Question 1: This executive summary sets out our proposals for the Digital Dividend Cleared Award. Do you agree with these proposals?

No.

Astrium has the following concerns with the principles set out in this executive summary.

Ofcom Objectives

The Ofcom Objective stated in Para 1.5 is to maximise the total value to society. Nowhere in this consultation is it explained how such value is to be measured.

Future technical developments will change any valuation made at the time of the award.

Current political imperatives to minimise carbon emissions are not part of Ofcom's remit and do not appear in the valuation methodology proposed. This may change, particularly since Ofcom has planned R&D activities to look at the impact of carbon emissions on its decision making process.

The present digital switchover process provides an example of how not to maximise the total value to society. The rapid development of affordable high definition flat panel TVs and the low cost of satellite transmission suggest that it is now feasible to equip every household for Freesat reception before 2012, with an easy upgrade to HDTV and other broadband services. All of this could be achieved for the existing public cost of converting to terrestrial SDTV.

If DSO were being planned with today's technology then total value would be greater.

Ofcom's decision making process should include mechanisms to improve total value to society as technology permits and society demands.

The shareholders of any bidder in an auction process will be very clear on the methodology they will use to determine value. This will not be the total value to society. Ofcom needs to be equally clear about its methodology to maximise this total value.

If, as it indicates in Para 1.6, Ofcom only places the market at the centre of it decision making then this would appear to be an abrogation of its own public responsibility.

The cleared spectrum

Cleared UK spectrum is a particularly valuable national asset. It has not been available in these bands for over a generation and it permits a wide range of uses compatible with simple indoor or outdoor receiving equipment. It is spectrum that, as Ofcom acknowledges, is particularly well suited to mobile, nomadic and dispersed connectivity applications.

There are many social and political issues which may lead to a requirement for a national wireless infrastructure, for which this spectrum is ideally suited. For example, a national road pricing scheme or energy demand management network may be needed, both of which would could be efficiently deployed using wireless means operating in the cleared spectrum.

It is important that this spectrum is retained in a cleared mode rather than be reduced over time to a patchwork of highest local bidders. Crucially, this would retain the option for such future national infrastructures to be implemented as requirements are set.

This is compatible with Ofcom's proposal in para 1.12 provided that the spectrum is traded as a national block and local subdivision is not permitted.

Timing of the award

Four issues that affect the timing are outlined by Ofcom

The timing of the award is affected by the availability of spectrum which is constrained by the timescale of DSO and by the spectrum needs of the 2012 Olympics. The European level of harmonisation provides another constraint as does the preparation process at Ofcom and the bidders.

Ofcom should consider any method to bring forward the date of DSO so that Britain is shown off in the best light to visitors and viewers around the world. One example of a measure to do this would be by encouraging uptake of Freesat in some parts of the UK.

It is important for the award process to be completed as early as possible within these constraints as noted by Ofcom in para 1.12. It is even more important to implement the networks early to achieve the user benefits as early as possible.

Just as cleared spectrum is important at national level, so also it is important at EU level. It is not difficult to imagine the benefits which may accrue to UK citizens from pan European services provided by truly pan European service providers (eg no international roaming charges). A harmonised sub band at European level would be a European and a UK asset. Ofcom should not too quickly dismiss the benefits that could accrue and may wish study the option to hold back some spectrum for this purpose. This may slightly delay the auction but it may be worth it.

Technical licence conditions

It is important to recognise that the high power DTT network is the major source of interference in these bands and over large geographic areas. DTT is spectrally inefficient and spectrum efficiency is a key means of meeting Ofcom's objective to maximise the total value to society.

Any new DTT network should be discouraged from reuse of the present DTT 'lighthouse' architecture by provision of maximum pfd limitations. This would encourage cellular network architectures with less interference to neighbours. Such a constraint would be compatible with services to mobile users and set top antennas as well as the planned DTT yagi antennas.

It is unfair to place asymmetric constraints on new licensees. Where two networks in neighbouring bands may interfere there should be coordination meetings between the two parties treated as equals, with Ofcom facilitation to agree necessary measures and a fair split of remedies between the parties.

Ofcom should discourage at network level (to minimise interference and improve overall spectral efficiency) and encourage at user level (to maximise user benefits) technical interoperability with existing DTT services.

