



# Update on the UK preparations for the World Radiocommunication Conference 2015 (WRC-15)

Update

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## About this document

Ofcom has today published an update on the key issues to be considered at the World Radiocommunication Conference 2015 (WRC).

WRCs are held approximately every four years and take key decisions concerning the identification and international harmonisation of spectrum bands.

Under a Government direction, Ofcom represents the UK at WRCs. The next conference takes place in Geneva from the 2 - 27 November 2015. It will consider a wide range of issues across a number of sector interests, including mobile broadband, maritime, aeronautical, satellite and science use of spectrum.

Today's update follows a consultation in June 2014 and is intended to inform the on-going preparation process and stakeholder engagement programme. We provide updated UK positions, taking into account the responses from the consultation.

In a number of cases, however, further work will be required to develop the UK position and we may publish another WRC update closer to the start of the conference.

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## Section 1

# Executive Summary

- 1.1 This Update sets out Ofcom's current thinking in relation to key issues that will be discussed at the World Radiocommunication Conference being held in November 2015 (WRC-15). It builds on responses received to the Consultation Document on WRC-15 that we published in June<sup>1</sup>.
- 1.2 WRCs are held approximately every four years and bring together thousands of engineers, diplomats and business executives from over 150 countries to discuss and agree a revision to the Radio Regulations (RRs). The RRs are an international treaty which provide a global framework for the many and varied uses of spectrum. Although WRCs are held only every 4 years, preparation for them is an ongoing process and some issues may straddle more than one WRC.
- 1.3 In some cases decisions taken at WRCs relate to services which are inherently international, such as aeronautical or satellite, where the nature of the service means that the UK has little discretion to act independently. However, even where the UK has some discretion to act at a national level, the drive for international harmonisation to support economies of scale and interoperability, as well as the need to prevent harmful cross-border interference, means that the RR are highly influential.
- 1.4 Ofcom leads for the UK at WRCs under a Direction from Government and also represents the UK in the preparatory work. In many cases UK positions for WRC-15 will not be finalised until shortly before the start of the Conference, taking into account ongoing international discussions and the results of technical studies. Ofcom will work closely with Government and stakeholders over the development of UK positions and final UK positions will be agreed and signed-off by the Government's Spectrum Strategy Committee (UKSSC). In some cases these positions will need to evolve during the Conference itself. This Update therefore sets out UK positions as they currently stand but also, in a number of cases, identifies where further work is required.
- 1.5 One of the most difficult and contentious issues to be addressed at WRC-15 concerns the future availability of spectrum for mobile broadband and Wi-Fi<sup>2</sup> services. This is of high importance to the UK given rapidly increasing demand for mobile broadband services. WRC-15 is aiming to identify further spectrum bands for mobile use and (where necessary) identify those frequency bands that are suitable for IMT<sup>3</sup> usage.

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<sup>1</sup> <http://stakeholders.ofcom.org.uk/consultations/wrc15/>

<sup>2</sup> WRC-15 Agenda Item 1.1 is assessing spectrum requirements for both mobile broadband and also for Wi-Fi. Wi-Fi is used in this document generally as a facility allowing computers, smartphones, or other devices to connect to the Internet or communicate with one another wirelessly within a particular area.

<sup>3</sup> IMT (or International Mobile Telecommunications) is a term used in the ITU to describe a framework of technical standards for mobile telephony. The IMT suite of standards, for mobile telephony, is a culmination and continuation of efforts involving governments and industry players to produce the next generation standards for global mobile communications.

This will help to give clarity to equipment manufacturers as to which bands they should target for the production of consumer devices, allowing them to benefit from economies of scale and leading to lower device costs for consumers. These decisions are addressed in WRC-15 Agenda Items 1.1 and 1.2 for which Ofcom:

- Expects to continue to support the frequency bands 1 427 – 1 452 MHz, 1 452 – 1 492 MHz and 3 400 – 3 800 MHz for IMT identification at WRC-15. In line with Ofcom's recent Statement on 700 MHz<sup>4</sup> (which confirmed that Ofcom would make this band currently used for terrestrial television available for mobile data use), we also support the 700 MHz band for IMT identification. This confirms the Decision that was effectively taken at WRC-12.
  - Expects to support IMT identification for the 1 492 – 1 518 MHz band while seeking to ensure that we maintain flexibility to protect fixed links operating in the band in the UK and address the global protection of mobile satellite services operating above 1 518 MHz.
  - Does not expect to support a mobile allocation or IMT identification in the band 5 925 – 6 425 MHz which is currently used for satellite uplinks.
  - Notes that the band 5 725 – 5 925 MHz is already used for licence-exempt devices in the UK and could be made available for Wi-Fi devices. We therefore consider that no further regulatory action is required at WRC-15.
  - Will seek to ensure the protection of digital terrestrial television (DTT) operating in the 470 – 694 MHz band in the UK. As a result we currently anticipate opposing a co-primary mobile allocation (which would see the band allocated to both mobile and broadcasting) in the 470 – 694 MHz band. We will take this position into relevant upcoming meetings in the European preparatory process for WRC-15.
- 1.6 In relation to the bands 2 700 – 2900 MHz, 3 800 – 4 200 MHz and 5 350 – 5 470 MHz, Ofcom continues to believe that there is merit in further investigating these bands for mobile broadband and/or IMT identification. However we accept that, noting the incumbent use (including respectively aeronautical, satellite and space science services), there appears to be limited international support for this position at the current time. As a result we anticipate that it will not be possible to achieve mobile allocation/IMT identification at WRC-15 but we will instead keep discussion of these bands alive for consideration at a future conference. In particular, we expect to support an agenda item covering the 5 350 – 5 470 MHz band for the next WRC which is expected to be held in 2019.
- 1.7 This Update also covers a number of other WRC-15 Agenda Items addressing a wide range of spectrum use and potentially impacting many spectrum users. Among the higher profile issues covered in this Update, Ofcom:

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<sup>4</sup> <http://stakeholders.ofcom.org.uk/consultations/700MHz/statement/>

- Confirms that we will oppose the identification of dedicated harmonised spectrum for Public Protection and Disaster Relief (PPDR), instead pursuing a flexible approach that will allow PPDR agencies (such as the emergency services) to choose the most appropriate solution to meet national needs (**Agenda Item 1.3**). This position is supported by UK Government in relation to their plans to procure services to support emergency services communications.
- Notes that we are unable to support, at least at the current time, the use of the FSS (Fixed Satellite Service) for the control of unmanned aircraft, noting in particular the concerns that have been raised by the aviation authorities (such as the Civil Aviation Authority in the UK). We will however keep this position under review and will continue to facilitate discussions between the satellite and aeronautical sectors (**Agenda Item 1.5**).
- Confirms that we will continue to support the retention of the leap second which is occasionally inserted into Co-ordinated Universal Time (UTC) to maintain the link between astronomical and atomic time. We expect, subject to Government confirmation, to take this position into WRC-15 (**Agenda Item 1.14**).
- Notes that an additional item on global flight tracking has been added to the agenda of WRC-15. This addition was agreed at the recent ITU Plenipotentiary Conference<sup>5</sup> held in Korea in October/November 2014 and has its roots in the disappearance of Malaysian Airlines flight MH370 in March 2014 and the loss of Air France flight 447 in 2009. Ofcom will actively engage in the relevant ITU and European groups that are considering this issue and will input to the technical studies.
- Confirms our continued support for a future Agenda Item (at WRC-19) on the availability of spectrum above 6 GHz for mobile broadband. Such spectrum is likely to be particularly useful for the next generation of mobile services (known as 5G). Ofcom is committed to the inclusion of this item on the WRC-19 agenda and will undertake further work to determine the exact scope of the agenda item (**Agenda Item 10**).

The UK position on a number of the Agenda Items will continue to evolve in the run-up to WRC-15. Ofcom will continue to engage in the European and international discussions relating to WRC-15, working closely with Government and UK stakeholders. We may publish a further Update on our preparations for WRC-15 during the course of 2015.

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<sup>5</sup> The Plenipotentiary Conference is the top policy-making body of the ITU. Held every four years, the Conference decides the future role of the ITU and sets its objectives in relation to the worldwide development of information and communication technologies (ICTs).

