DIGITAL UK AND SWITCHOVER

Digital UK is the independent not-for-profit company set up in April 2005 to lead the Government’s policy of digital switchover (DSO).

DSO is the process by which the ‘digital dividend’ 112 MHz of UHF spectrum, plus interleaved spectrum, will be cleared for new uses. Only by a successful switchover can the benefits of the digital dividend be realised. Indeed, the release of spectrum is one of the key benefits of switchover. The Government’s Cost Benefit Analysis attributed £1.7 billion of consumer value to “released spectrum…used for services using broadcasting technology”¹ [see Annex 1].

Digital UK’s members are those carrying legal obligations to achieve switchover: BBC, ITV, Channel Four, Five, S4C and Teletext and the commercial multiplex operators SDN and National Grid Wireless. The Digital UK Board also includes two nominated representatives of the supply chain industries.

The constituent members of Digital UK and the members of the Digital UK Board are all fully supportive of this response.

EXECUTIVE SUMMARY

Digital UK recognises that the decisions about how to release the spectrum freed up by digital switchover for new uses are of great importance. This response comments on the spectrum release only insofar as there may be a potential impact on either the delivery of the DSO programme; or public support for switchover.

We believe that Government and Ofcom share Digital UK’s view that “success” in relation to DSO will not only be measured in terms of achieving physical transition of transmitters but also the seamlessness of the process, the level of disruption experienced by viewers and their appreciation of the benefits.

¹ “Cost Benefit Analysis of Switchover”, Department of Trade and Industry & Department for Culture, Media and Sport; 10th February 2005. See Annex 1 for extract.
We are concerned that some aspects of the options considered in the DDR consultation could impact negatively on the success of switchover. Digital UK considers that it is vital to protect against these, and if they are ignored the risks to success of the programme could be significant.

Our response therefore covers the following areas:
1. Protection of the broadcast infrastructure programme
2. Possible impact on public attitudes to switchover
3. Responses to consultation questions

1. Protection of the broadcast infrastructure programme

Protection of the switchover process must be Ofcom’s first priority in the Digital Dividend Review. It is critical that the regional switchover process is not harmed by the release and re-use of the digital dividend spectrum. We are concerned that reallocation of spectrum without careful consideration of the impact on switchover could, for example, cause interference in adjacent regions, affecting coverage and causing at best confusion or at worst alarm and reaction amongst the viewing public. This in turn could dent consumer confidence in the switchover programme.

2. Possible impact on public attitudes to switchover

The DDR is made possible by switchover and it is largely the public who are bearing the cost of switchover through the cost of TV equipment and the BBC Licence Fee. It is therefore only fair and equitable that the DDR process returns clear value back to the public as was assumed in the Government cost benefit analysis of DSO.

The Government rationale for switchover is threefold:
(i) That it makes things fairer by giving everyone a choice of affordable digital TV options;
(ii) That it is a more efficient use of spectrum, enabling new services such as high definition television and mobile television; and
(iii) That it will help the UK continue as a world leader in broadcasting.

Whilst switchover will undoubtedly achieve the first objective, we are concerned that if the released spectrum is allocated via a straightforward auction mechanism (without conditions), as Ofcom has outlined, the second and third objectives are placed at risk, which could in turn impact on public acceptance of switchover.

On the second objective – enabling new services – we firstly believe that a significant proportion of the public do understand the link between switchover and the release of spectrum, which itself creates an expectation that
commensurate public benefit will be returned from switchover. Secondly, we believe that it is fair and reasonable that the public would receive TV services from the released spectrum (high definition TV and mobile TV have been used as illustrations of what switchover might provide precisely because it is logical to suggest that the TV switchover will deliver new types of TV services). Finally, our research has shown considerable awareness and expectation around high definition TV in particular, and we are therefore concerned that if HDTV was not an outcome of the DDR process, this could lead to public disappointment and therefore negatively impact on switchover.

Our research suggests that Ofcom have underestimated public awareness and interest in HD services and have not sufficiently taken into account the international broadcasting and manufacturing developments on HD. Our research shows that more than 80% of the public are aware of high definition television, and there are high expectations that HDTV will be available on all platforms: 65% of current Freeview users interested in HD say they expect it to be available on their platform (more than expect it to be available on cable). The Secretary of State for Culture, Media and Sport herself has acknowledged “the enormous consumer demand for high definition TV” and has said that “high definition television [is] approaching fast and will transform picture quality for ever”\(^2\). As referenced above, a key objective of the digital switchover programme is to bring a range of affordable digital television options to everyone in the UK. We similarly believe that the best public outcome of the DDR would be provision of affordable HD on all platforms.

The third objective of switchover was to ensure that the UK continues to be a world leader in broadcasting. We note that global broadcasting markets are rapidly moving to HD, and HD is widely seen as a natural evolution of mass market broadcasting rather than a niche technology.

We therefore believe that the provision of new television services, including HDTV on digital terrestrial television, should be an outcome of the Digital Dividend Review. We are concerned that the proposed market-led approach may not ensure this end, and in turn might negatively impact on the success of the switchover programme.

---

\(^2\) Tessa Jowell, Secretary of State for Culture, Media and Sport, at the second reading of the Digital Switchover Bill, 18\(^{th}\) December 2006.
1. PROTECTION OF THE BROADCAST INFRASTRUCTURE PROGRAMME

1.1 Timing

In Section 8 of the Consultation Document, Ofcom discusses the anticipated timing of the availability of the cleared and interleaved spectrum and the timetable for holding one or more auctions and in 8.32 makes proposals for consideration:

AUCTIONS

- Any auction for the award of licences to use the cleared channels be held as soon as possible compatible with an orderly process – currently expected to be in the second half of 2008.

