

Response by SAP REG / ESOA / GVF to call for consultation by Ofcom (UK)

For the convenience of the reader a WORD copy of the consultation document issued by Ofcom is reproduced below, and the comments of SAP REG / ESOA / GVF in response are added in green typescript immediately following the paragraphs to which they relate.

WRC-07 agenda item 1.4

Consultation on candidate bands under consideration at WRC-07 for IMT Consultation

Publication date: 27 February 2007. Closing Date for Responses: 30 March 2007

1 Executive summary

1.1 Ofcom has been leading UK preparations for the World Radiocommunication Conference 2007 (WRC-07) of the International Telecommunications Union (ITU). Agenda item 1.4 of the conference deals with spectrum requirements for the future development of advanced mobile wireless communications systems or "IMT"¹.

1.2 The ITU's Radio Regulations contain a Table of Frequency Allocations. These "allocate" services such as Fixed, Mobile, Broadcast and Satellite to particular frequency bands. Some radio services are given a "primary" allocation which gives them a particular status with respect to neighbouring territories. For example, stations of such a service may claim protection from interference from services which have a "secondary" allocation or services operating without an allocation in that frequency band.

1.3 The Radio Regulations also "identify" certain frequency bands as being suitable for an application within a broad service allocation – for example IMT-2000. Such an identification does not prevent the use of other applications of the relevant radio service. It gives no elevated status, either with respect to other primary radio services or with respect to other applications within the same radio service and it does not prevent the application from being used in bands other than those with identifications.

1.4 Although identification for an application does not elevate an application's regulatory status, there is merit in this process for particular applications. In the case of mass-market public cellular networks, the frequency bands identified become the bands that administrations around the world are most likely to make available for that application. These are the bands where high volumes of equipment are developed and the benefits of economies of scale flow from this.

SAP REG / ESOA / GVF is very concerned that if '*administrations around the world make available*', for future use by '*high volumes of equipment*' in '*mass-market public cellular networks*', bands that are already heavily used by applications of other services (e.g. the FSS), then widespread difficulties of avoiding harmful interference to and from those other services are likely to occur.

¹ Within the International Telecommunication Union these systems are known as International Mobile Telecommunications (IMT), a term which encompasses IMT-2000 (3G systems) and IMT-Advanced (previously known as 'systems beyond IMT 2000')

1.5 Most of the focus of agenda item 1.4 is on selecting frequency bands where WRC-07 could add an identification for IMT in the Radio Regulations. Some of the candidate bands, however, do not have an allocation to the mobile service or only have a secondary allocation. If those bands were to be identified for IMT, then it would be necessary to also add primary allocation to the mobile service in the Radio Regulations.

Ofcom has not indicated why a secondary allocation would not be adequate for new IMT systems. As a new, incoming service, it could be considered perfectly reasonable for that service to operate under the condition that, in the international context at least, it does not cause harmful interference to, or claim protection from, stations of the existing allocated primary services. In this case a secondary allocation for the mobile service would be entirely appropriate.

SAP REG / ESOA / GVF notes that, should a new primary allocation be made to the mobile service for the identification of IMT, henceforward other services with existing primary allocations in the band concerned would be required to protect IMT. In the case of the FSS it would not be practicable to reduce the Article 21 pfd limits at the Earth's surface for this purpose, since this would render some existing downlinks inoperable and also constrain future FSS development in the band.

1.6 The candidate frequency bands under consideration in the ITU for identification for IMT at WRC-07 are:

Candidate band	Anticipated use
410 to 430 MHz	Bands which are attractive for the coverage extension of current IMT-2000 systems
450 to 470 MHz	
470 to 862 MHz	Coverage extension and possibly providing capacity requirements
2300 to 2400 MHz	Bands which are attractive for providing the capacity requirements for IMT-Advanced
2700 to 2900 MHz	
3400 to 3600 MHz	
3600 to 3800 MHz	
3800 to 4200 MHz	
4400 to 4990 MHz	

Table 1: Candidate bands

The comments of SAP REG / ESOA / GVF in the remainder of this response are made primarily with the band 3400 to 4200 MHz in mind. However the band 4500-4800 MHz, which comprises the majority of the candidate band 4400-4990 MHz, is allocated to the FSS and is subject to the provisions of RR Appendix 30B which defines the FSS Allotment Plan. The Allotment Plan, which is especially important for developing countries, includes protection requirements that are considerably more difficult to meet than those of many FSS systems in the other bands below 5 GHz. Furthermore, the Plan is subject to review by WRC-07 under Agenda Item 1.10, and hence it will not be possible to reliably assess the potential difficulty of sharing the band 4500-4800 MHz with IMT until after the Conference.

1.7 This document sets out for consultation Ofcom's proposals for the positions the UK should take towards agenda item 1.4 and in particular towards the candidate bands currently under consideration. These are:

Note :

SAP REG / ESOA / GVF wishes to emphasize the following factors regarding the band 3400-4200 MHz (the down-link part of the FSS allocations in what is commonly termed 'C-band'). This band is very heavily utilized by the downlinks of FSS satellites in many countries throughout the World. In the GSO as a whole there are around 160 satellites whose payloads include C-band, and the great majority of these use most or all of the band. In Europe alone there are well over 1000 registered C-band earth stations, plus many unregistered receive-only earth stations. Studies by members of SAP REG / ESOA / GVF and others have shown that sharing of bands near 4 GHz between IMT and FSS would be impracticable in areas already populated by FSS earth stations. This includes large areas of the UK and most European countries, especially in and near large cities. In many cities the geographical density of registered FSS earth stations is such that it would be impracticable for IMT to deploy interference mitigation techniques to provide adequate protection for the registered earth stations in the multiple directions required and still provide a viable service to its customers. Moreover it would not be possible to ensure protection for the many unregistered earth stations whose locations are not recorded. Therefore it is concluded that in many areas of Europe it would not be possible to deploy IMT systems while protecting FSS earth stations, and that the band could not continue to be satisfactorily used by the FSS if IMT should be deployed. Migration of the 4/6 GHz FSS operations to the 11/14 GHz bands would not be possible because those bands are already very congested, especially in Europe and North America, and the aggregate cost of re-fitting all the earth stations would be enormous. At an approximate estimate, at least 20 billion Euros has already been spent on establishing the C-band FSS space-sector, and although it is difficult to quantify the corresponding aggregate expenditure on the earth sector it is likely to be of a similar order of magnitude. While parts of the band 3400-4200 MHz are currently more lightly used than others by the FSS, the entire band remains necessary for existing systems, and to give capacity for some future growth of the FSS

- to support efforts to keep the IMT-Advanced family as open and flexible as possible;

SAP REG / ESOA / GVF appreciates the desirability of this objective: however, this same objective should also be applied to incumbent services as well. We wish to emphasize that the need to protect other services with allocations in the candidate bands makes it essential to set some bounds on IMT transmission parameters. When the results of calculations on potential interference to FSS earth stations have been presented in meetings of UK WP8F, using IMT-Advanced parameters determined by international WP8F, these results have been challenged on the basis that IMT should not be constrained to operate within those parameters. In our opinion it is not possible to determine whether IMT could share frequencies satisfactorily with other services without calculating interference to those services based on maximum values of key IMT transmission parameters. And for WRC-07 to take decisions on the identification of bands for IMT it must be assured that IMT parameters in the bands it identifies will not be outside those used in the relevant ITU-R sharing studies.

- to support a non-binding identification of spectrum for IMT but keep this as generic as possible (i.e. for IMT rather than IMT-Advanced);

In the view of SAP REG / ESOA / GVF, unless IMT (including IMT-Advanced) could operate satisfactorily in a band within parameter bounds that can be shown to adequately protect existing services, then the WRC should not identify that band for IMT applications.

- to support changing existing identifications from IMT-2000 to IMT to foster greater flexibility in their use;
- to support the development of a European Common Proposal for a primary mobile service allocation in the band 470 to 862 MHz at WRC-07 and a Resolution for ITU-R to study the band for an identification for IMT at WRC-11;
- to support the development of a European Common Proposal for a co-primary allocation to the mobile service and identification for IMT in the bands 3400 to 3600 MHz and 3600 to 3800 MHz;

For the reasons we have given in the Note at the beginning of this section, SAP REG / ESOA / GVF is strongly of view that for the bands 3400-3600 MHz and 3600-3800 MHz, the UK should not support an ECP for a worldwide co-primary allocation to the mobile service and identification for IMT in these two bands. The UK should oppose the identification of these bands for IMT and support a “No Change” option for them.

- to oppose any change to the allocations or a IMT identification in the band 2700 to 2900 MHz at WRC-07; and
- to adopt a neutral approach to the remaining candidate bands.

Ofcom’s proposal to adopt a neutral position includes the band 3800-4200 MHz. For the reasons we have given in the Note at the beginning of this section SAP REG / ESOA / GVF is strongly of the view that, rather than adopting a neutral approach, the UK should oppose the identification of the band 3800-4200 MHz for IMT and support a “No Change” option for this band.