## Section 2

# Introduction

- 2.1 On 27 June 2014 Ofcom published a consultation document<sup>6</sup> seeking views on the issues included on the agenda for the 2015 World Radiocommunication Conference (WRC-15) of the International Telecommunication Union (ITU) which is being held in Geneva from 2<sup>nd</sup> to the 27<sup>th</sup> November 2015. WRCs are held approximately every four years in order to update an international treaty which provides a framework for the international allocation and harmonisation of spectrum bands. This International Treaty is called the ITU Radio Regulations (RRs).
- 2.2 The RRs have, for many years, determined the pattern of spectrum use for almost the entire radio spectrum and almost all radio services. In many cases, it is necessary to do this at international level in order to:
- Avoid or keep interference between countries to a minimum;
  - Seek internationally harmonised spectrum allocations. This helps to give clarity to equipment manufacturers and service operators around frequency bands to focus upon, thus helping to deliver economies of scale benefits to wireless users; and
  - Recognise the international nature of some radio services (for example, aircraft, maritime and satellite services all require spectrum to be available seamlessly across national boundaries).
- 2.3 Ofcom represents the UK at WRCs under Ministerial Direction and manages the preparatory work on behalf of the UK. This preparatory work includes working groups and committees to develop UK positions for the Conference. Furthermore Ofcom attends European and international meetings to develop European positions and hold preliminary discussions with other regional groups. In doing this Ofcom works closely with UK Government and stakeholders and final UK positions for WRC-15 will need to be agreed and signed-off by the Government's Spectrum Strategy Committee (UK SSC). The consultation document issued in June 2014 was an important part of Ofcom's preparatory process for WRC-15.
- 2.4 As well as explaining the process through which Ofcom manages UK preparations for WRC-15, the consultation document also set out the priority provisionally given to each agenda item together with the criteria used to generate that prioritisation. The document explained the stakeholder engagement process being followed for WRC-15 and asked for views on the preliminary UK position for each of the WRC-15 agenda items. It contained 44 questions and the period for responses closed on 19 September.

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<sup>6</sup> <http://stakeholders.ofcom.org.uk/consultations/wrc15/>

2.5 The document aimed to provide a broad overview for people unfamiliar with the WRC process. This was then followed by more specific sections which provided more detailed information on each of the Agenda Items being considered at WRC-15. We received approximately 100 responses to the consultation document, which between them addressed all the questions that were asked.

2.6 The WRC-15 consultation document grouped the WRC-15 agenda items into broader categories. Though not the same as those used in the international discussions that lead up to the WRC, we felt these categories provided a useful basis around which to structure the document and we have continued with the same structure for this update. Thus Section 3 addresses the UK preparatory arrangements for WRC-15 (see pages 7 to 9) and is followed by Sections 4-9 which deal with the individual Agenda Items under the following headings.

- **Electronic Communications Services:** This covers spectrum allocations to communications systems that would predominantly deliver services to end users. This includes services such as mobile and mobile broadband (including Wi-Fi), satellite services for use by domestic users and the use of radio by the amateur radio community. See pages 10 to 16.

*Relevant agenda items: 1.1, 1.2, 1.3, 1.4, 1.6 (1.6.1 and 1.6.2), 1.7, 1.9 (1.9.1), 1.10*

- **Transport, including radiodetermination:** This includes services used by aircraft and aircraft support services, those used by marine services and radar systems. See pages 17 to 19.

*Relevant agenda items: 1.5, 1.8, 1.9 (1.9.2), 1.15, 1.16, 1.17, 1.18*

- **Scientific use of spectrum:** including spectrum use by Radio Astronomy and the Earth Exploration Satellite Service. Radio astronomy services are predominately used for the study of radio emissions in outer space, and the Earth Exploration Satellite Service uses spectrum to monitor changes to the environment via satellites. See pages 20 to 21.

*Relevant agenda items: 1.11, 1.12, 1.13, 1.14*

- **Standing agenda items:** These are agenda items through which general regulatory changes can be made to the Radio Regulations. See pages 22 to 25.

*Relevant agenda items: 2, 3, 4, 5, 6, 7, 8, 9 (and sub issues thereof)*

- **New WRC-15 Agenda Item – ITU Plenipotentiary Conference 2014:** In the period between the consultation and the publication of this update, the agenda of WRC-15 has been amended to include an additional item which will consider the subject of Global Flight Tracking. See page 26.

- **Future Agenda items:** Every WRC develops the agenda for the next conference and the conference subsequent to that. The UK has made a specific proposal to place, on the WRC-19 agenda, consideration of spectrum for mobile broadband, including 5G, in frequency bands above 6 GHz. See pages 27 to 29.

*Relevant agenda items: 10*

## Section 3

# WRC-15: Preparation and prioritisation

## WRC Preparatory Process and IFPG arrangements

- 3.1 **Question 1** asked: Do you have any comments on the mechanism for UK preparation for WRC-15 and the role of Ofcom in this process?
- 3.2 A number of respondents indicated that they considered the UK preparatory process for WRC-15 to be working well and some suggested that it was working better than the equivalent process before WRC-12. However, others expressed concern that there was less opportunity for stakeholders to feed into the current process when compared to the process adopted for previous WRCs.
- 3.3 Ofcom restructured the International Frequency Planning Group (IFPG), which develops UK positions for WRC, following the WRC in 2012. We explained in the consultation document how the restructured IFPG provides a forum for Government and Ofcom to hold strategic discussions concerning the UK approach to key WRC Agenda Items. This has proved valuable. At the same time, however, we want to ensure that stakeholders are able to continue to feed into the debate through the Working Groups of the IFPG which undertake detailed work across each individual agenda item. Government also participates in the IFPG WG meetings and is therefore able to engage and have visibility of the issues and discussions at all stages in the preparatory process.
- 3.4 While Ofcom believes that these arrangements are working well, we do recognise the concerns raised by some stakeholders. As a result we have **established a stakeholder group** which sits above the IFPG Working Groups and which therefore provides an opportunity for more strategic discussion, especially in relation to overarching WRC issues. This group will meet every 2-3 months in the run-up to WRC-15 and will run alongside the existing meeting structures and arrangements. In particular, this WRC stakeholder group does not replace the IFPG Working Groups which will continue to meet and be the primary forum for discussion of individual agenda items in the UK.
- 3.5 One response commented that the current policy of only allowing UK Delegation members visibility of the UK brief can put UK organisations or individuals attending international meetings outside the UK delegation at a disadvantage. The same response also reflected that Ofcom did not appear receptive to allowing organisations to speak directly for the UK at meetings.
- 3.6 Ofcom would like to discuss these issues further at the WRC stakeholder meeting described above. In relation to the UK brief, it has been clear for some time that copies of the UK brief have on occasion been distributed outside of the UK delegation. As a result we do not tend to include sensitive material in the UK brief and for this reason we see little problem with making the brief more widely available. However, we would like to discuss this situation more fully with the UK delegation before reaching a final decision.

- 3.7 In terms of allowing UK stakeholders to speak on behalf of the UK we can envisage scenarios, such as highly technical arguments affecting a limited number of stakeholders, when such an approach may be beneficial. However, we equally believe that such situations need to be very carefully managed. We propose to consider further with the UK delegation as part of a broader discussion to consider how we can maximise the effectiveness of the UK delegation. This will include our interactions with other countries and regional groups both during and in preparation for WRC-15.
- 3.8 After WRC-15, **we will undertake a full review of the UK WRC preparatory process** in order to inform the process for WRC-19. This review will include an assessment of the IFPG, its Working Groups and the new WRC stakeholder meeting explained above, as well as more general stakeholder engagement. This is a regular review that we hold at the end of each WRC cycle.
- 3.9 **Question 2** asked: Do you agree with the prioritisation of the agenda items (as shown in Annex 6 of the Consultation Document), and if not why?
- 3.10 The majority of responses agreed with the current UK prioritisation applied to agenda items. However there were suggestions to change the UK prioritisation for a few agenda items. As a result of the responses received and following consideration of the current state of discussions the following changes are made to the UK prioritisation.

WRC-15 Agenda Item	Description	Previous UK priority	Revised UK priority
1.5	to consider the use of frequency bands allocated to the fixed-satellite service not subject to Appendices 30, 30A and 30B for the control and non-payload communications of unmanned aircraft systems (UAS) in non-segregated airspaces, in accordance with Resolution 153 (WRC-15);	Medium	High
1.15	to consider spectrum demands for on-board communication stations in the maritime mobile service in accordance with Resolution 358 (WRC-15);	Medium	Low
9.1.3	to consider and approve the Report of the Director of the Radiocommunication Bureau, in accordance with Article 7 of the Convention:  on the activities of the Radiocommunication Sector since WRC-12;  Use of satellite orbital positions and associated frequency spectrum to deliver international public telecommunication services in developing countries	Low	Medium

9.2	to consider and approve the Report of the Director of the Radiocommunication Bureau, in accordance with Article 7 of the Convention, on any difficulties or inconsistencies encountered in the application of the Radio Regulations	Low	Medium
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A full breakdown of the UK priority given to all WRC-15 agenda items is given at Annex 1.