Digital UK agrees that there is an imperative to introduce as much certainty as soon as possible on the use of cleared channels. It therefore, is broadly in support of this proposal. Our views would apply equally to any auctions or any process of allocation of frequencies.

Implementation of the transmitter re-engineering process for DSO is one of the most complex projects undertaken in the UK. The transition from analogue television and low power DTT to the new high power DSO network has to be managed in such a way as to maintain the existing television services throughout the process until the date of switchover. It also has to protect all the other services on the masts – FM Radio, DAB, Emergency Services, Mobile Telephony, Private Circuits, MOD communications, etc.

Many of the potential users of the cleared channels are likely to want to construct networks transmitting from some or all of the same masts as are being used for DTT. In order to minimise duplication of engineering and to manage the impact on viewers (and the end users of other services on the masts) it will be sensible to try to integrate the requirements of the cleared channel licensees into the switchover engineering programme as soon as possible. Otherwise, a second programme of engineering work would be required either shortly after or even in parallel with the later phases of DSO.

It is probably too late to integrate such requirements for the earliest DSO regions although we understand that Arqiva and NGW have made some allowances in their planning for the main masts in these regions. Nevertheless, as soon as auctions or allocations have been completed every effort should be made to integrate the transmission requirements. This may mean that, as with DSO, there is a significant period of time between the mast engineering works and the
launch of services but that should be an acceptable price to pay for containing the impact on members of the public.

We suggest that Ofcom should make it a condition of the issuing of licences that implementation work must be co-ordinated with the DSO programme in order to minimise disruption to viewers. For example, that new licensees of the released or interleaved spectrum should abide by a new Code of Practice in order that switchover transmissions are protected, in a similar way as analogue and pre-switchover DTT transmissions are protected in the existing Code of Practice.

- that channel 36 not be auctioned any sooner than this, but rather be included in the main auction (assuming that clarity and certainty as to rights of use can be achieved in sufficient time).

In accordance with the views stated above, Digital UK sees advantage in a co-ordinated timetable for identification of the future uses and their transmission requirements. Therefore, it makes sense to co-time the auction or allocation processes wherever possible.

- that any auction for the award of licences to use the interleaved frequencies be held as soon as possible compatible with an orderly process – similarly expected to be in the second half of 2008.

Digital UK believes that the same arguments apply to the interleaved frequencies as to the rest of the spectrum to be allocated or auctioned. However, since the uses of interleaved spectrum are likely to be local and/or low power, (as suggested in 3.39 of the Consultation), the impact on the engineering programme may be less disruptive than any national services using the cleared spectrum and, therefore, a delay in respect of awarding licences for interleaved spectrum may be less harmful.

Question 15: Do you agree with Ofcom’s proposals as to the timing of any auction? If not, what alternative proposal would you make and why, and what evidence and analysis can you provide in support of your alternative proposal?

As stated above, Digital UK supports the proposal that whatever process of auction or allocation of frequencies is adopted this should take place as early as possible to bring clarity and to allow integration and co-ordination of any related engineering programmes. This is important to DSO as any additional disruption to viewers will have a negative impact on the switchover programme.
Such clarity is also required in order that Digital UK communications can be definitive and properly informative.

1.2 License Awards and Availability of Frequencies

In 8.2, 8.3 and 8.4 of the Consultation, Ofcom suggests that although no frequency will become available UK wide before 2012, (with the possible exception of Channel 36), the spectrum released as a result of DSO will become available on a region-by-region basis, as DSO progresses, from 2008 to 2012, as will interleaved spectrum.

Ofcom also notes in 8.3 that such regional release will only be possible to the extent that it does not interfere with continued use of those channels for analogue and digital television broadcasting in other regions that have not yet completed switchover, and that it will be necessary to protect reception of analogue and digital television signals in neighbouring countries.

While fully supporting these caveats, Digital UK believes that Ofcom has not explained the full complexity of the issues and therefore, potential applicants/bidders for the spectrum may be misled about when it will become available for use.

In planning the DSO programme account has had to be taken of all the complex interactions between analogue, existing DTT and high power DTT post DSO. The shape of the final network has been dictated principally by two factors:

(i) The Government decision to “release” 14 channels currently used for television broadcasting and,

(ii) The GE-06 agreements reached at the Regional Radio Conference in June 2006;

but neither of the processes leading up to these outcomes took account of the transitional issues associated with moving from the current network topography to the final position.

Because of the complexity of the UK frequency plans and network infrastructures DSO is only manageable on a main transmitter by main transmitter basis and this, in turn, adds to the number of transitional interactions that need to be accommodated.

Broadcasters have been in continual dialogue with Ofcom on these matters and it is clear that until after the final region frequency and implementation plans are locked down in 2009 and all the potential transitional interactions have been analysed, there will be uncertainty about what channels may need to be retained
and/or used on a temporary basis to enable the transition without serious impact on viewers and possible consequences for the success of DSO.

For all the above reasons, Digital UK believes that Ofcom must be extremely cautious about the dates from which frequencies become available for other uses. There is an obvious need to inform applicants/bidders of the date from which they should assume access to the frequencies in order that they can frame the business cases to support proposed payments for the spectrum. Digital UK believes that the only way in which such certainty can be achieved is to assume that frequencies will only become available at the end of the DSO process and applicants should be clearly advised to use that assumption.

