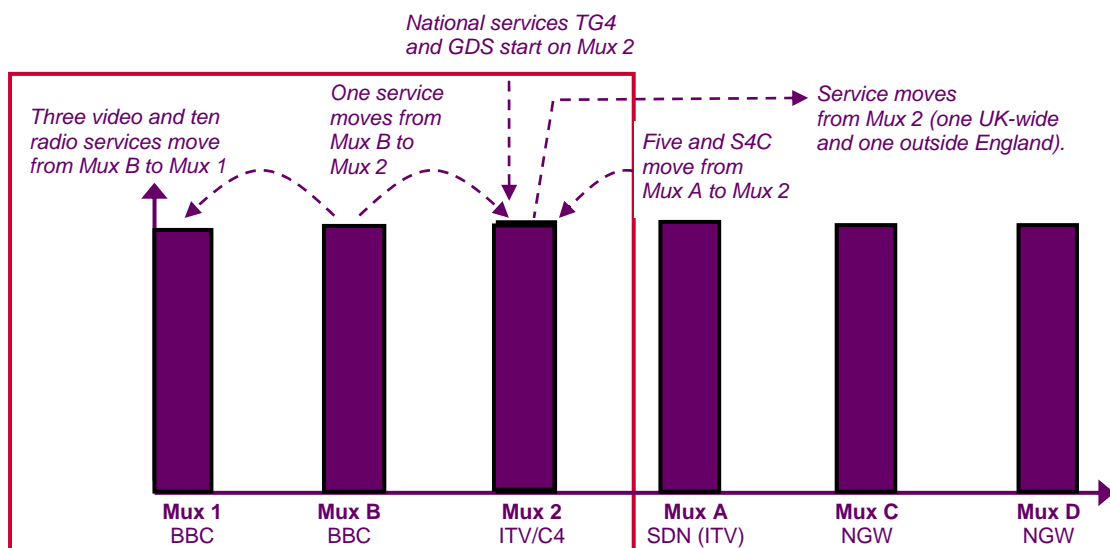
- 4.97 Our proposed central case scenario for the carriage of the displaced services considered the possible consequences of the carriage of existing services on Multiplex B (i.e. three video streams, two interactive and ten radio services) on other multiplexes. In so doing, we assumed that three out of the five video streams and all ten radio services on Multiplex B would move to Multiplex 1 (i.e. BBC's own multiplex) and a further BBC video stream on Multiplex B would move to Multiplex 2. (The BBC had already indicated to us that one of its interactive services may be removed from the platform. This decision is a matter for the BBC Trust and the BBC Executive, not Ofcom.)
- 4.98 We also assumed in our central case scenario that Multiplex 2 would be operated using a nine service statistical multiplex pool and that the bit rate demands of the BBC service transferred from Multiplex B would be similar to or lower than those currently required by one of the ITV or Channel 4 video streams displaced from Multiplex 2.

- 4.99 We refer to **Question 12** above in that we now agree that the nine service statistical multiplex pool should not form part of the initial reorganisation process. Instead, we now consider that the reorganisation should proceed on the basis that Multiplex 2 will be carrying only eight video streams (as it currently does), together with the Teletext and radio services. In addition to the BBC service being transferred to Multiplex 2, it was also proposed that the Channel Five service as well as the S4C service in Wales would move to Multiplex 2 from Multiplex A.
- 4.100 In light of the above, we have assessed the alternative proposals against the principles and criteria we set out in our consultation (which criteria we have now adopted, as set out under **Question 14**). Our view is that one of the alternative reorganisation proposals introduced in **Question 12** – which is the one relying on only eight services being carried on Multiplex 2 – is most likely to meet the principles and criteria for assessing counterproposals. We believe that this proposal (by one of the PSBs) for ITV and Channel 4 to carry Five and one BBC service, respectively, and for ITV, Channel 4 and the BBC to carry TG4, S4C and the GDS (should it proceed), respectively, would represent a fair and equal sharing of the impacts of the reorganisation.
- 4.101 We therefore consider that the movement of services in the reorganisation should be changed as follows:
- Three video and ten radio services move from Multiplex B to Multiplex 1.
  - ITV and Channel 4 will each forgo one service on Multiplex 2 so that:
    - ITV can accommodate Five on its half of Multiplex 2; and
    - Channel 4 can accommodate one BBC service on its half of Multiplex 2.
  - ITV will accommodate TG4 in Northern Ireland (on Multiplex 2).
  - Channel 4 will accommodate S4C in Wales (on Multiplex 2).
  - BBC will accommodate GDS in Scotland, should it proceed in the future.
- 4.102 We illustrate diagrammatically our changes to the reorganisation as compared to our proposals in our consultation in **Figures 2** and **3** below.

**Figure 2: Revised reorganisation of services**



**Figure 3: Proposed movement of services in our consultation**



4.103 We note the suggestion by S4C, Gaelic Media Service, QVC and the ACS that alternative proposals for the reorganisation should be consulted on prior to a decision being made. However, we do not consider that our conclusions on the reorganisation process below represent fundamental differences to those on which we consulted and, in any event, follow the principles and criteria we set out in our consultation. We do not therefore consider that a further consultation is necessary.

4.104 We also note the point made by one broadcaster that a side effect of longer term capacity growth may be short term scarcity for DTT capacity. We expect that the market for DTT capacity is likely to become increasingly liquid as multiplex licence renewals and channel carriage contracts expire. It is further possible that any contraction in available capacity arising from the proposed reorganisation will be offset by capacity released through expiration of existing channel carriage contracts. We also note that the upgrade will result in a substantial capacity boost across the platform, particularly if other multiplexes upgrade in the medium to longer term.

## **Evaluation of reorganisation counterproposals**

*Question 14: do you agree with the principles / conditions that Ofcom proposes to use to evaluate counterproposals for the reorganisation process?*

### **Responses**

4.105 Most respondents agreed with the proposed principles / conditions for this evaluation. The majority of those respondents who were against these proposals were individuals who provided little or no evidence or justification for their position. Although few comments were provided, several did note that any agreement reached by the parties should take account of the commercial (non-PSB) broadcasters and those most affected by it. Some respondents also suggested that Ofcom should also take into account:

- Ofcom's bias against intervention.
- The impact of delaying the introduction of MPEG-4.
- That consumer willingness to pay should determine demand and adoptions of new technologies - not regulation (with respect of permitting MPEG-4 services).

### **Our views**

4.106 An approach that delivers substantially the same outcomes with less intervention is preferable and such an approach would be consistent with Ofcom's regulatory principles.

4.107 In assessing the two points raised regarding permitting the introduction of MPEG-4 as discussed under **Questions 2, 3 and 7** above, we agree that further consideration should be given to the potential introduction of MPEG-4 (without DVB-T2). It is not clear, however, that a delay will result from the reorganisation.

4.108 In light of the general support by respondents, we consider that the proposed principles / criteria set out in the consultation for assessing counterproposals for the reorganisation process are appropriate. As seen from **Question 13** above, we have therefore adopted them in our assessment, namely:

- **Fairness / reasonableness / proportionality**; aiming to avoid negative effects of the reorganisation process on key parties, but where these are unavoidable seeking to minimise their impact and ensure that they are equitably distributed so far as possible.
- **Wide availability of new services**; ensuring that new services delivered using MPEG-4 and DVB-T2 technologies are available to a maximum possible number of households by converting a PSB multiplex with 98.5% coverage to these new standards. The alternative of using an existing commercial multiplex would deliver a lower level of coverage for new services, and the alternative of a seventh multiplex using the digital dividend spectrum would deliver a lower level of coverage, take longer to implement and incur much higher costs to society.
- **Early adoption**: ensuring that the capacity is made available as early as possible. This means starting in the Granada region if possible, in late 2009 - early 2010, and in subsequent regions as DSO rolls out, region-by-region, finishing in 2012.

- All broadcasters affected should have agreed to the proposal (i.e. the BBC, Channel 3 licensees, Channel 4, Five, S4C and Teletext).

4.109 We also consider that any proposal must ensure that Five, S4C, GDS and TG4 move to a universal coverage multiplex in time for DSO, as covered by our proposals.

### **Alternative proposals for the reorganisation**

*Question 15: Do you have an alternative proposal for the reorganisation process? If yes, please provide details.*

### **Responses**

4.110 Most respondents commented in some form on the reorganisation process. They were primarily concerned with core PSB or popular non-PSB channels not being lost from the DTT platform. Several respondents (including individuals, BECTU, DTG, and DTG Supply Group) argued that additional spectrum should be given to the PSBs in order to ensure HD services are available on DTT. Each of the PSBs made slightly different proposals on the reorganisation process all based around an eight service multiplex, and these are summarised under **Question 12** above.

### **Our views**

4.111 We have been persuaded by respondents' views on the feasibility of carrying nine services on Multiplex 2 and the counter-proposal for the reorganisation that assumes only eight services, as explained under **Question 13** above. This should not result in any PSB services being lost from the DTT platform.

4.112 The only other specific response received to this **Question 15** concerned the call for Ofcom allocating additional capacity to allow HD services on DTT. This issue was specifically considered by Ofcom as part of the DDR<sup>18</sup>. We concluded that there were no market failures which would justify intervention in favour of HD in the award of DDR spectrum. Additionally, our view is that the opportunity cost of such an intervention would be very high. Broadcasters, multiplex operators and other interested parties may wish, however, to participate in the DDR auction, if they believe there is sufficient demand for and value in acquiring additional spectrum.

## **C. CAPACITY ALLOCATION**

4.113 This part C sets out matters relating to allocation of the freed-up capacity covered by **Questions 16, 18, 19, 20** and **21** of our consultation.

### **Options for allocating Multiplex B capacity**

*Question 16: do you agree with Ofcom's assessment of the options for allocating the upgraded capacity?*

### **Responses**

4.114 While many respondents supported our proposals for a comparative selection process, around half were silent on this issue. Some respondents including BT, NGW, QVC and EuroNews, raised concerns about not being able to compete for this capacity, even though some believed that the services they delivered could meet the

<sup>18</sup> See: <http://www.ofcom.org.uk/radiocomms/ddr>

PSB objectives we discussed. They felt that limiting the competition to PSBs may lead to a two-tier DTT platform of HD “haves” and those without.

- 4.115 One respondent also had concerns that it and other non-PSB broadcasters would be unable to compete for the capacity. It was opposed to gifted capacity and considered there was an absence of any compelling evidence that HD services warrant the level of intervention proposed, particularly given our recent conclusions on the DDR. Sky briefly commented that, if Ofcom proceeded to introduce DVB-T2 and MPEG-4 on Multiplex B, any additional capacity generated should be allocated to broadcasters on a fair, reasonable and non-discriminatory basis. Some respondents believed the capacity should be allocated directly by either Ofcom or Government.
- 4.116 As noted in our analysis of responses to **Question 6**, the some PSBs argued that Ofcom’s proposals were disproportionate and proposed an “industry-led solution” to be overseen by the BBC Trust.
- 4.117 Some further comments from various PSBs included:
- arguments for a direct allocation of capacity by Ofcom (i.e. without a competition) if the intervention did proceed;
  - noting the merits of a competitive process but expressing scepticism that the process would yield greater benefit to citizens and consumers compared to the PSB approach;
  - the potential for a competitive process to be unfair on smaller PSBs; and
  - that Ofcom’s proposals would result in a false competition as there are four blocks of capacity available on Multiplex B and four national PSBs (i.e. they would likely each win one block of capacity).

## **Our views**

### ***Our broader consultation options***

- 4.118 Before setting out our views on these responses, it is appropriate to consider them in the context of the broader options for allocating upgraded capacity on Multiplex B that we set out in our consultation. In summary, we considered that there were three such options, namely:
- **Option 1** (i.e. the BBC, with the BBC Trust choosing how the incremental capacity should be used): our view was that this may not result in the optimal outcome for citizens and consumers, or in terms of the most efficient use of spectrum – principally due to the BBC’s position as a vertically integrated multiplex operator and broadcaster and the BBC Trust’s remit (which is focussed on the BBC and does not include the regulation of the commercial PSBs – which falls within Ofcom’s remit).
  - **Option 2** (i.e. revoking BBC Free to View Limited’s licence relating to Multiplex B and it being re-awarded by Ofcom, either via a beauty parade or via an auction, where the new licensee then chooses how the incremental capacity should be used, subject to licence obligations regarding the nature of the award and use of the capacity): our view was that this option would be disproportionate, given that BBC Free to View Limited had not breached the terms of its licence and other options appeared available which could be as effective in achieving the desired outcome, but which would be less interventionist.



- **Option 3** (i.e. a more direct role for Ofcom and Government in the allocation of the capacity through an administrative process to decide which organisations should have access to the capacity): our view was that this is the most appropriate option, while noting the risk of regulatory failure in any intervention. We noted, however, that such risk could be mitigated by the approach taken to allocation and we therefore considered three possible options for such an Ofcom-led process, namely:
  - **direct allocation:** consult on and then specify the organisations to which capacity should be allocated;
  - **use a comparative selection process:** set out criteria for allocation, and invite submissions from interested parties – then allocate capacity based on the extent to which the submissions set out proposals for use of the capacity which fulfil the predefined criteria; or
  - **allocate through the PSB Review:** include a statement as to which organisations should be allocated capacity as one of the outputs of the PSB Review.

4.119 Our belief was that a more direct role for Ofcom and Government was the most appropriate way to bring about the proposed changes and that allocating the capacity pursuant to a comparative selection process was the most appropriate option. We also considered that this process should be undertaken as soon as possible.

### ***Open competition***

4.120 As noted above, some respondents called on Ofcom to hold a more open competition to also enable non-PSB broadcasters to compete for the released capacity.

4.121 The decision of whether or not to hold an open competition as requested by respondents is one for the Government. We noted in our consultation that a comparative selection process between the PSBs would reflect the expressly worded powers available to the Secretary of State:

- to reserve capacity under section 243 of the CA03; and
- to direct the BBC to grant the right to use of capacity on a television multiplex under its control, where it lies in the interests of PSB in the UK, under Clause 42 of the BBC Agreement.

4.122 Under both these powers, the organisations specifically named are the existing PSBs. The extent to which these statutory order-making powers are more broadly available and (if so) their application is a matter for the Secretary of State. While not expressing a view on that matter in our consultation, we took account of the Secretary of State's request to Ofcom in proposing to limit the allocation of capacity to the PSBs.

4.123 Specifically, we were asked for our views on how any upgrade of capacity on Multiplex B could maximise the contribution to PSB objectives. The Secretary of State also asked that we take full account of the regulatory functions of the BBC Trust (see below) and he drew to our attention the Trust's duty to ensure BBC spectrum is used efficiently, including the fact that the BBC won Multiplex B in an open competition to operate for public service purposes.

- 4.124 Taking these matters into account, we consider that, as a matter of policy, reasons exist as to why the Government may want to limit any comparative selection process to PSBs only.
- 4.125 As concluded under **Question 9** above, Multiplex B is the most appropriate multiplex to be cleared and upgraded within this process. Our view is that the continuing use of Multiplex B to secure the purposes of PSB should not be changed as part of these proposals, nor do we consider that such a change would be consistent with (among other things) our policy objectives in this context (see **Section 3** of this Statement). In other words, and noting proposals not to allocate *additional frequencies* (but to reserve capacity already available on Multiplex B), we consider that a more limited competition would pursue general interest objectives already applying to the use of this capacity.
- 4.126 With this in mind, we also considered in our consultation the option of allocating this capacity through Ofcom's PSB Review<sup>19</sup>. We gave the following reasons, which we believe remain valid, against this option concerning timing, clarity, transparency and openness:
- It is not clear that it would result in more interaction with the market – indeed, given the wide range of issues likely to be considered within the PSB Review, a separately focused comparative selection process now might result in a clearer understanding as to the views of the market on the most appropriate content.
  - It is likely to result in a significant delay in the allocation of the capacity, especially compared to a situation in which clear criteria for the allocation process are established relatively quickly, stakeholders (including content providers and STB manufacturers) will have significantly less certainty as to the likely range of outcomes early in the process – and the final allocation could be some 12 months later.
- 4.127 With regards the respondents arguing that their current services would meet PSB objectives, we are currently unable to take a view on this (within the timescales available and noting the limitation of Section 243 to named PSBs). We do note, however that the fourth block will be awarded after the PSB Review (on which a consultation is expected to commence shortly) and that this may be an issue that respondents wish to raise in response to that consultation.

#### ***Allocation of the capacity by the BBC Trust***

- 4.128 We recognised in our consultation that the BBC Trust fulfils an extremely important governance function in respect of the BBC. It also has its own duty to ensure BBC spectrum is used efficiently, including Multiplex B.
- 4.129 We noted, however, that the BBC Trust's functions and role are set out in the BBC Charter and Agreement and are, in general, limited to the BBC and therefore we were cautious about the BBC Trust allocating the capacity. We also noted, with regard to the potential allocation of capacity by the BBC Executive, that a number of risks relating to its status as a vertically integrated multiplex operator and broadcaster that may lead to a sub-optimal outcome, both for the range, diversity and quality of services on the multiplex and spectrum efficiency.
- 4.130 We also considered that a strong level of regulatory certainty should be attached to the reorganisation and allocation of Multiplex B capacity to protect the interests of each of the parties. In the absence of a reservation of capacity on Multiplex B under a statutory order (coupled with a power for Ofcom to determine any dispute in default

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<sup>19</sup> See: [http://www.ofcom.org.uk/tv/psb\\_review/psb\\_2review/](http://www.ofcom.org.uk/tv/psb_review/psb_2review/)

of agreement), there would be no mechanism for the parties to refer any disputes on carriage terms to be resolved by Ofcom with binding regulatory effect.