- 3.11 Some responses raised concerns that Ofcom is placing too much priority on meeting the spectrum needs for terrestrial mobile broadband. Ofcom is aware that WRC-15 Agenda Item 1.1 (spectrum to meet the future needs for wireless broadband) in particular is going to be a major issue at WRC-15 and has implications for a wide range of stakeholders. It is also of high importance to UK citizens and consumers given the impact it may have on the availability and performance of mobile broadband services in the future in the UK. For this reason, Ofcom has put considerable resources into the preparatory work on this issue and we expect this to continue in the run-up to WRC-15. Nonetheless, Ofcom is very keen to emphasise its intent to take into account the needs of all spectrum users and ensure that the diversity of spectrum use in the UK is properly reflected in its international work.

## Section 4

# Electronic Communications Services

## Agenda Item 1.1 - Additional allocations for Mobile (IMT) services and applications

- 4.1 **Question 3** asked: Do you agree with Ofcom's general approach on WRC-15 agenda item 1.1?
- 4.2 There were a wide range of issues covered by respondents in respect of this question. A common theme, especially from the satellite community, was the view that the studies on future spectrum requirements for IMT are flawed and have resulted in overstated requirements. Ofcom is aware of these concerns and the criticisms that have been levelled at the forecasts. Ofcom notes that all forecasts are likely to have limitations and as such we believe they are best used as a guide to possible future outcomes, and not a definite answer to questions of future demand.
- 4.3 Some responses noted that the large list of candidate bands considered under Agenda Item 1.1 has been a problem and suggested that this had implications for any future Agenda Item considering the availability of spectrum for mobile broadband above 6 GHz. Another respondent suggested a more strategic approach to future spectrum requirements for wireless broadband was required at European level and suggested that the EU's Radio Spectrum Policy Group could take on this role. Finally, another respondent noted that international engagement should not seek to solely drive national spectrum issues but should also take into account broader international objectives.
- 4.4 Ofcom takes note of these comments and will take them into account both in relation to ongoing work on Agenda Item 1.1 and also with respect to other relevant agenda items (such as Agenda Item 10 on future agenda items).
- 4.5 **Question 4** asked: In view of the recent developments on the 1 492 - 1 518 MHz and 5 925 – 6 425 MHz bands, what are your views on the potential identification of these bands for IMT and/or RLAN and on the mobile data applications that could make use of them? How do you believe the sharing with the fixed service and the fixed satellite services could be managed at the national level?
- 4.6 For 1 492 – 1 518 MHz, some responses supported a co-primary mobile allocation. However the incumbent fixed link users/vendors expressed reservations and urged careful consideration of the impact on existing services, including emergency services. One 1.4 GHz fixed link equipment vendor recognised that the band was supported internationally but wished to ensure that fixed link use would not be impacted. Another response highlighted the use of the band for links to rural PSTN connections.
- 4.7 Some satellite stakeholders expressed concerns about potential interference issues into the adjacent band (upwards in frequency from 1 518 MHz) which is used by mobile satellite service operators. **Ofcom will seek to ensure that the issue of protecting mobile satellite terminals in the adjacent band above 1 518 MHz** (with respect to the mobile service) is addressed in future international discussions.
- 4.8 Noting the responses received, Ofcom is of the view that there continues to be significant interest in this band for wireless broadband. At the same time, there is

also strong support for the need to retain national flexibility in respect of the fixed links usage. Given this, and recognising that the band already has a primary mobile allocation internationally, **we consider that the UK should support IMT identification for the 1 492 – 1 518 MHz band at WRC-15**, thereby retaining a future possible option in this band for wireless broadband. In taking this position, Ofcom will ensure that the existing national use of the band in the UK, by fixed links, is fully taken into account during relevant European and international discussions **and we will seek to ensure that our national flexibility is preserved.**

- 4.9 Responses expressed little support for identification of 5 925 – 6 425 MHz at WRC-15 until further studies have taken place to assess the sharing between FSS and mobile or RLAN services. Some responses, whilst not explicitly opposing, noted that the restrictive sharing conditions meant the band did not appear attractive for a co-primary mobile allocation. **Whilst we will continue to monitor developments with respect to this band, we do not anticipate supporting this band for mobile broadband/IMT identification at WRC-15.**
- 4.10 **Question 5** asked: For the band 1 427 – 1 452 MHz, do you agree that it is right to support the further consideration of this band, recognising the Ministry of Defence interest?
- 4.11 The majority of responses supported IMT identification for this band at WRC-15. Noting these responses, the UK will continue to support the band for IMT identification at WRC-15, recognising that UK flexibility should be retained and the need to protect passive services operating in the frequency band below 1 427 MHz (i.e. between 1 400 – 1 427 MHz).
- 4.12 **Question 6** asked: For the band 1 452 – 1 492 MHz, which is already subject to a harmonisation measure within CEPT, do you agree that this band be supported for an IMT identification at WRC-15?
- 4.13 This band is already supported by UK and CEPT and is subject to a harmonisation measure within CEPT. **The UK will continue to support this band for IMT identification at WRC-15.**
- 4.14 **Question 7** asked: Recognising the UK plans to release spectrum in the 3 400 – 3 600 MHz band, coupled with the binding European Commission Decision (for electronic communications services) in the bands 3 400 – 3 600 MHz and 3 600 – 3 800 MHz, do you agree that these bands should be supported for both a co-primary mobile allocation and IMT identification?
- 4.15 Many responses supported these bands being put forward but others, especially the satellite community, were strongly opposed. Ofcom however notes that EC Decisions are already in place and are binding on Member States. Moreover the frequency band 3 400 – 3 600 MHz is already allocated to mobile and identified for IMT, via a Radio Regulation footnote in a number of countries, including the UK. On this basis and noting the potential of these bands for wireless broadband, we will **continue to support these bands being identified for IMT at WRC-15 and, in the case of 3 400 – 3 600 MHz, support greater international recognition for the mobile allocation and IMT identification.**

- 4.16 **Question 8** asked: Noting that there are a number of countries that strongly oppose the inclusion of the 3 800 – 4 200 MHz band, do you agree that we should support the longer term consideration of this band for potential mobile broadband use?
- 4.17 The general view of responses received was similar to that for the band 3 400 – 3800 MHz, but satellite opposition was stronger. At a European level there appears to be little support for this band and there seems little prospect of any progress being made at WRC-15. Therefore, although Ofcom thinks that there is merit in further studying this band, especially noting its adjacency to 3.4 - 3.8 GHz, **we do not see benefit in pursuing this band for identification at WRC-15. We will however keep this position under review and believe that there is benefit in continuing studies on the co-existence between the fixed-satellite service and mobile broadband in this band. In particular we believe that there could be benefit in including this band on the Agenda of a future Conference.**
- 4.18 **Question 9** asked: Noting that there is currently limited international support for a co-primary mobile allocation in the band 2 700 – 2 900 MHz, do you think that we should continue to support this band at WRC-15?
- 4.19 Some responses suggested continued UK support for this band in the hope that backing will emerge internationally. However, support at a European and international level currently appears to be very limited. **Ofcom will keep this situation under review but is aware that there is currently little prospect of achieving a mobile allocation/IMT identification at WRC-15. We will instead seek to keep discussion of this band alive for consideration at a future Conference.**
- 4.20 **Question 10** asked: Do you agree that the 5 350 – 5 470 MHz and 5 725 – 5 925 MHz bands could provide important additional capacity for Wi-Fi and similar systems? If so, and noting the need to protect both earth observation satellites and radar systems, do you agree that sharing solutions should be considered at WRC-15?
- 4.21 Whilst some responses were in favour of additional spectrum for Wi-Fi at 5 GHz, overall the responses were rather mixed in respect of these bands. A number of responses noted that since sharing studies are currently being concluded between Wi-Fi and FSS using 5 725 – 5 925 MHz, no position could be proposed until completion of these studies.
- 4.22 Regarding 5 350 – 5 470 MHz, some responses offered support, but a number were strongly opposed; especially those from the space science community (i.e. earth exploration satellites including the European Copernicus satellite programme which uses the band). A number of responses agreed that this issue would be better dealt with at a future WRC (in 2019) which would enable further mitigation studies to be undertaken in the meantime.
- 4.23 Since the Consultation document was published, it has become clear that this band will not have the required level of European or International support for a mobile allocation for RLAN usage to be made at WRC-15. Instead there is a proposal to have further studies and discussion at a future WRC, ideally WRC-19. **Therefore Ofcom does not see any potential for a mobile allocation at WRC-15 for the band 5 350 – 5470 MHz, but we will support an Agenda Item at WRC-19 and action at WRC-15 to ensure that appropriate mitigation studies are undertaken.**