With regard to the band 4500-4800 MHz SAP REG / ESOA / GVF is of the view that, at least for the reasons given in response to 1.6 above, the UK should oppose the identification of the band 4500-4800 MHz for IMT.

1.8 All of these positions should be read in the context of the likely changes to the International Radio Regulations that will result from the conclusions of WRC-07. Such decisions do not necessarily imply changes to regulatory policy in the UK. In the case of Government spectrum holdings, any changes to regulatory policy would need to be consistent with the Government response² to the Independent Audit of Spectrum Holdings³ lead by Professor Martin Cave.

1.9 This consultation, published on 27 February 2007, is for a period of 5 weeks in order to obtain stakeholder responses in time for the CEPT meetings of the Electronic Communications Committee Project Team 1 (ECC PT1) and the Conference Preparatory Group (CPG) in April, where we expect ECP’s to be finalised. The closing date for responses is 30 March 2007. See Annex 1 for details of how to respond to this consultation.

² <http://www.spectrumbauidit.org.uk/pdf/governmentresponse.pdf>

³ <http://www.spectrumbauidit.org.uk/pdf/20051118%20Final%20Formatted%20v9.pdf>

2 Introduction

2.1 Ofcom has been leading UK preparations for the World Radiocommunication Conference 2007 (WRC-07) of the International Telecommunications Union (ITU). Agenda item 1.4 of the conference deals with spectrum requirements for the future development of advanced mobile wireless communications systems or “IMT”.

2.2 In preparation for this, Working Party 8F (WP8F) of the ITU, Radiocommunications sector (ITU-R) has produced:

- Report ITU-R M.2078 which estimates that International Mobile Telecommunications (IMT) will require 1280 MHz of spectrum (a figure that includes the 580 MHz already identified for IMT-2000) by the year 2020; and
- a list of seven candidate frequency bands that the WRC-07 could identify to meet this estimated demand.

It should be noted that at present there is a lack of consensus within WP8F concerning the inclusion/exclusion of the bands 3400-4200 MHz and 4500-4800 MHz in/from the list of candidates.

2.3 Thus the estimates in ITU imply that an additional 700 MHz of spectrum may be required to support IMT-Advanced and IMT-2000 services.

2.4 The ITU’s Radio Regulations contain a Table of Frequency Allocations. These “allocate” services such as Fixed, Mobile, Broadcast and Satellite to particular frequency bands. Some radio services are given a “primary” allocation which gives them a particular status with respect to neighbouring territories. For example, stations of such a service may claim protection from interference from services which have a “secondary” allocation or services operating without an allocation in that frequency band.

2.5 The Radio Regulations also “identify” certain frequency bands as being suitable for an application within a broad service allocation – for example IMT-2000. Such an identification does not prevent the use of other applications of the relevant radio service. It gives no elevated status, either with respect to other primary radio services or with respect to other applications within the same radio service and it does not prevent the application from being used in bands other than those with identifications.

SAP REG / ESOA / GVF considers it important to stress that, although the Radio Regulations themselves may not confer elevated status to one service having a primary allocation in a band with respect to another service also having a primary allocation in that band, in circumstances where it is impracticable for the two services to share frequency without harmful interference to one and/or the other, then in practice the band concerned can be used for one or the other service but not both. Moreover, from a practical standpoint, the identification of a band for use by an application will automatically confer to it a superior allocation status, irrespective of whether the Radio Regulations explicitly states this or not.

2.6 Although identification for an application does not elevate an application’s regulatory status, there is merit in this process for particular applications. In the case of mass-market public cellular networks, the frequency bands identified become the bands that administrations around the world are most likely to make available for that application. These are the bands where high volumes of equipment are developed and the benefits of economies of scale flow from this, as well as the benefits of inter-operability within and across different countries.

SAP REG / ESOA / GVF would agree that there is no value in identifying a band for IMT unless there is a realistic likelihood that the band could actually be used for IMT in most countries of the world. In the view of SAP REG / ESOA / GVF it follows from this that if world-wide agreement could not be reached to identify a band for a given application, it would be inappropriate to identify that band for that application on a Regional, multi-national or national basis.

2.7 Most of the focus of agenda item 1.4 is on selecting frequency bands where WRC-07 could add an identification for IMT in the Radio Regulations. Some of the candidate bands, however, do not have an allocation to the mobile service or only have a secondary allocation. If those bands were to be identified for IMT, then it would be necessary also to add a primary allocation to the mobile service in the Radio Regulations.

Since it considers that the band 3400-4200 MHz should not be identified for use by IMT, SAP REG / ESOA / GVF sees no reason to elevate the allocation of this band to the mobile service in Region 1 from secondary to primary status.

2.8 The candidate frequency bands under consideration in the ITU for identification for IMT at WRC-07 are:

Candidate band

Anticipated use

Table 2: Candidate bands - as Table 1 above

2.9 In Europe, Project Team 1 of the CEPT's Electronic Communications Committee (ECC PT1) and the ECC Conference Preparatory Group (CPG) are in the process of developing a brief and a set of European Common Proposals (ECPs) for WRC-07 agenda item 1.4. The next meeting of ECC PT1 will take place on 11 – 14 April and the next meeting of CPG will be held over the week 16 – 20 April. Once a European Common Proposal has been adopted, members of CEPT are under an obligation to support it, or at least not openly oppose the proposal.

2.10 This document consults on the proposed approach towards the candidate bands currently under consideration, particularly the line to take in discussions on agenda item 1.4 at relevant preparatory meetings of ECC PT1 and the CPG prior to WRC-07.

2.11 Sharing and compatibility between IMT and the existing services in the candidate bands is being studied in ECC PT1 and ITU-R WP8F. It should be noted that there are considerable difficulties with all of the candidate bands under consideration. The compatibility studies indicate that sharing with incumbent services is likely to be challenging for the majority of the candidate bands.

2.12 Within the European Union the Radio Spectrum Policy Group (RSPG) was established following the Radio Spectrum Decision of 2002. The RSPG adopts opinions to advise the Commission on radio spectrum policy issues, on co-ordination of policy approaches and, where appropriate, on harmonised conditions with regard to the availability and efficient use of radio spectrum necessary for the establishment and functioning of the internal market. The members of the Group are representatives of the Member States and of the Commission. Representatives of the EEA countries, the candidate countries, the European Parliament, the European Conference of Postal and Telecommunications Administrations (CEPT) and the European Telecommunications Standardisation Institute (ETSI) attend as observers.

2.13 On 14 February 2007 the RSPG adopted an Opinion on WRC-07. On agenda item 1.4 of WRC-07 it states that “every effort should be made to accommodate the requirement for additional spectrum for IMT by designating spectrum for this purpose, preferably world-wide, but on a non-exclusive basis. This approach would provide a balance between global harmonisation for IMT and flexible use of the spectrum.”

In the view of SAP REG / ESOA / GVF the flexibility objective would not be met in the band 3400-4200 MHz because IMT use of the band in a particular area would preclude its continued use by FSS in that area.

In the case of other bands identified for IMT, satellite services are proposed to be constrained to the benefit of IMT – see for example the draft European proposals for the 2.5 GHz bands under WRC-07 agenda item 1.9. So rather than using the Radio Regulations to allow flexibility, they have been used to limit flexibility in favour of the terrestrial service. The IMT systems envisaged for this band are similar to those that might be expected in the bands above 3 GHz, so there would be a high risk of constraints being placed on satellite systems in the future.

2.14 The RSPG also adopted an opinion on the digital dividend, which states that “there may be EU-wide benefits to the use of the digital dividend by fixed/mobile applications (including uplinks) in a harmonised sub-band of the UHF band and that this would be facilitated by:

i) Seeking an additional allocation to the fixed/mobile service in the entire UHF band at WRC-07 or WRC-11, under conditions which ensure that the broadcasting service is not adversely impacted.

ii) In parallel, without further delay and irrespective of any WRC-07 decisions, pursue within CEPT the studies required to consider and possibly identify sub-band(s) with the objective of developing a non-mandatory decision at European level to facilitate the use of fixed/mobile applications (including uplinks), under certain harmonized conditions to be defined and adopted in the 2007-2010 timeframe.

iii) Seeking endorsement of this non-mandatory harmonisation at ITU level at WRC-11, through identification of part of UHF band for specific applications/systems.”

2.15 This Ofcom consultation is for a period of 5 weeks in order to obtain stakeholder responses in time for the ECC PT1 and CPG meetings in April, where we expect ECPs to be finalised.

3 Issues for consideration

Current UK position

3.1 Until now the position adopted by Ofcom in its engagement in international bodies dealing with preparation for WRC-07 agenda item 1.4 has been:

- to support efforts to keep the IMT-Advanced family as open and flexible as possible;
- to support a non-binding identification of spectrum for IMT but keep this as generic as possible (i.e. for IMT rather than IMT-Advanced);
- to support changing existing identifications from IMT-2000 to IMT to foster greater flexibility in their use; and
- not to narrow down the list of candidate bands under consideration but to keep options open on all bands under consideration.