- 4.131 For these reasons we were of the view that a BBC Executive or BBC Trust led allocation of capacity, in particular to commercial PSBs, may not lead to the optimal outcome for citizens and consumers, or the most efficient use of spectrum. However, we recognise that the BBC Trust does play an extremely important governance role, in particular with respect to the approval and regulation of BBC's own services and ensuring spectrum held by the BBC is used efficiently.

### ***The PSB proposal***

- 4.132 As noted under **Question 6**, we are aware that the PSBs have developed a proposal to allocate the capacity on Multiplex B through a set of commercial arrangements between the BBC, ITV, Channel 4 and Five. As we understand it, this allocation would be linked to the reorganisation of services similarly to that discussed in **Questions 11 to 15** above.
- 4.133 We have, so far as is possible, considered this proposition carefully. We have a number of concerns with the PSBs' proposal. Our concerns particularly include the ones discussed below.

#### *Risks of delay and of associated loss of value*

- 4.134 We believe that the proposal would significantly increase the risk of delay to the introduction of the new technologies to Multiplex B which, in turn, is likely to result in a significant loss of value to consumers.
- 4.135 Our consultation explained the importance of working to a proposed timescale of completing, if satisfactory bids were received, any award process by July 2008. Any delay (particularly if more than a couple of months) could lead to the launch of any services not being ready in time for DSO in Granada region, something which would also run contrary to our principles / criteria for assessing any counter-proposals for the reorganisation process (see Question 14 above). There are several aspects of the PSBs' proposal which may result in a delay; these include but are not limited to:
- Although the parties agree in principle, we understand, that the reorganisation and upgrade should occur it appears to us that there remains many further issues to resolve any of which may cause a delay to the upgrade and launch of services. Further, even if the parties were able to resolve these issues, they may fail to fully internalise the benefits of the upgrade or the impacts of a delay (given that many of these accrue to other parties which such as manufacturers and, importantly, consumers).
  - In addition to this material risk, as noted under Question 6 above, the proposal proceeds on, in our view, an incorrect assumption that few and limited regulatory approvals would be required for its implementation. This is not the case as the implementation of the PSBs' proposal may require (depending on, among other things, the service offerings of which we lack detail) Ofcom having to consider a number of licensing implications, both with regard to varying multiplex licences as well as content licences. (Such matters would be in addition to any changes required to existing regulation to allow the use of the new technical standards).
  - Furthermore, in the absence of a statutory order, Ofcom would also need to carry out a specific assessment of whether the PSBs' proposal would be consistent with BBC Free to View Limited's licensing obligation to ensure fair and effective competition (including the carrying of other services on a FRND basis) and, if not, whether Ofcom should consider varying the Multiplex B

licence accordingly, together with related processes. These matters would obviously be in addition to any approvals by the BBC Trust itself and any consideration of potential issues relating to the compliance of this proposal with competition law generally.

- 4.136 In light of the above, we believe that the necessary approvals would result, at best, in a delay to the launch of services beyond DSO in the Granada region and potentially significantly later.

*No evidence as to how the value to the public would be maximised*

- 4.137 As we understand it, under the PSB proposal, each of the incumbent broadcasters would be granted capacity to offer one HD service. We have seen no evidence that this allocation maximises the public benefit to be derived from use of this capacity. The proposal also appears to have been arrived at with minimal reference to the criteria set out in our consultation. These criteria were carefully selected to ensure that any allocation would be made with regard to maximising the public benefit from the use of the capacity and minimising risks to the DSO process.

*Confusion of statutory remits*

- 4.138 The proposal notes that the BBC Trust would assume responsibility for approving the contents of the services to be offered by the commercial PSBs and any amendments or updates subsequently proposed. We consider this creates a conflict between Ofcom's statutory role and the role of the Trust and, in our view, is therefore unacceptable.

*Not a competitive and transparent process for allocating a valuable public resource*

- 4.139 We also consider that the agreement lacks any element of competition, and lacks adequate transparency and openness. We do not consider that this is acceptable as a process for allocating a valuable public resource for public purposes to the commercial PSBs.
- 4.140 This is not an exhaustive list of the concerns we have about the PSB proposal, as we understand it. Other concerns relate to the robustness of the proposed commercial terms for the carriage and implementation of the reorganisation proposals, the management of the impact on the DSO programme, the promotion of the services and the overall impact on the review of PSB which we are currently carrying out.

### **Conclusions on Multiplex B capacity allocation**

- 4.141 We believe that our proposals to clear Multiplex B of its existing services and upgrade it to use MPEG-4 and DVB-T2 remain appropriate. We note that Multiplex B was acquired (through a competitive process) by the BBC principally for the provision of PSB services. We consider that this position should remain. Therefore, our view is that this capacity continues to be used for PSB purposes after the reorganisation. We also note that the commercial PSBs will be affected by this reorganisation, though to a lesser extent than the BBC. As regards services provided by non-PSBs that might meet PSB objectives, we consider that this raises wider issues about the future of PSB, which are more properly addressed by the PSB Review.
- 4.142 We have considered the BBC Trust's concerns about regulatory overlap. We accept that our proposals place a proportionately greater burden on the BBC than on the other PSBs. In addition, our proposals do not take explicit account of the Public Value Test (PVT) passed by the BBC HD service in late 2007<sup>20</sup>. We also note that the BBC Trust is charged with overseeing the BBC, where Ofcom performs this function for the commercial PSBs.

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<sup>20</sup> See: [http://www.bbc.co.uk/bbctrust/consult/closed\\_consultations/hdtv\\_consult.html](http://www.bbc.co.uk/bbctrust/consult/closed_consultations/hdtv_consult.html)

- 4.143 It is possible that an alternative process (i.e. negotiation between the BBC and other parties) would result in a similar outcome to the reorganisation and upgrade proposed. It is, however, far from clear that this could be achieved within the proposed timeframe or whether it would lead to the optimal outcome, both for the range, diversity and quality of services on the multiplex, the benefits to PSB and spectrum efficiency.
- 4.144 For the reasons set out above, we do not believe that the PSB proposal represents a satisfactory alternative for bringing about the reorganisation of services, the upgrade of Multiplex B and, in particular, the allocation of Multiplex B capacity. We do note, however, that cooperation between the multiplex operators and broadcasters is essential to the success of the reorganisation of services, upgrade and launch of services on Multiplex B, subsequent to the allocation of capacity. We hope, therefore, that the parties will maintain the collaborative and constructive spirit demonstrated over recent months.
- 4.145 In light of the Trust's responsibilities outlined above, we believe there is a strong case for one of the three blocks that will be available from late 2009 being retained and allocated by the BBC Trust. Further, with respect to the proposed BBC HD service, the BBC has undergone one regulatory approval process (the PVT process conducted in 2007) which required the BBC to demonstrate how it would satisfy similar criteria to those set out in our consultation. We note, however, that there may be a need for revisions to the BBC HD (DTT) proposal to reflect developments since November 2007 and to ensure smooth coordination with the launch of new services and DSO. We understand from the BBC Trust that it intends to consider further any revisions that may be needed to the BBC's HD proposal before approving any service on DTT.
- 4.146 In reaching this view, we have considered carefully the potential negative impacts of the BBC Trust allocating one block – for example on the level of competition between PSBs applying for the remaining capacity on Multiplex B. Our view is that, due to the BBC's highly developed and well resourced HD service, it is highly likely it would have secured one of the blocks of capacity and, therefore, that the true competition would be between the commercial PSBs who each have strong incentives to prepare compelling bids to secure this valuable capacity.
- 4.147 We remain of the view that the remaining two blocks of capacity should, subject to decisions by the Government, be awarded by Ofcom following a comparative selection process as proposed in our consultation.
- 4.148 Ofcom and the BBC Trust intend to work together over the coming months to ensure the successful implementation of the proposals in this document, including encouraging cooperation between the successful PSBs in promoting Multiplex B services, and in the development and take up of MPEG-4 and DVB-T2 consumer reception equipment.

### **Mandating of service type**

*Question 18: do you agree with the proposal that Ofcom should not mandate the use of the capacity for any particular service type (SD or HD) but allow the broadcasters to make proposals?*

### **Responses**

- 4.149 Over half of those who responded argued that this capacity is best used for HD services (not more SD services). They contend that a critical mass of services is required for HD on Freeview to be successful and that piecemeal use of this capacity may preclude that critical mass. Some argued for mandating a minimum amount of

HD content (e.g. nine hours as is the case with the BBC HD service available on other platforms).

- 4.150 Most other respondents agreed with Ofcom noting that demand for HD is unproven and that broadcasters should be given latitude to decide – both now and in the future. Several responses discussed the current availability of HD content and the likelihood that a combination of HD and SD content will be appropriate in the early years. Therefore, they believed that mandating HD services may only result in excessive repeats, poor quality content or lower quality upgraded SD content.

### **Our views**

- 4.151 There appears to be increasing demand for HD services (e.g. on satellite and cable) which is reflected in the uptake of “HD ready” sets and the latest qualitative market research conducted for the DDR which supports a mix of HD and SD services on the DTT platform (providing at least four or five HD services). We note that successful applicants will have strong incentives to promote uptake of services carried on Multiplex B and that they will be better placed to determine which HD and other services should be provided, taking into account the criteria against which they will be assessed.
- 4.152 Our view remains therefore that, while we note that HD may form a core part of the prime time service offering, we should not mandate the provision of these services as a *precondition* to the capacity, though we intend to reflect commitments made in applications in the terms of access to the capacity. We would also note that applicants for this capacity will have to compete with one another and therefore will have an incentive to develop compelling services – which will be assessed against the criteria set out in **Question 20** below.

### **Packaging of Multiplex B capacity**

*Question 19: do you agree with the proposal that the capacity should be allocated in three UK-wide blocks initially, rising to four blocks at DSO?*

### **Responses**

- 4.153 Most respondents addressing this question agreed that capacity should be allocated in three UK-wide blocks initially, rising to four blocks (around completion of DSO in 2012). Some expressed concern that the blocks would be too small to support HD services and that future efficiency gains are not yet confirmed.
- 4.154 Many respondents’ support is contingent on the completion of satisfactory tests demonstrating that three services of appropriate quality can be delivered (given that the technology remains unproven). Others noted the question is less important than ensuring there is flexibility about how the capacity is used.
- 4.155 One respondent argued that given there were four blocks of capacity and four PSBs, to defer the fourth slot would be unfair on the PSB who loses out in the first allocation, particularly as there was no guarantee that they would gain the fourth slot when it’s awarded later because they may have to compete against other parties for the capacity. S4C note the capacity should be fragmented to allow bids from smaller PSBs, e.g. for Multiplex B capacity in Wales.
- 4.156 There was strong objection especially from the PSBs to the proposed licence duration for Multiplex B capacity (we proposed capacity would expire in 2014).

## Our views

- 4.157 We note views about the packaging and timing of the capacity allocation. We agree that testing the new standards is necessary to ensure they provide satisfactory quality and coverage; we anticipate this work would be led by the working group we propose to initiate (which is discussed further in **Section 6**).
- 4.158 In our consultation, we discussed several options for allocating the capacity and proposed doing so in UK wide blocks as this provides the simplest and least risk allocation process. We noted that leasing of multiplex capacity on a sub-UK basis should be permitted, in line with current practice for multiplex capacity. We note S4C's proposal for a more fragmented allocation of capacity - to allow for bids from smaller PSBs, such as itself, in limited geographic areas. We believe however, that fragmenting the capacity unacceptably reduces the value of the capacity as it precludes provision of certain services – particularly as scope already exists for sub-UK (or other) use of the capacity pursuant to leasing of multiplex capacity, or in the case of S4C, through joint bidding for the capacity.
- 4.159 Our assessment of the proposed duration of the new licensed services is discussed at **Question 20** below. With respect to concerns about the competitiveness of PSBs in bidding for capacity, our clear intention is not to disadvantage any PSB, but rather to achieve the outcome most likely to be in the interests of citizens and consumers. We believe our selection criteria will allow all PSBs to compete fairly for the available capacity.
- 4.160 We therefore consider that the first three blocks should be available for award in 2008 (for use from late 2009), as proposed in our consultation, two by Ofcom and one by the BBC Trust (see **Question 16** above). The fourth slot should be available for award by Ofcom at the conclusion of the PSB Review in 2009/10 (for use in 2011/12).

### **Comparative selection assessment criteria**

*Question 20: do you agree with the proposed criteria for the comparative selection process?*

## Responses

- 4.161 There were limited responses to this question, with many respondents having addressed this point in response to previous questions. Respondents primarily focused on three issues:
- Opening access to the capacity for non-PSBs through the competition.
  - Securing high quality services, including picture and sound quality.
  - Clarification of what was meant by “high quality” in the context of these proposals (i.e. what technical parameters or content requirements would be applied to the new services).
- 4.162 There was also some debate about our proposals for a certain requirement of HD originated content (we proposed 80% of UK originated content by HD 2012, where the proposed service was HD, moving to 100% over time but some thought this was too high – at least initially). Some form of HD requirement was deemed by most to be a good idea.
- 4.163 The PSBs, as noted under **Question 16** above, did not support the proposal to undertake a comparative selection exercise. Further, they argued that since Ofcom retains a large degree of influence over the PSBs, it will be able to realise the public policy goals identified through licensing of PSB services. It was highlighted that the

BBC is proposing to hold the PSBs to their HD service proposals which would capture the broader public policy objectives, through contractual obligations. Furthermore the BBC Trust could ensure that the Ofcom criteria are applied when awarding the capacity on Multiplex B.

- 4.164 Respondents, including PSBs, also focused on the duration of licences noting that the proposed 2014 deadline would provide insufficient certainty to broadcasters and may not allow sufficient time to recoup initial investments and low returns in the early stages. A minimum term of ten years (in line with commercial licences) was sought.

### **Our views**

- 4.165 We address the issue of eligibility for the comparative selection process under **Questions 6 and 16** above, and note, in that context, the arguments for a commercial resolution to the process. Particularly we would highlight our view that the burden associated with the comparative selection process on the parties involved is relatively low in terms of preparing bids whereas the benefits to viewers arising from a competitive process are potentially very large.
- 4.166 We note the concerns raised about the duration of licences for Multiplex B capacity – in particular that the proposed expiration date of 2014 would not provide sufficient certainty to bidders, sufficient incentives to broadcasters to develop and promote services on Multiplex B and sufficient incentives for manufacturers to invest in the development of equipment for these services and for consumers to invest in receiver equipment.
- 4.167 We agree with the difficulty predicting costs and demand for new services and therefore the difficulty forecasting financial outcomes. We are keen to ensure services are sustainable in the medium to long term and, in particular, that long term incentives exist for broadcasters and equipment manufacturers to develop compelling service and product propositions. This is important also for consumers who will want to have certainty about the continued provision of services when investing in receiver equipment.
- 4.168 We believe a longer duration would increase certainty and address the risks to broadcasters, manufacturers, infrastructure providers and consumers. But at the same time it may unfairly benefit broadcasters, unless those benefits can be captured. We are of the view that a greater degree of certainty over access to Multiplex B capacity would help promote investment at each stage in the value chain and therefore assist in maximising the benefits of the upgrade. We remain, however, firmly of the view that this capacity should be tied to the provision of PSB. To that end, while we no longer propose that access to the capacity would automatically end in 2014, we now consider that any award of capacity should be contingent on the holding of a DRL and be treated as part of the benefits and obligations of the DRL. So, if the DRL were to be handed back, to lapse or be revoked then the capacity on Multiplex B would also be forfeit.
- 4.169 We conclude therefore that an open duration licence, contingent on the holding of a DRL, is most likely to create positive incentives for broadcasters to develop compelling services, and, consequently on manufacturers to invest in developing consumer reception equipment – and in the take up of that equipment by consumers.
- 4.170 With respect to the criteria to be applied in the comparative selection process and noting concerns about setting minimum expectations where HD services are proposed for HD content. We do not believe this is unreasonable in the timeframes specified and see no compelling reasons were provided in responses to our consultation to change or add to this requirement specifically or the criteria proposed in our consultation; those were:



- **Selection Criterion 1:** Promote the efficient use of spectrum, as reflected in the use of the capacity on the multiplex and in plans for promotion of rapid and widespread adoption of DVB-T2 MPEG-4 consumer reception equipment. Any content proposed by applicants should therefore show how they consider it likely that their services encourage such adoption.
- **Selection Criterion 2:** Contribute to the fulfilment of the purposes and characteristics of PSB in the UK<sup>21</sup>.
- **Selection Criterion 3:** Contribute to enhancing or maintaining the range and diversity of high quality television services available throughout the UK (both between and within individual services) on DTT.

4.171 Our view is that the criteria set out above are appropriate to consider applications against them. We expect to publish a draft ITA, subject to decisions by the Government, in mid April. It will provide guidance on how applicants may demonstrate that they satisfy each of the criteria, prior to any formal invitation being published later this year.