It should be possible to construct an approach which, if, and only if, circumstances permit, would allow access at an earlier date. The alternative of having to delay access to the spectrum beyond a previously anticipated date does not appear attractive and could generate challenges from putative licensees because of the investment required in preparing for the launch of services. Ofcom will undoubtedly argue, as it has done in the Consultation, that there is an opportunity cost in taking such an approach. Digital UK takes the view that there will be a bigger cost if DSO cannot be managed in a way that minimises the effect on viewers, and which in extremis could delay or jeopardise access to the spectrum.

In order to protect existing services both in the UK and internationally, the DSO programme needs the flexibility to call upon a range of possible solutions which include power variations, channel changes and parking channels and this may necessitate, on occasions, access for a temporary period to 'released' spectrum.

This is important in order to meet as far as possible one of the prime objectives of the DSO programme, i.e. to replicate, as nearly as practicable, analogue coverage by transitioning from the existing analogue and lower power DTT networks while minimising the impact on viewers during that transition.

Other areas of uncertainty and future developments need to be addressed before definitive decisions can be made about giving new users access to the spectrum. These include:

- **Protection of RBL paths**
  The DTT network will rely heavily on the use of re-broadcast links to distribute signals between main transmitters and their dependent relays, just as the analogue networks do today. The need for protection of RBL paths has been recognised in recent discussions between broadcasters and Ofcom but in a significant number of instances the reliability of these paths will not be known until the new network is switched on. Therefore, subsequent changes may need to be made but, most importantly, decisions about the timing of access
to spectrum need to take account of the need to protect both existing and proposed RBL paths.

- **Allowance for Power Increases**
  
  When planning the access to spectrum by new users Ofcom needs to take account of the possibility that either during or after DSO agreement may be reached between broadcasters and Ofcom to increase transmit powers at some sites from the current plan to the maximum levels permitted under GE-06.

  This is likely to apply most often to the COM multiplexes. It would allow the most efficient use of the spectrum by maximising the coverage possibilities for use of each frequency at a site, and it could narrow the perceived “digital divide” between those able to receive the full range of DTT services and those only able to receive the PSBs.

  Previous experience of the original DTT rollout and the Coverage Equalisation programmes suggests that it is only after the full network has been built and/or the international situation has stabilised that it would be possible to gauge whether power increases are necessary to meet coverage objectives and/or beneficial to equalising service delivery.

- **Ability of COM multiplexes to extend to additional sites.**
  
  The current implementation plan assumes that the COM multiplexes will not extend beyond 80 sites (81 in the case of SDN). In its Statement on Switchover related changes to DTT Licences dated 7th December 2006 (3.53), Ofcom confirmed its support for the commercial multiplexes having the maximum coverage at DSO in order to provide the best possible coverage for all DTT services in the UK. It stated its willingness to consider requests in future from the commercial multiplex operators to adopt additional sites subject to consideration of all relevant circumstances, including spectrum availability. Therefore, it would seem inappropriate to immediately allocate all the spectrum to other uses before the commercial multiplexes have had an opportunity to assess the coverage performance of the current network plan.

**1.3 Impact Assessment**

Section 6 of the Consultation contains an Impact Assessment of its proposals undertaken by Ofcom.

Digital UK has no particular issue with the analysis contained in the Impact Assessment but it is surprised that it does not extend to the critical area of DSO itself. We believe that before it proceeds with any of the proposals contained in the DDR, Ofcom should conduct a joint Impact Assessment with Digital UK and
the broadcasters to ensure that there is a clear understanding of the risks to this critical public policy project. We have described above some of the areas deserving analysis and, as Ofcom well knows, especially in the realms of international co-ordination, the situation is not static so flexibility must be maintained in order to leave room for the DSO programme to respond to yet to be identified issues.
2. POSSIBLE IMPACT ON PUBLIC ATTITUDES TO SWITCHOVER

2.1 Delivering Public Benefits in Support of Switchover

The digital dividend is made possible by switchover, and switchover in turn will be made possible by the UK public to whom the majority of the costs of switchover will fall. Switchover is a largely publicly-funded venture to upgrade the UK’s TV services, and Digital UK believes it should provide public value in TV services in return. The Government’s own cost benefit analysis, which underpinned the policy decision to pursue switchover, was based on the imputed value of the released spectrum to consumers and not its economic value at auction. We do not see that the proposed market-based approach to spectrum release will ensure the return of public value, or will best meet Ofcom’s objectives of furthering the interests of citizens and consumers. We would suggest that the approach to spectrum allocation needs to be structured in such a way as to guarantee these outcomes.

Firstly, we believe that a significant proportion of the public do understand that it is switchover which makes the digital dividend, and the release of spectrum for new services, possible. There is a general public awareness of spectrum allocation after the 3G licence auctions, and press coverage of the DDR has reinforced to the public the association between analogue switch-off and the provision of new services. When asked why switchover is happening the most common answers are those about freeing up the ‘airwaves’. Almost one third (32%) of those surveyed in the Switchover Tracker say that the reason for switchover is either so money can be made selling off the airwaves or so that new services can be launched on the freed up airwaves. A proportion of the public, then, expect switchover to deliver benefits back to the public. Ofcom have stated that switchover is a separate matter from the decisions made in the course of the DDR but we believe that the two are inextricably linked, and that many of the public understand this.