It should be noted that, at several meetings in the UK chaired by Ofcom, proposals have been made that the band 3400-4200 MHz should be removed from the list of candidates, and that those proposals were supported by the results of interference studies.

3.2 This document consults on a modification to the last of these.

3.3 All of these positions should be read in the context of the likely changes to the International Radio Regulations that will result from the conclusions of WRC-07. Such decisions do not necessarily imply changes to regulatory policy in the UK.

The UK preparation process

3.4 Ofcom represents the UK on international spectrum issues at CEPT and ITU meetings by virtue of a ministerial direction under s22 of the Communications Act 2003. For WRC preparation the UK line is formally agreed by the UK Spectrum Strategy Committee, with more detailed discussions on UK objectives delegated to its International Frequency Planning Group (IFPG) subgroup chaired by Ofcom.

Policy objectives

3.5 In framing Ofcom's policy position, it is useful to proceed from the basis of Ofcom's regulatory principles and the priorities set out in its Annual Plan. The high level objective is to ensure optimal use of the spectrum but there are other relevant policy objectives including promotion of investment and innovation, promotion of competition where appropriate and using the least intrusive regulatory means to achieve objectives.

3.6 The United Kingdom's objective for this agenda item is to maximise the benefits to the UK of this identification process. The selection of bands to be identified should align with those where it is judged that new applications could bring the greatest benefit to the UK but at the same time, the interests of the present users of the spectrum must be considered and the opportunity cost of displacing those services will represent a reduction in the overall benefit from the new applications. Therefore it is necessary to try to identify those areas where the cost of displacing services is lower and the benefit from introducing new applications is judged to be highest.

SAP REG / ESOA / GVF believes it is essential for such considerations to include a reliable determination of the aggregate amount of money already invested by the present users of a band (both for satellites and earth stations in the case of the FSS), and to take due account of the facts that (a) estimates of the use by IMT are inevitably speculative at this stage and (b) the investment in IMT has yet to be made.

3.7 In the case of a frequency band where there is no primary mobile service allocation in the Radio Regulations, this need not prevent the introduction of mobile systems in the UK but they would be at a disadvantage with respect to protection from interference from other services using the band in neighbouring countries. The addition of a mobile primary service allocation in a frequency band can enable greater regulatory flexibility and remove one of the regulatory barriers that could prevent the market from arriving at an optimal use for that spectrum.

How should Ofcom approach the candidate bands?

3.8 The question ultimately facing Ofcom in its role as UK representative at the WRC-07 is which candidate bands, if any, should it support (or oppose) as bands to be 'identified'

as those for IMT. The next CPG meeting in April is expected to agree the European candidate bands for IMT and finalise European Common Proposals (ECPs) for these bands. It is important for the UK to be able to play an active part in developing those proposals.

3.9 This consultation considers, in light of the situation internationally and within the UK, whether certain candidate bands stand out as particularly suitable or unsuitable for meeting the spectrum needs of IMT. While the line pursued by Ofcom to date has been to keep our options open on all of the candidate bands under consideration, as WRC-07 approaches Ofcom needs to refine its position on which frequency bands the UK can accept or support an identification for IMT and/or the addition of a mobile allocation. For the purposes of Ofcom's policy stance at the CPG meeting in April, the practical considerations for each band are:

- whether the UK should actively support or oppose addition of a mobile service allocation in the Radio Regulations (if none exists) and identification of the band for IMT;
- whether the UK could accept an ECP supporting its identification for IMT; and
- whether the UK could accept an ECP opposing any changes to the band.

3.10 Ofcom has considered the relationship between its regulatory principles and the identification of spectrum for IMT. The WRC-07 process in relation to IMT spectrum identification is driven by the view that there is a need to harmonise spectrum across nations for this kind of service. This is not inconsistent with a market-led approach favoured by Ofcom, since it does not stipulate the technology to be used, nor does it preclude the use of any spectrum band for other services, should the market allocate the spectrum to those services.

SAP REG / ESOA / GVF disagrees with the last two lines of this paragraph insofar as the band 3400-4200 MHz is concerned, because interference studies show that the introduction of IMT into a geographical area would render it impracticable to operate the FSS in that area. Furthermore, the market-led approach fails to recognise that the band 3400-4200 MHz is uniquely available for FSS. FSS applications in this band cannot be provided by any other means and no alternative band exists, let alone one that would provide the same characteristics. The same is not true for terrestrial mobile systems. In the case of the 2.5 GHz bands which are already identified for IMT, a market-led approach is being taken only after steps have already been taken (at the European level) to prevent use of the same spectrum by satellite services.

3.11 In accordance with Ofcom's duties and economic principles, the analysis of the suitability of each spectrum band is done on the basis of an initial, high-level cost-benefit analysis of each of the candidate bands to obtain a view of the order of magnitude of net economic benefits of each spectrum band of the accommodation of IMT. The benefits of use by IMT in a band are weighed against the costs of accommodating this service. The latter are principally the feasibility and costs of band-sharing and co-ordination with incumbent users, or, where this is not possible, the opportunity costs of displacing incumbent uses, namely the benefits of these uses, taking into account the feasibility and costs of incumbent users migrating to an alternative spectrum band (or using an alternative communications medium). Thus, for a given band, the higher the benefits of IMT, and the lower the costs of transition, the more likely it is that this band will be the band most conducive to IMT accommodation.

The high-level cost benefit analysis for each candidate band, referred to here, is not included in the consultation document. The assumptions on which these studies were based, and the quantitative results of the studies, have not been disclosed to

representatives of the incumbent users of the band 3400-4200 MHz. Will they be so disclosed in time for those representatives to assess them before the UK position on this band is determined ?

3.12 The overriding purpose of this WRC agenda item is to identify spectrum for use throughout the world to aid industry development, international roaming and economies of scale. The desirability of harmonisation on this issue across the EU and the world thus requires additional focus on the use of this spectrum internationally. Given the informational burden such an analysis presents, analysis of this factor in this consultation is done at a high level, taking into account the views already being expressed by other countries or regional groups since the WRC process depends on the development of international consensus.

3.13 Views in Europe on this WRC agenda item have been developing over the past few months. At the meetings of ECC PT1 in December 2006 and CPG in January 2007, administrations were asked to state their support or opposition on each candidate band. These views were compiled into a table, which is reproduced in Annex 6. The emerging picture is that there is general support for an IMT identification at 3400 to 3800 MHz but opposition to the 3800 to 4200 MHz band. There is also support for a mobile allocation and identification in 470 to 862 MHz but a difference of opinion on whether this should be done at WRC-07 or the following conference in 2011 (WRC-11). There are mixed views on 450 to 470 MHz and there is general opposition to the remaining bands.

Noting from the table in Annex 6 that 38% of CEPT administrations either consider that the bands 3400-3600 MHz and 3600-3800 MHz should not be candidates for IMT, or have yet to decide on their position regarding these bands, SAP REG / ESOA / GVF considers the Ofcom statement above "*that there is general support for an IMT identification at 3400 to 3800 MHz*" to be misleading.

Question 1: Do you agree with Ofcom's analysis of the benefit of identifying spectrum for IMT at WRC-07 and the general consideration that needs to be addressed for each band?

Although SAP REG / ESOA / GVF considers that the procedure for such an analysis outlined in section 3.11 above is logical and could be one element of the decision making process, SAP REG / ESOA / GVF members have received no information regarding the Ofcom analysis itself and we are therefore not in a position to answer this question.

Economic benefits of IMT

3.14 The benefits of IMT are first discussed in general terms in paragraphs 3.15 to 3.19, although these can differ somewhat between bands due to the variation in propagation characteristics of different frequencies. The discussion under each band then specifically addresses the appeal of this band in accommodating IMT.

3.15 The economic (and other) benefits of a 4th generation mobile technology (of which IMT-Advanced is one possible type) have been studied in general terms in other contexts. It should be noted at the outset that arriving at a definitive estimate for the economic benefits of IMT mobile technology is neither very feasible nor proportionate in this context. Given the uncertainty surrounding the nature and uptake of the technology, a precise figure of its economic benefits is correspondingly very difficult and must necessarily be based on some extrapolation of existing results.

3.16 One fundamental measure of economic benefits is provided by consumer and producer surplus. A 2002 Radiocommunications Agency study of consumer surplus used survey results to calculate residential and business average consumer surplus per month of £16 and £44 for public cellular systems.

3.17 On the basis of these figures and using a range of methods accounting for number of mobile subscribers and inflation, Europe Economics calculated an average value of consumer surplus for 2006 at approximately £18bn⁴. This provides some idea of the possible magnitude of consumer surplus associated with the consumption of IMT services.

3.18 For the purposes of this consultation, it may be reasonable to assume producer surplus is fairly small. This would reflect a high degree of competition between mobile operators in the future. That said, a very broad idea of the size of producer surplus can be gleaned from the same study carried out by Europe Economics. On the basis of company accounts, producer surplus for cellular mobile was calculated at approximately £2-3 bn..