4.172 With respect to the application process for Multiplex B capacity, we believe (among other things) that:

- Joint bidding should be allowed between some parties and content providers: this is particularly aimed at enabling the participation of S4C and promoting innovative bids (e.g. to include high quality content from non-PSB providers). However, while we accept joint applications in principle, we have decided that certain bidder combinations should be restricted. Specifically, that joint applications by the UK wide PSBs (BBC, ITV and the Channel 3 licensees, Channel 4 and Five) which could reduce the level of competition between these parties, should not be allowed.
- The capacity awarded under this process should not be tradable. Licensees will, however, in line with current general practice for multiplex capacity, be able to lease capacity subject to meeting the licence obligations.
- Bids from Channel 3 licensees should be made by at least ten Channel 3 licensees collectively. ITV plc would therefore not be able to submit its own sole proposal for capacity; it must do so in conjunction with SMG, UTV and a sufficient number of the other Channel 3 DRL holders.
- Proposals will be published on receipt (with confidential material redacted).
- Applicants should ensure compliance of their bids with competition law.

### **Comments on proposals for Multiplex B**

*Question 21: do you have any comments on Ofcom's proposals for the upgraded multiplex?*

### **Responses**

4.173 Many of the responses to this question (less than a quarter of respondents) reiterated points already raised in relation to previous questions. **Table 2** below lists the additional comments and our response to each.

<sup>21</sup> PSB Purposes and Characteristics are set out in Ofcom's PSB Review Phase 2, page 6: [http://www.ofcom.org.uk/consult/condocs/psb2/psb2/psb\\_phase2.pdf](http://www.ofcom.org.uk/consult/condocs/psb2/psb2/psb_phase2.pdf)

**Table 2: General comments and Ofcom's response**

Issue/comment	Ofcom response
1. Ofcom should consult on the channels and programming of the new services	We believe that we have provided a sufficient opportunity to stakeholders to influence the proposed assessment criteria (see, for instance, <b>Question 20</b> above) in this respect. Having carefully considered the responses, we consider that it now requires a judgement to be made by Ofcom in light of applicants' proposals.
2. The new services should be free to air	We agree and this is central to our proposals.
3. Need to provide two multiplexes to deliver a competitive HD offering	We are confident that our proposals will enable the DTT platform to migrate to new technologies over time, and this may allow and encourage further HD offerings from other broadcasters, including non-PSBs.
4. Should delay process until DSO is completed, then use a 7 <sup>th</sup> multiplex from DDR spectrum	DSO provides a unique opportunity to streamline this process and reduces confusion for consumers. The DDR considered this issue and identified no justification for reserving further spectrum to enable HD services.
5. Proposals risk further tilting the playing field in favour of PSBs, giving them a significant advantage over other competitors.	We note that this process does not preclude other broadcasters or interested parties from acquiring spectrum through the DDR to provide additional SD or HD services on a 7 <sup>th</sup> multiplex. Non-PSBs may also form bidding consortia led by a PSB (who would hold the licence for the capacity).
6. 10Mbps is not sufficient to provide a quality HD service (BBC currently broadcast at 16Mbps and Sky at 18Mbps; dedicating high bit rates to these high quality services is a large part of their success) and will not compare well with cable or satellite offerings. At launch, 15Mbps is more appropriate.	By late 2009/2010, our projections show (and industry experts support this view) that 10Mbps is a reasonable (if not conservative) target. We expect efficiency improvements over the next few years will enable this.
7. One PSB proposed three primary objectives for Ofcom's proposal should be to: a) meet the interests and needs of consumers; b) ensure the long-term competitiveness of the platform; and c) ensure the long-term health of PSB ecology in the UK (for which this capacity has been reserved).	We consider that the meeting of the interests and needs of consumers already lies at the heart of both our policy objectives as well as our statutory duties of our proposals. We have not been persuaded to adopt the other two criteria concerning the long-term competitiveness and health of PSB as specific assessment criteria though note these are implicit, to a degree, in our existing objectives.

Issue/comment	Ofcom response
8. One PSB recognised that a competitive process could lead to the introduction of additional services beyond simulcasting of existing services in HD. They also thought it was potentially damaging if the terms of the capacity allocation restricted innovative approaches and that sufficient flexibility would need to be embedded into the award process to enable successful applicants to respond to unforeseen market circumstances.	We agree and have taken these points into consideration in drafting our ITA. We also believe that this process may introduce additional services beyond simulcasting: see <b>Question 16</b> where we discuss the need for a new public service DTPS licence.
9. Need to extend cross-promotion rules to ensure PSBs do not show bias towards HD services on DTT	We agree, and consider that with current services already available on satellite and cable, and upcoming launches during 2008 on Freesat that PSBs are already addressing these requirements.

## D. OTHER MATTERS

4.174 Part D deals with the remaining issues dealt with in our consultation, **Questions 1, 4, 22 and 23**, as well with additional comments raised by respondents.

### *Services likely to drive take up of consumer reception equipment*

*Question 1: which services are most likely to drive take up of DTT consumer reception equipment using new technologies? In particular, are HD services the most likely to do so?*

#### Responses

- 4.175 Respondents predominantly felt that a range of high quality (i.e. high content quality) HD television services would be most likely to drive the take up of consumer reception equipment. The respondents proposed that HD friendly content such as sports, film, documentary, special events such as the FIFA World Cup and 2012 London Olympic and Paralympic Games and other high quality PSB programming would be most likely to provide significant value to viewers. Most respondents (including individuals, PSBs and other broadcasters, equipment manufacturers, industry representatives and advisory groups) shared this view.
- 4.176 A minority of respondents (including NGW, Teletext and United for Local TV) argued that other services, such as more high quality SD, local TV or interactive services would encourage equipment uptake. They did also note that this could possibly be implemented in conjunction with other services such as HD.
- 4.177 However, the majority view, taking into account all responses, was that a unique new service not yet available on the platform (such as HD) would be a far better driver of new equipment than more channels delivering similar services or content. One manufacturer also noted DSO as a major driver of take up and “refreshment” of consumer reception equipment.
- 4.178 Respondents who supported HD services pointed to a range of evidence in support of their value. This included: increasing consumer demand for HD services, as evidenced by continued growth of demand for Sky HD subscriptions and results from

other research (including the PSB HD trial in 2006 and Ofcom's DDR market research during 2007), and the rapid and widespread adoption of HD-ready TVs (even though the consumer equipment and currently available services are comparatively expensive).

## Our views

- 4.179 It seems likely that HD content could be a major driver of consumer decision making with respect to the purchase of new DTT reception equipment. However, it would appear that other services (including more SD services, regional or local TV, interactive and text services) are also likely to provide value to consumers. We note research conducted for the DDR<sup>22</sup> shows regional or local TV and SD channels, in addition to HD, as being important to consumers.
- 4.180 Our view therefore is that the primary factor affecting the take up of consumer reception equipment is likely to be new high quality services including HD but potentially including quality SD, local TV or interactive services. We also note DSO as a critical driver for purchase or replacement of DTT reception equipment. As a result, we do not propose to require usage of the capacity for HD services; other services including SD, will be allowed and applicants are invited to submit bids through our comparative selection process which explain how they meet the specified criteria. This issue is considered further under **Question 18** above.

## Speed of introduction

*Question 4: do you agree that the earliest possible availability and adoption of the technologies is in the interests of consumers and citizens?*

## Responses

- 4.181 Most respondents to this question supported the view that, if we proceed to implement the MPEG-4 and DVB-T2 technologies on Multiplex B, they should be introduced as soon as possible to allow maximum benefits for viewers. The reasons for this included:
- It ensures consumers can choose at the earliest opportunity when making purchasing decisions (thereby minimising unnecessary duplication of equipment).
  - It brings forward the increase in effective platform capacity available for delivering new services.
  - It minimises the number of "re-scans" households will be required to undertake to pick up the new services.
- 4.182 A small number of respondents (mostly individuals) disagreed and were concerned that an early adoption of these new standards would result in obsolete equipment and a second switchover. These respondents argued that the upgrade should not take place until after DSO is completed (or for a substantial period beyond this).
- 4.183 The PSBs and other broadcasting interests strongly supported early adoption, citing the need to move quickly to enable the DTT platform to remain competitive and to take advantage of the unique opportunity presented by DSO. Many flagged the importance of not adversely impacting DSO and the need for clear communications with consumers – noting the potential for confusion.

<sup>22</sup> See: <http://www.ofcom.org.uk/radiocomms/ddr/documents/research07/>

4.184 A key concern raised by a large proportion of the respondents was the need to balance the risk of early adoption with the potential stability and availability of the new technologies. Several also noted the importance of trialling any new services to be used on the platform, and the need to protect the status of the DTT platform.

### **Our views**

4.185 We gave four reasons in our consultation why the early adoption of these technologies would be beneficial. In summary these were:

- Introducing the two technologies (DVB-T2 and MPEG-4) at the same time would reduce the number of receiver equipment upgrades for consumers – in particular for analogue viewers who will be able to incorporate the upgrade within their switch to digital.
- Earlier adoption could bring forward the availability of new services such as HD on the DTT platform, and would bring forward the more efficient use of the valuable spectrum already used for DTT.
- An upgrade should be done in the simplest possible manner with the least disruption and mode change at DSO provides such an opportunity.
- Earlier adoption of these technologies provides a greater level of consumer choice.

4.186 We welcome the general support for the earliest possible adoption of MPEG-4 and DVB-T2 technologies. We consider therefore for the same reasons set out in our consultation, and, in light of responses, that the earliest possible availability and adoption of MPEG-4 and DVB-T2 services and equipment is in the interests of citizens and consumers. We note again that existing DTT reception equipment will continue to receive existing services.

4.187 We also agree with the views expressed by respondents that it is important that these new technologies are subject to extensive testing to ensure robustness prior to their launch.

4.188 We intend to work closely with the broadcasters, multiplex operators, manufacturers and other stakeholders to ensure suitable trials are held from the earliest opportunity. In particular, we note that careful coordination will be needed between the broadcasters, Digital UK, the Consumer Expert Group (and its constituents) and Ofcom to ensure communications with consumers are managed carefully and effectively. We discuss this further in **Section 6**.

### **Impact Assessment**

*Question 22: Do you agree with Ofcom's impact assessment?*

### **Responses**

4.189 Many respondents referred to the impact assessment and in particular areas they believed were not considered adequately. For example, a small number of respondents felt that when considering the choice of counterfactual we should have considered all the options discussed in our consultation, as well as the 'do nothing' option. Specifically, they felt that we should have considered more fully the adoption

of MPEG-4 and DVB-T and the use of additional DDR spectrum to help drive services.

- 4.190 Some respondents commented specifically on the modelling, finding insufficient detail to enable them to make a proper assessment about our underlying assumptions (e.g. taking account of other types of costs broadcasters will face in contract renewals).
- 4.191 We received comments on our assessment of how to allocate the multiplex capacity, specifically in relation to the benefits and opportunity cost of a more open competition process, potentially including new entrants, and the downsides of limiting the competition to PSBs.
- 4.192 We also received comments on the provision of HD services. It was thought that the analysis failed to consider the extent to which consumers and citizens are likely to demand new SD services on DVB-T over HD simulcasts using DVB-T2 and provided a lack of evidence that HD is an optimal use of universal multiplex capacity. Respondents argued that it did not take account of how demand for HD services might be met by alternative platforms, or give full consideration to the House of Commons Culture, Media and Sport Committee's opposition to intervention for HD.

## Our views

4.193 We note the comments on the consultation's Impact Assessment:

- Our consultation document considered the adoption of MPEG-4 with DVB-T and explained the reasons why this option would not be expected to result in greater benefits. These reasons are also explained in the response to **Questions 2 and 3** above. Given this analysis in our consultation document, detailed consideration of this as a counterfactual in the impact assessment was not considered necessary. However, for completeness, we have now added the reasons for this into the impact assessment at **Annex 1**.
- Our decision in relation to the award of DDR spectrum has been set out in the DDR statement.
- We note that the proposals in our consultation were not reliant on the underlying assumptions of the modelling work. The modeling work provided illustrative indications of the potential order of magnitude of the benefits which could be realised from reducing the delay in the adoption of new technologies on the DTT platform and did not seek to quantify robustly the benefits of the particular proposals in our consultation. We believe that sufficient information was provided to allow respondents to form an assessment of whether the order of magnitude of our results was correct, and to provide comments. However, in response to these concerns, and because it is not possible for us to meaningfully make significantly more information available (owing to the confidential nature of some of the underlying information), we do not use the results of the modelling in the impact assessment (see **Annex 1**) to illustrate the scale of the benefits. Instead we rely on the general acceptance from consultation respondents that the upgrade would generate significant benefits and was worth pursuing, in justifying the likely benefit of the upgrade.
- With regard to our assessment for allocating the multiplex capacity and the limitations on who is eligible to apply under the competitive process, we concluded that this remains the Government's decision and our detailed reasoning and views on this are discussed under **Question 16** above.

- We note the point raised in respect of intervention to secure the provision of specific services. Our view is that our policy here is consistent with that adopted by Ofcom elsewhere. In particular we note that, while the outcome of the proposals set out in our consultation, and adopted in this statement, may well result in HD on DTT, this is not a requirement of the proposed intervention. We note the primary purpose of these proposals is to secure the optimal use of spectrum *already allocated* to DTT both now and in the future.

4.194 We have reflected comments raised by respondents and any modifications to our policy proposals, as appropriate, in the impact assessment.

### **General comments on benefits, risk & mitigations and impacts**

*Question 23: Do you agree with Ofcom's assessment of the potential benefits, risks and mitigations strategies relating to the impact of these proposals on the DSO programme?*

### **Responses**

4.195 Respondents were largely supportive of our assessment of the potential risks to DSO. However, we also received additional comments about our assessment and these can be grouped into three areas:

- The benefits and risks were not adequately assessed – including quality issues, risks to DSO timetable due to delay in technologies (if DVB-T2 is delayed), impact on use of MPEG-4 if the two technologies are coupled, and consideration of alternative counterfactual and intervention scenario(s).
- Consumer concerns and messaging – if handled incorrectly they could destabilise DSO, the proposals will exacerbate the 3/6 multiplex access issue, areas that have already completed DSO will be concerned as to why they weren't informed earlier, availability of equipment will be too late for Granada (late 2009).
- Loss of services – concerned that reduction in coverage of TG4 / RTE at DSO may lead to a political problem, also the handling of consumers who have already switched and may lose the displaced services after the reorganisation.

### **Our views**

4.196 We will continue to liaise with Digital UK to ensure that the impact of these proposals on DSO is kept to a minimum. We have discussed our approach for addressing DTT quality and DVB-T2 timing concerns and the impact of a delayed MPEG-4 introduction previously in this section.

4.197 Accordingly, we believe that our assessment of the benefits and risks to DSO is appropriate, and will continue to be monitored throughout implementation of the proposals. This is further discussion in **Section 6**. The upgrade will be retrofitted in the regions that have already completed DSO so all post DSO regions have access to the new services.

### **Other comments**

4.198 In addition, we received a number of general observations which we set out in **Table 3** below along with our response.

**Table 3: Other general observations made by respondents**

Issue raised	Our response
Several respondents noted the importance of being able to use this unique opportunity to keep the UK at the forefront of broadcasting as a world class leader, but this needed to be balanced against the UK taking too large a gamble and being the only European country who adopts DVB-T2.	We agree with the need to continue to liaise with manufacturing interests and international regulators. We have had informal contact with a number of European regulators and note increasing interest in MPEG-4 and DVB-T2. We intend to continue this dialogue and note Ofcom will be speaking on this matter at a forthcoming digital television symposium hosted by Slovenia, who currently hold the EU presidency.
A new equipment logo should be developed to assist consumers e.g. a Freeview HD brand for the UK. Accordingly the digital tick needs to be phased out or updated to account for new technologies.	We agree that there is merit in reviewing current logos, and are discussing solutions with our DCMS and Department of Business, Enterprise and Regulatory Reform (BERR) colleagues.
<p>The timescales in our proposals are problematic:</p> <ul style="list-style-type: none"> <li>• too late for DSO; or should wait until after DSO is completed;</li> <li>• DDR decisions should not be taken without certainty for this process; and</li> <li>• The DTT process should not pre-empt PSB Review decisions.</li> </ul>	We agree that timing is a crucial element of these proposals. We also agree that decisions here need to be taken in light of their links to other Ofcom projects, including the PSB Review and the DDR. However, we note the relevance of the recently published DDR statement <sup>23</sup> which did not find any evidence of market failure to justify reservation of capacity for HD services. Further, that there is a one off opportunity to introduce the proposed technologies – and that opportunity arises at switchover.
Some respondents felt Local TV should be given PSB status and Ofcom should make representations to DCMS to support this (we note ten MPs and local TV lobby groups provided their support for local and community TV in response to our consultation).	We believe these issues lie outside of the scope of this project, but may warrant consideration separately by Ofcom (e.g. as part of the PSB review) and or the Government.

<sup>23</sup> See: <http://www.ofcom.org.uk/consult/condocs/ddr/statement/>



## Section 5

# Conclusions and recommendations

- 5.1 This Section summarises our conclusions on the issues raised by our consultation. In reaching our conclusions, we have taken account of the responses, our relevant duties and policy objectives as well as the Secretary of State's request for our advice with respect to the potential introduction of new technologies to the DTT platform.
- 5.2 We have already noted in **Section 2** that any implementation of our conclusions is dependent on the Secretary of State exercising his powers in a way that takes account of our recommendations as we currently have limited powers to do so. While we are mindful of this being a matter falling within the Government's remit, we conclude this Section by also setting out certain specific recommendations on substance that appear to us required to achieve our proposals.

