



Statement on the Requests for Variation of 28 GHz Broadband Fixed Wireless Access Licences

Statement

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Section 1

Summary

- 1.1 This document sets out Ofcom's decision to vary the Wireless Telegraphy 28 GHz Broadband Fixed Wireless Access (BFWA) licences of Urban Wimax Limited and Cable & Wireless UK so as to:
- extend the licence duration indefinitely beyond the current expiry date of 31 December 2015;
 - apply, where applicable, the technical terms of Interface Requirement 2048 (IR 2048) to align with other 28 GHz licences; and
 - apply, from January 2016, administered incentive pricing per geographic region at a rate yet to be determined but which will be decided as part of (or in parallel with) the fees review for fixed link bands.
- 1.2 The Consultation on these licence variation requests set out two options for dealing with the period beyond end 2015:
- Vary the licences to make them indefinite and introduce annual fees from the date at which the licences would have expired; or
 - Decline the variation requests and hold a new award process for the spectrum access rights that relate to the period following the expiry of the current licences (the new award process would be an auction).
- 1.3 We have considered carefully the responses received and have concluded, in light of our duties and for the reasons set out in this Statement, that it is appropriate to vary the licences held by Urban Wimax Limited and Cable & Wireless UK by extending them so that they become of indefinite duration. We consider that this variation will provide licence holders with clarity of spectrum tenure/use beyond 2015 and should remove the main obstacle to investment, development and use of the spectrum in the meantime; it will do sooner than the alternative of holding an auction. We also consider that this approach is a more proportionate and cost effective process by which to promote the optimal future use of the spectrum, noting that these licences can be traded (with a history of having been traded on a number of occasions already) and that spectrum pricing will apply from the end of 2015.
- 1.4 Ofcom will offer this variation, on request, to other BFWA licence holders, noting in particular that UK Broadband indicated via its response that it intends to request the variation.

Section 2

Background and legal framework

Introduction

- 2.1 In December 2012 we published a consultation on our proposals to vary the 28GHz licences held by Urban Wimax Limited and Cable & Wireless UK by extending the duration of their licences indefinitely beyond the current expiry date of 31 December 2015 subject to applying administered incentive pricing from January 2016 and, where not already aligned, to apply the technical terms of IR 2048 for consistency with Spectrum Access licences in these bands (the “Consultation”). This Consultation followed requests from Urban Wimax Limited and from Cable & Wireless UK to vary their licences in this manner.
- 2.2 This section summarises the background to the 28GHz BFWA licences and to the licence variation requests. It also sets out the legal framework that is relevant to our assessment of these licence variation requests. The rest of the document is then set out as follows:
- Section 3 summarises the proposals in the Consultation;
 - Section 4 considers the main issues that different parties raised in responses to the Consultation. In relation to each issue we summarise the responses and set out our analysis and conclusion.
 - Section 5 sets out our decision on the licence variation requests.

The 28GHz BFWA licences

- 2.3 In November 2000, the Radiocommunications Agency held an auction for the use of radio frequencies in the 28 GHz band. Three spectrum lots, each of 2 x 112 MHz bandwidth were offered in 14 geographic regions of the UK. 16 licences were awarded, some in each of the three spectrum allocations (see figures 1 – 4 below which show these and their relationship to the spectrum packages awarded in 2008).
- 2.4 The licences (which we refer to as “BFWA licences”), were awarded for a period until 31 December 2015. One licence was subsequently surrendered and many others have since changed ownership through spectrum trading. 15 Licences are currently held by 5 companies as follows:
- Cable & Wireless UK (4 licences);
 - Chorus Communications Ltd (1 licence);
 - Telefónica UK Ltd (6 licences);
 - Urban Wimax Ltd (1 licence); and
 - UK Broadband Ltd (3 licences).
- 2.5 In 2008, as part of a wider award process, unallocated spectrum in the 28 GHz band was auctioned, including the remaining 26 geographic areas across the 3 paired spectrum allocations unsold in 2000, the one area that had been surrendered by its licensee and two further national allocations adjacent to the original award bands.