- 4.24 **For 5 725 – 5 925 MHz**, Ofcom notes that the bands 5 725 – 5 830 MHz and 5 830 – 5 850 MHz are already used for licence-exempt devices in the UK and could be made available for Wi-Fi devices. We also note that 5 850 – 5 925 MHz is allocated to the Mobile service on a primary basis. We are aware that studies are ongoing but consider that **action to make these bands available for Wi-Fi at WRC-15 is not needed. However, it is possible that action may be required at a future Conference (e.g. WRC-19) if the studies show that amendment to certain regulatory provisions that apply to the bands between 5 725 – 5 850 MHz, is needed.**
- 4.25 **Question 11** asked: Do you agree that we should oppose a co-primary mobile allocation at WRC-15 for the band 470 – 694 MHz?
- 4.26 The majority of responses agreed with Ofcom’s proposal for the UK to oppose a co-primary mobile allocation in the band. These responses highlighted the key and important role that the Digital Terrestrial Television (DTT) platform currently plays in broadcasting delivery and emphasised the wide consumer interests. In addition the PMSE usage in the UHF band was also highlighted by some responses. On the other side, some responses reflected that the fast moving mobile broadband environment meant that opposing a co-primary mobile allocation would be too short-term a view and warned that such an approach might result in the UK being left behind where others move ahead. These responses noted that supporting a co-primary mobile allocation would offer regulatory flexibility and would provide a platform for the UK to participate in the technical standardisation work.
- 4.27 Ofcom explained in a discussion document on the Future of Free to View Television published on 28 May 2014<sup>7</sup>, that we do not currently expect full switch-off of DTT until post 2030, unless there were to be a significant policy intervention to support a more aggressive timetable for change. Added to this is our recognition that the on-going importance of DTT and barriers associated to IPTV availability and take-up could make DTT switch-off unlikely until at least 2030.
- 4.28 Ofcom acknowledges the benefits of flexibility for the band 470 – 694 MHz over the longer term but equally we want to ensure that regulatory decisions do not create uncertainty and risk holding back investment. Some responses indicated that the use of supplemental downlink (SDL) would remove some of the technical complexities of a traditional duplex frequency arrangement and limit the technical compatibility issues between countries. One response proposed that the UK should take forward a proposal for a secondary allocation.
- 4.29 We recognise that SDL is one of a number of interesting technological innovations that have emerged over the past few years. We will continue to monitor these and further technological developments in the future.

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<sup>7</sup> See <http://stakeholders.ofcom.org.uk/consultations/700MHz/ftv/>

- 4.30 Taking these points into consideration and noting previous Ofcom Statements which have highlighted the need to protect DTT services in the 470 – 694 MHz band in the UK, **Ofcom anticipates opposing a co-primary mobile allocation and IMT identification in the 470 – 694 MHz band at WRC-15. We will take this position into the relevant upcoming meetings of European preparatory process starting with the CEPT PTD meeting in January 2015.**

### **Agenda Item 1.2 - Mobile allocation in the frequency band; 694 - 790 MHz**

- 4.31 **Question 12** asked: Do you agree that the UK should continue to support harmonisation of 694 - 790 MHz for mobile broadband and an out-of-band emission limit for protection of DTT reception in an ITU-R Recommendation, alongside an acknowledgement that 694 MHz should be the lower frequency boundary for the band?
- 4.32 The responses received were broadly split between those that agreed that we should continue to support mobile allocation/IMT identification in the 694 – 790 MHz band, and those that did not agree with that position. Those that did not agree were concerned that this might impact the DTT platform in the UK. Ofcom recently published a statement<sup>8</sup> on future plans for the 700 MHz (694 – 790 MHz) band: “*Decision to make the 700 MHz band available for mobile data*”. In this Statement we make it clear that we will aim to ensure that the change in use of the 700 MHz band occurs in a way that safeguards the important benefits that DTT and PMSE services deliver to citizens and consumers.
- 4.33 Since we published our consultation document the international discussions have formally considered the proposed draft ITU-R Recommendation on setting limits for the out-of-band emissions that fall outside the 694 - 790 MHz band. These discussions took place at a recent international meeting<sup>9</sup> but agreement could not be reached on the content of the draft Recommendation. Whilst that document was therefore not formally adopted we will continue to monitor activities, particularly with respect to how that Recommendation is now taken forward.
- 4.34 We will continue to support co-primary mobile allocation/ IMT identification, in the 694 – 790 MHz band, being made at WRC-15.

### **Agenda Item 1.3 - Broadband Public Protection and Disaster Relief (BPPDR)**

- 4.35 **Question 13** asked: Do you agree that any harmonisation measures for PPDR use should be sufficiently flexible to enable PPDR agencies to choose the most appropriate spectrum solutions nationally?
- 4.36 The majority of responses agreed with this statement, although some expressed concern over bands that might be studied. A small number of responses supported dedicated spectrum, but even these tended to recognise the need for countries to have options to manage their own needs.

<sup>8</sup> <http://stakeholders.ofcom.org.uk/consultations/700MHz/statement/>

<sup>9</sup> Meeting of ITU-R Study Group 5 (10<sup>th</sup> – 11<sup>th</sup> November 2014)

- 4.37 We will maintain the position of supporting national flexibility in order to enable PPDR agencies to choose the most appropriate solution to suit their national needs. We will oppose any solution which seeks to identify dedicated bands for emergency services use.

#### **Agenda Item 1.4 - Amateur service, on a secondary basis, within the 5 250-5 450 kHz band**

- 4.38 **Question 14** asked: Do you have any comments on the potential use by the amateur service in the 5 250 to 5 450 kHz band?
- 4.39 This band is managed in the UK by MoD, which already allows UK amateurs limited access.
- 4.40 Ofcom has in the past offered some support for a wider allocation, but equally we have been very clear that this is a matter for the MoD who will ultimately define what the UK can support, into the international preparatory processes, for amateur use in this band.

#### **Agenda Item 1.6 - Additional fixed satellite allocations between 10 and 17 GHz**

- 4.41 **Question 15** asked: Do you agree that if any allocations to the fixed satellite service in the 10-17 GHz range impose undue constraints on existing services then further studies on the demand and justification for use of the spectrum would need to be carried out?
- 4.42 Making additional allocations to the fixed-satellite service was widely supported by those satellite industry representatives who responded to the consultation. On the other hand vendors of fixed link equipment, where fixed links share use of these bands with satellite use, expressed caution against making additional FSS allocations. Some satellite responses reflected that Ofcom's participation in satellite coordination meetings gave a good indication of the difficulty in obtaining coordination agreements between satellite operators and that this was a good guide to the demand for spectrum in the bands. Ofcom is aware of the difficulties raised by some co-ordination agreements but equally believes that there are different reasons as to why such difficulties arise. We note that not all satellite systems subject to coordination are actually launched and put into service. A number of responses felt that the priority of this agenda item should be raised to high, from medium. We will keep this situation under review but for the time being have kept this agenda item at medium.
- 4.43 We are aware that there are ongoing studies in ITU and CEPT assessing the current allocations in the band (i.e. fixed, mobile and some science services, but not IMT as it is not currently identified in the bands under discussion). These **studies will inform the development of the UK position going forward.**

### **Agenda Item 1.7 – Review of Fixed Satellite Service (FSS) use in the band 5 091 – 5 150 MHz**

- 4.44 **Question 16** asked: Do you agree that the UK should support retaining the recognition for aeronautical radionavigation use, but equally support reviewing the limits associated with the FSS with a view to facilitating better use by the FSS?
- 4.45 The majority of responses agreed with continued recognition of aeronautical use and supported flexibility in the limits. One response indicated the importance of the 5 GHz band to the defence and aviation industries and was thus reluctant to support FSS use.
- 4.46 Ofcom will continue with its current position to support a review of the limits on the fixed satellite service (FSS) use, whilst retaining the aeronautical radionavigation allocation.