### Our policy conclusions

- 5.3 Our conclusions below are grouped into the four broad themes that we used in **Section 4**.
- 5.4 Overall, we have concluded that some form of intervention will be required in order for the DTT platform to commence an upgrade to the new technologies without delay. We have further concluded that the appropriate form of our regulatory intervention as well as the Government's intervention should involve the Secretary of State specifying, by a statutory order under section 243 of CA03, certain modifications to the BA96.
- 5.5 We believe, in particular, that such modifications could empower Ofcom to give effect to the reorganisation process and to award certain capacity on Multiplex B if we deem that the selection criteria (as specified by Order) have been satisfied by applicant(s) following our comparative selection process. We would then exercise those powers by varying the relevant digital multiplex licences (including possible changes to the DRLs) and possibly awarding proposed new DTSP licences as well as using our existing powers to amend the Ofcom Reference Parameters to introduce the new technologies. We will provide further details of these views below.
- 5.6 Our justification for the intervention is, in short, to ensure that the reorganisation and upgrade takes place within a timescale and manner necessary to maximise benefits to viewers, including by:
- providing suppliers with sufficient certainty to make investment decisions imminently;
  - giving the largest possible proportion of households the ability to upgrade to MPEG-4 and DVB-T2 at DSO by introducing new services and new equipment as soon as is practically possible; and
  - promoting competition and innovation on the upgraded multiplex through these proposals, as far as possible.
- 5.7 In summary, we consider that our conclusions and recommendations are consistent with our duties and policy objectives set out in **Section 3** so as to further the interests of citizens and of consumers.

## Technical matters

### *Use of MPEG-4 and DVB-T2*

5.8 We conclude that:

- The adoption of MPEG-4 and DVB-T2 on Multiplex B represents the combination of technologies uniquely capable of meeting the short, medium and longer term capacity growth demands of DTT.
- These technologies should be introduced on the DTT platform at DSO when the mode change capacity boost will enable accommodation of displaced services. This would be achieved by upgrading Multiplex B.

5.9 As explained in our consultation, Ofcom regulates the use of technical standards on the DTT platform. This is implemented through a requirement that Multiplex licensees and DRL holders adhere to the Technical Performance Code (and the more detailed document on Reference Parameters, the current version of which is Issue 4 of 13 September 2007).

5.10 While we intend to use our existing powers to amend the Ofcom Reference Parameters, any such amendment will depend upon the Secretary of State's decisions with respect our recommendations. We intend to amend the Reference Parameters document to permit the use of MPEG-4 and DVB-T2 standards on Multiplex B later this year. We will also amend the Parameters to enable other multiplex operators to also adopt these standards, subject to obtaining Ofcom's prior written consent. We intend to consider any such applications on a case-by-case basis, which may also require, if we consider it appropriate, Ofcom holding a further consultation with regard to such application.

### *Availability of equipment*

5.11 In light of responses to the consultation and separate discussions with equipment manufacturers our view is that there is a reasonable likelihood that limited volumes of consumer reception equipment will be available from late 2009 and in higher volumes from early 2010. We believe that by taking an early but informed decision to adopt MPEG-4/DVB-T2 on Multiplex B at the Granada switchover in late 2009, we will create a strong incentive for viewers to upgrade and for manufacturers to get the products in the shops. We intend to monitor the situation closely and continue our dialogue with manufacturers, retailers, the DVB working group and other relevant stakeholders.

### *Use of MPEG-4 without DVB-T2*

5.12 In light of the responses to our consultation, we conclude that any applications for new services using MPEG-4 without DVB-T2 should be considered on a case by case basis which will take into account the benefits and impacts that may arise from their adoption.

5.13 In particular, we will seek assurances that the adoption of any such proposal would not have an adverse impact on the development and uptake of MPEG-4 and DVB-T2 equipment and on DSO. For instance, we would want reassurance that such a proposal would not unreasonably increase consumer confusion around DSO. We also believe that there would be less risk in the adoption of MPEG-4 coded services

on a DVB-T multiplex, if all of the equipment capable of receiving the service is also compatible with the DVB-T2 standard.

- 5.14 NGW has separately applied to Ofcom seeking our permission to use MPEG-4 with DVB-T on their multiplexes. We believe, therefore, that any applications for new services using MPEG-4 without DVB-T2 should be considered on a case-by-case basis, which should take into account the benefits and impacts that may arise from their adoption. This should specifically include any possible impact on the development and take up of MPEG-4 and DVB-T2 equipment and communications to consumers around DSO.
- 5.15 In relation to an application by NGW to launch services using MPEG-4 and DVB-T on Multiplex C, we are not yet in a position to be able to take a final view on this matter, particularly as we need to understand and evaluate any risks associated with such implementation. We will therefore carry on discussing these proposals with both parties with a view to gaining a better understanding of how this variation could be adopted without causing a detrimental impact to DTT viewers

### ***Mode change at DSO***

- 5.16 We conclude that the three Ofcom licensed multiplexes currently operating on 16QAM should be required to change to 64QAM at DSO. We have reached this conclusion in light of responses which support the rationale set out in our consultation, particularly:
- Mode change presents a very significant opportunity for DTT, including significantly boosting capacity on four multiplexes.
  - This may not happen without a regulatory requirement as (a) multiplex operators themselves may not have incentives to change mode or (b) multiplex operators may be prevented from changing mode due to contractual obligations.
  - The frequency planning and international coordination for DSO has been carried out using the assumption that all of the multiplexes are operated using the 64QAM operating mode. Therefore, the predictions made about post DSO coverage are all consistent with these assumptions.
- 5.17 The four multiplexes that currently operate at 16QAM are:
- Multiplex B controlled by BBC Free to View Limited.
  - Multiplex C and Multiplex D controlled by NGW.
  - Multiplex 1 controlled by the BBC under its Royal Charter (we understand, however, from the BBC that they also intend to adopt the 64QAM transmission mode on this multiplex at DSO).
- 5.18 Again, we intend to amend the Reference Parameters document later this year to reflect these new mode change requirements.

### ***Video format – Progressive & Interlaced***

- 5.19 We conclude that the progressive video format is superior in efficiency terms when compressed using MPEG coding to the interlaced format. We believe it is reasonable to conclude that where broadcasters use the 720p progressive format, it would be

possible to carry three HD sized services on an upgraded Multiplex B by the end of 2009, with a fourth block becoming possible by 2012.

- 5.20 We will therefore amend the Reference Parameters document to permit the 720p and 1080p, as well as the 1080i video formats, when we amend them later this year. However, we conclude that the decision about which format should be used to broadcast the new services on DTT should be taken by the broadcasters themselves, not the regulator.
- 5.21 However, our view is that when we come to reassess the capacity available for services that can be carried on Multiplex B in the future, or considering a reduction in the capacity that should be reserved for PSB services carried on Multiplex B (see **Section 4**), we should only consider the use of progressive video formats.

## Reorganisation of services

### *The upgraded multiplex, including timing for upgrade*

- 5.22 We conclude that Multiplex B should be upgraded to use MPEG-4 and DVB-T2 in time for the launch of services at DSO in the Granada region.
- 5.23 We have selected Multiplex B on the basis of the criteria set out in our consultation and noting the general support by respondents on this matter. We consider that it is the most appropriate multiplex given, in particular, that:
- Multiplex B will have universal coverage at DSO and will therefore ensure that as many viewers as possible are able to access the new services.
  - Multiplex B (along with Multiplex D) currently carries the smallest number of services, thus minimising the number of displaced services that would have to be carried elsewhere to give effect to this change to the DTT platform.
- 5.24 While we are confident this change is achievable, we do also note that the proposed timescales include little room for manoeuvre in the event of any unforeseen delay. In order to minimise any risks to the timetable, Ofcom expects to work closely with the multiplex operator, BBC Free to View and other relevant parties to achieve this objective. We discuss this matter further in **Section 6**.

### *Movement of services from Multiplex B*

- 5.25 We conclude that the reorganisation should proceed on the basis that:
- Three out of the five video streams and all ten radio services on Multiplex B should move to Multiplex 1 (i.e. the BBC's own multiplex) with a further BBC video stream on Multiplex B moving to Multiplex 2. As noted in Section 4, the BBC has already indicated to us that one of its interactive services may be removed from the DTT platform. We consider that this specific decision is a matter for the BBC Trust and the BBC's management, not Ofcom.
  - It should be a matter for the operators of Multiplex 2 (D3&4) to decide when they will move from an eight video service (together with the Teletext and radio services) to a nine service statistical multiplex pool, although we would encourage this to happen as soon as is practically possible

- On the basis of applying our principle of fairness and equity (here, to the joint operators of Multiplex 2) that it would be appropriate for each of ITV and Channel 4 to forgo one nationwide video stream on Multiplex 2 so that ITV should carry the Five service on its half of Multiplex 2, and Channel 4 should carry the displaced BBC service (from Multiplex B) on its half of Multiplex 2.
  - As regards to the Nations' services, we conclude on the same basis that it would be appropriate for ITV to carry the TG4 service in Northern Ireland on its half of Multiplex 2, and Channel 4 to carry the S4C service in Wales on its half of Multiplex 2. We also conclude that the GDS service should be carried on BBC capacity, if the BBC Trust subsequently approves its carriage on DTT.
- 5.26 We believe that this reorganisation process is consistent with the principles and criteria set out in our consultation (see, in particular, under **Question 14**). This specifically includes our aim that all current PSB channels, including Five, S4C, TG4 and GDS (if it is approved for DTT), should be accommodated on universal coverage multiplexes.
- 5.27 We therefore conclude that a statutory order by the Secretary of State should empower Ofcom to make such variations of the Multiplex 2 licence, and that it would be appropriate for such order to provide for the relevant parties to refer the matter of carriage fees to Ofcom for determination, where agreement is not able to be reached. We note that these conclusions do not extend to the two nationwide services (operated by ITV and Channel 4) which are displaced from Multiplex 2 to accommodate this reorganisation.
- 5.28 In summary, we refer to the diagram in **Figure 2** under **Question 13** in **Section 4** to illustrate our now anticipated movement of services between the relevant multiplexes.

## Capacity allocation

### *The packaging of Multiplex B capacity*

- 5.29 As set out in **Section 4**, we conclude that:
- Multiplex B capacity should be divided into nationwide blocks, each of which should be large enough to carry one HD sized service (initially three blocks but expected to increase to four blocks over time).
  - The three initial blocks should be available to launch new services in the Granada television region from late 2009 and other television regions at the point they undergo switchover; in regions which have completed DSO prior to Granada, they should be made available within a period soon after Granada DSO. This timetable should be subject to Ofcom making any determination to grant Multiplex B capacity following our consideration of applications which satisfy the selection criteria (see further information about the process below).
  - The fourth block should be made available by 2012, or earlier if the predicted MPEG-4 efficiency gains are realised. Any additional efficiency gains across Multiplex B should thereafter accrue to the multiplex holder (i.e. BBC Free to View Limited). In particular, Ofcom should be empowered under any statutory order by the Secretary of State upon notifying the Multiplex B licence holder and any broadcaster for whom digital capacity has been reserved, to reduce that capacity as appropriate (whether as a portion or otherwise). However, any such

determination by us should not be made unless we are satisfied that it would not unduly prejudice service quality or reliability. We also recognise that any such reduction in capacity may have an impact on the carriage payments already agreed between the parties and they should therefore be entitled to refer any such disputes to Ofcom, in default of agreement.

- We should be empowered to reserve any above-mentioned capacity either for the whole of each day or for any part of each day, as we deem appropriate.

5.30 We also conclude that any statutory order must modify the provisions of the BA96 so as to empower Ofcom to vary the Multiplex B licence accordingly, including that the relevant parties (the Multiplex B operator, BBC Free to View Limited, and each broadcaster in question to whom Ofcom has reserved capacity) may negotiate appropriate fees for carriage and, in default, they should be able to refer the matter to us for determination.

### ***The award of capacity***

5.31 Regarding the award of Multiplex B capacity, and as set out in **Question 16 of Section 4**, we conclude that:

- Two of the three initial blocks should be reserved by Ofcom through, and subject to, the comparative selection process.
- The third initial block should be managed by the BBC Trust, who we understand intends to make this available from 2009 in Granada and thereupon in post DSO regions).
- The anticipated fourth block should be reserved by Ofcom through, and subject to, a further comparative selection process, which we expect will take place in 2009 or 2010 following the conclusion of the PSB Review. Any statutory order by the Secretary of State should therefore ensure that it makes provision also for this purpose.

5.32 We refer to our views on the consultation responses in **Section 4** for our reasons behind these conclusions. In particular, we conclude that the comparative selection process remains the most appropriate option for the award of Multiplex B capacity, excepting the block allocated for management by the BBC Trust. In reaching this conclusion, we also refer to **Section 4** for our considerations as to the holding of a more open process and as to not holding such Ofcom led process and instead relying on the PSB proposal as a way forward.

### ***The licensing of Multiplex B capacity***

5.33 A key policy element of our proposed reorganisation is that it will bring significant benefits to citizens and consumers through the wide availability of new and innovative services. We therefore anticipate that the new services will not be qualifying services (such as simulcasts of existing services in HD). Accordingly in licensing these services, it would not be sufficient to simply issue a variation to the existing DRLs, although this may also be necessary.

5.34 Therefore, we conclude that relevant provisions of the BA96 should be modified by the Secretary of State's order, to introduce a new DTPS licence under which the new services should operate. This new DTPS licence should authorise the provision of a digital television service consisting of television programmes (together with any

ancillary services) being broadcast so as to be available for reception by members of the public and which is not a qualifying service.

- 5.35 We also conclude that, as proposed in our consultation, any allocation of capacity on Multiplex B reserved by Ofcom should be contingent on the successful broadcaster(s) retaining their DRL and included within the value of the licence.
- 5.36 We further conclude, for reasons set out in **Section 4** (see **Question 20**) that it would be inappropriate to specify that the licence should end in 2014 but that its duration (and access) should last until the DTPS licence is surrendered by the holder or, until the expiry or other amendment or termination of the Multiplex B licence or, as the case may be, the expiry of the DRL on which the holding of the new DTPS licence is contingent (whichever is sooner). Given that the BA96 provides that DTPS licences continue in force until they are surrendered, it is necessary, in our view, for a statutory order to make the latter provision.
- 5.37 We also conclude that the relevant provisions of the BA96 should be modified to empower Ofcom to include such conditions as appear to us appropriate for securing that the broadcaster provides the new DTPS and Digital Additional Television Services (DATS) (if any) offered in the application to us for the duration of the licence. We consider that our consent should be required for the carriage of any relevant services (i.e. those falling within section 12(1A) of the BA96) or any DATS from time to time specified by the broadcaster for whom the capacity has been reserved. Subject to such consent (and the service in question being licensable under either a DRL or a new DTPS licence), no other service should be carried on any such capacity that is reserved by Ofcom on Multiplex B.
- 5.38 In light of the above, we conclude that it is necessary to modify the provisions of the BA96 concerning the licensing of a DTPS, so that applications for any such new DTPS are linked to provisions pursuant to any statutory order empowering us to run a comparative selection process for the digital capacity on Multiplex B. We consider that Ofcom should still be satisfied that a person applying for such a licence is a fit and proper person to hold it (as is currently the position under section 3(3)(a) of the BA96) and that section 5(1)(a) of the BA96 should apply (concerning disqualified persons) save as Ofcom should not be prevented from granting a new DTPS licence to the Welsh Authority, if appropriate.

### ***The conditions of application***

- 5.39 With regards applications for Multiplex B capacity, we conclude that:
- Any bid should include a proposal for use of one block of capacity, although bidders may also make proposals for additional blocks.
  - Bids could be made by single parties and/or from certain combinations of parties/content providers. For example, S4C might offer a joint application with Channel 4 or the Channel 3 licensees. However, while we accept joint applications in principle, we have decided that certain bidder combinations should be restricted. Specifically, that joint applications by the UK wide PSBs (BBC, ITV and the Channel 3 licensees, Channel 4 and Five) which could reduce the level of competition between these parties, should not be allowed.
  - Parties should be permitted to bid on the basis that they will subsequently split the blocks into several components to provide services separately, either in terms

of day part, or in terms of division of the capacity into sub-blocks for simultaneous transmission, subject to their proposal and the terms of their licence.

- Parties should be permitted to share capacity on a geographical basis (e.g. one party might offer a service in Wales and Scotland, with another offering a service in England and Northern Ireland).
- Bids from Channel 3 licensees should be made by at least ten Channel 3 licensees collectively, as this is how the holding in Digital 3&4 is held. ITV plc would therefore not be able to submit its own sole proposal for capacity; it must do so in conjunction with SMG, UTV and a sufficient number of the other Channel 3 DRL holders.
- Proposals will be published on receipt (with confidential material redacted).
- Applicants should ensure compliance of their bids with competition law.

### ***The selection criteria and process***

5.40 We conclude that the selection criteria for assessing applications for Multiplex B capacity are appropriate and should be adopted (see **Question 20**), namely:

- to promote the efficient use of the spectrum, as reflected in the use of the capacity on Multiplex B and in plans for promotion of rapid and widespread adoption of DVB-T2 and MPEG-4 consumer reception equipment. Any content proposed by applicants should therefore show how they consider it likely that their services encourage such adoption;
- to contribute to the fulfillment of the purposes and characteristics of PSB in the UK; and
- to contribute to enhancing or maintaining the range and diversity of high quality television services available throughout the UK.