- 2.6 These 2008 licences (which we refer to as “Spectrum Access Licences” to distinguish them from the BFWA licences), consolidating the remaining areas in each of the three 28 GHz bands (“Sub National” licences 1,2 & 3 respectively), are now held by Vodafone Ltd (1) and UK Broadband Ltd (2 & 3). The two national allocations were both awarded to Arqiva Ltd and were subsequently consolidated into a single national licence. In contrast to the original BFWA award, the Spectrum Access licences issued in 2008 were granted for an initial period of 15 years and will thereafter continue in force until surrendered or revoked. The licences provide for the introduction of administered incentive pricing (AIP) after the end of the initial licensing period.
- 2.7 Figure 1 below shows the spectrum packages. Figures 2 and 3 below that describe the spectrum pairings and show the current licensees in their geographic regions. Figure 4 shows the geographic regions covered by each licence.

Figure 1 : Spectrum Packages

Spectrum Access National (Arqiva)	27.8285	28.0525	<i>paired with</i>	28.8365	29.0605	(2 x 224 MHz)
BFWA 1 or Spectrum Access 1	28.0525	28.1645	<i>paired with</i>	29.0605	29.1725	(2 x 112 MHz)
Guard-band						(2 x 28 MHz)
BFWA 2 or BFWA 2* or Spectrum Access 2	28.1925	28.3045	<i>paired with</i>	29.2005	29.3125	(2 x 112 MHz)
Guard-band						(2 x 28 MHz)
BFWA 3 or BFWA 3* or Spectrum Access 3	28.3325	28.4445	<i>paired with</i>	29.3405	29.4525	(2 x 112 MHz)

Figure 2: Frequencies in the 28 GHz Spectrum Band

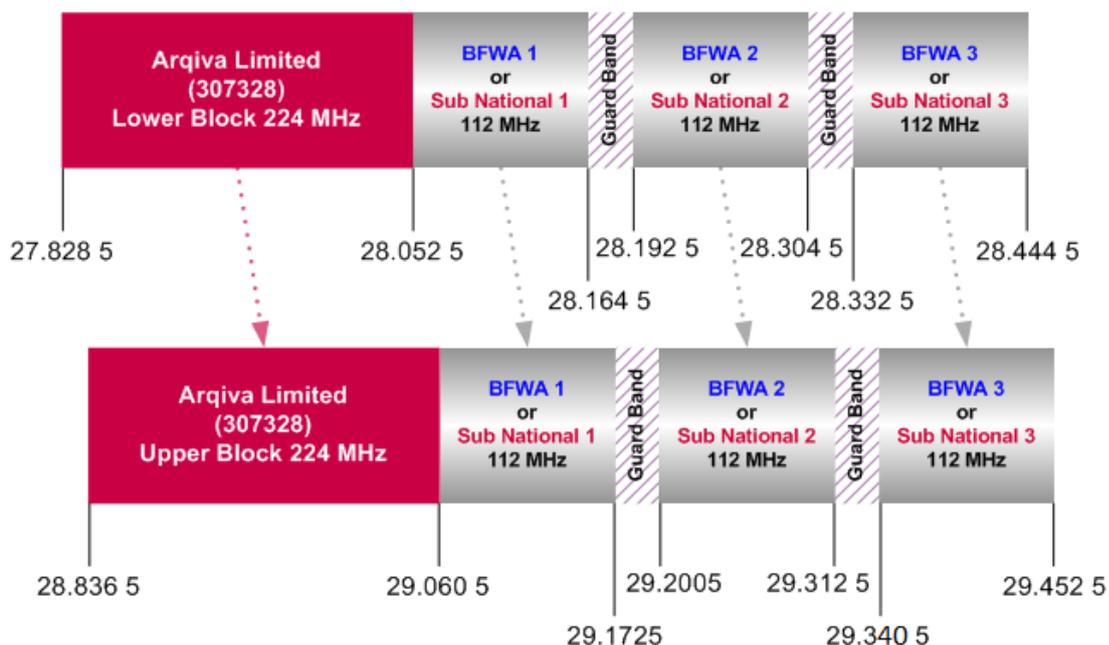


Figure 3: Current licensees, geographical and spectrum agencies

	Spectrum Access National (2 x 224 MHz)	BWA 1 OR Spectrum Access Sub-National 1 (2 x 112MHz)	BWA 2 / BWA 2* OR Spectrum Access Sub-National 2 (2 x 112MHz)	BWA 3 / BWA 3* OR Spectrum Access Sub-National 3 (2 x 112MHz)
A	Arqiva	Telefónica UK	Urban Wimax *	UK Broadband *
B		Cable & Wireless	Telefónica UK	
C		Telefónica UK	Cable & Wireless	
D		Vodafone	UK Broadband	UK Broadband
E				
F				
G		Telefónica UK	Cable & Wireless	
H		Vodafone	UK Broadband	
I				
J		Telefónica UK	UK Broadband	
K				
L		Vodafone	UK Broadband	
M				
N		Telefónica UK	Chorus Comms	