### **Agenda Item 1.9 (1.9.1) - Additional fixed satellite (FSS) allocations in the 7/8 GHz bands**

- 4.47 **Question 17** asked: Do you agree that the UK should support new primary allocations for the fixed-satellite service in the 7/8 GHz bands, with the proposed restrictions?
- 4.48 The majority of responses to this question agreed that the UK should support new primary allocations of 2 x 100 MHz to FSS in the 7/8 GHz band. Some responses stressed that such allocations to FSS should include restrictions so as not to place additional constraints on existing services.
- 4.49 Ofcom will continue with its current position of supporting additional allocations to the fixed-satellite service with the proposed restrictions as outlined in the consultation document

### **Agenda Item 1.10 - Additional mobile satellite IMT allocations in the 22-26 GHz range**

- 4.50 **Question 18** asked: Do you agree that the UK should not support new allocations for the mobile-satellite service in 22-26 GHz as they are not justified and that the focus should instead be upon the continued protection of the incumbent services?
- 4.51 The majority of responses agreed with the proposed UK position. As a result, Ofcom maintains its position to **oppose any new allocations for the mobile satellite service in the band 22 – 26 GHz at WRC-15.**

## Section 5

# Transport, including Radiodetermination

## Agenda Item 1.5 - Use of fixed-satellite service bands for the control of unmanned aircraft

- 5.1 **Question 19** asked: What are your views on the use of FSS spectrum allocations for Unmanned Aircraft Systems (UAS), recognising the shared regulatory responsibility and the safety considerations for the control of unmanned aircraft?
- 5.2 The majority of responses were from the satellite industry (both UK and overseas) which, with one exception, considered that the UK should support the use of the FSS bands for unmanned aircraft with the minimum of regulatory action.
- 5.3 The satellite industry view was countered by both the UK CAA and NATS who require stronger regulatory recognition in the international Radio Regulations.
- 5.4 Some respondents suggested that we had misinterpreted the ICAO (International Civil Aviation Organisation) view on this agenda item and that we should therefore be able to support unmanned aircraft under the less prescriptive regime currently being discussed. However, since CAA, and to an extent the Department of Transport, lead for the UK in ICAO, it would not be appropriate for Ofcom to try to interpret the ICAO position on this Agenda Item. **We continue to work with CAA on this matter.**
- 5.5 Given the advice of CAA, we have concluded that the **UK cannot support the solution proposed by the satellite industry** (under which beyond-line-of-sight UAS control and non-payload communications (CNPC) links are considered to operate as part of the FSS). However, noting the strong views on both sides, **we will keep this position under review and will continue to engage closely on this matter and follow the ongoing debates.**
- 5.6 Given the levels of interest in this issue, we have lifted the priority of this agenda item from **Medium** to **High**.

## Agenda Item 1.8 - review the provisions relating to earth stations located on board vessels (ESVs)

- 5.7 **Question 20** asked: Do you have any view on the need, or otherwise, to modify the restrictions that relate to the operation of ESVs in the bands 5 925 – 6 425 MHz and 14 – 14.5 GHz?
- 5.8 Many responses indicated that the coordination distances in the current regulations may be out of date since state-of-the-art ESV technology allows the use of power levels lower than those foreseen in the regulations, thereby enabling the coordination distance to be reduced. Some responses also emphasised that any revised limits would still need to protect incumbent fixed and space science services. **Ofcom will take these views into account in ongoing discussions under this agenda item.**

### **Agenda Item 1.9 (1.9.2) - Potential allocations to the maritime-mobile satellite service in 7/8 GHz**

- 5.9 **Question 21** asked: What are your views on a potential new allocation to the maritime mobile satellite service, recognising the UK interest in the other services that make use of the bands under consideration?
- 5.10 Responses indicated that the UK should not support new allocations to the maritime mobile-satellite service in the 7/8 GHz band. **Ofcom would expect to oppose any such allocation at WRC-15.**

### **Agenda Item 1.15 - Spectrum demands for maritime on-board communications**

- 5.11 **Question 22** asked: Do you agree that the UK should not support a proposal for additional UHF spectrum for maritime on-board communications and that narrower channels will help to increase capacity?
- 5.12 The general flavour of responses to this question supported the view expressed in the question. Therefore **Ofcom would not expect to support a proposal for additional spectrum for maritime on-board communications.** We continue to believe that narrower bandwidths will deliver an increase in the total number of channels available, thereby helping to alleviate congestion. As we note in section 3 of this document, current discussions under this Agenda Item appear to have stabilised to a point where we believe it is appropriate to lower the priority from medium to low. However Ofcom, as with all agenda items, will keep priorities under review between now and the conference itself.

### **Agenda Item 1.16 – Development of the maritime Automatic Identification System (AIS)**

- 5.13 **Question 23** asked: What are your views on any necessary regulatory provisions for AIS in the bands already identified for maritime use?
- 5.14 Ofcom will take into account responses which expressed broad support for implementation of the VHF Data Exchange System as an application of AIS.

### **Agenda Item 1.17 - Potential allocations for wireless avionics intra-communications (WAIC)**

- 5.15 **Question 24** asked: Where the appropriate radio regulatory provisions are established for use in existing aviation related bands, do you agree that the UK should support regulatory conditions for the accommodation of WAIC applications?
- 5.16 Responses expressed support for developing regulatory conditions to allow the accommodation of WAIC. Some responses emphasised the need to protect services in bands adjacent to the emerging preferred band for WAIC of 4 200 – 4 400 MHz. Ofcom will take these views into account.

### Agenda Item 1.18 – Radar for automotive applications in 77.5 - 78.0 GHz

- 5.17 **Question 25** asked: Do you agree that the UK should support a generic radiolocation allocation in the 77.5 – 78 GHz band, where appropriate technical conditions are established?
- 5.18 Responses to this question raised a number of issues. Some pointed out that technology similar to that used in the automotive industry is being developed for use in wingtips of taxiing aircraft and thus not limiting any allocation to automotive use might offer advantages.
- 5.19 Other responses highlighted the primary amateur and amateur satellite allocations and questioned the need for making a radiolocation allocation for use by licence-exempt devices.
- 5.20 Some other responses considered that fixed services in 76 – 81 GHz and 81 – 86 GHz should not be constrained as a result of making a radiolocation allocation in 77.5 – 78 GHz.
- 5.21 Some responses considered that the scope of the agenda item means that any allocation to radiolocation should not be generic and unconstrained, so that high power radars could not be implemented in this allocation
- 5.22 Ofcom maintains its position of support for a radiolocation allocation and will seek to maintain flexibility in the applications that can be implemented in this allocation. We will do this by promoting the idea of a set of technical parameters in the Radio Regulations to which any radar operating in this band must conform. These parameters should be consistent with those used in automotive applications.

## Section 6

# Scientific use of spectrum

### Agenda item 1.11 – Earth exploration-satellite service (Earth-to-space) in the 7-8 GHz range

- 6.1 **Question 26** asked: Do you agree that the UK should support an allocation across the 7 190 – 7 250 MHz band, dependent upon the outcome of technical studies?
- 6.2 Responses expressed support for an allocation to the earth exploration satellite service (Earth-to-space) across the 7 190 – 7 250 MHz band provided that protection of existing services can be assured. Ofcom will take this position forward.

### Agenda item 1.12 - Earth exploration-satellite (active) service in the 8/9/10 GHz bands

- 6.3 **Question 27** asked: Do you agree that it is right to wait for the relevant sharing studies to mature before coming to a final position on the potential for additional allocations to the earth exploration-satellite (active) service in the 8/9/10 GHz band?
- 6.4 Responses agreed that we should wait for the sharing studies to mature before coming to a final position. One response considered that the studies will reach maturity in the near future. This response noted the recognition in the ITU spectrum requirements report of the importance of high resolution EESS SAR and suggested that a decision should be taken soon after the completion of the studies.

### Agenda item 1.13 - Distance limitation on space vehicles communicating with orbiting manned space vehicles

- 6.5 **Question 28** asked: Do you agree that the UK should support the CEPT position that removes the distance limitation on space vehicles communicating with orbiting manned space vehicles, whilst retaining the pfd limit to protect terrestrial services?
- 6.6 All but one response agreed with this position and that response suggested the distance might be increased but not removed altogether. Ofcom anticipates continuing to support the CEPT position.

### Agenda item 1.14 - Reference time-scale and potential modification of coordinated universal time (UTC);

- 6.7 **Question 29** asked: Do you agree that the UK should support maintaining UTC as currently defined (i.e. with the inclusion of leap seconds) and that the UK should support further study around the concept of dissemination of two reference time scales?

- 6.8 All responses indicated a preference to retain UTC as currently defined (with leap seconds).
- 6.9 We anticipate that Government will continue to strongly support the retention of the leap second and this is the position we expect to take into WRC-15. This is expected to continue to be a high priority and potentially very difficult issue for the UK at WRC-15.

## Section 7

# Standing agenda items

### Agenda Item 7 - Resolution 86 (Satellite coordination and notification procedures)

- 7.1 **Question 30** asked: Do you have any comments on the UK approach and positions on the elements of Agenda Item 7?
- 7.2 This agenda item covers a wide range of issues and this was reflected in the responses to this question. Ofcom will take these views into account in the ongoing preparations under this Agenda item. A number of responses felt that this agenda item should have its UK priority lifted from medium to high, noting the detailed and difficult discussions that arose at WRC-12. Ofcom recognises that discussions under Agenda Item 7 at WRC-12 did indeed become very important for the UK, but does not consider that discussions at WRC-15, based on the issues that have thus far been raised, will be so contentious. Therefore at this time we feel that it is appropriate to retain this Agenda Item at medium priority. We are however aware that issues can escalate rapidly under this agenda item and will continue to monitor and engage in the on-going discussions and will keep the prioritisation under review.