5.41 As noted in elsewhere in this Statement, we are expecting to publish a draft form of the Invitation to Apply in or around mid April 2008 to provide further information relevant to the application of these selection criteria.

5.42 In addition, we conclude that any statutory order by the Secretary of State should make appropriate provisions for Ofcom holding such competition on one or more occasions (particularly if no suitable bids were received the first time around and to deal with a further fourth block of capacity and any future reductions in capacity), publishing a notice inviting applications for reserved capacity, requiring certain details and information to be submitted by applicants and empowering Ofcom to apply an application fee.

5.43 We set out in **Section 6** a possible timetable for conducting the comparative selection process.

### **Other matters**

#### ***Synchronisation of upgrade with DSO***

5.44 We have concluded that it is necessary to synchronise the reorganisation and upgrade of the multiplexes with DSO in order to take advantage of the capacity boost



that will be provided by mode change. We also conclude that it will be necessary to carefully manage and coordinate the reorganisation process with DSO to minimise any consumer confusion that may arise and to ensure that consumers are able to make informed choices about the equipment they purchase.

- 5.45 We will be looking to the successful bidders of the capacity on Multiplex B to ensure that these important issues are handled in a positive and comprehensive manner. Ofcom expects to work closely with BBC Free to View, Digital UK, the DSHS and other relevant parties to achieve this objective. We discuss this further in **Section 6**.

### ***Adoption of additional areas***

- 5.46 We believe that the implementation of the reorganisation of DTT should start in the Granada region in late 2009 and then be adopted in other regions according to the DSO timetable. However, we are concerned that this will mean that households in later regions will have to wait several years before they are able to take advantage of the new services that will be made available by this reorganisation.
- 5.47 We will therefore continue to explore whether it is possible to identify any additional frequencies that could be used to provide carriage of these services in other regions in the period leading up to switchover. We aim to consult further on this issue later in 2008.

### **Our recommendations to the Secretary of State**

- 5.48 As explained in **Section 2** of this Statement, Ofcom has been considering since the publication of the DDR in 2006 ways in which the DTT platform may be able to operate with maximum efficiency and hence be able to carry more services than at present.
- 5.49 We have carried out extensive discussions with a large number of stakeholders, including the PSBs. We have also discussed this issue with DCMS. These discussions have helped us to further develop our understanding of how such efficiencies could be achieved, some of which would require the Government to take an active role in helping to facilitate such a change.
- 5.50 We have been asked by the Secretary of State specifically to advise him on the most appropriate manner in which we could ensure that the platform was upgraded through the introduction of the MPEG-4 and DVB-T2 technologies to enable the introduction of new services, including HD, and the benefits that they could bring. He has also sought our advice on the process through which these technologies could be deployed, recognising the possible need for the reorganisation of services as well as a potential use of regulatory powers by the Government and Ofcom.
- 5.51 Our consultation process was specifically aimed at helping to inform our recommendations back to the Secretary of State. In advising him on these matters, we therefore ask the Secretary of State to take account of all information and evidence referred to in this Statement, including the responses we received, our views on them as set out in **Section 4** as well as our conclusions above. These conclusions also contain some specific recommendations on the provisions we believe are required pursuant to a statutory order by the Secretary of State to enable the reorganisation, to hold a competition for any upgraded capacity on Multiplex B, and various issues relating to empowering Ofcom to vary and issue certain licences.

- 5.52 The implementation of these recommendations and the exercise of the Secretary of State's powers is naturally a decision for him to take. We conclude this Section by drawing the Secretary of State's attention to certain statutory powers upon which our recommendations are based.

### ***The case for intervention***

- 5.53 The primary issue is, of course, whether there is a need to intervene by Ofcom and Government at all to secure the policy objectives and benefits described in this Statement. For reasons already set out in this Statement (see, in particular, in **Section 4**) and having carefully considered the alternatives, we are firmly of the view that regulatory intervention is required in order for the DTT platform to upgrade to the new technologies without undue risk of delay and in a manner likely to maximise value to viewers.
- 5.54 As to the introduction of those technologies on Multiplex B, we draw the Secretary of State's attention, in particular, to the marked change in sentiment toward the feasibility and attractiveness of the MPEG-4 and DVB-T2 combination of technologies since our consultation was published. Our process of consultation, research and analysis and the conclusions reached by us in light of that process have reconfirmed that view.
- 5.55 As noted above, we are prepared to use our existing powers to amend the Ofcom Reference Parameters to require the use of MPEG-4 and DVB-T2 on Multiplex B, though any such amendment is pending the Secretary of State's decision in light of our recommendations.
- 5.56 We draw the Secretary of State's attention to **Section 6**, which outlines a possible schedule of events that could lead to the launch of MPEG-4 and DVB-T2 services in the Granada region in late 2009. This schedule is based on our discussions with DCMS officials, broadcasters and other stakeholders.

### ***Relevant powers***

- 5.57 In our consultation, we described the legal and regulatory framework, including powers already available to Ofcom (such as powers to require the adoption of the new technologies and to vary certain aspects of the multiplex and DRL licences). However, we do not believe we have sufficient powers to implement our conclusions.
- 5.58 We provide details in our specific recommendations on the provisions that we believe are required to empower Ofcom pursuant to a statutory order, and these refer to at least two regulatory powers being relevant to the Secretary of State's consideration.
- 5.59 First, section 243 of CA03 is a provision that enables the Secretary of State, by order, to specify modifications<sup>24</sup> to sections 7 to 16 and sections 18 and 19 of the BA96 and that these modifications may have effect in place of any or all of those provisions. Specifically, section 243(2) of the CA03 provides that this power may be exercised by the Secretary of State in relation to licences under Part 1 of the BA96—which includes digital multiplex licences as well as DTPS licences—and the award

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<sup>24</sup> Section 405(1) of the CA03 provides that "In this Act, except in so far as the context otherwise requires—"modification" includes omissions, alterations and additions, and cognate expressions are to be construed accordingly;"

and grant of such licences, in a case in which the licence is, or is to be a licence to provide a service for broadcasting on any one or more reserved frequencies<sup>25</sup>.

- 5.60 In relation to licence conditions that relate to payments for capacity specifically reserved for the use by certain broadcasters, section 243(4), by virtue of section 243(3), of the CA03 makes express provision for the Secretary of State by order to require Ofcom to include such conditions. We further note that the organisations specifically named in the Order as relevant broadcasters in this context are the PSBs (Channel 3, Channel 4, Channel 5, The Welsh Authority and Teletext). As regards the public teletext provider, we should make clear that we are not proposing any changes to that broadcaster's capacity on Multiplex 2 as part of these proposals.
- 5.61 Secondly, the BBC Trust has a duty under Clause 42 of the BBC Agreement to secure the efficient use of the spectrum that is available for use by the BBC or its contractors. The Secretary of State may, however, direct the BBC to grant to any relevant broadcaster the right to use any capacity on a television multiplex service that is under the BBC's control (subject, where applicable, to compliance with any need to obtain a new or revised licence from Ofcom for that purpose); this applies to Multiplexes 1 and Multiplex B. Such direction may be given in writing<sup>26</sup>, in particular, where it appears to the Secretary of State appropriate to do so in the interests of PSB in the UK. Again, the organisations specifically named as relevant broadcasters in this context are the PSBs. We express no view as to whether such direction is required, should the Secretary of State decide to make the order to achieve the matters we recommend in this Statement. Rather, we consider that this is a matter between the Secretary of State and the BBC Trust.
- 5.62 In addition, it may be relevant for the Secretary of State to note his powers under section 32 of BA96 to provide, by order, for Ofcom to include in no more than one relevant multiplex such conditions relating to the broadcasting of programmes in Gaelic for reception wholly or mainly in Scotland as may be specified in, or determined by them under, the order. We note that the provision of this service on DTT would require the approval of the BBC Trust.
- 5.63 We consider that the regulatory intervention could be achieved if the Secretary of State were minded to exercise his powers under section 243 of CA03 by way of a statutory order to empower Ofcom to carry out the recommendations made above. If he so decides, we further consider that the reorganisation of services should coincide with regional switchover commencing, subject to feasibility, in the Granada region for the reasons set out above and in **Section 4**.
- 5.64 We believe that such an order would have the effect of requiring the BBC to move three of its current video streams and ten radio services from Multiplex B to Multiplex 1. While we note that this would be the BBC Trust's decision, our analysis shows that there is sufficient capacity on Multiplex 1, provided that Multiplex 1 changes mode from 16QAM to 64QAM at DSO to accommodate these services.

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<sup>25</sup> Section 243(6) of the CA03 defines a "reserved frequency" as one as respects which Ofcom has made a determination, in exercise of its functions under the enactments relating to the management of the radio spectrum, that the frequency should be reserved for the broadcasting of television multiplex services.

<sup>26</sup> Clause 96(2) of the BBC Agreement.

## Section 6

# Next steps & implementation

- 6.1 This Section proposes a possible series of next steps in light of our conclusions reached, and our recommendations made to the Secretary of State in response to his request for our advice, in Section 5. These steps also include broad indicative timescales for a possible way forward should our recommendations be accepted.
- 6.2 We consider nonetheless that it is appropriate to propose certain possible next steps, including and indicative timescales, to give earliest possible indications on our readiness to implement any such decisions. In so doing, we also note that the Secretary of State has already indicated to Ofcom that he is prepared to use those powers to help achieve the reorganisation. We would expect to revisit the proposed next steps in this Section with Government at that point. We may also discuss any revisions with relevant stakeholders.

### The award of Multiplex B capacity

- 6.3 Subject to decisions by Government – specifically to any decision to consult on its use of statutory powers – Ofcom expects to publish a draft ITA in April.
- 6.4 Our publication of a draft ITA for the two initial blocks of Multiplex B capacity would serve the purpose of assisting interested applicants with their preparation of any applications to respond to any formal ITA for Multiplex B capacity (should the Government decide to later make a statutory order after its consultation).
- 6.5 The draft ITA will reflect the process requirements contained in any draft statutory order on which the Government may consult, and we expect that any such draft ITA would specify:
- the digital capacity on Multiplex B which will be reserved;
  - the area or areas within the UK where that capacity will be available;
  - the transmission and coding technologies that should be used for broadcasting services by means of that capacity;
  - the nature of the services which Ofcom considers should be broadcast by means of that capacity;
  - the terms and conditions applying to services broadcast by means of that capacity;
  - the selection criteria against which applications will be assessed;
  - the types of information that Ofcom may require from applicants, including the form and the manner of its verification, for the purposes of considering applications, on submitting their applications or before determining the applications;
  - the timetable for the process, including an indicative closing date for applications following any formal notice being published;

- our internal rules under which the comparative selection process will operate; and
  - the fee payable on the making of any such application.
- 6.6 Should the Government decide to make the recommended statutory order, Ofcom will consider whether any amendments are needed to the draft ITA to reflect the provisions of such an order, before publishing our notice to invite formal applications for the relevant capacity. We expect to give not less than four weeks but no longer than six weeks for applications to be made upon publication of the notice.
- 6.7 As regards to our anticipated processes for considering applications, we proposed in our consultation that Ofcom would delegate its decision-making on any applications received during this process to a committee nominated by the Ofcom Board. We expect to set out further details of the constitution of such a committee in the draft ITA. Subject to any Government decision in light of our recommendations and any further material developments, we expect that a decision on the reservation of any Multiplex B capacity could be made by our nominated committee by the end of July 2008.
- 6.8 As soon as reasonably practicable after our determination of whether (or not) to reserve any of that capacity to any proposed service offerings, we intend to either publish the names of successful applicants (together with granting or varying relevant multiplex and content licences) or that some or all of the capacity has not been allocated, together with our reasoning.

## Regulatory changes

- 6.9 Subject to decisions by the Government, we should note that several regulatory changes by Ofcom are necessary to implement the policy set out in this Statement. These changes include:
- amending our Reference Parameters document to add DVB-T2 and MPEG-4 as permitted standards subject to each holder of a multiplex licence first obtaining Ofcom's prior consent in writing (although, in the case of Multiplex B, we intend to require its licence holder, BBC Free to View Limited, to use those standards in line with our conclusions reached in this Statement); we also intend to amend the Reference Parameters to deal with mode change issue across the DTT multiplexes as well as the video format issue, as set out in this Statement;
  - modifying the Multiplex B licence to incorporate our recommendations; we will give further consideration to the full extent of modifications necessary to that licence later this year, but they would at a minimum, require our reservation of capacity following the outcome of our comparative selection process;
  - modifying such provisions of the Multiplex 2 and A licences as may be required to deal with the recommended reorganisation process(if accepted) ;
  - modifying the DRLs as may become necessary following the comparative selection process or awarding any new DTPS licences as discussed in this Statement.

## Coordination of activities

- 6.10 We emphasised in our consultation, and this was reflected in the consultation responses, the need to ensure that all appropriate measures are taken to provide for a smooth reorganisation of existing services and upgrade to MPEG-4 and DVB-T2 on Multiplex B at DSO. We have given particular consideration to the potential impacts on viewers to ensure that such measures are mitigated through careful technical planning and well managed communications to consumers.
- 6.11 We believe that these activities require industry leadership and support, in particular that of the Multiplex B operator (BBC Free to View Limited), but also from other parties. We therefore propose to establish a working group to manage the reorganisation process and the launch of new services on Multiplex B and the dovetailing of this process with the existing DSO programme. We specifically propose that this group involves (but is not limited to) the following organisations:
- The BBC Trust and Executive (including BBC Free to View Limited);
  - The successful applicants for Multiplex B capacity and the operators of Multiplexes 2 and A;
  - Digital UK, Freeview and the DSHS;
  - DCMS and BERR;
  - Arqiva;
  - DTG; and
  - Ofcom.
- 6.12 We propose to arrange an initial meeting of this group in late April, at which the Terms of Reference and objectives for the group should be agreed. We suggest that the following matters should fall within the group's remit (and therefore for inclusion in the group's Terms of Reference):
- The evaluation of the performance of MPEG-4 and DVB-T2.
  - The testing of MPEG-4 and DVB-T2 transmission and receiver equipment.
  - The plan for rolling out upgrades to the transmission network, including retrospective roll out to post DSO regions.
  - The coordination between multiplex operators, broadcasters, equipment manufacturers, retailers, Digital UK, and the DSHS in the development and marketing of MPEG-4 and DVB-T2 consumer reception equipment.
  - The promotion and marketing of Multiplex B services.
  - The confirmation of technical standards for use on Multiplex B.
  - The planning and management of communications with consumers in the lead up to DSO.

- 6.13 In particular, we note the importance of performing early validation testing of MPEG-4 and DVB-T2 transmission and receiver equipment. Our commitment is to facilitate and support these tests to minimise any risks to the successful launch of services on Multiplex B in time for DSO in the Granada region. To this end, we propose to work with the BBC, Arqiva and other relevant parties in April and May to agree plans for a pilot test transmission of these technologies. These plans should include the fixing of a timetable for the pilot test transmissions and the identification of available frequencies and locations for the tests.

### Interim schedule of possible events

- 6.14 Subject to decisions by the Government, we anticipate the following schedule of events as being achievable with the launch of new services on Multiplex B in late 2009 to coincide with switchover in the Granada region.
- (1) **Early April 08:** Submission of recommendations by Ofcom to the Government (Statement).
  - (2) **Early April 08:** Consultation by DCMS on any proposed use of its statutory powers (including, if appropriate, a draft order).
  - (3) **Mid April 08:** Draft ITA published by Ofcom (to be confirmed after decision by the Government).
  - (4) **Late April 08:** Initial meeting of multi-lateral working group.
  - (5) **Late May 08:** Government's decision on any consultation it may decide to hold.
  - (6) **End of May 08:** Notice of the ITA published by Ofcom inviting formal applications.
  - (7) **Late June 08:** Closing date for applications in response to the ITA.
  - (8) **Late July 08:** Ofcom publishes outcome of award process.
  - (9) **Autumn 08:** Regulatory changes (Reference parameters & licensing).
  - (10) **Summer 08 – Spring 09:** MPEG-4 and DVB-T2 evaluation testing.
  - (11) **Late 2009 / early 2010:** First generation of consumer reception equipment available.
  - (12) **Q4 2009:** Granada switchover (MPEG-4 and DVB-T2 services launched).
  - (13) **2009/10:** Fourth slot available for award by Ofcom (post PSB Review by Ofcom).
  - (14) **Q1 or Q2 2010:** Second generation consumer reception equipment available.
- 6.15 This schedule is based on Ofcom's current understanding of the possible need for Government to consult and decision making procedures, which is provisional only and subject to the Government's consideration of our recommendations. It may therefore become necessary to make revisions to these timescales, including for Ofcom to take account of any further material developments.