---

3 The Government’s Cost Benefit Analysis of switchover identified £619m of broadcaster costs associated with the upgrade of the terrestrial television network, £3,769m of direct consumer costs for equipment and energy to power that equipment, and £163m of indirect consumer costs for marketing and assistance to be funded out of the BBC Licence Fee. We now know that Licence Fee payers will fund a total of £800m of switchover cost taking in both these marketing and assistance costs plus the costs of the Government’s Digital Switchover Help Scheme. Of this revised total of £5,188m of switchover costs consumers (either directly or via the Licence Fee) will be paying for £4,569m or 88%.

4 For example: (i) Daily Express, 20th December 2006: “Mega-sale of airwaves gets lift-off”, “Media regulator Ofcom began the countdown yesterday to the biggest sell-off of the airwaves since the 3G mobile phones auction…Commercial demand for the frequencies to be freed by switching off the analogue TV signals between 2008 and 2012 is expected to outstrip supply…”. (ii) Daily Star, 20th December 2006: “Air raid! Firms in line to plunder frequencies”, “Ofcom has begun the countdown to the biggest sell-off of airwaves since the 3G auction raised £22 billion six years ago…Demand for the frequencies – to be freed by the switch-off of analogue TV signals between 2008 and 2012 – is expected to exceed supply”.

5 Source: Ofcom / Digital UK Switchover Tracker Q4 2006. When asked why they thought switchover was happening 23% said it was ‘so the Government could make money selling off the airwaves’ and a further 9% said that it was because it would ‘free up the airwaves for other uses’.
We would therefore encourage Ofcom to ensure that public expectations are met to strengthen the rationale for switchover, rather than the reverse happening and public disappointment undermining the switchover process.

Digital UK is keen to ensure that nothing from the DDR should create confusion in the minds of the public, delay purchasing decisions nor create negative sentiment towards the programme. Although public attitudes to switchover have proved reasonably positive over the past year, still over a quarter of the public believe that switchover is unfair. As Ofcom will know we monitor switchover attitudes (public and those of press and opinion formers) closely, and are mindful that ‘bad news’ could tip the balance of opinion against switchover. It is important to maintain the current levels of comfort with the programme.

This is important not only for DSO but also for the DDR because any delay in the programme will push back availability of spectrum for other users.

In Ofcom’s report for the Secretary of State (Driving Digital Switchover: April 2004) a number of benefits arising from switchover were identified including:

“Digital broadcasting allows the release of spectrum for potential uses by additional broadcasting services or many new communications services”.

This, of course, is what the DDR is all about but it needs to be recognised that DSO has been ‘sold’ to the public on the basis of benefits to them as viewers as well as the wider benefits to UK plc. The DCMS Official Statement on ‘Why is switchover happening?’ includes:

“Digital is also more efficient. It frees up airwaves that could be used for innovation such as mobile TV or high definition TVs”.

This has been replicated in Digital UK’s own public communications. The leaflet already distributed to 6 million UK households in the first four regions explains that:

“Digital TV is...more efficient. It frees up airwaves that could be used for innovations such as mobile TV or high definition TV.”

In order to maintain faith with the public it is important that opportunities for those benefits to materialise are not curtailed by the DDR process. In fact, Digital UK would argue that they need to be underpinned by the process.

This is particularly the case in relation to High Definition Television.

---

6 Source: Ofcom / Digital UK Switchover Tracker, Q4 2006. In response to the question ‘which statement best describes your thoughts on switchover’ 26% respond ‘switchover is unfair, we shouldn’t be forced to convert to digital’.
2.2 High-Definition Television

In its Consultation document Ofcom refers to research it has undertaken in relation to the perceived importance of HDTV to viewers (Figure 6.2). We believe that the research significantly underestimates current awareness and growing expectations around HDTV, and as such fails to account for the potential impact of public disappointment should HDTV not be delivered as part of the Digital Dividend Review.

The Ofcom research states that “knowledge and awareness of HDTV is currently low”\(^7\). This is at odds with our own research [see Annex 2 for full results], which demonstrates that 81% of the public have heard of high definition TV, and 70% of them can accurately describe what it is (a better quality/definition of TV picture)\(^8\). Such widespread awareness suggests that HD is more than a “niche” proposition.

New technology research, by the very fact that people need to experience it before they give a true opinion of it or even purchase it, tends to reflect people’s ignorance. It is also invariably expensive and niche when launched because of consumer ignorance and low demand. Early Digital TV research, at a time when it was pay TV dominated and products were relatively expensive highlighted a high percentage of people who said their current five channels were fine and they would never upgrade. In 2001 research conducted by the Consumers’ Association 23% of the population said they would never get digital TV. Today, 6 years on and before DSO has started, digital television penetration has already reached 75% of the nation\(^9\) and we are happy to talk about 100% conversion of the population. Mobile phone research in the early days suggested penetration levels of 50% of the population as ambitious. Today, having saturated the business and adult consumer markets. And so it has been with Computer, DVD, Camcorder, Digital Camera, Digital Audio and even Microwave technologies. They all started out as expensive and niche, before customer experience and price transformed them into successful mass market products.

Whilst it might be difficult to gauge future take-up of HDTV, there are trends which point the way, and it is possible to test current expectations of HDTV.