Non-Technical licence conditions

The broad conclusions of para 6.67 are compatible with the objective to maximise total value to society but the proposal to grant indefinite licence terms requires critical examination.

It is tempting to draw parallels between land and spectrum. Both are finite resources but technological advances can enable greater use of both. For example, land may be valued in terms of the food it can produce or the number of people it can house. In each of these applications technology has generated gains over time, through the use of fertilisers and high rise buildings for example. Inevitably a higher value is placed on land for housing and compulsory purchase of agricultural land is a routine feature of the market. More controversially is the compulsory purchase of housing to make way for essential transport infrastructure or energy supplies.

Given the unpredictability of technological advance it may be necessary for Ofcom to consider application of different types of legal ownership to spectrum, such as leasehold and freehold, to facilitate change of use, without damaging long term business planning. This will provide the opportunity to recalculate total value rather than shareholder value at regular intervals as leases expire and would be more efficient than simply reserving spectrum for potential national uses.

Partial trades should not be allowed on a geographic basis that might fragment the nationally cleared nature of the spectrum.

Spectrum packaging

Some smaller blocks may be needed in future for applications such as road pricing and remote monitoring. If care were taken to attach flexible ownership conditions on some smaller frequency blocks at the outset, then there should be no need for partial sales of spectrum to enable such future national applications.

For example, it is not uncommon in town centre regeneration schemes for low cost temporary leases to be granted for properties that are earmarked for development. As the overall redevelopment scheme advances, some businesses may be faced with frequent moves of premises but have the advantage of low lease charges.

Auction design

No comment, other than the already stated concerns that no auction process can maximise total value to society.

Competition and efficient use of spectrum

It is difficult to reconcile spectrum efficiency with fallow spectrum. It may increase in value to provide a capital gain for the owner but this is hardly compatible with Ofcom's stated objective. The proposal not to impose any "use it or lose it" conditions is also incompatible with the objective to maximise total value to society.

Ofcom should impose requirements to bring the spectrum into efficient use in a reasonable time frame.

The digital dividend comes as a result of tax payer investment through the licence fee and in new user equipment. This price is national by nature because the current user was required to roll out a national service. It would seem fair that a national asset should result in nationally available benefits in a reasonable time. Ofcom should impose some requirements for roll out and access similar to the PSO.

It is also difficult to reconcile the current trend to network sharing with spectrum caps. It is widely recognised by Ofcom in other consultations (such as NGA) that competition at telecommunications infrastructure level is unlikely to be the major future means of differentiation amongst service providers.

It is also difficult to reconcile this approach with that in the neighbouring DTT spectrum where a single network provider will operate over 256MHz of spectrum below 1 GHz.

Conclusion

The Ofcom consultation document contains some worthwhile proposals but is seriously flawed in terms of meeting its most important objective to maximise total value to society.

Question 2: Do you agree with our proposal to include the interleaved spectrum in channels 61 and 62 in the cleared award?

No.

As outlined above it is nationally cleared spectrum which is the USP of this auction. Channels 61 and 62 should be placed with the rest of the interleaved spectrum. The main benefit of this is that steps can be envisaged to further clear spectrum at local or regional level. The more interleaved spectrum that is available the better the chance that this can be done. Astrium will expand on this in response to the interleaved spectrum consultation.

Question 3: Do you agree with our proposal not to allow licence-exempt use of channels 61 and 62 by cognitive devices?

Yes.

Question 4: Do you have any comments on our assessment of the most likely uses of the cleared spectrum and the amount of spectrum required for these services? Are there any other potential uses that we should consider?

Ofcom has made a fair assessment of the potential uses of the spectrum on the basis of current commercial activity.

As Astrium is a major global manufacturer of satellites it is pleasing to note that Ofcom has given some consideration to the possibility of satellite use of the cleared spectrum.

Internal assessments show that the present international pfd constraints would not be met with a satellite beam over the UK using antenna technology becoming available commercially today (limited to about 25m diameter). This satellite application is not feasible today.

At least a 50m antenna would be required to protect French interests even with some reduction of performance along the South Coast. This should be available in about 2014 allowing a UK satellite system in UHF to be deployed by 2018. If the band is not retained in a nationally cleared form then this application would be impossible.

It has been noted elsewhere in the world that satellite implementation of DTT in UHF may already be feasible with a regional approach to coordination. Effectively this means that a region such as Europe could implement a satellite based DTT system in a harmonised sub band provided that it maintained a corridor near its external borders to protect neighbours from interference.