## Annex 1

# Impact assessment

## Introduction

- A1.1 The analysis presented in this annex represents an impact assessment, as defined in section 7 of 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 This impact assessment also accounts for comments we received on the impact assessment contained in the consultation document. These comments and our responses are outlined under **Question 22** of **Section 4** of the Statement, but can be summarised as:
- Areas not adequately considered by the impact assessment (for example, the benefits of using MPEG-4 without DVB-T2 on DTT). These are addressed both in our discussion of these issues in Section 4 and in our analysis of the benefits of introducing MPEG-4 and DVB-T2 at DSO below.
  - Our assessment of the benefits and opportunity cost of allocating the capacity. Our response to this comment and the reason for not including this in the impact assessment is discussed in Section 4.
  - Our assessment of the benefits of, and case to not intervene to provide, HD services. Our response to this and the reason for not including this in the impact assessment is discussed in Section 4.
- A1.4 We have also identified two new issues to consider as part of this impact assessment, and these are the proposal put forward by the PSBs to reorganise and upgrade the platform by agreement (i.e. without direct intervention by Ofcom and the government), and the reservation of one block of capacity to the BBC Trust for allocation. The former is dealt with below, while the latter is addressed under our assessment for awarding Multiplex B capacity later in this impact assessment.
- A1.5 As well as responding to the comments received and the inclusion of the new issues considered, this impact assessment also repeats the analysis presented in the impact assessment which accompanied the consultation document. We believe that our original analysis still holds and that Ofcom intervention involving a comparative selection process remains the best option for citizens and consumers.



## The citizen and/or consumer interest

- A1.6 The completion of DSO will result in an increase in the coverage of all services on the DTT platform, and also has the potential to increase the capacity of some multiplexes through changes in the transmission mode. These improvements in both coverage and capacity will be of great benefit to UK citizens and consumers. We believe that there are even greater improvements in capacity and efficiency that can be made due to recent advances in technology, in particular MPEG-4 and DVB-T2 technologies, but there are a variety of factors which may prevent the platform from taking advantage of them in an efficient manner.
- A1.7 At DSO, it will be possible to restructure the DTT platform in order to take advantage of these technical advances without requiring a reduction in the number of services available to existing viewers. This could significantly benefit consumers and citizens by facilitating greater efficiency in the use of valuable broadcasting spectrum, potentially more than doubling platform capacity over time; enabling the DTT platform to continue to develop; and allowing the introduction of new services. However, the adoption of the new technologies will require those consumers who wish to receive the new services to purchase new receivers as they will not be compatible with existing consumer reception equipment.
- A1.8 Therefore, the way in which the new technologies are introduced to the platform will affect consumers and citizens alike, and hence the upgrade should be carried out in such a way that, wherever possible, access to the existing services by the current range of digital receivers is maintained and that a new STB is only required if the viewer wishes to access new (rather than existing) services.

## Ofcom's duties

- A1.9 We have a number of duties and objectives under the CA03, several of which are relevant to the matters considered in this statement; in particular:
- Our duty to secure the optimal use of the electro-magnetic spectrum.
  - Our duty to secure the availability of a wide range of television and radio services of high quality and wide appeal throughout the UK.
- A1.10 As a result of these objectives and duties, we have a strong interest in the commercial and technical development and status of the entire DTT platform, with a particular interest in the PSB multiplexes.

## Options considered

- A1.11 There are a number of issues and options that need to be assessed in order to achieve our policy objectives, which are:
- a) Do we believe that the introduction of MPEG-4 and DVB-T2 at DSO is likely to be in the interests of citizens and consumers?
  - b) Is intervention needed to introduce these technologies to DTT?
  - c) If so then:
    - i) Which multiplex do we upgrade?

- ii) Should we intervene in the reorganisation process, and if so, what is the impact of such an intervention?
  - iii) Do we need to intervene in the allocation of capacity on the cleared and upgraded multiplex?
  - iv) How should we intervene to allocate capacity?
  - v) What are the justifications for the selection criteria and what impact will these have?
- d) Do we need to intervene to ensure a mode change to 64 QAM?

A1.12 These issues are assessed in the above order throughout this impact assessment.

### **Analysis of issues**

#### **Do we believe that the introduction of MPEG-4 and DVB-T2 at DSO is likely to be in the interests of citizens and consumers?**

A1.13 In **Section 5** we conclude that the introduction of MPEG-4 and DVB-T2 to the DTT platform at DSO is likely to be in the interests of citizens and consumers.

A1.14 In our consultation document and in Sections 4 and 5 of this document we noted the benefits of a technological upgrade to MPEG-4 and DVB-T2 consistent with the DSO timetable. These are benefits relative to a counterfactual in which MPEG-4 is adopted first and is then followed by a second upgrade to DVB-T2 in the future. Firstly, we believe that an earlier adoption of these technologies could bring forward the (greater) availability of new services, such as HD on the DTT platform, and would bring forward the more efficient use of the valuable spectrum already used for DTT. Secondly, the earlier the new technologies are introduced, the greater the number of consumers who will have a choice to adopt both MPEG-4 and DVB-T2 reception equipment when their region undertakes DSO. Finally, we think there are incremental benefits to be gained from the combined adoption of MPEG-4 and DVB-T2 in line with DSO for the reasons described below.

- Simultaneous adoption minimises the number of times consumers have to upgrade their reception equipment in order to receive new services which also reduces consumer confusion. Timing this simultaneous upgrade with DSO may increase the number of consumers who have compatible STBs early in the upgrade process, as a significant number of STBs will be purchased throughout DSO, and therefore adopting this timeline is likely to increase the number of potential viewers of new services delivered by this technology.
- Platform adoption of DVB-T2 may be significantly delayed or not happen to the same level unless the upgrade is carried out in the medium to short term in line with DSO. This is due to the opportunity provided by the mode change at DSO, which allows an upgrade of the first multiplex to DVB-T2 without requiring a reduction in the number of services offered to existing viewers.

A1.15 We further believe that the additional benefits associated with the simultaneous adoption of both technologies in line with DSO outweigh any incremental costs of implementing two new technologies compared to MPEG-4 on its own. As such we believe our conclusion to upgrade both technologies simultaneously provides the best opportunity to generate the benefits the upgrade can bring and allows us to

achieve our key objectives. Therefore, for the purpose of the consultation, we only consider the combined introduction of DVB-T2 and MPEG-4 on the DTT platform.

A1.16 Therefore, to summarise, the main reasons why we believe the adoption of MPEG-4 and DVB-T2 is superior to a counterfactual in which MPEG-4 is adopted first with DVB-T2 then adopted later are as follows.

A1.17 Delaying use of DVB-T2 fails to fully maximise the efficiency with which the spectrum is used for a period of time, and as a result, for this period, the benefits of the DTT platform to consumers will be lower than they could otherwise be.

A1.18 The benefits of the upgrade to both consumers and the producers on the DTT platform are dependent upon the speed of take-up of the new equipment. We believe that a combined move to MPEG-4 and DVB-T2 will promote faster adoption of the equipment by consumers as this will allow a greater number of new services to be offered from the outset.

A1.19 The simultaneous adoption of these two technologies also:

- Minimises the number of times consumers need to upgrade.
- Maximises the choice available to consumers as they invest in new equipment in the run up to DSO.
- Minimises the disruption of moving to DVB-T2 by making use of the capacity provided via mode change to allow the first multiplex to upgrade to DVB-T2 without existing services being lost to consumers.

A1.20 We believe these benefits outweigh the costs of simultaneous adoption, such as the greater risk involved in moving to DVB-T2 given that this standard has not yet received final approval, and the costs involved in converting one entire multiplex rather than adopting a more piecemeal approach. In considering the magnitude of these costs we note that:

- For other multiplexes we will consider on a case-by-case basis requests to move to MPEG-4 without DVB-T2. Where these proposals do not hinder the take-up of consumer equipment with both MPEG-4 and DVB-T2 it may be possible to allow the two stage adoption of these technologies on other multiplexes.
- The issue of having to upgrade entire multiplexes to DVB-T2 will remain even when a two stage upgrade process is adopted. Therefore, the costs of this will still be incurred under the two stage process albeit later in time. However, given the opportunity offered by mode change we do not think it is clear that these costs will necessarily decrease overtime.

### **Is intervention needed to introduce these standards to DTT?**

A1.21 A number of regulatory changes are required to bring about the upgrade and reorganisation of services needed to enable this. These changes can either be through deregulation of the platform to increase flexibility for broadcasters and multiplex operators, reactive in response to requests from licensees, or proactive in the form of direct regulatory intervention. We discuss each of these in **Table 4**.

A1.22 We note here the alternative proposal from the PSBs to reorganise and upgrade the DTT platform by agreement. However, we rejected their proposal for the reasons

set out in **Questions 6 and 16 of Section 4**, including the risks of delay, the need to ensure benefits to the public are maximised, the intrusion into Ofcom’s remit, and the need for an open and transparent process.

A1.23 A key difference between the PSB proposal and the proposed intervention by Ofcom is that, under the PSB proposal, the decision of how to allocate the capacity on the upgraded multiplex is made by the PSBs rather than through a comparative selection process. However, the PSB proposal also suggests that it may be possible to bring about the upgrade process with less direct intervention than Ofcom proposed.

A1.24 We assess the impact of the PSBs proposal to allocate capacity by agreement later in this impact assessment. In this section we consider the impact of the PSBs proposal to bring about the upgrade with less direct intervention under our assessment of the “No direct intervention – PSB proposal” option.

**Table 4: Summary of costs and benefits of intervention options**

Option	Benefits	Costs	Assessment of magnitude
No direct intervention	<ul style="list-style-type: none"> <li>Reduces risk of regulatory failure owing to inappropriate intervention (e.g. requiring the upgrade to proceed too early)</li> </ul>	<ul style="list-style-type: none"> <li>Unlikely to lead to upgrade within DSO timeframe due to requirements set out in Section 4 therefore some benefits may be lost.</li> <li>May lead to sub-optimal outcome due to market failures outlined in Section 4.</li> </ul>	<ul style="list-style-type: none"> <li>Costs outweigh benefit as market failure risk is significant, as is the magnitude of the benefits which may be lost without early adoption and if the reorganisation and allocation of capacity is sub optimal</li> </ul>
No direct intervention – PSB proposal	<ul style="list-style-type: none"> <li>As above</li> <li>Lower administrative costs involved if less regulation is required under a reactive approach</li> </ul>	<ul style="list-style-type: none"> <li>The lack of a regulatory defined timetable for the upgrade provides less certainty to manufacturers and consumers and introduces the prospect for delay if the parties’ negotiations breakdown during implementation</li> <li>The regulatory process involved in reactive decisions (rather than following the proposed proactive action) may increase the time taken to complete the process if we need to re-consult when reactive requests are received</li> </ul>	<ul style="list-style-type: none"> <li>The cost of even relatively short delays to the upgrade process, given the potential scale of consumer benefits and the dependence of these on the level of and speed of the take-up, outweigh the benefits of the PSB proposal, which are predominately limited to low administrative costs</li> </ul>

Deregulation	<ul style="list-style-type: none"> <li>• May bring about the upgrade but highly likely the upgrade would be significantly slower.</li> </ul>	<ul style="list-style-type: none"> <li>• Large number of policy, legal and regulatory changes required for any deregulatory option which could potentially address the issues</li> </ul>	<ul style="list-style-type: none"> <li>• Costs are substantially higher relative to the smaller scale and uncertainty of the benefits.</li> </ul>
Direct regulatory intervention	<ul style="list-style-type: none"> <li>• Improvement to spectrum efficiency and the benefits of a technology upgrade accrue to stakeholders</li> </ul>	<ul style="list-style-type: none"> <li>• Risk of regulatory failure due to:                             <ul style="list-style-type: none"> <li>- costs ending up being higher than benefits;</li> <li>- timing being wrong;</li> <li>- upgrade costs being higher than they needed to be; and</li> <li>- benefits being lower than they could have been</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Whilst the regulatory failures described are possible in theory, they are likely to be significantly lower than the prospective benefits of the technology upgrade, especially as they can potentially be addressed in the intervention design.</li> </ul>

A1.25 Our view, therefore, is that deregulation is not a viable option (due to the significant policy and legal changes required for the kind of deregulation that may encourage an upgrade) and that the no direct intervention option is unlikely to lead to the optimal upgrade path and may result in fewer benefits to citizens and consumers. We conclude that it is likely the benefits of direct regulatory intervention will significantly outweigh the costs of that intervention.

A1.26 With respect to the no direct intervention option we note there now appears to be a greater probability of the reorganisation and upgrade occurring (due to developments with the PSBs since the consultation was published). However, while we recognise that the PSBs do have an interest in the success of the platform and a desire to bring about the upgrade we noted in the consultation and in **Section 4** the potential market failures that exist and the risk that one or more of these may result in a delay to the upgrade or to its sub-optimal execution. We note that the incentives on the parties may not be perfectly aligned with those likely to maximise the benefits to citizens and consumers – this is because many of the benefits of a successful upgrade will go to other stakeholders, such as STB and iDTV manufacturers, rival broadcasters on the platform, and, in particular consumers. Consequently, the cooperating PSBs will not internalise all the social value of a successful upgrade, potentially resulting in an execution of the reorganisation, upgrade and allocation of capacity that does not maximise benefits for citizens and consumers.

A1.27 Therefore, considering the substantial benefits of a technology upgrade at DSO, it appears to us that the risk that the platform will not optimally upgrade on its own within the DSO timeframe due to market failures and the risk that the scope and pace of the reorganisation, upgrade and allocation of capacity is sub-optimal, is greater than the regulatory failure risk of direct intervention. We do not believe there is scope to deregulate the platform to a sufficient degree within the timescales necessary for the upgrade to occur without substantive regulatory approvals (as this is likely to require changes to primary legislation).

A1.28 Given this, we now go on to consider the issues which are raised by this decision.

## **Which multiplex do we upgrade?**

A1.29 It is necessary to select a multiplex to be upgraded with the new technologies. In order to reduce the risk of regulatory failure (by promoting the multiplex which incurs the lowest cost for consumers and broadcasters), we made an assessment (see **Section 4**) based on two key criteria: the number of services the multiplex carries (particularly the number of SD services), and whether the multiplex has universal coverage.

### Which carries the lowest number of services?

A1.30 This is important due to the desire for displaced services to be accommodated elsewhere. The lower this is, the lower the reorganisation costs incurred as there are fewer services moving between multiplexes.

A1.31 Under this criterion, Multiplex B carries the fewest SD services and Multiplex C carries the second fewest.

### Which has the highest coverage?

A1.32 This criterion is particularly important as it aims to minimise consumer confusion around DSO, reduce the potential for the creation of a digital divide, and promote the faster uptake of new STBs.

A1.33 To choose between Multiplex B and C, this second criteria indicates that Multiplex B is the most appropriate multiplex to upgrade as it has universal coverage which we believe is beneficial due to the reasons above.

A1.34 Therefore this implies Multiplex B should be cleared due to the benefits it will generate because of its universal coverage characteristic, and by carrying the fewest number of SD services at present, which means that the costs are low compared to those incurred if another multiplex was upgraded. However there is an opportunity cost associated with the upgrade as it will significantly reduce the number of potential viewers able to receive services on the upgraded multiplex due to the technology change until compatible receiving equipment penetration increases. It is important to note that this effect is relatively short term, would be the case if any multiplex was upgraded, and the PSB services currently carried on Multiplex B will be carried on other universal multiplexes so there will be no reduction in the PSB services consumers can receive.

A1.35 We note that the PSB agreement also designates Multiplex B as the multiplex for upgrade.

### What is the impact of the reorganisation involving the upgrade of Multiplex B on relevant parties?

A1.36 **Sections 4 and 5** detail a reorganisation process that would result in the clearing of Multiplex B. For the reasons explained under **Question 12** in **Section 4**, we have made minor alterations to our consultation proposals for the reorganisation to take account of respondents' views that it is not yet technically feasible for Multiplex 2 to operate with nine services (four of these being PSB services). The result of this change is that an extra service is displaced from Multiplex 2.

A1.37 The reorganisation is summarised below:

- Multiplex 1 carries three additional video and ten additional radio services transferred from Multiplex B;
- Multiplex 2 will carry Five, transferred from Multiplex A, in order to achieve universal service coverage for this service;
- Multiplex 2 will carry one national BBC video service, transferred from Multiplex B;
- Each PSB (the BBC, ITV and Channel 4) will carry one of the three national services in their respective nations (GDS (if given DTT approval), TG4 and S4C respectively) using capacity on a PSB multiplex (we refer to **Sections 4 and 5** for specific details of the reorganisation); and
- Multiplex 2 will lose two existing services (one each from ITV and Channel 4) in order to accommodate the displaced BBC service from Multiplex B and Five from Multiplex A. The accommodation of the displaced Multiplex 2 services on an alternative multiplex is to be determined by the channel operators themselves.

A1.38 The impact of this reorganisation process will mean a reduction in coverage for the two displaced Multiplex 2 services due to moving from a universal coverage multiplex. This may result in a loss of income and potential viewership for these broadcasters, although this is mitigated by the fact that existing viewers will not lose services they currently receive. A further impact on these broadcasters will be the need to negotiate new carriage contracts for the displaced services should they choose to seek alternative capacity. However, it is worth noting that while potentially non-trivial, any loss experienced by broadcasters as a result of the reorganisation is likely to be a short term loss, and substantially less than the benefits the technology upgrade may generate in the long run. This reorganisation takes account of alternative proposals made in responses to the consultation.

A1.39 While any reduction in coverage for certain services as a result of transferring from a PSB to a commercial multiplex will have a detrimental effect on those consumers who are no longer able to receive them, the recommended reorganisation ensures all core PSB services continue to be delivered on a universal coverage multiplex. This remains consistent with our objectives relating to PSB, and ensures the negative impact on consumers is reduced.