Ofcom has said that the future is uncertain, but it is clear that the manufacturing and retail markets worldwide are moving towards HD. Over the 2006 Christmas period 88% of medium to large screen TVs (26” and over) sold were HD-Ready\(^10\); and by the end of the year 2.4 million HD televisions had been sold in the UK. Moreover, HD manufacturing lines are making HD a standard feature of

---

\(^7\) Source: A Report of consumer research conducted for Ofcom by Holden Permain and ORC International. 19\(^{th}\) December 2006. Reference page 32.
\(^8\) Source: Research conducted by BMRB for Digital UK, January 2007.
\(^9\) Source: Ofcom Digital Progress Report, Q3 2006
\(^10\) Source: GfK LekTrak, December 2006. Also note that sales of HD-Ready have gone hand-in-hand with sales of digital TVs. In December 2006 77% of HD-Ready TVs sold were digital, but only 29% of non-HD TVs were digital.
new television sets. All 2007 lines from the major manufacturers were fully HD-Ready across their ranges\(^{11}\).

Manufacturers and retailers have been responding to a growing global momentum behind HD production and broadcasting. Introduction of HD is a key broadcasting policy objective in many of the world’s leading broadcasting markets, including the US (where the networks now almost fully replicate their schedules in HD), Australia (where HD is mandatory for the public service broadcasters), Canada (where the terrestrial channels are simulcasting in HD), and Japan (where broadcasters are required to simulcast at least 50% of their content in HD as a condition of the 2011 switchover).

We would note that the official Government explanation for switchover, and that copied in Digital UK’s own consumer materials, states that one of the three reasons for the switchover is that by:

\begin{quote}
“Moving to the best available technology will ensure that the UK continues as a world leader in broadcasting”.
\end{quote}

This has certainly been true in the past, and the UK continues to have the highest digital TV take-up in the world, but we do not believe this will continue to be true in the future if the UK does not keep pace with the global HD market, at which point we will not be able to claim that through switchover we are providing the UK public with the “best available technology”.

Secondly, and as a consequence of this rapid market shift to HD, there is now high consumer expectation of high definition television.

The Secretary of State for Culture, Media and Sport herself has acknowledged “the enormous consumer demand for high definition TV” and has said that “high definition television [is] approaching fast and will transform picture quality for ever”\(^{12}\).

The recent research conducted by BMRB for Digital UK shows that of those large numbers of consumers now buying HD-Ready TV sets in stores, most are either planning on getting HD now, or thinking of getting it in the future. Of those buying HD televisions 12% said that they intended to get HD now, and a further 58% had bought an HD-Ready set because they did or might want HD at some point in the future [see Figure 1 below and Annex for further detail].

\(^{11}\) At the 2007 Consumer Electronics Show all ranges from Philips, Panasonic, Sony, LG, Hitachi, Sharp and Sanyo were fully HD-Ready.

\(^{12}\) Tessa Jowell, Secretary of State for Culture, Media and Sport, at the second reading of the Digital Switchover Bill, 18\(^{th}\) December 2006.
FIGURE 1: WHY BOUGHT AN HD-READY TV SET
[Question: Which of the following best describes your reason for buying an HD-Ready TV?]

- Get HD now, 12%
- Get HD in future, 36%
- Potentially get HD in future, 22%
- Other reasons, 29%
- Don’t Know, 1%

70% of those buying an HD-Ready TV did so to get access to HD, either now, in the future, or potentially in the future.

When asked how they expect to get HD 65% of those currently using Freeview expect high definition to be available on their platform. This is higher even than cable customers expectations of their platform, where despite HD already being available only 63% of current cable users said that they expected HD to be available via cable.

FIGURE 2: EXPECTED WAYS OF GETTING HIGH DEFINITION TELEVISION ON OWN CURRENT PLATFORM (AMONG THOSE INTERESTED IN HDTV)
[Question: How do you expect to get high definition TV?]
Digital UK are concerned that such high expectations may not be fulfilled through the Digital Dividend Review. Unless the output of the DDR gives clear confirmation that HD services on DTT will form part of the future package there is a danger that public attitudes will turn against the DSO programme due to disappointment among those who have already invested in HD and confusion among those who are about to make purchasing decisions. The absence of such confirmation will remove one of the most recognisable benefits to individual householders of the DSO programme and could serve to undermine Ofcom’s attempts to deliver significant benefits to citizens and consumers.

2.3 MPEG-4

Provision on HDTV on the DTT platform would also support a voluntary migration of the platform towards the MPEG-4 compression standard. MPEG-4 enables a greater number of services to be broadcast on scarce spectrum than the MPEG-2 standard the UK DTT platform is currently based on. Adoption of MPEG-4 would significantly improve the efficiency of DTT capacity but although the global manufacturing market is moving towards MPEG-4 and would like to introduce it in the UK, it is unlikely that manufacturers will offer MPEG-4 equipment to the UK market or that consumers would purchase it without the incentive of a new service like HD to drive take-up.

The introduction of HD could be the basis for the launch of MPEG-4 that in time, as old MPEG-2 boxes come to the end of their natural life and are replaced by dual-compatible MPEG-2 / MPEG-4 boxes, would enable the platform to adopt the MPEG-4 standard for other services and allow expansion of the service line-up and continued improvement of the platform.
3. CONSULTATION QUESTIONS

**Question 1**: This executive summary sets out Ofcom’s proposals for the release of the digital dividend. Do you agree with these proposals?

It is not appropriate for Digital UK to comment upon the proposals except insofar as they have potential impact on the DSO programme. We are particularly concerned about:

- Protection to the DSO programme; and
- The impact on public attitudes to DSO

and suggest that these have not been sufficiently addressed. Please see Sections 1 and 2 of this response for a full discussion of these concerns.

**Question 2**: Do you have any comments on our analysis of the essential constraints that will apply to the available UHF spectrum?