Question 5: Do you agree that we should proceed with our current timetable, with a view to holding the cleared award in summer 2009?

Yes.

If Ofcom is confident that it can show that the process will maximise total value then the award should be made as soon as practicable.

Question 6: Do you have any views on the appropriate notice period for temporary PMSE access to channels 63-68, and/or on whether or not extend temporary access to channels 31-40?

No.

Question 7: What are your views on deferring the start date for rights to use cleared spectrum in London to help meet the need for wireless microphones and other audio links for the London 2012 Olympic Games and Paralympic Games?

It is difficult to understand how delaying the introduction of new and valuable digital services across the UK could help make the London Games a success in the eyes of the world.

It would be better to seek interleaved spectrum for this purpose than to delay, for example, a key national mobile broadband infrastructure.

If this is not possible then the DTT band should be sacrificed before the cleared spectrum. This will impact only a few British viewers whereas the majority (viewers overseas, visitors to Britain staying in hotels, and British HDTV viewers) will be able to enjoy the Olympics in HDTV from satellite and cable.

Question 8: Do you agree with the use of SURs as the approach for defining consistent TLCs for this award?

See answer to Question 1.

Question 9: *Do you have any comments on the SUR parameters listed in Tables 5.1 to 5.5 and the assumptions used to derive them?*

Astrium has not performed the calculations necessary to comment on the specific values. The process should not favour DTT or permit higher power and increased CO_2 at the main terrestrial transmitter sites. See answer to Question 1.

Question 10: *Do you agree with our proposals for managing interference between new services in the DDR cleared spectrum?*

No comment.

Question 11: Do you agree that the most efficient and effective means of preventing interference to the existing DTT services is by the addition of a protection clause to licences in the cleared spectrum? If not, what alternative approach would you suggest?

No.

See answer to Question 1. The DTT services should not be favoured in the coordination process.

Question 12: Do you agree that the best way to finalise the protection clause approach and to address the practical implementation issues is through direct engagement with interested stakeholders? With which stakeholders should we engage?

Yes.

Ofcom should facilitate the coordination process between Arqiva and all bidders.

Question 13: What do you believe would be the implications of protecting indoor/settop antennas? Should a distinction be drawn between set-top antennas and larger antennas designed for external reception of TV signals that are loft-mounted?

The protection of DTT users with low gain antennas should not be encouraged as it will increase the already high levels of EIRP from the main network, and thus increase interference and reduce spectral efficiency.

These sets should be candidates for service through a more efficient cellular network with more numerous base stations.

Question 14: *Do you agree with our proposals for managing interference between new and existing users?*

No. The Ofcom proposals favour the DTT user.

Question 15: *Do you agree with the proposed propagation models and databases to be used for compliance assessment?*

No comment.

Question 16: *Do you have any comments on the transmit masks set out in paras 5.128 to 5.130?*

No.

Question 17: Do you agree that where the cleared spectrum is used for the operation of a DTT multiplex, we should replicate the ownership restrictions from the Broadcasting Act regime relating to (a) local authorities, (b) political bodies, (c) religious bodies and (d) bodies exerting undue influence but not

replicate restrictions relating to (e) broadcasting bodies and (f) advertising agencies?

No comment.

Question 18: Do you agree that we should facilitate interoperability between existing DTT multiplex operators and new operators using cleared spectrum?

No.

Whilst benefits through standardisation at STB level should be encouraged at user level, the Ofcom proposal implies that the existing 'lighthouse network' should be reused. As indicated in the response to Question 1, Astrium believes that more benefit would be accrued to users of portable DTT sets through a lower power cellular solution at network level.

Question 19: We welcome views on the relative merits of such an approach to information provision; in particular concerning the type of information that may be helpful and any impacts that publication of information might have both on licence holders and the wider spectrum market.

Astrium disagrees with the approach proposed as indicated in response to Question 1. The information provision is not relevant to this conclusion.

Question 20: Do you agree that the cleared award should include both 8 MHz lots for DVB-T and MMS TLCs and 5 MHz lots for FDD and TDD TLCs across the band?

Yes.

Question 21: Do you agree that the cleared award requires a mixture of frequency specific and frequency-generic lots to be offered in the auction?

No comment.