3.19 One point worth highlighting at the outset when ascertaining the benefits of spectrum use, either by IMT or by incumbent services, is the notion of what constitutes economic benefits.

⁴ http://www.ofcom.org.uk/static/archive/oftel/publications/mobile/ctm_2002/network_costs.pdf

In the absence of market failure, economic benefits are equivalent to, and can generally be measured as, private benefits (consumer and producer surplus). Where there are externalities, however, social benefits will depart from private benefits. For example, where there are positive externalities, social benefits will exceed private benefits. This issue is discussed further under each spectrum band.

3.20 Section 4 presents a band-by-band analysis of each of the candidate bands being considered under WRC-07 agenda item 1.4.

4 Candidate bands

4.1 This section discusses each of the candidate bands and Ofcom's proposed position on each.

410 to 430 MHz

4.2 In terms of the benefits of IMT in this particular band, it could be expected that the roll-out costs will differ between the bands. In general, the lower the frequency, the less the requirement for base stations to provide coverage. On the other hand, the lower frequency candidate bands have lower capacity, which is likely to be an important consideration for IMT mobile.

4.3 This band does not offer the amount of spectrum determined to be required to fully accommodate IMT-Advanced services but the focus for lower frequency bands is on coverage rather than capacity. The band 410 to 430 MHz at most offers 20 MHz of spectrum, meaning that at most it may offer some complementary IMT-2000 spectrum, especially in rural areas.

4.4 Internationally, there is very little support for this band, in Europe or elsewhere. At the CPG meeting in January 2007, 26 CEPT Administrations were opposed to identification of this band for IMT and no Administration was in favour of the use of the band for IMT. This fact alone depresses the appeal of this band for the accommodation of IMT.

4.5 The incumbent uses of this band are mainly private mobile radio, military radar and programme making and special events (PMSE). The main users are Ministry of Defence (MOD), emergency services, and a range of Business Radio users. Ofcom also awarded a licence for the 412 to 414 MHz and 422 to 424 MHz spectrum to Arqiva in October 2006.

4.6 Ofcom believes that the feasibility of IMT sharing the band with incumbent uses is likely to be very low. This suggests that the costs of accommodating IMT in this band are likely to involve the costs of displacement of the incumbent uses by IMT, which mainly comprise the opportunity costs – i.e. the benefits of incumbent uses – in the case where these benefits cannot be realised via the use of an alternative spectrum band. Where re-location is feasible, these costs consist of the costs of incumbents vacating to another spectrum or indeed to using another communications medium.

4.7 The benefits of incumbent use of this spectrum band are difficult to quantify. Internal Ofcom estimates of the benefits of business radio to the UK economy are between £1bn and £2bn. Since 66% of business radio users are in this band or in the band 450 to 470 MHz, in the absence of better information, it could be estimated that the benefits are split equally between these two bands, which means half (33%) of these benefits are attributable to this band, or around £330m-£660m per annum. The costs of moving to another band (were one to exist) are estimated to be around £50m. Estimates are not available for the cost to PMSE users if they were required to move out of this band.

4.8 The benefits of MOD use are, however, more difficult to quantify. Conceptually, these benefits are not likely to be measured using standard measures of consumer and producer surplus. However, in setting fees for defence use the fee for equivalent commercial services have been used as a basis. In terms of whether vacation to another spectrum band is feasible, Ofcom considers it would be extremely unlikely to be able to accommodate the military radar use in the band 420 – 450 MHz in any other equivalent part of the spectrum.

4.9 It is possible that the benefits of IMT in this band might outweigh the cost of accommodation but the benefits of incumbent uses are difficult to quantify. Further, international support is very low for this band.

4.10 Ofcom believes that this band is not a priority for IMT use in the UK. In view of the level of international opposition to an identification of this band for IMT, Ofcom believes that it would not be productive to oppose the prevailing European view that this band should not be identified for IMT at WRC-07. Therefore Ofcom proposes to be neutral on whether this is supported as a candidate band for IMT identification.

450 to 470 MHz

4.11 The benefits of IMT in this band would not be expected to significantly differ from those identified for the band above. This is especially the case given the similar frequencies and width of band.

4.12 Internationally, there is some limited support for this band in Europe. At the CPG meeting in January 2007, nine CEPT Administrations were in favour of the use of the

band for IMT and thirteen were opposed. Those in favour see this band as useful to provide IMT-2000 coverage in sparsely populated areas and some are already using the band for public cellular systems such as cdma450 and FLASH-OFDM. For some administrations with large areas of low population density this band may be their highest priority for identification at WRC-07.

4.13 The CEPT CPG meeting in January 2007 advised ECC PT1 to develop the CEPT position on the band 450 to 470 MHz including development of a possible European Common Proposal to identify this band for IMT.

4.14 The incumbent uses of this band are primarily Private Business Radio, fixed links, PMSE, maritime, and scanning telemetry. There are thousands of incumbent users, including some large public companies, the Civil Aviation Authority (CAA), and utility companies. As with the band above, feasibility of band-sharing with IMT is likely to be quite low.

4.15 As discussed in 4.7, the benefits of Business Radio in this band are estimated at £330m-£660m per annum. In 2003, the costs of moving to another band were assessed in a study by PA Consulting as £277m. Estimates are not available for the cost to PMSE users if they were required to move out of this band. More evidence would be required to quantify the benefits of all incumbent uses in this band.

4.16 Alternative spectrum for incumbent users is not likely to be available, however. For example, the unique propagation characteristics in this spectrum mean that scanning telemetry radio systems could not be moved to higher bands.

4.17 It is possible that the benefits of IMT in this band might outweigh the cost of accommodation. If so, this suggests that were this spectrum to be offered on the market for the use by IMT, the market may optimally allocate this spectrum to IMT, with existing users having to find alternative spectrum bands. However, international support for this band is mixed. The band does not offer the required amount of bandwidth to service IMT-Advanced requirements so its focus would probably be to provide additional coverage in areas of low population density.

4.18 Ofcom believes that this band is not a priority for IMT use in the UK, however, if WRC-07 were to add an IMT identification in 450 to 470 MHz it should not prevent the continued development of existing services in this band. In view of the strong positions on both sides regarding identification of this band for IMT, Ofcom does not plan to support or oppose identification of this band for IMT at WRC-07. Therefore Ofcom proposes to be neutral on whether this is supported as a candidate band for IMT identification.

470 to 862 MHz

4.19 The Digital Dividend Review consultation document ⁵(DDR) published on 19 December 2006 addresses this spectrum. Under Ofcom's proposals, the cleared spectrum potentially available in this band amounts to at least 112 MHz.

4.20 Internationally there is general support amongst CEPT administrations for consideration of a primary mobile service allocation in this band and identification for IMT but there are differences over whether this should happen at WRC-07 or WRC-11 (or be split between the two conferences).

4.21 The European Commission has issued a mandate to CEPT and in response ECC has set up Task Group 4 (ECC TG4) on technical considerations regarding harmonisation options for the digital dividend. The new group ECC TG4 is studying

(amongst other issues) the possibility of harmonising at EU level a sub-band for multimedia applications, minimising the impact on the GE-06 plan; the possibility of harmonising, or co-allocating, a sub-band for mobile communication applications (i.e. including uplinks), minimising the impact on GE-06 and with a view of deployment of such services throughout the EU.

4.22 This frequency range could provide improved coverage (compared with existing 2G and 3G spectrum at 900 MHz, 1800 MHz and 1900/2100 MHz) without the constraints suffered in 410 to 430 MHz or 450 to 470 MHz. However the DDR has identified some constraints on the use of this spectrum for mobile services, principally that it may be difficult to implement mobile uplinks due to the risk of interference to receivers of digital terrestrial television.

4.23 The CEPT CPG meeting in January 2007 advised ECC PT1 to develop a draft European Common Proposal for no change to the allocations at WRC-07, a WRC Resolution referring to studies on the possible future use of the band for the operation of mobile systems including IMT and modification of the draft agenda for WRC-11 to include future use of the digital dividend by different applications and to consider allocation to the mobile service in the relevant parts of the band 470 to 862 MHz. CPG also asked ECC PT1 to study the options of an allocation to the mobile service at WRC-07 followed by studies leading to possible IMT identification at WRC-11 or an allocation to the mobile service and identification for IMT at WRC-07.

⁵ Available on the Ofcom website at <http://www.ofcom.org.uk/consult/condocs/ddr/>

4.24 The incumbent uses are analogue and digital terrestrial TV, and some PMSE use, plus aeronautical radar in Channel 36 and Radio Astronomy in Channel 38. The DDR sets out in detail the range of possible uses of this band. These include advanced mobile technology. Ultimately, the market would largely determine which one of these uses is of highest value, and hence firm conclusions on its suitability for IMT do not need to be reached.