Generally, Digital UK agrees with the analysis but we believe that two other constraints require close attention:

- The protection of interactions – both domestic and international – during the DSO programme; and
- Protection to RBLs.

Both of these issues are explained in detail in the body of our response.

**Question 3**: Do you agree with the more detailed analysis and proposals regarding these technical constraints as set out in Annex 10?

Digital UK believes that it is extremely important to ensure that any alternative use of released spectrum does not have an adverse impact on consumers’ ability to receive terrestrial television.

We generally agree with the analysis of the technical constraints on spectrum use, insofar as they have the potential to impact on the reception of DTT during and after switchover. However, we believe that Ofcom should additionally consider:

- The technical constraints required to protect the broadcasters’ re-broadcast links

Digital UK notes that the technical research did not explore the impact of a number of possible scenarios in detail, and we therefore consider that further studies are required to better quantify the impact on reception of:
• two-way transmissions where consumers are using aerial systems in poor condition
• two-way transmissions from handheld devices within the consumer’s home
• operation of PMSE equipment co-channel with a wanted DTT transmission
• operation of PMSE equipment adjacent channel to a wanted DTT transmission

Digital UK is keen to understand the process by which Ofcom will fully define the technical constraints which will apply to licences for the use of released spectrum, and the ways in which compliance will be monitored.

**Question 4**: Do you have any comments on Ofcom’s assessment of the potential uses which should be considered that are not mentioned in this document?

**NO DIGITAL UK VIEW**

**Question 5**: Do you have any comments on our analysis of the choice between a market-led and an interventionist approach to the release of this spectrum? Do you agree with the analysis of different mechanisms for intervening to remedy potential market failures?

Switchover itself is a major market intervention, and given that the burden of cost for switchover falls largely on the public we believe the DRR process should maximise the public benefit and are concerned that a market-led approach may not achieve this. A straightforward spectrum auction could result in the spectrum going to the largest entity and possibly encourage “spectrum squatting” with an organisation speculatively buying spectrum simply to prevent its use in competition with its own services. We would therefore support both a reinstatement of the ‘use it or lose it’ policy to prevent spectrum squatting, and that the DDR process is structured to ensure that public benefit it is a certain outcome.

**Question 6**: Do you agree with our proposals to continue making available channel 69 for use by low power PMSE devices? Do you agree with our proposal to make some or all of the spectrum available for use on a licence-exempt basis?
Question 7: Do you agree that there should be transitional protection for professional PMSE users to ensure that they can continue to access interleaved capacity until at least 2012? Do you have any views on the mechanism for providing future access to this spectrum?

Question 8: Do you consider that additional spectrum from the digital dividend should be reserved for low power applications? If so, please provide as much evidence as possible about the nature of the application and its potential value to society.

NO DIGITAL UK VIEW ON QUESTIONS 6, 7 AND 8.

Question 9: Do you consider that it would be desirable to hold back some spectrum from award with a view to its potential use for future innovation? If so please provide comments on how much spectrum should be held back and for how long.

Digital UK recommends that Ofcom holds back spectrum:

- **During the DSO programme** – in order to preserve flexibility to deal with transitional issues in the manner which causes the least disruption to viewers; and
- **Following DSO** – to preserve the flexibility for commercial multiplexes to extend to additional sites.

Question 10: Do you agree with our proposal that we should package the interleaved spectrum in a way that would be suitable for use by local television services, but not reserve spectrum solely for this use?

Digital UK believes that local television services will be perceived by viewers as a valuable potential benefit from DSO and therefore help to underpin the process. Therefore, we support the proposed packaging arrangements. We also believe that Ofcom should ensure that some of the available spectrum ends up being used for new television services (local or otherwise) in order to deliver on public expectations from DSO. Failure to do so may create negative sentiment towards the programme.

Question 11: Do you agree with our proposal to package the spectrum in a way which does not preclude mobile broadband use, but to take no further action in relation to its use?
Question 12: Do you agree with our proposal that we should not intervene in the award of this spectrum for DTT? Do you agree that we should package the spectrum in a way which is suitable for DTT use?

Digital UK believes that it is important that Ofcom ensures that some of the available spectrum ends up being used for new television services in order to deliver on public expectations for DSO.

Question 13: Do you consider that we have included in our analysis the most material risks in relation to market failure?

NO DIGITAL UK VIEW.

Question 14: Do you agree with our proposal to auction licences for the use of the available UHF spectrum?

Digital UK’s concern about this proposal is that a non-prescriptive auction could easily lead to all the available spectrum being used by services that viewers do not value or do not see as an adequate benefit to come out of the DSO process.

Question 15: Do you agree with Ofcom’s proposals as to the timing of any auction? If not, what alternative proposal would you make and why, and what evidence and analysis can you provide in support of your alternative proposal?

Please see Digital UK’s comments on this question in the body of this response.

Question 16: Do you have any views on which of the packaging options identified for the cleared spectrum would be most suitable?

Question 17: Do you have any views on which of the packaging options identified for the interleaved spectrum would be most suitable?

Question 18: Do you have any views on which of the auction design options would be most suitable?
Question 19: Do you agree with Ofcom’s proposals for the non-technical terms of the licences to be awarded for use of the UHF spectrum?

NO DIGITAL UK VIEW on Questions 16, 17, 18, 19.

Question 20: Do you agree with the analysis of the options set out in this Impact Assessment?