A1.40 The criteria for multiplex selection clearly identify Multiplex B. While there is an opportunity cost involved with this option, this is relatively short term as when new receiving equipment becomes more widely available, the audience able to receive the services will increase. Therefore the longer term benefits of this are likely to significantly outweigh this cost.

### **Do we need to intervene in the allocation of capacity on the cleared and upgraded multiplex?**

A1.41 The existence of market failures that are likely to prevent an optimal upgrade of the technology of the platform within the timeframe of DSO without intervention raise a further question as to whether there is the need for us to intervene in the allocation of the capacity. Three potential options were discussed in Section 7 of our consultation (these are considered above in **Section 4**); those were: no intervention, revoke and re-award the licence, and an Ofcom-led direct allocation process. These three options are assessed below. The PSB proposal, which is a variant of the no intervention scenario, is also considered here.

## No intervention

- A1.42 The PSB proposal involves no intervention by Ofcom in the allocation of capacity. The proposal would involve the PSBs collectively agreeing on the allocation of the capacity on the upgraded multiplex. In this section we consider the costs and benefits of this proposal.
- A1.43 The table below summarises the main costs and benefits of a general no intervention option which would leave the capacity on Multiplex B for the BBC Trust to allocate. We then separately consider the benefits and costs of the PSB proposal which is similar to this but which includes the agreement of the commercial PSBs involved.

### **No intervention**

#### **Benefits**

- Reduced risk of regulatory failure.

#### **Costs**

- Spectrum efficiency – our initial assessment in the consultation document found that the incentives the BBC has to make the capacity available to others are likely to be less than those which would be experienced by a profit making entity. We also considered the vertically integrated nature of the BBC and how that may cause it to limit or favour its own content, and/or lead to capacity being left unused which has social cost implications due to the value of the capacity. This has been evident historically given the BBC has not opened up its multiplex capacity to non-BBC services. However, in light of the developments since November between the PSBs it would appear the BBC is willing, under certain conditions, to provide access to Multiplex B capacity.
- A sub-optimal allocation of capacity (and / or quality, range and diversity of services provided using that capacity) – the PSBs and the BBC Trust all have defined remits and obligations in relation to the delivery of public service broadcasting. However, none of these entities have obligations (similar to Ofcom’s duties in carrying out our statutory functions) to protect the interests of consumers or citizens through their access to the DTT platform. Therefore, given the presence of consumer externalities, and the significant benefits to consumers which can arise from the upgrade process and the allocation of capacity, we believe that Ofcom is the only entity with a remit which is sufficiently broad to ensure that these benefits are captured.
- Potential uncertainty for equipment manufacturers which may delay the availability of consumer reception equipment.
- Should the PSB proposal not be compliant with competition law or regulatory obligations (noting the FRND requirements also apply to BBC Free to View Limited on Multiplex in the absence of a statutory order reserving capacity or a variation by Ofcom), such state of affairs would result in further (and unacceptable costs).



### **No intervention - PSB proposal**

#### **Benefits**

- Reduced risk of regulatory failure.
- Reduced administrative burden on Ofcom, Government and the PSBs.

#### **Costs**

- Spectrum efficiency – the agreement between the PSBs suggests that it may be possible to overcome the difficulties posed by the incentives of the BBC to make the capacity available to others.
- Risk of delay – the market failures which can impact upon the ability of the DTT platform to swiftly upgrade to new technologies would still be expected to impact upon the finalisation of the agreement between the PSBs and on the timetable over which the upgrade is delivered. These include the failure to fully internalise the consumer externalities involved and the risks posed by diverging incentives across the different PSBs. Therefore, we believe that there is a risk that the allocation of capacity by agreement of the PSBs could introduce delays, which even if relatively minor, could pose significant costs on consumers if they impact upon the availability of new services for DSO in some regions.
- A sub-optimal allocation of capacity (and/or quality, range and diversity of services provided using that capacity) – the PSBs and the BBC Trust all have defined remits and obligations in relation to the delivery of PSB. However, none of these entities has obligations to protect the interests of consumers or citizens through their access to the DTT platform. Therefore, given the presence of consumer externalities, and the significant benefits to consumers which can arise from the upgrade process and the allocation of capacity, we believe that Ofcom is the only entity with a remit which is sufficiently broad to ensure that these benefits are captured.
- Incursion on Ofcom's statutory remit – in addition to the above concerns about the ability of other entities to make decisions which fully reflect the benefits to consumers of the upgrade, we are concerned that any attempt to do so would represent an unworkable conflict between Ofcom's statutory role and the role of the other entities involved (such as the BBC Trust).

A1.44 As a result, we believe the leaving the allocation of capacity with the BBC, the BBC Trust, or by agreement of the PSBs as a whole, may not result in the optimal outcome for citizens and consumers, or the most efficient use of spectrum.

### **Revoke and re-award the BBC licence of Multiplex B**

A1.45 This option appears to be disproportionate compared to other potential options. It would require that the BBC had breached the terms of its licence, which is not the case, and in the absence of this, a revocation could be made on the grounds of spectrum efficiency. However, there appear to be other options available which could be as effective at promoting spectrum efficiency whilst considering our objectives, but which are less interventionist and therefore more proportionate than revocation, and therefore we reject this option.

### Ofcom and DCMS assess which organisations get access to the capacity in an administrative process

A1.46 The impact this will have on stakeholders very much depends on the outcome of the allocation process, but follows very general theories.

#### **Benefits**

- More proportionate response than licence revocation as the multiplex licence can be left with the BBC
- Likely to give more certainty sooner to manufacturers and consumers thus aiding the uptake process
- Potentially greater variety in providers of new content which benefits consumers and increases new receiver uptake
- Avoids market failure risk preventing efficient capacity allocation
- Independent approach which avoids the issue of favouring own services in the use of capacity
- Participants will have a mechanism through which they can refer disputes to Ofcom, which would not be available if there was no intervention
- Can help achieve our objectives through design of allocation process

#### **Costs**

- Risk of regulatory failure as there is less market involvement than other options. Ofcom and DCMS have a limited opportunity to use the views of the market to determine the allocation
- Administrative costs associated with intervention by Government and Ofcom and regulatory burden on licensees associated with (a) applying for capacity and (b) adhering to commitments made in return for access to that capacity

A1.47 As set out in **Section 5** we think that one of the blocks of capacity on the Multiplex B should be retained by and allocated by the BBC Trust. The main benefits of this are to avoid unnecessary regulatory overlap between Ofcom and the BBC Trust, and to avoid imposing undue uncertainty on the BBC, which has already passed a PVT for its HD service in 2007, but which without access to capacity on the upgraded multiplex is likely to struggle to introduce this service. We think that the costs involved in this are not significant. Given that the proposal prepared by the BBC for its PVT involved similar criteria to those identified by Ofcom, we would expect the resulting service to be in accordance with our policy objectives. Additionally, we do not think that the reduction in the number of blocks available in the comparative selection process will unreasonably reduce the level of competition in the process.

A1.48 In summary, we think that the market failure risk justifies intervention in the technology upgrade, and similarly, provides a rationale for intervention in the allocation of the capacity. The complicated nature of the benefits accruing from the upgrade and use of the capacity now and in the long term together with the complicated BBC incentives (stemming from the different institutional and regulatory barriers they face) combine to create a substantial the risk of market failure absent intervention. This market failure risk and the resulting reduction in the rate at which the benefits are realised significantly outweigh the regulatory failure risk and

administrative burden of DCMS and Ofcom intervention. This is especially true as regulatory failure risk can be considered and to some degree addressed in the design of the allocation process. However, we also recognise the potential costs involved if the BBC is required to take part in the allocation process. Therefore we believe that direct intervention by Government and Ofcom (with capacity allocated to the BBC by the BBC Trust as set out in **Section 5**) constitutes the most appropriate approach for allocating the capacity to ensure the benefits of the technology upgrade are realised, and is more likely to result in an optimal outcome.

### How should we intervene to allocate capacity?

A1.49 We set out in **Sections 4 and 5** certain policy reasons justifying that capacity on Multiplex B should be reserved for PSB organisations. We also set out three options for allocating the capacity to those PSBs; those were:

- direct allocation following consultation,
- pursuant to an Ofcom comparative selection process; and
- allocation decision as an output of the PSB Review.

A1.50 We note the benefits and costs of each of these options are summarised in **Table 5** below.

**Table 5: Options for allocation of Multiplex B capacity by Ofcom**

Options	Benefits	Costs	Assessment of Magnitude
<b>1. Direct Allocation Now</b>	<ul style="list-style-type: none"> <li>• Faster process – earlier certainty in capacity access for equipment manufacturers, broadcasters and consumers</li> <li>• Consistent with consumer reception equipment being on sale well in advance of events likely to drive uptake</li> </ul>	<ul style="list-style-type: none"> <li>• Not a fair, open or transparent process</li> <li>• Less structured capacity allocation – greater reliance on regulatory judgement (risk of regulatory failure)</li> </ul>	<ul style="list-style-type: none"> <li>• Benefits are certain but the costs are significant and highly likely to outweigh any benefits</li> </ul>
<b>2. Comparative Selection Process</b>	<ul style="list-style-type: none"> <li>• More open and transparent than direct allocation</li> <li>• Structured process to create competition among potential holders – creates information to inform allocation</li> <li>• Greater competition for capacity as PSBs could submit applications for more than one of the initial blocks</li> </ul>	<ul style="list-style-type: none"> <li>• More complex process than option 1</li> <li>• Slower process than direct allocation (though some information / certainty provided by definition of criteria)</li> </ul>	<ul style="list-style-type: none"> <li>• Benefits are certain while costs are relatively low compared to other options and can be addressed in design, therefore the outcome is likely to be positive</li> </ul>

	<ul style="list-style-type: none"> <li>• Greater ability to convert broadcaster commitments from allocation process into obligations</li> </ul>		
<b>3. Decision as Output of PSB Review</b>	<ul style="list-style-type: none"> <li>• Decision is made with greater information than option 1</li> <li>• Allows allocation to take place in wider context of the other decisions being taken in the review</li> <li>• More open and transparent than direct allocation (though less so than comparative selection process)</li> </ul>	<ul style="list-style-type: none"> <li>• More significant delay – might take over a year to achieve</li> <li>• Unclear whether it would be possible to create any element of competition for capacity</li> <li>• Still less information than option 2 as there is no specific request for information on the potential use of this capacity from the market as part of the PSB review</li> </ul>	<ul style="list-style-type: none"> <li>• Benefits can be better achieved with a comparative selection process and the costs are significantly higher under the PSB Review</li> </ul>

A1.51 Based on the impact each of these options will have on the various stakeholders, a comparative selection process enables us to achieve our policy objectives, and appears to be the best option available for doing so, particularly given the benefits for linking the implementation to the DSO timetable. It reduces the risk of regulatory failure due to the interaction the market will have throughout the process, and has the potential to include a competitive element between broadcasters. It also fosters some early level of certainty as to the outcome as the early announcement of selection criteria enables consumers and equipment manufacturers to make their own decisions regarding potential outcomes whilst still retaining a comparatively shorter time scale before a confirmed decision.

A1.52 This means the benefits of the reorganisation are likely to accrue to stakeholders earlier as the scale and timing of the benefits partly depend on certainty among equipment manufacturers and consumers to generate faster uptake of consumer reception equipment. A comparative selection process is also an open, transparent, objective and non-discriminatory process as it sets a list of common criteria which all parties are judged against and all have the opportunity to provide any relevant information to Ofcom for the process.

**What are the justifications for the selection criteria and what impact will these have?**

A1.53 In **Section 5** we confirmed the selection criteria for awarding Multiplex B capacity; those were:

- to promote the efficient use of the spectrum, as reflected in the use of the capacity on Multiplex B and in plans for promotion of rapid and widespread

adoption of DVB-T2 and MPEG-4 consumer reception equipment. Any content proposed by applicants should therefore show how they consider it likely that their services encourage such adoption;

- to contribute to the fulfillment of the purposes and characteristics of PSB in the UK; and
- to contribute to enhancing or maintaining the range and diversity of high quality television services available throughout the UK.

A1.54 We described these criteria, which we are derived from those of Ofcom's statutory duties that we believe to be relevant in the circumstances, in detail in Section 7 of the consultation and discuss these further in **Sections 4 and 5** above. These criteria appropriately reflect the objectives for use of this scarce and valuable spectrum through promoting continued efficiency gains. They further the development of PSB content and the contribution to the range and diversity of services available on DTT reflecting the allocation of this resource for PSB.

### **Do we need to intervene to ensure a mode change to 64 QAM?**

A1.55 Four out of the six multiplexes on the DTT platform currently operate at 16 QAM, but will have the opportunity to upgrade to 64 QAM at DSO, a mode presently used by Multiplexes 2 and A. This increases the capacity on each multiplex by 6Mbits/s which is equivalent to adding capacity of greater than an additional multiplex on the DTT platform, and would therefore enable the spectrum to be used much more efficiently. As a result, we fully support and also anticipate a mode change for all multiplexes.

A1.56 Generally, we believe that the multiplex operators are likely to have incentives to introduce mode change. However, as we highlight in **Section 4** there may be situations where they may have incentives to upgrade but are prevented from doing so (absent a regulatory requirement) and, as a result, mode change may not occur or be delayed.

A1.57 The costs of failing to ensure a mode change across the platform at DSO extend far beyond the extra capacity and spectrum efficiency gains lost. This is because it would make it significantly harder for the DTT platform to upgrade to DVB-T2 technology as the capacity created by mode change allows this upgrade to occur with requiring a loss of services to existing viewers.

A1.58 We note comments made by respondents in relation to the costs of mode change, most notably the potential effects on picture quality and interference that had earlier been associated with using 64QAM. As discussed under **Question 10 of Section 4**, these were predominantly historical concerns related to the poor performance of early equipment and the lower transmission powers employed and therefore, we concluded that these costs are no longer relevant.

A1.59 As a result we believe that mode change at DSO should be a requirement rather than an option, as this ensures that consumers and citizens can gain the maximum benefit from the valuable spectrum already allocated to broadcasting as it will be used as efficiently as possible. We expect that this recommendation would mitigate the small risk of a significantly negative impact on the platform if the mode change did not occur. In any case, we also note that the multiplex operators not yet operating on 64 QAM indicated in their responses to the consultation that they had already made plans to begin operating at the alternate mode from DSO, and

therefore we consider the impact of this intervention to be negligible but important in providing certainty to enable the reorganisation to occur.

## Conclusion

A1.60 Following each of the preferred options, the overall outcome should be an upgrade of one DTT multiplex (Multiplex B) to operate using the MPEG-4 and DVB-T2 technologies with three quarters of the capacity awarded by Ofcom through a comparative selection process<sup>27</sup> (pursuant to orders from the Government) and one quarter by the BBC Trust to the BBC. It is important to consider the impact this overall outcome will have on key stakeholders as well as the impact of the counterfactual – a state of the world without intervention where there is slower adoption of MPEG-4 and DVB-T2 technologies (for example, as a result of a two stage upgrade process which involves upgrading to MPEG-4 first followed by a later upgrade to DVB-T2).

A1.61 In the consultation document we presented the results of some illustrative modelling work. These results were questioned by some respondents as they felt that they did not have enough information to comment appropriately on our results. We believe that sufficient information was provided to allow respondents to form an assessment of whether the order of magnitude of our results was correct, and to provide comments given that our modelling work only sought to provide an indication of the potential scale of benefits rather than a precise quantification of the benefits of our proposals. However, in response to these concerns, and because it is not possible for us to meaningfully make significantly more information available (owing to the confidential nature of some of the underlying information), we do not use the results of the modelling in this impact assessment to illustrate the scale of the benefits. Instead we rely on the general acceptance from consultation respondents that the upgrade would generate significant benefits and was worth pursuing, in justifying the likely benefit of the upgrade.

<b>Counterfactual – Delayed Adoption of Technology Upgrades</b>	<b>Preferred Intervention Path</b>
<p><b>Benefits</b></p> <ul style="list-style-type: none"> <li>• At least one universal HD service which generates some benefits for consumers</li> <li>• Speedier adoption of MPEG-4 and DVB-T may provide some immediate benefits for consumers</li> <li>• Potentially greater flexibility for broadcasters. Can adapt to changing circumstances</li> <li>• No reorganisation costs</li> <li>• No risk of new regulatory failure</li> </ul> <p><u>Related to DSO</u></p> <ul style="list-style-type: none"> <li>• Maintains the status quo for the</li> </ul>	<p><b>Benefits</b></p> <ul style="list-style-type: none"> <li>• Significant benefits to consumers as a result of the speedy upgrade to both MPEG-4 and DVB-T2 which maximises the availability of new services and which will spur take-up of new STB (which is key to allowing the platform to upgrade)</li> <li>• Greater spectrum efficiency by unlocking additional capacity on the platform</li> <li>• Potential for a greater quantity and variety of (universal) content</li> <li>• Strengthen the future competitive position of the DTT platform through improved quality and mix of content and services whilst maintaining universal coverage, making it more attractive to consumers</li> </ul>

<sup>27</sup> Two blocks in 2008 and a third in 2009 or 2010 pursuant to the outcome of the PSB Review.