4.25 Ofcom believes that this band is highly suitable for mobile applications but recognises the need for regulatory safeguards to protect the broadcasting use of the band and avoid conflict with the agreements reached at the ITU Regional Radiocommunication Conference in 2006. Therefore Ofcom considers this to be a suitable band to seek a mobile service allocation co-primary with broadcasting and initiate studies in ITU on the spectrum availability following digital switchover and potential for an identification for IMT. Ofcom believes that WRC-07 is the appropriate time for the change of allocation and considers that the alternative option of entering WRC-07 with a proposal to put this band on the agenda for WRC-11 would represent a missed opportunity.

4.26 Given that the views expressed at CPG are divided between those supporting an allocation at WRC-07 and those supporting no decision at WRC-07 but wishing to consider the band at WRC-11, this is a key band on which Ofcom needs to express a strong position at ECC PT1 and CPG. Therefore Ofcom proposes to support the development of a European Common Proposal for a co-primary mobile service allocation in the band 470 to 862 MHz at WRC-07 and a Resolution for ITU to study the band for an identification for IMT at WRC-11, subject to suitable safeguards to protect the UK's digital television switchover programme.

2300 to 2400 MHz

4.27 This band has attracted only limited interest and significant opposition in Europe. Korea has deployed WiBro in this band so the band is already one of the WiMAX profiles.

4.28 The main users in this band are the Emergency services, MOD, amateur and PMSE. There are also some existing point to point links in the band. Evidence on the economic benefits of the services in this band is not readily available.

4.29 There is not sufficient evidence on feasibility of band-sharing to draw firm conclusions, however we note that current use by emergency services in the UK is likely to present a problem.

4.30 On the basis of the evidence, it is not clear whether or not IMT would have greater value to society than the current uses. Taken with the limited international support for this band this leads to the conclusion that 2300 to 2400 MHz should not be a priority. Ofcom therefore proposes to adopt a neutral position regarding support for this candidate band.

2700 to 2900 MHz

4.31 The adjacency of this band to the 2500 to 2690 MHz spectrum is an advantage, with similar propagation and wide bandwidth, which could help towards the capacity requirements of IMT.

4.32 Internationally, substantial opposition to the use of this band for IMT has emerged in Europe and beyond. However, Norway and Sweden support this band as an IMT candidate.

4.33 The main incumbent uses of the 2700 to 2900 MHz spectrum are aeronautical radar (civil and military) and meteorological radar. The economic value of these incumbent uses is difficult to quantify, mainly due to their non-commercial nature.

4.34 The Public Spectrum Safety Test Group is carrying out band sharing trials in the 2700 to 3400 MHz spectrum but these are not specific to IMT. In ITU-R Working Party 8F studies on the feasibility of IMT sharing this band with radar have not concluded, but many administrations believe sharing is not a possibility in this band.

4.35 The significant international opposition to this band undermines its candidature for IMT. Given the nature of its present use in the UK and in view of the significant Government interest in this band, Ofcom proposes to oppose any change to the allocations or an IMT identification in the band 2700 to 2900 MHz at WRC-07.

3400 to 3800 MHz

4.36 As the table in Annex 6 shows, support for 3400 to 3600 MHz and 3600 to 3800 MHz is broadly similar but 3800 to 4200 MHz attracts less support. Paragraphs 4.37 to 4.44 consider the first two bands together and paragraphs 4.46 to 4.53 deal with 3800 to 4200 MHz.

From the table in Annex 6 SAP REG / ESOA / GVF notes that only 24% of CEPT countries have indicated support for identifying the band 3800-4200 MHz for IMT, and that 45% have indicated opposition.

4.37 The propagation characteristics associated with the higher frequency candidate bands result in relatively small cell sizes, which would make nationwide coverage difficult or costly. However, in the spectrum estimate studies performed within the ITU the most significant demand for spectrum came from the low-mobility and nomadic service

categories. For these applications, small cell radius may have some advantages in facilitating re-use of frequencies for high density network deployment with a geographical area.

4.38 Significantly, in its favour, this band has the wide bandwidth that has been seen as necessary to meet the capacity needs of IMT-Advanced and there is growing support for this band as a European proposal for the conference. While 3400 to 3800 MHz does not provide the full bandwidth requirement estimated in the ITU-R Report, it goes a considerable way towards addressing the requirement.

4.39 The CEPT CPG meeting in January 2007 advised ECC PT1 to develop European Common Proposals for a co-primary allocation to the mobile service and identification for IMT in the bands 3400 to 3600 MHz and 3600 to 3800 MHz. A Resolution addressing the issue of sharing between FSS and IMT may also be developed.

Studies by a SAP REG / ESOA / GVF member, submitted to Ofcom and also presented to ITU-R WP8F, show that sharing between FSS and IMT in this part of the spectrum is not feasible in the same geographical area.

4.40 3400 to 3600 MHz is an MOD managed band and used by them for radiolocation (radar) and other services. There is fixed broadband in parts of 3400 to 3600 MHz and parts of 3600 to 3800 MHz. Parts of the 3400 to 3600 MHz are also used for PMSE, amateurs and the Emergency Services. Above 3600 MHz there are point-to-point fixed links and satellite Earth stations.

SAP REG / ESOA / GVF assumes that this paragraph refers only to the UK. In a number of other regions of the World (e.g. Asia, Africa, South America) there are many satellite earth stations using the band 3400-3600 MHz, and this band is also used by earth stations in some European countries. The band 3600-3800 MHz is extensively used by satellite earth stations in many parts of the World.

4.41 The study by Europe Economics estimated the value of fixed wireless services (point to point links) across all of the frequency bands in which they operate at around £4bn. In relation to fixed satellite earth stations, a report by BNSC suggests a value of around £1bn for the whole of the band 3600 to 4200 MHz in terms of contribution to the UK economy.

SAP REG / ESOA / GVF members have not seen the BNSC report mentioned above, and we would be grateful to receive a copy from Ofcom. Pending that, the meaning of the phrase “a value of ... in terms of contribution to the UK economy” is not clear to us, nor are we able to assess the validity of the BNSC estimate. It is worth repeating here that, whereas the extensive existing use of the band 3600-4200 MHz by the FSS represents money already invested in satellites and earth stations, any estimates of IMT use of the band represent only speculative future expenditure.

4.42 Band sharing is considered to be difficult between IMT and fixed links or between IMT and satellite earth stations. However, the frequencies being used and the exact geographic placement of the services would have a bearing on whether this could be managed. Currently, sharing the band between fixed links, satellite earth stations, and fixed broadband is achieved through coordination.

SAP REG / ESOA / GVF notes that in many large cities a number of earth stations in different locations are in operation in the 4 GHz band. This is particularly so in Europe. Studies employing terrain data-bases have shown that protection contours with radiuses averaging distances of the order of 100 km around each earth station in such cities

would be needed. Although studies into the extent to which these distances might be reduced by the application of mitigation techniques are on-going, it is doubtful that such reductions would be sufficient to facilitate sharing in and around cities containing several earth stations. Furthermore, the need for an IMT base station to mitigate interference simultaneously in several different directions would make the mitigation expensive and render it impracticable for the IMT system to serve significant parts of the area concerned. Moreover, although in principle interference mitigation could be implemented to assist frequency coordination, it would only be applicable in respect of registered earth stations. Coordination would not be feasible for the many "Television Receive Only" (TVRO) earth stations whose locations are not known to the coordinating parties. SAP REG / ESOA / GVF members have already made the output of relevant studies available to Ofcom, and further evidence can be supplied if required.

It is also worth noting that both fixed and fixed satellite systems operating in this band utilize highly directional antennas having extremely narrow beamwidths. This attribute is a major factor in facilitating coordination between fixed and fixed satellite services. However, coordination of IMT stations with fixed satellite stations will be quite difficult in that IMT stations (whether a base station or a mobile station) employ antennas that have very wide beams (or omni-directional beams) which provide relatively large power levels to a relatively large area. Given the coverage characteristics of IMT stations, and the sensitivity of a typical satellite link to outside interference, it will be very difficult for FSS to expand into new areas given the deleterious effects of IMT transmissions on its links. Additionally, it will be very difficult for IMT to provide service to areas already occupied by FSS stations – which include most major cities and towns.

4.43 Moving fixed satellite services to another band is considered to be problematic in terms of both feasibility and costs. On the fixed wireless side, long distance point-to-point fixed links can only be achieved in lower fixed service bands due to propagation characteristics of these bands. Estimates are not available for the cost to PMSE users if they were required to move out of this band.

It is worth repeating here that the 11/14 GHz FSS allocations are already so heavily utilized, especially by satellites in GSO locations visible to Europe and the Americas, that they would be unable to accommodate a significant move of services from the 4/6 GHz allocations. And although the 20/30 GHz allocations are not yet at saturation point as regards satellites already in operation, satellites in the planning and construction phases to meet known additional traffic demands leave little room in those allocations for migrated traffic from lower bands.

Also, moving FSS traffic to other frequency bands would require replacement of satellite and earth station equipment currently operating in the 4/6 GHz bands. Who would pay for the purchase and installation of such replacement equipment, and who would compensate the satellite operators for the loss of revenue from space sector in which they have already invested ?