Key: Shaded areas represent the BFWA licences awarded in 2000; Plain areas represent the Spectrum Access licences awarded in 2008

Figure 4 : Geographic Regions



Technical conditions

- 2.8 The BFWA licences were issued in 2000 with technical conditions set by reference to IR 2043. IR 2043 reflects a specific technology and deployment model based on Point to Multipoint Fixed Wireless Access with 28 MHz channel spacing. In contrast, the Spectrum Access licences issued in 2000 contained technical conditions set by reference to IR 2048 which uses a block edge mask on a technology-neutral basis. This allows the licensee more in-band flexibility and, where holding adjacent geographic areas or spectrum, to have a consistent set of technical conditions across their portfolio of 28 GHz spectrum.
- 2.9 The BFWA licences now held by Urban Wimax Limited and UK Broadband were varied in 2009 at the request of the licensees at that time, to align their technical conditions with Spectrum Access licences complying with IR 2048.

The licence variation requests

- 2.10 We received requests from Urban Wimax Ltd (14 August 2012) and subsequently Cable & Wireless UK (7 December 2012) to vary their 28 GHz BFWA licences to extend the duration of the licences indefinitely beyond the current expiry date of 31 December 2015.

The legal framework

- 2.11 The applicable legal framework derives from our duties under both European and domestic legislation, specifically from:
- the Common Regulatory Framework¹ for electronic communications networks and services, in particular, the Framework Directive and the Authorisation Directive; and
 - the Communications Act 2003 (the “2003 Act”) and the Wireless Telegraphy Act 2006 (the “2006 Act”) which transpose the provisions of those directives into national law.

European Regulatory Framework

- 2.12 Article 14 of the Authorisation Directive requires that rights of use (in this case a wireless telegraphy licence) “*may only be amended in objectively justified cases and in a proportionate manner, taking into consideration, where appropriate, the specific conditions applicable to transferable rights of use for radio frequencies*”.
- 2.13 More generally, in carrying out our regulatory tasks, including considering the case for amending rights of use, we are required to take all reasonable measures which are aimed at achieving the objectives set out in Article 8 of the Framework Directive. Article 8 requires national regulatory authorities to promote competition in the provision of electronic communications networks and services by, amongst other things:
- ensuring that users derive maximum benefit in terms of choice, price and quality;

¹ The Common Regulatory Framework comprises the Framework Directive (Directive 2002/21/EC), the Authorisation Directive (Directive 2002/20/EC), the Access Directive (Directive 2002/19/EC), the Universal Service Directive (Directive 2002/22/EC) and the Directive on privacy and electronic communications (Directive 2002/58/EC), as amended by the Better Regulation Directive (Directive 2009/140/EC).

- ensuring that there is no distortion or restriction of competition in the electronic communications sector; and
- encouraging efficient use and ensuring the effective management of radio frequencies.²

2.14 In terms of process, the Authorisation Directive requires that Member States must ensure that where they propose to make amendments to rights of use, including extension to the duration of existing rights:

- notice of the proposed change is given in an appropriate manner; and
- all interested parties, including users and consumers, are allowed a sufficient period of time to express their views on the proposed amendments.

The 2003 Act and the 2006 Act

2.15 The requirements of Article 8 of the Framework Directive are given effect to by our duties under the 2003 Act and the 2006 Act.

2.16 Our principal duty under section 3 of the 2003 Act is to further the interests of citizens in communications matters, and the interests of consumers in relevant markets, where appropriate by promoting competition.

2.17 By virtue of our principal duty, we are required to secure (amongst other things) the optimal use for wireless telegraphy of the electro-magnetic spectrum, and the wide availability throughout the UK of a wide range of electronic communications services.

2.18 In performing those duties, we are also required to have regard to various matters where they appear to us to be relevant in the circumstances, including the desirability of promoting competition in relevant markets, the desirability of encouraging investment and innovation in relevant markets, and the desirability of encouraging the availability and use of high speed data transfer services throughout the UK.