As stated in the body of this response, Digital UK does not believe that Ofcom has given sufficient consideration in the Impact Assessment to the issues that may arise from DDR in relation to the DSO programme. We would urge Ofcom to undertake further analysis in this area before making final decisions on the DDR.
ANNEX 1

Extract from ‘Cost Benefit Analysis of Digital Switchover’ published by DCMS and DTI on 10th February 2005

Table 2  Results from CBA model

<table>
<thead>
<tr>
<th></th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Year of completion of Switch-over Benefits</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Consumer benefit in current non-DTT areas</td>
<td>3246</td>
<td>2987</td>
<td>2725</td>
<td>2495</td>
<td>2262</td>
<td>2035</td>
</tr>
<tr>
<td>Consumer benefit from additional services in retailed spectrum</td>
<td>787</td>
<td>724</td>
<td>659</td>
<td>605</td>
<td>548</td>
<td>493</td>
</tr>
<tr>
<td>Consumer benefit from re-use of released spectrum</td>
<td>1181</td>
<td>1086</td>
<td>1011</td>
<td>907</td>
<td>821</td>
<td>740</td>
</tr>
<tr>
<td>Imputed consumer benefit of compulsory migration</td>
<td>689</td>
<td>678</td>
<td>657</td>
<td>626</td>
<td>599</td>
<td>574</td>
</tr>
<tr>
<td>Broadcaster benefit from savings on analogue transmission and energy costs</td>
<td>1377</td>
<td>1282</td>
<td>1191</td>
<td>1103</td>
<td>1018</td>
<td>936</td>
</tr>
<tr>
<td><strong>Total benefits</strong></td>
<td>7280</td>
<td>6759</td>
<td>6244</td>
<td>5736</td>
<td>5247</td>
<td>4778</td>
</tr>
</tbody>
</table>

**Costs**

<table>
<thead>
<tr>
<th></th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-voluntary consumer costs on reception equipment</td>
<td>2504</td>
<td>2454</td>
<td>2357</td>
<td>2220</td>
<td>2082</td>
<td>1963</td>
</tr>
<tr>
<td>Additional consumer energy costs (incl. social cost of carbon)</td>
<td>1651</td>
<td>1529</td>
<td>1412</td>
<td>1297</td>
<td>1187</td>
<td>1081</td>
</tr>
<tr>
<td>Broadcaster investment in digital infrastructure</td>
<td>702</td>
<td>660</td>
<td>619</td>
<td>580</td>
<td>542</td>
<td>505</td>
</tr>
<tr>
<td>Marketing &amp; practical support costs (excluding any targeted assistance)</td>
<td>174</td>
<td>169</td>
<td>163</td>
<td>157</td>
<td>152</td>
<td>147</td>
</tr>
<tr>
<td><strong>Total costs</strong></td>
<td>5031</td>
<td>4812</td>
<td>4551</td>
<td>4254</td>
<td>3963</td>
<td>3696</td>
</tr>
</tbody>
</table>

Total NPV | 2249 | 1947 | 1692 | 1482 | 1285 | 1082 |
ANNEX 2

BMRB Research on public expectations of High Definition Television
Conducted on behalf of Digital UK

Summary of Results

Digital UK commissioned BMRB to test current awareness and understanding of HDTV, and assess the public’s expectations of HDTV for the future.

The survey was conducted as part of a CATI (telephone interview) omnibus to a representative sample of 1010 UK adults over the age of 16 in late January 2007.

Results showed very high awareness of HDTV, with 81% of the public having heard of HDTV, and 70% of them being able to accurately describe what it is (a better quality/definition TV picture). Moreover, awareness was consistently high, and did not fall below 60% in any demographic group or even in analogue TV households.

There was confusion about how to get HDTV, with only 22% of those who aware understanding that they would be required to buy a new set-top box in addition to an HD-Ready television. This was confusion was borne out in the numbers of people who thought they were already watching HDTV, but evidently were not. Digital UK estimates that less than 250,000 HD boxes are in the marketplace and yet the research showed that perhaps 1,700,000 believe they are watching high definition television.

2.4 million consumers had bought an HD-Ready TV set by the end of 2006. Our research showed that 12% had done so to get HDTV now, and a further 58% to get HDTV in the future, suggesting that 70% of HD-Ready TV set purchases are being made with a current or future intention of getting HDTV.

When asked how they expected to be able to get HDTV in the future 65% of current Freeview users said they expected it to be available on their platform.

Detailed Results

1. Awareness and Understanding of HDTV

81% of adults have heard of high definition television. Awareness proved consistently high across all demographic groups, and rose to highs of 91% amongst men and 89% in the 35-44 age group.

---

13 Sky reported sales of 184,000 HD boxes at the end of 2006. Ntl:Telewest (now Virgin Media) reported that it had an installed base of 40,000 HD boxes in Q3 2006.
FIGURE 1: AWARENESS OF HDTV BY DEMOGRAPHIC GROUP

[Question: Have you heard of something called high definition television, sometimes called HDTV?]

Awareness was predictably higher in digital TV households (86%) than analogue households (62%), but was very similar across the different digital TV platforms.

FIGURE 2: AWARENESS OF HDTV BY CURRENT TV PLATFORM

[Question: Have you heard of something called high definition television, sometimes called HDTV?]

Awareness is as high in DTT households (where HDTV is not available) than in cable households (where it is), and only marginally below awareness in satellite households where the service is both available and being promoted.
Of those who had heard of HDTV 70% were able to accurately describe what it is (a better quality/definition TV picture).