4.44 This band supports high-value incumbent uses, and band-sharing with a high density mobile service appears difficult. However, its capacity characteristics and international support for the band suggest that it should be a priority for upgrading the existing secondary mobile service allocation to make it co-primary with the fixed and fixed-satellite (space to Earth) services. Ofcom proposes to support the development of an ECP for a co-primary allocation to the mobile service and identification for IMT in the bands 3400 to 3600 MHz and 3600 to 3800 MHz.

For reasons we have given above SAP REG / ESOA / GVF strongly opposes the proposal for a primary allocation in Region 1 of these two bands to the mobile service and its identification for IMT.

4.45 It should be re-iterated that a decision to support such an ECP does not necessarily imply changes to regulatory policy in the UK and in particular any changes to the use of 3400 to 3600 MHz would require the agreement of the MOD and be consistent with the Government Response to the Independent Audit of Spectrum Holdings⁷ lead by Professor Martin Cave.

3800 to 4200 MHz

4.46 The propagation characteristics of the band 3800 to 4200 MHz are broadly similar to those of the band 3400 to 3800 MHz, so this band would also be suited to high density network deployment focused on low-mobility or nomadic applications.

4.47 Again in common with 3400 to 3800 MHz, this spectrum has the wide bandwidth that has been seen as necessary to meet the capacity needs of IMT-Advanced, however there is significantly less support for use of this band for IMT than for the bands 3400 to 3600 MHz or 3600 to 3800 MHz. Use of this spectrum for C-band Fixed-satellite service reception and terrestrial point-to-point fixed links is widespread.

As mentioned earlier, Annex 6 reveals that only 24% of CEPT countries have indicated support for identifying the band 3800-4200 MHz for IMT, and that 45% have indicated opposition.

4.48 The CEPT CPG meeting in January 2007 advised ECC PT1 to develop further the CEPT position on the band 3800 to 4200 MHz, including development of possible European Common Proposals to identify the band for IMT.

4.49 The main incumbent uses in the UK are fixed broadband in parts of the band, fixed wireless links and satellite Earth stations.

As previously mentioned, there are well over 1000 registered FSS earth stations operating in C-band in Europe. In addition a significant number of receive-only earth stations, whose locations are unknown to the operators of the satellites from which they receive, are in operation in the band.

4.50 As discussed in 4.41, the study by Europe Economics estimated the value of fixed wireless services (point to point links) across all of the frequency bands in which they operate at around £4bn. As also discussed in 4.41 in relation to fixed satellite earth stations, a report by BNSC suggests a value of around £1bn for the whole of the band 3600 to 4200 MHz in terms of contribution to the UK economy.

Likewise, the remarks made by SAP REG / ESOA / GVF in response to 4.41 apply here also.

4.51 Band sharing is considered to be difficult between IMT and fixed links or between IMT and satellite earth stations. However, the exact geographic placement of the respective services would have a bearing on whether this could be managed. Currently, sharing the band between fixed links, satellite earth stations, and fixed broadband is achieved through coordination.

The remarks made by SAP REG / ESOA / GVF in response to 4.42 apply here also. Additionally the opportunity is taken to comment on suggestions made by IMT proponents in UK meetings that sharing might be facilitated by micro band segmentation – i.e. that IMT base stations and user terminals in the vicinity of an FSS earth station

would avoid using the frequencies occupied by the FSS carriers received by that earth station, but would use the remainder of the band. This is considered to be impractical for four reasons: (a) that earth stations receiving contribution TV or direct-to-home TV carriers need access to substantial parts of the band to cover the many TV channels available; (b) that for operational reasons (e.g. accommodating changes in communications traffic requirements owing to new customers and/or increased needs of existing customers, coping with transponder failures, etc.) it is necessary to change carrier frequencies within the band from time to time; (c) that some earth stations include more than one antenna and RF equipment, enabling them to operate to several satellites on different carrier frequencies; and (d) that in a typical IMT-Advanced system each base station will employ the same carrier frequency and will operate in CDMA mode using a wide carrier bandwidth (this information was given in response to a question at a meeting of WP8F).

4.52 Moving fixed satellite services to another band is considered to be problematic in terms of both feasibility and costs. On the fixed wireless side, long distance point-to-point fixed links can only be achieved in lower fixed service bands due to propagation characteristics of these bands.

The remarks made by SAP REG / ESOA / GVF in response to 4.43 apply here also.

4.53 The widespread opposition to the use of IMT in this band had led Ofcom to conclude that the band 3800 to 4200 MHz should not be a priority for action at WRC-07. Ofcom therefore proposes to adopt a neutral position regarding support for this candidate band.

It is the opinion of SAP REG / ESOA / GVF that the widespread opposition is thoroughly justified by studies already carried out in ITU-R and CEPT fora, and therefore we are strongly of the view that the UK should support a policy of no change to the allocations in this band and no identification of it for IMT, rather than adopting a neutral position.

4400 to 4990 MHz

4.54 As discussed in 4.36 and 4.46, the propagation characteristics of the higher frequency candidate bands lend themselves to smaller cell radii. Another consideration for this band is that it is at the extreme end of the range considered by the ITU. Report ITU-R M.2079 recognised that nomadic applications may be accommodated in the 5 GHz bands allocated to the mobile service at WRC-03, if such use is in accordance with the relevant footnote and Resolution, and identification specifically for nomadic application of IMT in the Radio Regulations may not be necessary. The propagation in the 4400 to 4990 MHz spectrum has few advantages over that at 5 GHz so there seems to be little reason to press for action in this band.

4.55 Internationally, there is very little support for the band 4400 to 4990 MHz, in Europe or elsewhere. At the CPG meeting in January 2007, 18 CEPT Administrations were opposed to identification of this band for IMT and only one Administration expressed a position in favour of the use of the band for IMT. This fact alone depresses the appeal of this band for the accommodation of IMT.

4.56 4400 to 4990 MHz is a NATO harmonised band and is used for MOD systems, for fixed satellite and the Emergency Services

4.57 Ofcom concludes that the band 4400 to 4990 MHz would be a low priority for IMT in the UK. Ofcom therefore proposes to adopt a neutral position on this candidate band.

The remarks made by SAP REG / ESOA / GVF in response to 1.6, in relation to the band 4500-4800 MHz being subject to the provisions of the FSS Allotment Plan and therefore to the outcome of WRC-07 Agenda Item 1.10, apply here also.

Summary of proposals for terrestrial candidate bands

4.58 Ofcom proposes to support the development of a European Common Proposal for a primary mobile service allocation in the band 470 to 862 MHz at WRC-07 and a Resolution to study the band for an identification for IMT at WRC-11.

4.59 Ofcom proposes to support the development of an ECP for a co-primary allocation to the mobile service and identification for IMT in the bands 3400 to 3600 MHz and 3600 to 3800 MHz.

As stated above, SAP REG / ESOA / GVF strongly opposes the proposal for a primary allocation in Region 1 of these two bands to the mobile service and its identification for IMT.

4.60 In view of the significant Government interest in the band 2700 to 2900 MHz, Ofcom proposes to oppose any change to the allocations or an IMT identification in this band at WRC-07

4.61 Ofcom proposes to adopt a neutral approach to the remaining candidate bands.

As stated above, SAP REG / ESOA / GVF opposes the adoption of a neutral approach in respect of the band 3800-4200 MHz, and proposes instead that there should be no change to the allocations and no IMT identification in this band.

Question 2: Do you agree with Ofcom's proposal to seek a primary mobile service allocation in the band 470 to 862 MHz and a Resolution to initiate studies at WRC-07 for an IMT identification at WRC-11?

The band 620 - 790 MHz is allocated to BSS. We would not have any problem with a primary mobile service allocation as proposed by Ofcom, providing the BSS allocation is taken into account along with Method A1 of the CPM Report relating to WRC-07 agenda item 1.11..

Question 3: Do you agree with Ofcom's proposal to support the development of a European Common Proposal for a co-primary allocation to the mobile (except aeronautical mobile) service and an identification for IMT in the band 3400 to 3800 MHz at WRC-07?

As already indicated above, SAP REG / ESOA / GVF does not agree with Ofcom's proposal to support the development of a European Common Proposal for a co-primary allocation to the mobile (except aeronautical mobile) service and an identification for IMT in the band 3400-3800 MHz at WRC-07. The UK should oppose the identification of these bands for IMT and support a "No Change" option for them.

Question 4: Do you agree with Ofcom's proposal to oppose any change to the allocations or an IMT identification in the band 2700 to 2900 MHz at WRC-07?

In the opinion of SAP REG / ESOA / GVF the case for 'no change' made in sub-sections 4.31 to 4.35 inclusive is not very convincing. SAP REG / ESOA / GVF sees no technical reason why the bands 3400-3600 MHz and 3600-3800 MHz should be considered suitable for identification for IMT whereas 2700-2900 MHz should not be considered suitable for IMT. However, since there are no allocations to satellite services within the

band 2700-2900 MHz, SAP REG / ESOA / GVF has no strong reason to disagree with this particular Ofcom proposal.