2.19 In furthering the interests of consumers we must have regard in particular to the interests of those consumers in respect of choice, price, quality of service and value for money.

2.20 In performing our principal duty we must have regard in all cases to the principles under which regulatory activities must be transparent, proportionate, consistent and targeted only at cases in which action is needed.

2.21 Section 4 of the 2003 Act requires Ofcom when carrying out its spectrum functions to act in accordance with the “six community requirements” set out in that section when managing the wireless spectrum in the UK.

2.22 Section 3 of the 2006 Act requires us, amongst other things, to have regard in particular to the extent to which the spectrum is available for use or further use, for wireless telegraphy, the demand for use of that spectrum for wireless telegraphy, and the demand that is likely to arise in future for the use of that spectrum for wireless telegraphy.

² This is also consistent with the requirements in Article 7 of the Authorisation Directive which, amongst other things, require Member States to give due weight to the need to maximise benefits for users and to facilitate the development of competition, when considering whether to extend the duration of existing rights of use of radio frequencies.

- 2.23 Ofcom must also have regard, in particular, to the desirability of promoting the efficient management and use of the spectrum for wireless telegraphy, the economic and other benefits that may arise from the use of wireless telegraphy, the development of innovative services, and competition in the provision of electronic communications services.
- 2.24 Where it appears to Ofcom that any of its duties in section 3 of the 2006 Act conflict with one or more of its general duties under sections 3 to 6 of the 2003 Act, priority must be given to its duties under the 2003 Act.
- 2.25 Section 9(7) of the 2006 Act (which reflects Article 6 of the Authorisation Directive) to ensure that wireless telegraphy licence conditions are objectively justified in relation to networks and services to which they relate, non-discriminatory, proportionate and transparent.

Ofcom's spectrum functions

- 2.26 Ofcom's powers to carry out its spectrum functions are set out in the 2006 Act. In summary Ofcom has the following powers:
- Section 8(1) of the 2006 Act gives Ofcom the power to grant licences to establish or use a wireless telegraphy station and to install or use wireless telegraphy apparatus. Ofcom has a general discretion under this provision to decide how to award a licence, including for example whether to use an auction mechanism (provisions in respect of which are set out in section 14 of the Act);
 - Section 9 of the 2006 Act gives Ofcom the power to grant wireless telegraphy licences subject to such terms as Ofcom thinks fit;
 - Schedule 1(6) of the 2006 Act gives Ofcom a general discretion to revoke or vary any wireless telegraphy licences by serving a notice in writing on the licence holder or by way of general notice to licensees in a class.
- 2.27 Ofcom therefore has broad discretion under Schedule 1(6) of the Wireless Telegraphy Act 2006 to agree to vary licences but legal rules operate to limit that discretion. These legal rules include the following:
- UK obligations under European law or international agreements where use of spectrum has been harmonised: Ofcom will not agree to remove restrictions from licences or other changes that would conflict with the UK's obligations under international law. This includes changes in use or technology that would contravene binding Community measures, such as directives or harmonisation measures adopted under the Radio Spectrum Decision (676/2002/EC) and ITU Radio Regulations;
 - Any direction from the Secretary of State under section 5 of the Communications Act 2003 and section 5 of the 2006 Act;
 - Ofcom's EU and domestic statutory duties as set out above;
 - General public law principles, which include the duties to act reasonably and rationally when making decisions and to take account of legitimate expectations.

Section 3

The Consultation

3.1 The consultation considered the regulatory options, in light of our statutory duties, for dealing with the spectrum access rights associated with the 28 GHz spectrum in these geographic regions post 2015 when the current 28 GHz licences are due to expire. The main points of our assessment are summarised in this section.

Impact of the licence end date

- 3.2 In considering the licence variation requests to extend the licence duration beyond 2015, we first recognised that the current end date and uncertainty over spectrum access rights post 2015:
- Risked inhibiting investment and service deployment in this spectrum which, in turn, was likely to result in the band being inefficiently used in the meantime;
 - Might risk continuity of service for consumers using services provided by BFWA licensees;
 - Could prevent licensees who hold both 28GHz BFWA licences and other 28GHz licences in adjacent regions (or adjacent spectrum in the same region) from offering seamless longer-term services to customers where such services span these adjacencies.