### Agenda Item 9.1, issue 9.1.1 - Protection of the mobile-satellite service in 406 - 406.1 MHz

- 7.3 **Question 31** asked: Do you agree that any potential regulatory constraints need to be fair and proportionate on both the Cospas-Sarsat operation and users in the adjacent band?
- 7.4 The majority of responses considered that constraints introduced in order to provide adequate protection of and ensure the operation of the Cospas-Sarsat system should be fair and proportionate on both Cospas-Sarsat and existing services in adjacent bands.
- 7.5 Some responses felt that Cospas-Sarsat should not be subject to additional constraints given its role in emergency communications, whereas another response felt that additional constraints on existing systems should not exceed those which currently provide appropriate protection.
- 7.6 Ofcom will take these positions into account in trying to develop an approach which is fair and proportionate to both Cospas-Sarsat and users in the adjacent band.

### Agenda Item 9.1, issue 9.1.2 – Studies on possible reduction of the satellite coordination arc

- 7.7 **Question 32** asked: Do you have any comments on Agenda Item 9.1.2 concerning reduction of the satellite coordination arc?
- 7.8 A variety of views were received that discussed the merits of a potential change to the coordination arc in the C and Ku Bands, while there was general agreement that a change in the Ka bands was not required at this time. In addition the merits of the  $\Delta T/T$  criteria over using a C/I (carrier to interference) mechanism was mentioned by some respondents.
- 7.9 Ofcom will continue to actively engage on this agenda item as it develops further.

### Agenda Item 9.1, issue 9.1.3 - Use of satellite orbital positions and associated spectrum by developing countries

- 7.10 **Question 33** asked: Do you agree that the UK should oppose any proposal that aims at changing the provisions of the Radio Regulations in a way that gives inherent priority (i.e. coordination priority) to certain satellite systems over any other satellite system?
- 7.11 Responses to this question supported the proposed UK position to oppose changes which would result in inherent priority being given to certain satellite systems. Ofcom will maintain the position to oppose any such proposals.

### Agenda Item 9.1, issue 9.1.4 – Updating the Radio Regulations (RRs)

- 7.12 **Question 34** asked: Do you have any comments on Agenda Item 9.1.4 relating to updating the RR for out of date or redundant material
- 7.13 Responses advocated a cautious approach to updating the Radio Regulations in respect of the removal of out of date or redundant material.

### Agenda Item 9.1, issue 9.1.5 - Satellite use of 3.4 – 4.2 GHz, for aeronautical and meteorological services

- 7.14 **Question 35** asked: Do you have any view on the need, or otherwise, for additional international regulatory measures to support the use of earth stations for aeronautical and meteorological communications in the 3.4 – 4.2 GHz band?
- 7.15 A number of responses considered the use of earth stations for aeronautical and meteorological communications to be essentially a national matter and thus not requiring any changes to the Radio Regulations. Some responses saw a need to afford the aeronautical and meteorological usage of the band some form of international recognition and one response suggested that a specific portion of the 3.4 – 4.2 GHz band could be identified. Finally some responses saw a link between this agenda item and possible use of parts of this band for IMT. Ofcom will take these views into account in taking forward work under this agenda item.

### **Agenda Item 9.1, issue 9.1.6 - Studies towards review of the definitions of fixed service, fixed station and mobile station**

- 7.16 **Question 36** asked: Do you agree that the UK should not support any change to the fixed and mobile definitions under Agenda Item 9.1.6?
- 7.17 Responses agreed that we should not support any change to the definitions of fixed and mobile under this agenda item. Ofcom expects to maintain the UK position as described in the consultation.

### **Agenda Item 9.1, issue 9.1.7 - Spectrum management guidelines for emergency and disaster relief radiocommunication**

- 7.18 **Question 37** asked: Do you have any views on the CEPT position that no further work is required in respect of spectrum management guidelines for emergency and disaster relief communications?
- 7.19 Responses agreed with the CEPT position that no further action is required in respect of spectrum management guidelines for emergency and disaster relief communications. Ofcom agrees and will continue with this position moving forward.

### **Agenda Item 9.1, issue 9.1.8 - Regulatory aspects for nano and pico-satellites**

- 7.20 **Question 38** asked: Do you agree that no specific measures need to be introduced for nano and pico-satellites and that the current approach to their regulation is sufficient?
- 7.21 The vast majority of responses supported the position as set out in the consultation document that no specific measures are required. One response saw advantages in having a process that would potentially aid their deployment, but other responses equally saw some difficulties in adopting such an approach. Ofcom looks forward to continued discussion on the matter. While we recognise the attraction in having a process that eases the international regulatory requirement for these systems, Ofcom is, at the present time, minded not to support having specific regulatory measures for nano and pico satellites included in the Radio Regulations.

## Agenda Item 9.2 - difficulties or inconsistencies encountered in the application of the Radio Regulations

- 7.22 **Question 39** asked: Do you agree that the UK should support the recent regulatory developments with respect to ESOMP<sup>10</sup> operation, while continuing to monitor developments?
- 7.23 There was a mix of responses under this item. There was broad support from the satellite industry, and some from the aviation sector, for the operation of ESOMPs to have greater regulatory certainty within the Radio Regulations. However others from the satellite industry opposed such a change, along with some from the fixed service community (i.e. fixed links), citing potential interference to satellite and fixed link systems respectively. In addition, some from the aviation sector felt that changes to the Radio Regulations to recognise ESOMPs operation, whilst sufficient for some applications, might not carry sufficient regulatory clarity for ESOMPs to be used for the control of unmanned aircraft. This is distinct from discussions under Agenda Item 1.5 (Unmanned Aircraft).
- 7.24 This item will ultimately be addressed by the Director's Report to the WRC and it will be reliant upon what that report will say when submitted to the WRC. Ofcom continues to support the principle behind giving ESOMPs greater international regulatory certainty and will monitor and actively engage in the continuing discussions. As a result we feel that, from a UK perspective, this agenda item should have its priority lifted from low to medium.

## Agenda Item 9.3 - on action in response to Resolution 80

- 7.25 **Question 40** asked: Do you have any comments on Agenda Item 9.3 considering Resolution 80?
- 7.26 We received a limited number of responses under this agenda item. Whilst it was noted that no specific proposal had been made, the general view was that the UK needed to monitor potential developments where they might have a linkage with the activities addressed under Agenda Item 7. Ofcom will keep this agenda item under review leading up to WRC-15.

## Other standing Agenda items

- 7.27 **Question 41** asked: Do you have any comments concerning the standing agenda items?
- 7.28 The majority of responses emphasised the need to monitor the standing agenda items to review proposals as they are made. Whilst one response felt that any proposals to reduce the detail of the Radio Regulations were to be welcomed, many responses noted that changes can have other consequential actions that need careful consideration. We recognise this concern and will take it into account going forward.

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<sup>10</sup> ESOMPs – Earth Stations on Mobile Platforms: an application of the fixed-satellite service, where the earth station may operate from a single defined location, multiple points or whilst in motion. Antenna technological developments have gone some way to lessen the potential for interference to other satellite systems and terrestrial fixed link services.

## Section 8

# 2014 Plenipotentiary Conference – New WRC-15 Agenda Item

## Global Flight tracking

- 8.1 At its most recent meeting in October/November 2014, the ITU Plenipotentiary Conference (the highest-level policy making body in the ITU) adopted a Resolution *“to instruct WRC-15 to include in its agenda, as a matter of urgency, the consideration of global flight tracking, including, if appropriate, and consistent with ITU practices, various aspects of the matter, taking into account ITU-R studies”*. This is due in part to the disappearance of Malaysian Airlines flight MH370 and the loss of Air France flight 447 in 2009. This is a highly unusual step taken by the Plenipotentiary Conference and reflects the sensitive and political nature of the topic.
- 8.2 Ofcom supports efforts to improve the safety of aviation globally and we are actively engaging in the European and ITU groups that are considering this issue. UK Government was closely engaged in the development of this issue at the ITU Plenipotentiary Conference. Government argued that, given the importance of this issue, consideration should not be rushed and studies should be fully completed looking at all the potential issues involved. Ofcom expects to play an active role in the ongoing discussions and technical studies.