Question 5: Do you agree with Ofcom's proposal to adopt a neutral position on whether the remaining bands are supported or opposed as candidates for a mobile allocation and IMT identification?

As already indicated above, SAP REG / ESOA / GVF disagrees with Ofcom's proposal to adopt a neutral approach in respect of the band 3800-4200 MHz, and proposes instead that there should be no change to the allocations and no IMT identification in this band.

Satellite IMT

4.62 In addition to the terrestrial IMT spectrum discussed in the preceding paragraphs, there is a satellite component of IMT. ITU-R Working Party 8D has carried out studies on the capacity requirements and candidate bands for future satellite IMT.

4.63 Ofcom supports the identification of the bands 1518 to 1525 MHz and 1668 to 1675 MHz for the satellite component of IMT-2000 at WRC-07. This approach is consistent with the line that the UK has adopted at previous World Radiocommunication Conferences.

SAP REG / ESOA / GVF supports this approach.

5 Next steps

5.1 This consultation, published on 27 February 2007, lasts for a 5 week period. The closing date for responses is 30 March 2007. See Annex 1 for details of how to respond to this consultation.

5.2 Ofcom will consider the responses in its development of the brief for the meetings of ECC PT1 and ECC CPG and in further preparation for WRC-07 and will publish a statement on the responses in due course.

Annex 1

1 Responding to this consultation

How to respond

A1.1 Ofcom invites written views and comments on the issues raised in this document, to be made **by 5pm on 30 March 2007**.

A1.2 Ofcom strongly prefers to receive responses using the online web form at <http://www.ofcom.org.uk/consult/condocs/wrc07/howtorespond/form>, as this helps us to process the responses quickly and efficiently. We would also be grateful if you could assist us by completing a response cover sheet (see Annex 3), to indicate whether or not there are confidentiality issues. This response coversheet is incorporated into the online web form questionnaire.

A1.3 For larger consultation responses - particularly those with supporting charts, tables or other data - please email steve.green@ofcom.org.uk attaching your response in Microsoft Word format, together with a consultation response coversheet.

SAP REG / ESOA / GVF believes that the outcome of WRC-07 Agenda Item 1.4 is of sufficient importance to the future of the FSS to justify making the larger form of response.

A1.4 Responses may alternatively be posted or faxed to the address below, marked with the title of the consultation. Steve Green Spectrum Policy Group Ofcom Riverside House 2A Southwark Bridge Road London SE1 9HA Fax: 020 7783 4303

A1.5 Note that we do not need a hard copy in addition to an electronic version. Ofcom will acknowledge receipt of responses if they are submitted using the online web form but not otherwise.

A1.6 It would be helpful if your response could include direct answers to the questions asked in this document, which are listed together at Annex 4. It would also help if you can explain why you hold your views and how Ofcom's proposals would impact on you.

For Ofcom's convenience SAP REG / ESOA / GVF has attempted to meet this request by adding comments to the text of this consultation document immediately after the paragraphs to which the comments individually refer.

Further information

A1.7 If you want to discuss the issues and questions raised in this consultation, or need advice on the appropriate form of response, please contact Steve Green on 020 7783 4384.

Confidentiality

A1.8 We believe it is important for everyone interested in an issue to see the views expressed by consultation respondents. We will therefore usually publish all responses on our website, www.ofcom.org.uk, ideally on receipt. If you think your response should be kept confidential, can you please specify what part or whether all of your response should be kept confidential, and specify why. Please also place such parts in a separate annex.

SAP REG / ESOA / GVF does not require this response to be kept confidential.

A1.9 If someone asks us to keep part or all of a response confidential, we will treat this request seriously and will try to respect this. But sometimes we will need to publish all responses, including those that are marked as confidential, in order to meet legal obligations.

A1.10 Please also note that copyright and all other intellectual property in responses will be assumed to be licensed to Ofcom to use. Ofcom's approach on intellectual property rights is explained further on its website at <http://www.ofcom.org.uk/about/accoun/disclaimer/>

Next steps

A1.11 Following the end of the consultation period, Ofcom will consider the responses in its development of the brief for the meetings of ECC PT1 and ECC CPG and in further preparation for WRC-07 and will publish a statement on the responses in due course.

A1.12 Please note that you can register to receive free mail Updates alerting you to the publications of relevant Ofcom documents. For more details please see: http://www.ofcom.org.uk/static/subscribe/select_list.htm

Ofcom's consultation processes

A1.13 Ofcom seeks to ensure that responding to a consultation is easy as possible. For more information please see our consultation principles in Annex 2.

A1.14 If you have any comments or suggestions on how Ofcom conducts its consultations, please call our consultation helpdesk on 020 7981 3003 or e-mail us at consult@ofcom.org.uk. We would particularly welcome thoughts on how Ofcom could more effectively seek the views of those groups or individuals, such as small businesses or particular types of residential consumers, who are less likely to give their opinions through a formal consultation.

A1.15 If you would like to discuss these issues or Ofcom's consultation processes more generally you can alternatively contact Vicki Nash, Director Scotland, who is Ofcom's consultation champion:

Vicki Nash Ofcom Sutherland House 149 St. Vincent Street Glasgow G2 5NW Tel: 0141 229 7401 Fax: 0141 229 7433 Email vicki.nash@ofcom.org.uk

Annex 2

2 Ofcom's consultation principles

A2.1 Ofcom has published the following seven principles that it will follow for each public written consultation:

Before the consultation

A2.2 Where possible, we will hold informal talks with people and organisations before announcing a big consultation to find out whether we are thinking in the right direction. If we do not have enough time to do this, we will hold an open meeting to explain our proposals shortly after announcing the consultation.

During the consultation

A2.3 We will be clear about who we are consulting, why, on what questions and for how long.

A2.4 We will make the consultation document as short and simple as possible with a summary of no more than two pages. We will try to make it as easy as possible to give us a written response. If the consultation is complicated, we may provide a shortened version for smaller organisations or individuals who would otherwise not be able to spare the time to share their views.

A2.5 We will normally allow ten weeks for responses to consultations on issues of general interest.

A2.6 There will be a person within Ofcom who will be in charge of making sure we follow our own guidelines and reach out to the largest number of people and organizations interested in the outcome of our decisions. This individual (who we call the consultation champion) will also be the main person to contact with views on the way we run our consultations.

A2.7 If we are not able to follow one of these principles, we will explain why. This may be because a particular issue is urgent. If we need to reduce the amount of time we have set aside for a consultation, we will let those concerned know beforehand that this is a 'red flag consultation' which needs their urgent attention.

After the consultation

A2.8 We will look at each response carefully and with an open mind. We will give reasons for our decisions and will give an account of how the views of those concerned helped shape those decisions.

Annex 3

3 Consultation response cover sheet

A3.1 In the interests of transparency and good regulatory practice, we will publish all consultation responses in full on our website, www.ofcom.org.uk.

A3.2 We have produced a coversheet for responses (see below) and would be very grateful if you could send one with your response (this is incorporated into the online web form if you respond in this way). This will speed up our processing of responses, and help to maintain confidentiality where appropriate.

A3.3 The quality of consultation can be enhanced by publishing responses before the consultation period closes. In particular, this can help those individuals and organisations with limited resources or familiarity with the issues to respond in a more informed way. Therefore Ofcom would encourage respondents to complete their coversheet in a way that allows Ofcom to publish their responses upon receipt, rather than waiting until the consultation period has ended.

A3.4 We strongly prefer to receive responses via the online web form which incorporates the coversheet. If you are responding via email, post or fax you can download an electronic copy of this coversheet in Word or RTF format from the 'Consultations' section of our website at www.ofcom.org.uk/consult/.

A3.5 Please put any parts of your response you consider should be kept confidential in a separate annex to your response and include your reasons why this part of your response should not be published. This can include information such as your personal background and experience. If you want your name, address, other contact details, or job title to remain confidential, please provide them in your cover sheet only, so that we don't have to edit your response.

Cover sheet for response to an Ofcom consultation

BASIC DETAILS

Consultation title: WRC-07 agenda item 1.4

To (Ofcom contact): Steve Green

Name of respondent: Tony Reed.

Representing (self or organisation/s): SAP REG / ESOA / GVF

Address (if not received by email): Received by email to tonyreduk@btconnect.com.

CONFIDENTIALITY

Please tick below what part of your response you consider is confidential, giving your reasons why

Nothing	<input checked="" type="checkbox"/>	Name/contact details/job title	<input type="checkbox"/>
Whole response	<input type="checkbox"/>	Organisation	<input type="checkbox"/>
Part of the response	<input type="checkbox"/>	If there is no separate annex, which parts?	

If you want part of your response, your name or your organisation not to be published, can Ofcom still publish a reference to the contents of your response (including, for any confidential parts, a general summary that does not disclose the specific information or enable you to be identified)?

DECLARATION

I confirm that the correspondence supplied with this cover sheet is a formal consultation response that Ofcom can publish. However, in supplying this response, I understand that Ofcom may need to publish all responses, including those which are marked as confidential, in order to meet legal obligations. If I have sent my response by email, Ofcom can disregard any standard e-mail text about not disclosing email contents and attachments.