Options for establishing clear spectrum access rights post 2015

- 3.3 We set out two main options for establishing clear spectrum access rights post 2015 (both of which would allow for the alignment of technical licence conditions):
- Vary the licences such that they become indefinite subject to an annual AIP fee rate (to be determined as part of the forthcoming review of fees for fixed link bands) and vary them to align the technical licence conditions with IR 2048. This option would be open to any current licence holder; or
 - Auction new spectrum rights from 2016 allowing for new licences aligned with IR 2048 but reflecting existing spectrum and geographic packages, to be awarded indefinitely from January 2016. These new spectrum access rights could be acquired by the incumbent licensees or by others.

Comparison of options

- 3.4 Our assessment of these options was conducted in accordance with our statutory duties, in particular the need to secure optimal use of the spectrum and our duty to have regard to the promotion of efficient management and use of the spectrum. We considered the following factors were most relevant:
- Allocative efficiency;
 - Duration of period of uncertainty; and
 - Proportionality of implementation effort and cost.

Allocative efficiency

- 3.5 Ofcom's statutory duties require us to secure the optimal use of the radio spectrum. In order for this to happen, we consider that the spectrum needs to be placed in the hands of the parties that can create the most value through its use, with licence conditions that maximise the potential for the licensees to achieve this.
- 3.6 We believed both options to be compatible with our duty to promote optimal use of the spectrum because:
- The licence variation option would result in post 2015 spectrum rights remaining with current licensees. In the event that these existing licensees were able to create less value than others through future use of this spectrum, then there would be a mutually beneficial opportunity to trade the licences (and the trading history of these BFWA licences indicates that there are unlikely to be material barriers to their trade). Any constraints that currently exist are likely to be related to the uncertainty over future access rights.
 - Under the auction approach it is likely that the post 2015 spectrum access rights would be acquired by those that can derive most value from use of the spectrum. However, an efficient auction outcome would probably require a combinatorial auction design (in which bids are made for packages that combine different lots) on account of the strong complementarity and substitution characteristics of the spectrum packages (although if there were a sub-optimal allocation in the auction, this could be mitigated through subsequent trading as under the licence variation option).

Duration of period of uncertainty

- 3.7 We believed that there was likely to be a material difference between the two options as regards the timescale for resolution of the uncertainty of future spectrum access rights. We could vary licences within a short timeframe following the conclusion of this consultation process. However, based on past auction experience and given the complexity of design, resource requirements and need to familiarise potential bidders with the process, it would be unlikely that we could prepare and complete an auction in less than 9 - 12 months of this consultation process. Even this timeframe would assume that all stages of the process ran smoothly and we had appropriate resources available to carry out the necessary preparatory work.
- 3.8 Consequently the licence variation option would put in place the incentives to exploit the spectrum efficiently at least a year earlier than the auction option (and possibly considerably more than a year earlier).
- 3.9 Whilst the decision to extend the licences would remove the uncertainty over the post 2015 access rights it would not remove the uncertainty over the annual fee rate for these post 2015 rights until the forthcoming fee review has been completed. However, it seems to us unlikely that this source of uncertainty would, on its own, be sufficiently material to inhibit investment that would bring this spectrum into use (noting also that we included some potential fee level benchmarks in the Consultation).

Proportionality of implementation effort and cost

- 3.10 We explained that we must also consider the effective use of limited Ofcom resources. In this context, the licence variation option would be relatively simple to implement and require considerably less of Ofcom's resources than a bespoke auction which would have to be designed and conducted specifically for these licences. Additionally we suggested that the likely value of the spectrum could be potentially less than the cost of running the award, suggesting that holding an award for these spectrum packages may not represent good value for money or efficient spectrum management.

Provisional conclusion

- 3.11 Our initial view, subject to stakeholder responses, was that we should proceed with licence extension via the variation option. The main reason for our initial view was that this option would remove the uncertainty over post 2015 spectrum access rights at least a year earlier than the auction approach and cost considerably less to secure the same benefits in terms of optimal use of the spectrum in the longer term. Meanwhile, the evidence of an active trading market in this particular band provides confidence that other parties could be expected to obtain access to this spectrum if they placed materially higher value on it than the existing licensees. In addition, the application of AIP-based spectrum fees to these licences would help to encourage efficient use.

Technical Licence conditions

- 3.12 The Consultation noted that we had already varied the BFWA licences of Urban Wireless Limited and UK Broadband to align their technical conditions with IR2048 rather than IR2043. It also noted that, at the time we made the decision to vary these licences in 2009, we stated that we would also make the same change available to other licensees on request.