Question 22: *Do you agree with the proposed outline definition of lots suitable for MMS, DVB-T, TDD and FDD applications?*

No comment.

Question 23: Should the flexibility to bid for lots defined on both fixed and variable frequency rasters be preserved in the auction? If not, which are preferred?

No comment

Question 24: *Do you agree with the proposed basis for awarding Channel 38 as a distinct lot in the auction?*

No comment.

Question 25: Do you agree with the proposed structure of frequency rules for allocating different licence types in the auction? Are there any amendments that would improve the efficiency of spectrum allocation via an auction?

No comment.

Question 26: Do you agree with our proposal to proceed on the basis of UKwide lots?

Yes.

Question 27: Do you favour including the available cleared spectrum in (a) Guernsey and (b) Jersey in the geographic coverage of the licences to be awarded? If not, what approach do you favour instead?

Yes

Question 28: Do you agree that the combinatorial clock auction is the most suitable auction design for the cleared DDR award?

No comment

Question 29: What potential simplifications, if any, could be made to the proposed lot structure for DVB-T, MMS, TDD and FDD lot categories which would still reflect the most important differences in value between lots?

No comment

Question 30: Do you have any comments on our proposals for the Application and Qualification Stages of the combinatorial clock auction for the cleared DDR award, including our proposals for initial deposits?

No.

Question 31: Do you consider that it is important to distinguish relative weightings in advance between the eligibility points of the different 1 MHz blocks available in this award? If so should this be restricted to channels 36, 38, 61 and 62 and what do you consider these relative weightings should be?

No comment.

Question 32: Do you have any views on whether an ex ante eligibility points activity rule or a revealed preference activity rule should be used in this award?

No

Question 33: Do you have any views on whether there should be restrictions on bidders' ability to bid on multiple technical licence types within single package bids or between different rounds of the auction and whether bidder association rules should potentially be adjusted to cater for any such restrictions being imposed? **Question 34:** Do you have any further comments on any aspect of our proposals for the Principal Stage of the combinatorial clock auction for the cleared DDR award?

No

Question 35: Do you have any comments on any aspect of our proposals for the Assignment Stage or the Grant Stage of the combinatorial clock auction for the cleared DDR award?

No

Question 36: Do you agree with our approach to assessing whether the award of cleared spectrum fully promotes competition and efficiency?

No. See answer to Question 1.

Question 37: Do you have particular concerns about possibilities for award outcomes to fail to fully promote competition in downstream markets or to result in inefficient use of spectrum? If so, please explain what these are and provide supporting evidence.

No comment.

Question 38: Do you agree with our view that we should introduce a general safeguard cap aimed at promoting diversity of spectrum holdings? Do you have views concerning the level of such a cap?

No.

See answer to Question1. The de facto cap is 256MHz for DTT.

Question 39: Do you agree with our proposals to include an information provision licence condition to help facilitate efficient secondary trading?

Yes.

Question 40: Do you agree with our view that we should not apply any other general remedies in the cleared award?

No See answer to Question 1

Question 41: Do you agree with our identification of the three areas requiring further attention?

No comment

Question 42: Do you agree with our assessment that the limitations on the amount of cleared spectrum available for mobile broadband applications, and the particular advantages of sub 1GHz spectrum, could result in an outcome where there are limits on the level of competition possible in the provision of these services?

No

Astrium believes that mobile broadband/TV services would be better placed to become an integral part of a national NGA strategy if subject to similar regulatory environment with the encouragement of a single national network infrastructure open to all.

Question 43: Do you think that a soft spectrum cap on either (a) the cleared spectrum suitable for mobile broadband applications alone, or (b) the holding of any sub 1GHz spectrum suitable for mobile broadband applications, which would trigger action if a significant competition concern emerges in relation to the market structure in the future mobile broadband market, could be an appropriate approach to these concerns?

No

See answer to Question 1 and the comments on network infrastructure sharing. In time most mobile applications will become another utility.

Question 44: Do you agree with our assessment that issues in the pay TV market are not at this stage primarily an issue for the cleared award?

Yes

Question 45: Do you agree with our initial assessment that we should not intervene further in the cleared award to remedy any potential impact on competition resulting from the holding of cleared spectrum by NGW/Arqiva?

No.

A precedent has already been set for spectrum holding below 1GHz. A cap at 256MHz including DTT should apply if any cap is applied at all.