## Section 9

# Future WRC Agenda items

## Agenda item 10

### Potential future Agenda Item for IMT above 6 GHz

- 9.1 **Question 42** asked: Do you have any comments regarding UK positions for future WRC agenda items?
- 9.2 **Question 44** asked: Are there particular frequency bands, above 6 GHz, that should be considered for technical study in relation to the potential future agenda item addressing IMT use?
- 9.3 Responses to the first question indicated strong support from the mobile sector and strong opposition from the satellite sector to a future agenda item addressing IMT use in frequency bands above 6 GHz.
- 9.4 Satellite sector responses to the second question looked to bands above 30/31 GHz, thereby avoiding the Ku and Ka bands which, a number of responses explained, are well-established and widely used by the satellite community. Other frequency ranges mentioned included: below 30 GHz and above 60 GHz, between 20 GHz and 50 GHz, and 43.5 to 47 GHz.
- 9.5 It is clear that another process which mirrors that used for WRC-15 Agenda Item 1.1 (mobile broadband and Wi-Fi), whereby the scope of the frequency bands to be considered was wide and a Joint Task Group straddling a number of existing ITU Study Groups was established, would not be attractive to a number of stakeholders. At the same time, it is clear that any focusing and narrowing of the bands to be considered is likely to be highly contentious.
- 9.6 We continue to support a future agenda item for IMT in bands above 6GHz, but recognise that further work is required to try to narrow the scope of the Agenda Item if at all possible. Separately Ofcom is shortly to issue a Call for Inputs to invite views on bands that could be investigated for the next generation of mobile broadband, in bands above 6 GHz. Following this Call for Inputs, we may provide a further update on this item later in 2015.
- 9.7 **Question 43** asked: Are there any other possible agenda items you wish to see addressed by future WRCs?
- 9.8 Ofcom received a variety of responses which proposed ideas for future WRC Agenda Items. These were varied and diverse and included proposals for items such as;
- Additional spectrum for terrestrial broadcasting in support of HD and UHD services.
  - New amateur radio allocations in a number of bands, and the extension to bands where amateur use is already harmonised.
  - Regulatory framework for non-geostationary satellite services in the 37.5 – 51.4 GHz band.

- Proposals for international visibility for “Utility Radio Operations”.
  - Services Ancillary to Broadcasting (SAB) and Services Ancillary to Programme Making (SAP) (i.e. PMSE) along with Short Range Devices (SRD).
  - Spectrum for Space Planes.
  - Regulatory framework for Pico-satellites and Nano-satellites.
  - Further consideration of bands not agreed for mobile broadband or Wi-Fi at WRC-15 (e.g. 5 350 – 5 470 MHz).
  - Global harmonisation and power increase for the PMR446 “walkie-talkie” application.
  - Further review of the regulatory provisions applied to platforms (i.e. ships and aircraft) in motion, with respect to fixed satellite services in the 17-30 GHz bands.
- 9.9 Ofcom will review these and discuss further through 2015. However for two items Ofcom notes the following.
- 9.10 In respect of spectrum for **terrestrial broadcasting in support of HD and UHD services** and as stated earlier in the document, we fully recognise the value and benefits of the terrestrial television platform and welcome developments in support of High Definition (HD) and Ultra High Definition (UHD) services. However we also note that UHD and HD can be delivered through other platforms and note developments in compression techniques used in digital audio-video content.
- 9.11 We stated in Ofcom’s Free to View discussion document<sup>11</sup> that; “If, in the longer term, HD and potentially Ultra HD become more important to consumers, then there may be a need to upgrade the compression and transmission standards for DTT to increase capacity to carry these services. For instance, if 4K takes hold on some platforms this could raise the entry bar for picture quality from SD to HD, even for free platforms”. Therefore we do not believe that the delivery of HD or UHD services is solely linked to increased spectrum for terrestrial broadcasting.
- 9.12 In respect of the proposal for global harmonisation and a power increase for the **PMR446 “walkie-talkie” application**, Ofcom notes that PMR446 is an application of the mobile service. The wider frequency band between 440 - 450 MHz is already globally harmonised for mobile services and whilst PMR446 is a harmonised application at a European or CEPT level, countries outside Europe have their own low powered walkie talkie services which might not operate on the exact same frequencies<sup>12</sup> as the PMR446 service.

<sup>11</sup> <http://stakeholders.ofcom.org.uk/consultations/700MHz/ftv/>

<sup>12</sup> The Family Radio Service (FRS) is a walkie-talkie radio system authorised in the United States. This personal radio service uses channelised frequencies around 462 and 467 MHz.

- 9.13 As WRCs make allocations for services and not specific applications, the decision as to whether PMR446 can operate is mainly a national, or in some cases a regional, decision (i.e. a decision to be taken outside a WRC). Finally the case to increase the power is also a national or regional decision. Increasing the power would likely increase the potential for congestion and interference and in the UK there are other spectrum bands, close to the PMR446 frequencies, that can be used for higher powered “walkie-talkie” like applications. **Therefore Ofcom does not see a case to take forward such a proposal into the WRC process.**

## Section 10

# Next Steps

- 10.1 Preparations for WRC-15 continue at the UK, at regional (in Europe this is primarily within the CEPT) and at the global level (in the ITU). Responses to the consultation have been extremely helpful in informing and refining our positions and priorities for the WRC-15 agenda items. These positions will be taken into forthcoming WRC-15 preparation meetings.
- 10.2 The timeline for forthcoming UK, CEPT and ITU meetings leading up to the WRC is set out in the following table.

Date	Event	Description
28 <sup>th</sup> Jan 2015	UK SSC	UK Spectrum Strategy Committee, chaired by Government
3-6 Feb 2015	Conference Preparatory Group (CPG) <i>(CPG project teams meet between this and the prior CPG meeting)</i>	European: CEPT discussion of European positions
Mar 2015	UK WRC Delegation meeting	Meeting between Ofcom, Government and Stakeholders
23 Mar - 2nd Apr 2015	Conference Preparatory Meeting (CPM)	ITU meeting at which the CPM Report is finalised and agreed
Apr 2015	UK SSC	Sign-off of UK positions for first set of European Common Proposals (ECPs)
May 2015	UK WRC Delegation meeting	Meeting between Ofcom, Government and Stakeholders
2-5 June 2015	Conference Preparatory Group (CPG) <i>(CPG project teams meet between this and the prior CPG meeting)</i>	European: CEPT Approval and agreement on 1st set of ECPs
July 2015	UK SSC	Sign-off of final UK positions
Sept 2015	UK WRC Delegation meeting	Meeting between Ofcom, Government and Stakeholders
14-18 Sept 2015	Conference Preparatory Group (CPG) <i>(CPG project teams meet between this and the prior CPG meeting)</i>	European: CEPT Agreement on remaining ECPs
Oct 2015	UK SSC	Final discussion of UK brief for WRC
26 – 30 Oct. 2015	Radio Assembly 15	ITU Radiocommunication Assembly
2 – 27 Nov 2015	WRC-15	World Radiocommunication Conference 2015

- 10.3 Within Europe, the CEPT Conference Preparation Group (CPG) meetings develop draft European Common Proposals (ECPs) in respect of the WRC-15 Agenda Items. At the current stage of the preparatory process (approximately 10 months before the WRC), some of these draft ECPs are more mature than others. The forthcoming months leading up to the WRC will see meetings occurring with increased frequency in order to complete these preparations.
- 10.4 As explained in the Consultation Document, Ofcom is responsible for the development of the UK positions taken into both the CEPT process and then the WRC itself. At the most formal level we agree the positions and negotiating lines we take into the WRC through the Government's UK Spectrum Strategy Committee (UK SSC) in order to ensure consistency with Government policy. The Ofcom chaired International Frequency Planning Group (IPFG) is a sub-group of the UK SSC.
- 10.5 As explained in Section 3 above (paragraph 3.4) we have established a stakeholder group to consider strategic and overarching co-ordination issues relating to WRC-15. We anticipate that this meeting may ultimately become the basis of the UK delegation to WRC-15 itself.
- 10.6 We expect the first set of ECPs (i.e. those that are currently the most mature) to be formally adopted by the CPG at its meeting in early June 2015, with remaining ECPs formally adopted by the CPG at its final meeting in September 2015.

## Annex 1

# UK Prioritisation Table for WRC-15 Agenda Items

A1.1 As we stated in our consultation document the UK priority given to individual agenda items is qualified accordingly;

- **High:** key policy issues for the UK, either because of their strategic importance or because of the potential threat they may pose to UK interests. This will usually apply where there is a major conflict between radio services or between differing UK interests, and especially where the agenda item is so wide-ranging that it presents potentially multiple (as yet undefined) threats (e.g. where additional spectrum is sought without any indication as to the target band). We anticipate these to be controversial with diverging views from other countries, including within Europe. We will aim to actively engage at all stages.
- **Medium:** important for the UK and/or likely to present some difficulties, at least in detail. This will generally apply to agenda items mainly confined to a single radio service, rather than where this is a major conflict between services. We expect some degree of consensus at least in Europe but will ensure UK participation in all relevant meetings.
- **Low:** either relatively unimportant for the UK or sufficiently straightforward and uncontroversial that we can expect others to lead with minimum risk to the UK. We will however continue to monitor developments.

A1.2 Following the consultation and further internal assessment, the current UK prioritisation for all WRC-15 agenda items is listed over the page.