Consultation

- 3.13 In light of our provisional conclusion, we asked stakeholders to consider the following questions when responding to the Consultation:

Q1 Do you agree that Ofcom should grant Urban Wimax's and Cable & Wireless's requests to vary their licences as soon as practicable

Q2 Do you agree with our proposal to align the technical conditions of the licences with those awarded in 2008 in these and adjacent spectrum bands?

Q3 Do you agree with Ofcom's proposals to set an AIP fee level in context with the review of fees within bands used for fixed links?

Q4 Do you agree that Ofcom should offer this variation to other BFWA licence holders?

- 3.14 We asked for written views on the issues raised in the Consultation to be made by 31 January 2013, later extended to 15 February 2013.

Section 4

Responses to the Consultation

- 4.1 We received 12 responses to the Consultation, one of which was submitted on a confidential basis. The non-confidential responses are published on our website³ and the parties who submitted them are listed in Annex 1. The points raised by respondents in respect of each of the four questions asked are considered in this section, along with our assessment of the issues raised.

Q1 Do you agree that Ofcom should grant Urban Wimax's and Cable & Wireless's requests to vary their licences as soon as practicable?

- 4.2 This first question is concerned with the main proposal set out in the Consultation to extend the licences so that they become of indefinite duration. The responses to this question fell broadly into two categories, the first category reflecting respondents with an interest in the particular spectrum covered by these licences for terrestrial applications and the second category reflecting satellite stakeholders who want a change to the approach to authorising use of the 28GHz band so as to facilitate satellite use.
- 4.3 From our first category of respondents, UK Broadband, Vodafone and WHP Wilkinson Helsby agreed with the proposal. The confidential response also supported varying the licences in the hands of the current incumbents as soon as possible, to give sufficient certainty to facilitate further investment in use of the spectrum.
- 4.4 UK Broadband holds three BFWA licences in the spectrum block where it also holds a Spectrum Access (2008) licence (covering the remaining 12 regional areas). It noted that without clarity of future licence rights, continuity of service to its customers would be uncertain and that investment and any potential trading of these licences could be limited.
- 4.5 Vodafone holds a Spectrum Access licence in the bands and, through its ownership of Cable & Wireless, four BFWA licences. It cited uncertainty as a bar to investment in the bands which was one of the major issues raised by Urban Wimax Limited in its request for the variation.
- 4.6 WHP Wilkinson Helsby considered that the variation should be granted to allow investment in and development of the band for high speed microwave backhaul and for possible applications in rural broadband networks.
- 4.7 In contrast, Everything Everywhere (EE) did not agree with the licence variation proposal and suggested that an auction of the spectrum would lead to a more efficient outcome. It didn't believe that trading would address the potentially sub-optimal configuration of existing licenses because the bi-lateral nature of trading doesn't allow the value of obtaining complementary licences to be taken into account (in the way that a combinatorial clock auction could). Additionally, EE considered that uncertainty around AIP levels would continue to undermine investment decisions. EE also suggested that the original service and technology limitations of the award may have led to a sub-optimal allocation.

³ <http://stakeholders.ofcom.org.uk/consultations/variation-28ghz/?showResponses=true>