Ofcom seeks to publish responses on receipt. If your response is non-confidential (in whole or in part), and you would prefer us to publish your response only once the consultation has ended, please tick here.

Name Mr A G Reed.

Signed (if hard copy)

Annex 4

4 Consultation questions

A4.1 This annex provides a list of the questions included in this consultation document.

Question 1: Do you agree with Ofcom's analysis of the benefit of identifying spectrum for IMT at WRC-07 and the general consideration that needs to be addressed for each band?

Although SAP REG / ESOA / GVF considers that the procedure for such an analysis outlined in section 3.11 above is logical and could be one element of the decision making process, SAP REG / ESOA / GVF members have received no information regarding the Ofcom analysis itself and we are therefore not in a position to answer this question.

Question 2: Do you agree with Ofcom's proposal to seek a primary mobile service allocation in the band 470 to 862 MHz and a Resolution to initiate studies at WRC-07 for an IMT identification at WRC-11?

The band 620 - 790 MHz is allocated to BSS. We would not have any problem with a primary mobile service allocation as proposed by Ofcom, providing the BSS allocation is taken into account along with Method A1 of the CPM Report relating to WRC-07 agenda item 1.11.

Question 3: Do you agree with Ofcom's proposal to support the development of a European Common Proposal for a co-primary allocation to the mobile (except aeronautical mobile) service and an identification for IMT in the band 3400 to 3800 MHz at WRC-07?

As already indicated above, SAP REG / ESOA / GVF does not agree with Ofcom's proposal to support the development of a European Common Proposal for a co-primary allocation to the mobile (except aeronautical mobile) service and an identification for IMT in the band 3400-3800 MHz at WRC-07.

Question 4: Do you agree with Ofcom's proposal to oppose any change to the allocations or an IMT identification in the band 2700 to 2900 MHz at WRC-07?

In the opinion of SAP REG / ESOA / GVF the case for 'no change' made in sub-sections 4.31 to 4.35 inclusive is not very convincing. SAP REG / ESOA / GVF sees no technical reason why the bands 3400-3600 MHz and 3600-3800 MHz should be considered suitable for identification for IMT whereas 2700-2900 MHz should not be considered suitable for IMT. However, since there are no allocations to satellite services within the band 2700-2900 MHz, SAP REG / ESOA / GVF has no strong reason to disagree with this particular Ofcom proposal.

Question 5: Do you agree with Ofcom's proposal to adopt a neutral position on whether the remaining bands are supported or opposed as candidates for a mobile allocation and IMT identification?

As already indicated above, SAP REG / ESOA / GVF disagrees with Ofcom's proposal to adopt a neutral approach in respect of the band 3800-4200 MHz, and proposes instead that there should be no change to the allocations and no IMT identification in this band.

Annex 5

5 Impact Assessment

Introduction

A5.1 The analysis presented in this annex represents an impact assessment, as defined in section 7 of the Communications Act 2003 (the Act).

A5.2 You should send any comments on this impact assessment to us by the closing date for this consultation. We will consider all comments before deciding whether to implement our proposals.

A5.3 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 Act, 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

The citizen and/or consumer interest

A5.4 The development of advanced mobile communications has a significant impact on consumers and citizens in the UK, as well in Europe and across the world. As discussed in the body of this consultation, the approach taken towards harmonisation is critical in ensuring that the highest possible benefits are realised from the introduction and proliferation of these services. In particular, citizens and consumers may enjoy lower prices and a higher quality and more diverse products and services where these services are most appropriately facilitated.

A5.5 In this regard, choosing the most appropriate band for identification, and ensuring maximum flexibility with respect to allocations, may be critical in fostering the development of IMT communication services to the ultimate benefit of consumers and citizens. A key factor in this respect is assessing which band is likely to offer the highest net benefits as the band to accommodate IMT. Importantly, this takes into account the costs imposed on existing and potential users of each band, and hence also on the consumers of these services. Thus the purpose of this consultation and accompanying IA is to obtain a clearer picture of the implications for each band of accommodating IMT mobile communications services.

Ofcom's policy objective

A5.6 As discussed, the objective of this exercise is to adopt the minimum degree and type of regulatory intervention necessary to best facilitate the development of IMT services, whilst also taking account of the associated costs to other users of spectrum.

Ofcom's wording here gives the impression that Ofcom has decided in advance that adequate spectrum to meet the forecast growth of IMT must be identified somewhere within the bands selected as candidates by WP8F, even if the impact on incumbent users is dire. In association with the explanations in sections 3.8 to 3.11 the phrase "whilst also taking account of the associated costs to other users" here appears to mean

simply determining what those costs would be. Those users and their providers would still have to bear those very real costs in order to accommodate the assumed future development of another service (IMT) by other providers.

A5.7 More specifically, the question to be addressed in this IA is what approach Ofcom should take towards each of the IMT candidate bands in order to bring about maximum benefits for consumers as well as minimise the costs imposed on other stakeholders.

Options considered

A5.8 The options below essentially represent different ways in which the above policy objective could be achieved. In this IA, the basic choices facing Ofcom are the approach taken to each of the bands with respect to IMT identification of that band. Therefore the options are as follows:

Candidate band	Policy option
410 to 430 MHz	Support, oppose, or neutral on IMT identification
450 to 470 MHz	Support, oppose, or neutral on IMT identification
470 to 862 MHz	Support, oppose, or neutral on IMT identification
2300 to 2400 MHz	Support, oppose, or neutral on IMT identification
2700 to 2900 MHz	Support, oppose, or neutral on IMT identification
3400 to 3600 MHz	Support, oppose, or neutral on IMT identification
3600 to 3800 MHz	Support, oppose, or neutral on IMT identification
3800 to 4200 MHz	Support, oppose, or neutral on IMT identification
4400 to 4990 MHz	Support, oppose, or neutral on IMT identification

Table 3: Policy options for candidate bands

A5.9 The above table represents the primary policy options for this IA. In addition, there is the issue of supporting or opposing an allocation of mobile to the bands where there is presently not a mobile allocation. The decision of whether to support, oppose or be neutral on such an allocation thus also represents a range of policy options to consider.

Analysis of the different options

A5.10 The body of this consultation considers the benefits and costs of each of these policy options. Thus it is not considered necessary to repeat that analysis here.

The preferred option

A5.11 On the basis of the analysis above, Ofcom is consulting on the following policy recommendation:

A5.12 A primary mobile service allocation in the band 470 to 862 MHz at WRC 07 and a Resolution to study the band for an identification for IMT at WRC 11.

The band 620 - 790 MHz is allocated to BSS. We would not have any problem with a primary mobile service allocation as proposed by Ofcom, providing the BSS allocation is taken into account along with Method A1 of the CPM Report relating to WRC-07 agenda item 1.11..

A5.13 Ofcom proposes to support the development of an ECP for a co-primary allocation to the mobile service and identification for IMT in the bands 3400 to 3600 MHz and 3600 to 3800 MHz.

For the reasons given in previous comments, SAP REG / ESOA / GVF does not agree with Ofcom's proposal to support the development of an ECP for a co-primary allocation to the mobile service and identification for IMT in the bands 3400-3600 MHz and 3600-3800 MHz. The UK should oppose the identification of these bands for IMT and support a "No Change" option for them.

A5.14 In view of the significant Government interest in the band 2700 to 2900 MHz, Ofcom proposes to oppose any change to the allocations or an IMT identification in this band at WRC-07

In The opinion of SAP REG / ESOA / GVF the case for 'no change' made in sub-sections 4.31 to 4.35 inclusive is not very convincing. SAP REG / ESOA / GVF sees no technical reason why the bands 3400-3600 MHz and 3600-3800 MHz should be considered suitable for identification for IMT whereas 2700-2900 MHz should not be considered suitable for IMT. However, since there are no allocations to satellite services within the band 2700-2900 MHz, SAP REG / ESOA / GVF has no strong reason to disagree with this particular Ofcom proposal.

A5.15 Ofcom proposes to adopt a neutral approach to the remaining candidate bands.

As already indicated in earlier comments, SAP REG / ESOA / GVF disagrees with Ofcom's proposal to adopt a neutral approach in respect of the band 3800-4200 MHz, and proposes instead that there should be no change to the allocations and no IMT identification in this band.

Annex 6

6 Summary table from CEPT CPG

Positions of CEPT administrations on candidate bands for IMT at WRC-07

An unsuccessful attempt was made to copy the table in Annex 6 from the pdf document issued by Ofcom to the present WORD version. However, SAP REG / ESOA / GVF notes that the table simply summarises the current positions of CEPT administrations on the candidate bands, and therefore has no comment on it.

In support of the foregoing comments the following attachment includes the results of some of the relevant studies carried out by SAP REG / ESOA / GVF members in recent months.

ATTACHMENT

{Please see files labeled "ModAttachment" and "ModEuroCapConturs"}