**FIGURE 3: UNDERSTANDING OF WHAT HDTV IS (AMONG THOSE AWARE)**
[Question: Can you tell me what high definition TV is?]

![Pie chart showing understanding of HDTV](image)

Again the highest performing demographics were men and the 35-44 age group, amongst whom understanding exceeded 80%.

### 2. Understanding of How to Get HDTV

Despite generally high awareness and understanding of what HDTV is, our research showed considerable confusion about how to get high definition.

When asked what equipment you might need to get HDTV only 23% knew that you needed both an HD television set and an HD set-top box. 21% said that you needed a high definition set but did not mention the need for a new box. The majority either gave a variety of incorrect answers or did not know.

---

14 Understanding of what HDTV is was 80% among men, 59% among women; 75% in the ABC1 socioeconomic group and 64% in the C2DE group; 64% in the 16-24 age group, 69% in the 25-34 age group, 81% in the 35-44 age group, 72% in the 45-54 age group, 70% in the 55-64 age group and 61% in the 65+ age group.
FIGURE 4: UNDERSTANDING OF HOW TO GET HDTV (OF THOSE AWARE)
[Question: Do you know what equipment you need to get high definition television?]

We went on to ask respondents whether they had HD equipment and were currently watching HD television, and the results showed that there are probably large numbers of people mistakenly thinking they have an HD-Ready set, or, worse, mistakenly thinking they are watching high definition.

When asked whether they had an HD-Ready television set 18% of those in the survey said that they did\textsuperscript{15}. Extrapolated to a national level this suggests that 4.5 million households believe they have HD-Ready televisions. But we know from market sales data that only 2.4 million sets had been sold at the end of 2006.

Those who had (or believed they had) an HD-Ready set were then asked whether they already get high definition TV. More than one third (37%) believed they were already watching high definition television, and the figure was actually higher in Freeview homes (44%) than Sky homes (31%).

This indicates that 1.7 million households are claiming to already be watching high definition television. Digital UK estimates that there were no more than 250,000 HD boxes in the market at the time of the research\textsuperscript{16}, so there are perhaps something in the region of 1.5 million homes who mistakenly believe they are watching high definition broadcasts.

\textsuperscript{15} 26% of Sky households thought they had an HD-Ready television, 20% of Freeview households and 12% of cable households.

\textsuperscript{16} Sky reported sales of 184,000 HD boxes at the end of 2006. NTL:Telewest (now Virgin Media) reported that it had an installed base of 40,000 HD boxes in Q3 2006.
Digital UK sought to test consumers current expectations around HDTV. We asked both why those with HD-Ready sets had bought them, and how respondents expected to be able to get HDTV in the future. We discovered that the majority of those purchasing HD-Ready sets are doing so with some intention to get HD in the future; and that expectations of being able to get HD are running high amongst users of all digital TV platforms, including DTT.

When asked why they had bought an HD-Ready television 70% said that had done so because they had some intention of getting high definition – either now or potentially at some point in the future.
**FIGURE 6: Why Bought an HD-Ready TV Set**
[Question: Which of the following best describes your reason for buying an HD-Ready TV?]  

<table>
<thead>
<tr>
<th>Reason</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Get HD now</td>
<td>12%</td>
</tr>
<tr>
<td>Get HD in future</td>
<td>36%</td>
</tr>
<tr>
<td>Potentially get HD in future</td>
<td>22%</td>
</tr>
<tr>
<td>Other reasons</td>
<td>29%</td>
</tr>
<tr>
<td>Don't Know</td>
<td>1%</td>
</tr>
</tbody>
</table>

70% of those buying an HD-Ready TV did so to get access to HD, either now, in the future, or potentially in the future.

These high levels of intentions were extremely consistent across all the digital television platforms.

**FIGURE 7: Why Bought an HD-Ready TV Set – By Current TV Platform**
[Question: Which of the following best describes your reason for buying an HD-Ready TV?]  

<table>
<thead>
<tr>
<th>Platform</th>
<th>Get HD now</th>
<th>Get HD in future</th>
<th>Potentially get HD in future</th>
<th>Other Reasons</th>
<th>Don't Know</th>
</tr>
</thead>
<tbody>
<tr>
<td>DTT</td>
<td>42%</td>
<td>31%</td>
<td>7%</td>
<td>18%</td>
<td>31%</td>
</tr>
<tr>
<td>Satellite</td>
<td>71%</td>
<td>25%</td>
<td>15%</td>
<td>28%</td>
<td>28%</td>
</tr>
<tr>
<td>Cable</td>
<td>48%</td>
<td>46%</td>
<td>15%</td>
<td>9%</td>
<td>31%</td>
</tr>
</tbody>
</table>

Although fewer DTT users were planning on getting HD now (7%), more were thinking of getting HD at some point in the future (60%, compared to 56% of satellite users and 55% of cable users).
We asked the public how they expected to be able to get high definition in the future. The expectation of getting HD was higher on the satellite and DTT platforms than on the cable and broadband platforms. More than 4 in 10 expected to get HD through an aerial (even 35% of Sky satellite households expected HD to be available on DTT).

Figure 8: Expected Ways of Getting High Definition Television (among those interested in HDTV)
[Question: How do you expect to get high definition TV?]

Expectation of being able to get HD was always higher on a respondent’s own current platform: i.e. a Sky user had higher expectations of satellite delivering HD (85%) than of DTT delivering HD (35%); and a Freeview user had higher expectations of HD being available on DTT (65%) than on satellite (20%).

Figure 9: Expected Ways of Getting High Definition Television on Own Current Platform (among those interested in HDTV)
[Question: How do you expect to get high definition TV?]