- 4.8 We agree with EE's view that a combinatorial auction will generally lead to an efficient allocation of spectrum, allowing the complementarities between different spectrum lots within the auction to be taken into account by bidders. However, we note that the BFWA licences that would be included in an auction of this type would cover only some of the geographic regions of the UK and not all of them (see figures 3 and 4 in section 2). An auction of the full band (including the 2008 licences) would be required in order for bidders to take account of the complementarities between all the relevant regional spectrum blocks. However, that would not be possible as the 2008 Spectrum Access licences have an initial term that runs to 2023. Therefore a combinatorial clock auction would not necessarily remove the need for trading to help achieve the most efficient allocation of the licences in this spectrum band.
- 4.9 As noted in our Consultation, there has been a history of significant trading of these spectrum licences. This gives us some confidence that the potential for future trading of this spectrum, together with the incentives associated with spectrum pricing, could help to support efficient allocation and use of these bands, whether these BFWA licences are extended as proposed or whether we held a new auction for the spectrum rights in the relevant regions (represented by the shaded regions in figure 3).
- 4.10 As noted in the Consultation, there would be some material disadvantages in the auction approach in that it would take significantly longer to conduct and so would prolong the uncertainty for licensees and inhibit use of the spectrum in the meantime. This approach would also incur significantly higher costs to implement.
- 4.11 On EE's two other points:
- The current licence holders have not indicated to us that the uncertainty over AIP charges for this particular band will inhibit their ability to invest in use of this spectrum once the uncertainty over licence tenure has been removed;
 - To the extent that the service and technology restrictions in the licences at the time of the original award might have led to a sub-optimal allocation, these restrictions either have been removed, or will be removed following this statement (see below).
- 4.12 Ofcom continues to believe that trading, coupled with the application of spectrum pricing within these bands, should be capable of supporting efficient allocation and use of this spectrum, noting that recent trades have been to companies that have indicated they have specific plans to deploy the spectrum, pending clarification of the licence term. We therefore consider that extending the licences in this context is more likely to be a better fit with our statutory duties.
- 4.13 BT also disagreed with the proposal to make the BFWA licences indefinite because it did not believe this would lead to efficient use of the spectrum based upon evidence of current use. BT put forward a third option for consideration, namely that the spectrum should revert to Ofcom and be added to the current pool of fixed link spectrum available for coordinated point to point fixed link licensing managed by Ofcom.
- 4.14 Although this would be a viable option in principle, it has a number of drawbacks which in our view outweigh any potential benefits of BT's proposed approach:

- it would create a mixed spectrum management environment so that, at each of the frequency ranges covered by these licences, we would have some geographic areas licensed as a regional blocks (these being the spectrum access licences awarded in the 2008 auction) and others available for Ofcom managed point to point links (see figures 3 and 4 in section 2). Our existing point to point link assignment tools would have to be adapted so that they could manage co-existence across the geographic boundaries between these adjacent regional blocks. This could be complex, costly and time consuming task to implement.
 - It could undermine the ability of the current licence holders to use the spectrum during the remaining life of the current licence term up to the end of 2015. Given that a number of the licencees have indicated an intention to invest in use of the band if and when the uncertainty over licence tenure is removed, this would lead to inefficient use of the spectrum during this period.
 - It would restrict the future use of the spectrum covered by these licences to fixed links – and to fixed links that conform to the Ofcom point to point licence product. Whilst this might be the most likely use of this spectrum in the near term it would remove the flexibility to use this spectrum for other purposes in future.
- 4.15 We therefore consider that BT's proposed approach would lead to less efficient management, and potentially use, of the spectrum.
- 4.16 We also note that there a very large pool of spectrum is already available under the Ofcom coordinated point to point fixed link licence product of the type suggested by BT (around 12GHz in total as compared with 6GHz that is assigned as spectrum blocks that could be used for fixed links). Furthermore, respondents to our 2012 Fixed Links Band Review did not suggest this allocation of 12 GHz was insufficient.
- 4.17 Turning to the satellite community, we received responses from Inmarsat, Globecast UK Ltd, the European Satellite Operators' Association (ESOA), O3b Ltd, UK Space Agency and UK Space, who argued variously that the spectrum has been underutilised and should be made available for satellite use. For these respondents the core argument against extending the lifetime of these BFWA licences centred upon their position that the spectrum would be better, or more efficiently, allocated to space services. In some of the responses this argument did not take account of the current structure of the band whereby spectrum is licensed on a regional basis and not on a UK wide basis. The fact that the licences are regional, and that only some of the regional licences have a 2015 end date (as illustrated in figures 3 and 4), is significant because a UK wide regime would be required to authorise the use of uncoordinated satellite applications ("high density fixed satellite services" of HDFSS). Respondents who noted that the configuration of the band determined by the 2003 and 2008 auctions would make it difficult or impossible for uncoordinated satellite applications to access this spectrum, concluded that a re-plan of the band as a whole would first be needed.
- 4.18 Inmarsat and UK Space proposed that these BFWA licences might be extended to 2023 to align with the end of the initial period of the 2008 awarded Spectrum Access licences which occupy the majority of these bands and that the entire 28GHz spectrum band should then be reviewed and possibly re-awarded.
- 4.19 Globecast UK Ltd, ESOA, O3b and the UK Space Agency all noted that the current spectrum packaging in the band for terrestrial licences does not easily facilitate access for satellite use.