WRC-15 Agenda Item	Title	Current UK priority
1	on the basis of proposals from administrations, taking account of the results of WRC-15 and the Report of the Conference Preparatory Meeting, and with due regard to the requirements of existing and future services in the bands under consideration, to consider and take appropriate action in respect of the following items:	N/A
1.1	to consider additional spectrum allocations to the mobile service on a primary basis and identification of additional frequency bands for International Mobile Telecommunications (IMT) and related regulatory provisions, to facilitate the development of terrestrial mobile broadband applications, in accordance with Resolution <b>233 (WRC-15)</b> ;	High
1.2	to examine the results of ITU-R studies, in accordance with Resolution <b>232 (WRC-15)</b> , on the use of the frequency band 694-790 MHz by the mobile, except aeronautical mobile, service in Region 1 and take the appropriate measures;	High
1.3	to review and revise Resolution <b>646 (Rev.WRC-15)</b> for broadband public protection and disaster relief (PPDR), in accordance with Resolution <b>648 (WRC-15)</b> ;	High
1.4	to consider possible new allocation to the amateur service on a secondary basis within the band 5 250-5 450 kHz in accordance with Resolution <b>649 (WRC-15)</b> ;	Low
1.5	to consider the use of frequency bands allocated to the fixed-satellite service not subject to Appendices <b>30, 30A and 30B</b> for the control and non-payload communications of unmanned aircraft systems (UAS) in non-segregated airspaces, in accordance with Resolution <b>153 (WRC-15)</b> ;	High
1.6	to consider possible additional primary allocations:	
1.6.1	to the fixed-satellite service (Earth-to-space and space-to-Earth) of 250 MHz in the range between 10 GHz and 17 GHz in Region 1;	Medium
1.6.2	to the fixed-satellite service (Earth-to-space) of 250 MHz in Region 2 and 300 MHz in Region 3 within the range 13-17 GHz;	Low
	and review the regulatory provisions on the current allocations to the fixed-satellite service within each range, taking into account the results of ITU-R studies, in accordance with Resolutions <b>151 (WRC-15)</b> and <b>152 (WRC-15)</b> , respectively;	
1.7	to review the use of the band 5 091-5 150 MHz by the fixed-satellite service (Earth-to-space) (limited to feeder links of the non-geostationary mobile-satellite systems in the mobile-satellite service) in accordance with Resolution <b>114 (Rev.WRC-15)</b> ;	Low
1.8	to review the provisions relating to earth stations located on board vessels (ESVs), based on studies conducted in accordance with Resolution <b>909 (WRC-15)</b> ;	Low
1.9	to consider, in accordance with Resolution <b>758 (WRC-15)</b> :	
1.9.1	possible new allocations to the fixed-satellite service in the frequency bands 7 150-7 250 MHz (space-to-Earth) and 8 400-8 500 MHz (Earth-to-space), subject to appropriate sharing conditions;	Medium
1.9.2	the possibility of allocating the bands 7 375-7 750 MHz and 8 025-8 400 MHz to the maritime-mobile satellite service and additional regulatory measures, depending on the results of appropriate studies;	Medium
1.10	to consider spectrum requirements and possible additional spectrum allocations for the mobile-satellite service in the Earth-to-space and space-to-Earth directions, including the satellite component for broadband applications, including International Mobile Telecommunications (IMT), within the frequency range from 22 GHz to 26 GHz, in accordance with Resolution <b>234 (WRC-15)</b> ;	Medium

<b>1.11</b>	to consider a primary allocation for the Earth exploration-satellite service (Earth-to-space) in the 7-8 GHz range, in accordance with Resolution 650 (WRC-15);	Medium
<b>1.12</b>	to consider an extension of the current worldwide allocation to the Earth exploration-satellite (active) service in the frequency band 9 300-9 900 MHz by up to 600 MHz within the frequency bands 8 700-9 300 MHz and/or 9 900-10 500 MHz, in accordance with Resolution 651 (WRC-15);	Medium
<b>1.13</b>	to review No. 5.268 with a view to examining the possibility for increasing the 5 km distance limitation and allowing space research service (space-to-space) use for proximity operations by space vehicles communicating with an orbiting manned space vehicle, in accordance with Resolution 652 (WRC-15);	Low
<b>1.14</b>	to consider the feasibility of achieving a continuous reference time-scale, whether by the modification of coordinated universal time (UTC) or some other method, and take appropriate action, in accordance with Resolution 653 (WRC-15);	High
<b>1.15</b>	to consider spectrum demands for on-board communication stations in the maritime mobile service in accordance with Resolution 358 (WRC-15);	Low
<b>1.16</b>	to consider regulatory provisions and spectrum allocations to enable possible new Automatic Identification System (AIS) technology applications and possible new applications to improve maritime radiocommunication in accordance with Resolution 360 (WRC-15);	Medium
<b>1.17</b>	to consider possible spectrum requirements and regulatory actions, including appropriate aeronautical allocations, to support wireless avionics intra-communications (WAIC), in accordance with Resolution 423 (WRC-15);	Medium
<b>1.18</b>	to consider a primary allocation to the radiolocation service for automotive applications in the 77.5-78.0 GHz frequency band in accordance with Resolution 654 (WRC-15);	Medium
<b>2</b>	to examine the revised ITU-R Recommendations incorporated by reference in the Radio Regulations communicated by the Radiocommunication Assembly, in accordance with Resolution 28 (Rev.WRC-03), and to decide whether or not to update the corresponding references in the Radio Regulations, in accordance with the principles contained in Annex 1 to Resolution 27 (Rev.WRC-15);	Low
<b>3</b>	to consider such consequential changes and amendments to the Radio Regulations as may be necessitated by the decisions of the Conference;	Low
<b>4</b>	in accordance with Resolution 95 (Rev.WRC-07), to review the resolutions and recommendations of previous conferences with a view to their possible revision, replacement or abrogation;	Low
<b>5</b>	to review, and take appropriate action on, the Report from the Radiocommunication Assembly submitted in accordance with Nos. 135 and 136 of the Convention;	Low
<b>6</b>	to identify those items requiring urgent action by the Radiocommunication Study Groups in preparation for the next world radiocommunication conference;	Low
<b>7</b>	to consider possible changes, and other options, in response to Resolution 86 (Rev. Marrakesh, 2002) of the Plenipotentiary Conference, an advance publication, coordination, notification and recording procedures for frequency assignments pertaining to satellite networks, in accordance with Resolution 86 (Rev.WRC-07) to facilitate rational, efficient, and economical use of radio frequencies and any associated orbits, including the geostationary-satellite orbit;	Medium
<b>8</b>	to consider and take appropriate action on requests from administrations to delete their country footnotes or to have their country name deleted from footnotes, if no longer required, taking into account Resolution 26 (Rev.WRC-07);	Low

<b>9</b>	to consider and approve the Report of the Director of the Radiocommunication Bureau, in accordance with Article 7 of the Convention:	
	<b>9.1</b> on the activities of the Radiocommunication Sector since WRC-12;	
	<b>9.1.1</b> Protection of the systems operating in the mobile-satellite service in the band 406-406.1 MHz	Medium
	<b>9.1.2</b> Studies on possible reduction of the coordination arc and technical criteria used in application of No. 9.41 in respect of coordination under No. 9.7	Medium
	<b>9.1.3</b> Use of satellite orbital positions and associated frequency spectrum to deliver international public telecommunication services in developing countries	Medium
	<b>9.1.4</b> Updating and rearrangement of the Radio Regulations	Low
	<b>9.1.5</b> Consideration of technical and regulatory actions in order to support existing and future operation of fixed satellite service earth stations within the band 3 400-4 200 MHz, as an aid to the safe operation of aircraft and reliable distribution of meteorological information in some countries in Region 1	Low
	<b>9.1.6</b> Studies towards review of the definitions of fixed service, fixed station and mobile station	Medium
	<b>9.1.7</b> Spectrum management guidelines for emergency and disaster relief radiocommunication	Low
	<b>9.1.8</b> Regulatory aspects for nano and pico-satellites	Medium
	<b>9.2</b> on any difficulties or inconsistencies encountered in the application of the Radio Regulations; and	Medium
	<b>9.3</b> on action in response to Resolution <b>80 (Rev.WRC-07)</b> ;	Low
<b>10</b>	to recommend to the Council items for inclusion in the agenda for the next WRC, and to give its views on the preliminary agenda for the subsequent conference and on possible agenda items for future conferences, in accordance with Article 7 of the Convention.	High
<b>RESOLUTION COM5/1 (Busan, 2014)</b>	to include in its agenda, as a matter of urgency, the consideration of global flight tracking, including, if appropriate, and consistent with ITU practices, various aspects of the matter, taking into account ITU-R studies	TBD