<p>programme</p> <ul style="list-style-type: none"> <li>• Avoids some of the costs associated with the intervention</li> </ul>	<ul style="list-style-type: none"> <li>• Compared to a counterfactual in which the platform does not upgrade sufficiently quickly, and as a result loses share to alternative platforms, a higher viewer share for individual broadcasters which in turn increases revenues (relative to the counterfactual of a declining share of viewers on DTT)</li> <li>• Design of entire upgrade process aims to increase the uptake speed of STBs and iDTVs which should encourage economies of scale in their production so the price becomes comparable with DVB-T equipment sooner, increasing viewer numbers and thus realising greater benefits</li> </ul> <p><u>Related to DSO</u></p> <ul style="list-style-type: none"> <li>• More choice of services early on in DSO programme strengthens the overall benefits viewers can receive</li> <li>• Opportunity to communicate the changes at the same time as switchover messaging – also the Help Scheme could inform vulnerable groups</li> <li>• Many consumers will be able to avoid a double upgrade later on by buying DVB-T2 &amp; MPEG-4 compatible equipment at switchover</li> </ul>
<p><b>Costs</b></p> <ul style="list-style-type: none"> <li>• Even if an upgrade of the entire platform occurs eventually, it carries the risk of being incomplete and substantially slower resulting in lower overall consumer benefits. Additionally, if it fails to coincide with DSO, the benefits of early adoption of the new technology resulting in faster take-up of equipment and lower disruption for consumers may be lost</li> <li>• Without the benefits of a DSO-timed upgrade, the ability of the DTT platform to compete with other platforms in the future may be restricted, both in terms of viewer numbers (which affects advertising revenues of commercial broadcasters) and for quality content</li> <li>• Lower quantity and variety of new services</li> </ul> <p><u>Related to DSO</u></p> <ul style="list-style-type: none"> <li>• Would forgo the benefits of the intervention</li> </ul>	<p><b>Costs</b></p> <ul style="list-style-type: none"> <li>• More channels may reduce viewer shares for some channels, potentially impacting advertising revenues for certain players (though note that the overall viewing on the platform as a whole is expected to be improved by this intervention)</li> <li>• The costs of the upgrade process including reorganisation costs and those incurred due to the allocation process (however these are short term and one-off)</li> <li>• Some potential changes to the coverage of existing services on the platform</li> <li>• Risk of regulatory failure throughout the process (however this can be addressed in the design of the allocation process)</li> </ul> <p><u>Related to DSO</u></p> <ul style="list-style-type: none"> <li>• Need to inform those who have already switched over of purchasing options as soon as possible</li> <li>• Information on the technical upgrade option</li> </ul>

	would need to be included in the Help Scheme
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### Assessment of risks

- A1.62 The DSO-related costs and benefits included above relate to the implementation of the intervention process in 2009. Implementing the policy after DSO has completed would bring the benefit that there is a clear message to deliver to consumers and thus reduce the risk of confusion. However there would be no infrastructure in place to deliver the new information consumers need and there are significant costs of doing so. Additionally, by delaying until after switchover it is likely that there will be a much higher number of STBs and iDTVs that need upgrading, imposing additional costs on consumers who choose to convert to DVB-T2, and potentially placing an environmental impact via the large number of boxes that may be discarded earlier than expected in their lifecycle.
- A1.63 There is a risk with the intervention that the other multiplexes do not follow the upgrade path and therefore the efficiency gains in the use of the spectrum are not as high as they could potentially be. This risk is partially related to the uptake of new equipment as the greater this is, the higher the potential viewer numbers for any service delivered by the new technology, and therefore the greater the benefit of upgrading and improving spectrum efficiency. In turn, the penetration of new STBs and iDTVs is dependent on content and the type of services delivered by the new technologies as it is this that will provide the incentives for consumers to buy new receivers.
- A1.64 The significance of this risk partly depends upon the impact it will have on key stakeholders. Overall, spectrum efficiency will still have increased, even if not to its full potential. The upgrade of a single multiplex may still generate net benefits for consumers as they will still have access to new services provided on the multiplex if they choose to upgrade their equipment, and the costs are relatively low for them. Whether the individual broadcasters would benefit if this event occurred depends upon the additional revenue they can generate from the new technology on the single multiplex (which depends upon the uptake of equipment), and how this compares to the one-off costs. However, the outcome is more likely to be net beneficial for broadcasters if the multiplexes share the one-off costs between them, given that in the longer term there are potential benefits for all of them.
- A1.65 This risk can be reduced through the comparative selection process; included in the selection criteria is the need for the applicant to demonstrate how they will promote the rapid and widespread adoption of DVB-T2 MPEG-4 consumer reception equipment. There are also content related criteria that applicants will be assessed under, in that they must contribute to the range and diversity of television services available on DTT, which should ensure there are services provided that are attractive to consumers. By including such obligations in the licence terms, the viewer numbers of the new technology services should increase at a faster pace, thus providing the incentives for other multiplex operators to upgrade to the more efficient technologies sooner, increasing the overall benefits of the process even further.
- A1.66 Therefore, whilst this risk could result in a negative outcome for broadcasters, it is a relatively low risk, especially considering the criteria included in the comparative selection process to promote equipment uptake and those related to content. As such, the risks that other multiplexes do not follow the upgrade path and that equipment uptake is slower than expected, are less significant.



A1.67 There are further risks that relate to the DSO process, and are shown below with methods to potentially mitigate them.

<p><b>Risks</b></p>	<ul style="list-style-type: none"> <li>• Help Scheme comes under pressure to change its policy on help-scheme equipment to include DVB-T2 technology with potential associated cost increases</li> <li>• Increased confusion for consumers when communicating the new choices</li> <li>• Potentially de-stabilises confidence in DSO and DTT platform which causes reduction in audience share – people defer decisions to upgrade to digital</li> <li>• Volume production of DVB-T2 equipment is late and benefits of early launch cannot be realised. Could be due to delays in standards, manufacturing delays or lack of scale in UK market alone to justify volume production</li> <li>• First generation DVB-T2 equipment does not function to full expectations, destabilising consumers’ purchasing decisions and the DSO programme more widely</li> <li>• Engineers unable to implement the DSO timetable if some re-tasked to DTT capacity work</li> </ul>
<p><b>Risk Mitigation</b></p>	<ul style="list-style-type: none"> <li>• Communicate with consumers – explain that no existing services currently received by consumers will be lost, but that they have the option to obtain additional services through the purchase of new equipment. Also that it is not a mandatory change for consumers – existing equipment will still provide existing TV services. This is addressed in the allocation criteria as applicants have to demonstrate how they will reduce consumer confusion surrounding this.</li> <li>• Early and prompt decision to provide certainty to manufacturers, which decisions in this statement and the early completion of the comparative selection process should assist with</li> <li>• Form a working group, which amongst other things will pilot test transmission to validate the new services and to test how consumers behave and the information they will need</li> <li>• Continue efforts in international fora to promote adoption of DVB-T2</li> </ul>

A1.68 The majority of the risks identified in paragraph A1.66 above would be irrelevant under the counterfactual (i.e. if there was no intervention), and to some degree under implementing the policy straight after DSO has been completed. Under the counterfactual, the status quo of the DSO programme would be maintained, and therefore the net effect is likely to be neutral. However, there are benefits that can accrue to the DSO process as a result of intervention as noted above, and therefore the net effect of intervention compared to the counterfactual depends upon the ability of the risk mitigation options to limit the identified risks and their impact upon the net benefits of the process. Therefore, with the right actions in place, this intervention may well have a net positive effect on the DSO process.

A1.69 Multiplexes 1 and 2 are expected to remain with the current DVB-T/MPEG-4 technologies for the foreseeable future to continue the universal coverage of PSB

services for all UK citizens. This is beneficial for consumers as it means that access to the new services is a choice to opt into, and if they choose not to upgrade their receiving equipment they will not lose any services they are currently able to receive. This follows our key objectives in terms of promoting PSB purposes.

### **The preferred option**

- A1.70 Our preferred option is to intervene in the technological upgrade of the DTT platform as despite the improvements in spectrum efficiency and potentially proving net beneficial to broadcasters, it is unlikely that it will happen in the optimal timeframe without intervention due to incentive-based market failure issues. We believe this is true even if the PSBs formally cooperate to bring about the upgrade. The intervention will involve the clearing of Multiplex B which will then be upgraded, and the award of this capacity will be made through a comparative selection process.
- A1.71 This is more interventionist than the other options considered in the consultation and so carries with it a degree of regulatory failure risk and an opportunity cost in terms of lower viewership of Multiplex B while DVB-T2, MPEG-4 STB and iDTV penetration is growing. However, the existence of market failure risks without intervention significantly outweighs these, particularly as the design of the comparative selection process can be used to minimise regulatory failure where possible.
- A1.72 The benefits of the upgrade are potentially significant for all stakeholders compared to the net outcome without an upgrade or with a delayed upgrade and as such, they are most likely to far exceed the comparative costs and risks involved.
- A1.73 Therefore, we believe that our recommendations provide the best opportunity to upgrade the platform and achieve our policy objectives in a way that generates the highest possible level of net benefits to key stakeholders.

## Annex 2

## List of respondents

No. of Response	Name of Respondent	No. of Response	Name of Respondent
N/A	31 responses from individuals	80	Confidential respondent
61	Advisory Committee for Northern Ireland	81	Julie Morgan MP
72	Advisory Committee for Scotland	36	Mike Hancock MP
32	Alliance Party of Northern Ireland	87	Mike Wood MP
77	Confidential respondent	86	Mr Sammy Wilson MP
47	Astrium Ltd	67	National Grid Wireless
82	BBC Trust	49	National Union of Journalists
57	BECTU	21	Northern Ireland Screen Commission
45	Belfast City Council	53	Northern Visions/NvTv
24	Belfast Media Group	26	PACE Micro Technology
41	Betty Williams MP	58	Panasonic
43	BT	75	POBAL
71	Campaign for Press and Broadcasting Freedom	70	QVC
83	Confidential respondent	56	RTÉ
39	Comhairle na Gaelscolaíochta	64	S4C
37	Confidential respondent	35	Sinn Fein
59	David Taylor MP	88	Sky
62	Digital Television Group	68	Social Democratic and Labour Party
40	Digital UK	76	Sony UK Ltd
34	Confidential respondent	25	ST Microelectronics Ltd
48	DTG Supply Chain Group	73	Strategy & Technology Ltd
55	EuroNews	51	Teletext
84	Confidential respondent	79	Tim Farron MP
27	Gael Linn	60	Tony Lloyd MP
66	Gaelic Media Service	85	Confidential respondent
74	GTech Surveys Ltd	20	ULTACH Trust
54	Ian Gibson MP	65	United for Local Television
42	Ian Stewart MP	78	Confidential respondent
50	Institute of Local Television	46	Voice of the Listener & Viewer

## Annex 3

## Glossary

BA96	Broadcasting Act 1996
Bandwidth	The amount of information that can be transmitted in a given period of time. A large bandwidth is generally associated with better picture quality. Compression techniques reduce the bandwidth required, especially for transmission and storage.
BERR	Department for Business, Enterprise and Regulatory Reform
Bit	Short for binary digit. The smallest piece of binary digital data, represented by either a 1 or a 0. 8 bits = 1 byte.
Bits/sec	Normally shown as Kb/s (thousands of bits per second) or Mbit/s (millions of bits per second). A 'bit' is one binary digit of information.
CA03	Communications Act 2003
DATS	Digital Additional Television Service. Type of digital television licence awarded by Ofcom
DCMS	Department for Culture, Media and Sport
Digital Dividend Review (DDR)	Ofcom's review process for awarding the DTT spectrum freed up by DSO
Digital Switchover (DSO)	The process of switching over the current analogue television broadcasting system to digital, as well as ensuring that people have adapted or upgraded their televisions and recording equipment to receive digital TV.
DRL	Digital Replacement Licence. Type of digital television licence awarded by Ofcom
DSHS	Digital Switchover Help Scheme
DTPS	Digital Television Programme Service. Type of digital television licence awarded by Ofcom
DTT	Digital Terrestrial Television, currently most commonly delivered through the Freeview service.
DVB	Digital Video Broadcasting. A set of internationally accepted open standards for digital broadcasting, including standards for distribution by satellite, cable, radio and handheld devices
DVB-T / DVB-T2	Terrestrial Digital Video Broadcasting. T2 is a second generation standard currently under development, but expected to launch in 2009
Enhanced television services	Television services which include interactive applications as well as audio and video.
Free to air (FTA)	Broadcast signals that do not require payment at the point of reception

FRND	Fair, reasonable and non-discriminatory
GDS	Gaelic Digital Service
GHz	Gigahertz
HD (HDTV)	High Definition (High Definition Television). A TV system which provides a clearer, sharper picture through higher resolution. HD transmission may be in 720p, 1080i or 1080p standards, where the number refers to the number of lines of vertical resolution (an HD format must display at least 720 lines), 'p' refers to progressive and 'i' to interlaced.
IDTV	Integrated Digital Television, a television with an integrated digital television receiver
ITA	Invitation to Apply (for the award of capacity which becomes available on Multiplex B as a result of the reorganisation process)
Mbit/s / Mbps	Megabits per second. A measure of data transfer speed, with 1 Mbit/s representing 1,000,000 bits being transmitted in one second
MHz	Megahertz
MPEG	Moving Pictures Expert Group. Group which established a set of international standards for compression and transmission of digital audio-visual content. Most digital television services in the UK use MPEG-2, but MPEG-4 offers greater efficiency and is likely to be used for new services including TV over DSL and High Definition TV.
Multiplex	A digital stream or service that carries multiple signals or streams of information on a carrier at the same time in the form of a single, complex signal. The separate signals are then recovered at the receiving end.  In broadcasting, this relates to a collection of compressed digital channels which typically occupies the same bandwidth as a single analogue service. May be abbreviated to 'mux'.
NGW	National Grid Wireless
Ofcom	Office of Communications. The UK's independent regulator and competition authority for broadcasting, telecommunications and radiocommunications matters
PSB	Public Service Broadcasting, or Public Service Broadcaster. The Communications Act in the UK defines the PSBs to include the BBC, the Channel 3 licensees, Channel 4, Five and S4C.
PVT	Public Value Test (undertaken by the BBC)
QAM	Quadrature Amplitude Modulation. A method of combining two amplitude-modulated (AM) signals into a single channel, thereby doubling the effective bandwidth
Resolution	The number of pixels displayed on a screen
S4C	Welsh national broadcaster

SD	Standard Definition. In the UK, this is the 625 line system, of which 576 lines are visible – a lower resolution than HDTV.
STB	Set top box. A receiver/decoder for digital broadcast signals
Up-conversion	A process to enable a lower resolution picture to be shown on a higher resolution display – for example, so that SD content can be included in an HD broadcast. Although the number of lines and frame rate might be increased, the overall resolution remains the same as the original.
VoD	Video on Demand. A service or technology that enables TV viewers to watch programmes or films whenever they choose to, not restricted by a linear schedule.
WTA	Wireless Telegraphy Act 2006

## Annex 4

## Services currently operating on DTT

## DTT channel list November 2007 - Crystal Palace

Mux	Service	Service type		Mux	Service	Service type
<b>Mux 1</b>	BBC 1	SD		<b>Mux A</b>	Five	SD
BBC	BBC 2	SD		SDN	QVC	SD
	BBC3/CBBC	SD			Bid tv	SD
	BBC News 24	SD			Price-drop tv	SD
	BBCi MHEG (4 streams)	Text			Five Life / TVX	SD
	<b>Total SD</b>	<b>4</b>			Five US	SD
<b>Mux 2</b>	ITV1/GMTV	SD			Setanta sports	SD
Digital 3&4	ITV2/GMTV2	SD			UKTV Gold (TUTV)	SD
	ITV3	SD			Nuts TV	SD
	ITV4/CITV	SD			Teletext Holidays (more audio than text)	Text
	C4	SD			Teletext Games	Text
	E4	SD			Various MHEG (QVC, EMAP, TUTV etc)	Text
	More 4	SD			Radio x 2	2R
	Channel 4 + 1	SD			<b>Total SD</b>	<b>9</b>
	Teletext	Text		<b>Mux C</b>	Sky 3	SD
	Teletext Cars	Text		NGW	Sky News	SD
	Teletext on 4	Text			Sky Sports News	SD
	Radio x 2	2R			E4 +1	SD
	<b>Total SD</b>	<b>8</b>			Dave	SD
<b>Mux B</b>	BBC4 / Cbeebies	SD			Sky Text	Text
BBC	BBC Parliament	SD			Various MHEG (Sky/UKTV/Virgin/TVTV)	Text
	BBCi 301 video / Community	Red Button			Radio x 4	4R
	BBCi 302 video / Community	Red Button			<b>Total SD</b>	<b>5</b>
	BBCi 305 (news multiscreen video)	Red Button		<b>Mux D</b>	The Hits	SD
	Associated BBCi (4 streams)	Text			The Music Factory (TMF)	SD
	Radio x 10	10R			ITV2+1	SD
	<b>Total SD</b>	<b>2 + 3 red button</b>			Ideal World	SD
					Virgin 1/UKTV History	SD
					Film Four/Gems TV	SD
					Radio x 9	9R
					<b>Total SD</b>	<b>6</b>

Key: ■ New services which have recently replaced other existing services.

Note: Four of the BBC radio services shown on Multiplex B recently migrated to Multiplex B from Multiplex A