- 4.20 O3b suggested the licences should be allowed to expire and alternative licensing mechanisms considered. GlobeCast UK Ltd also felt the overall policy for the spectrum should be reviewed, although they and UK Space did note that the period to 2023 was fixed by the initial term of the Spectrum Access licences and that these licences do not then expire but are subject to a minimum notice of five years which could not have effect earlier than 2023.
- 4.21 ESOA noted that there is little evidence of effective use of these licences since their award in 2000. While that is true, all except one licence has recently changed ownership and the indications are that there are now market conditions which will encourage them to be effectively used, once the question of duration is settled. This view is reinforced by noting that the auctioned 2008 spectrum licences, which are very similar to these licences except for their termination date, have recently become heavily used for mobile network backhaul.
- 4.22 When assessing these arguments, we note that the satellite community is, in effect, arguing for a wholesale review of the entire band that would encompass the Spectrum Access licences awarded in 2008 as well as the BFWA licences covered by this consultation. The 2008 Spectrum Access licences continue in perpetuity but have an initial period to 2023 after which they can be revoked on spectrum management grounds with a minimum of five years' notice (that can be given from 2018). Therefore, if there was a strong case for changing the allocation of this band as a whole in the UK, we could consider this from 2018. The key point is that our ability to conduct such a review, and to take action to change the future allocation of this band, would not be affected by a decision to vary the BFWA licences so as to make them of indefinite duration. This is because we would have the ability to revoke the varied BFWA licences on spectrum management grounds with a minimum of five years' notice (just as with the 2008 Spectrum Access licences). If, however, we were to auction the spectrum covered by the BFWA licences instead, then assuming we followed our usual practice of providing for an initial period (usually at least 15 years) during which we would restrict our ability to revoke the licences on spectrum management grounds, it would not be possible to revoke the licences on spectrum management grounds until that initial period had expired.
- 4.23 Although uncoordinated satellite applications (HDFSS) are not authorised in the specific frequency ranges covered by these BFWA licences, we note that they are authorised in more than 1.2GHz of bandwidth at other frequencies in the 27.5 GHz and 30 GHz ranges. Permanent Earth Stations (eg. satellite gateways) can also obtain licences at the same frequencies that are authorised for HDFSS. In addition, it would be possible for satellite communication providers to obtain access to the frequency ranges covered by these BFWA licence by trading (or under leasing arrangements) with the licensees of this spectrum.
- 4.24 For the reasons set out above, Ofcom remains of the view that licences should be extended, subject to AIP based spectrum charges and 5 years' notice of revocation, as proposed.

Q2 Do you agree with our proposal to align the technical conditions of the licences with those awarded in 2008 in these and adjacent spectrum bands?

- 4.25 The majority of respondents, even where not agreeing with the proposal in Q1, agreed that if the licences were to be extended (or auctioned), it was sensible and proportionate for the technical terms to be aligned within the bands. GlobeCast UK Ltd did not agree with this proposal on the basis that having disagreed with question 1 it would not entertain acceptance of any of the subsequent questions. Ofcom has responded to the points raised concerning the potential use of this spectrum for satellite purposes at paragraph 4.22 above.

- 4.26 As discussed at paragraph 2.8, Ofcom notes that the interface requirement IR 2043 (for BFWA) represents an unnecessary restriction on the licences compared with the later IR 2048 (Spectrum Access) because IR 2043 imposes a specific channel spacing that may limit the choice of technologies that could be used. We have already varied the BFWA licences of Urban Wireless Limited and UK Broadband to align their technical conditions with IR2048 rather than IR2043 and we consider it is appropriate to make the same change available to other licensees on request.

Q3 Do you agree with Ofcom's proposals to set an AIP fee level in context with the review of fees within bands used for fixed links?

- 4.27 As above, the majority of respondents felt that the proposal to set fees relative to other (fixed) services using these and similar bands was appropriate. It was noted that the market value of spectrum and potential demand for links/backhaul capacity should be assessed nearer to 2016 and that there would need to be consultation on an appropriate mechanism for valuing the spectrum. Both Vodafone and the confidential respondent suggested that, given the differences between fixed links (licensed by Ofcom on a link by link basis) and the BFWA licence, it should not be assumed that there will be a direct comparison and that Ofcom should determine this as part of setting a method to value the spectrum.
- 4.28 EE expressed the view that uncertainty over the level of AIP could undermine investment in the meantime. However, the existing licensees themselves did not express concerns of this nature.
- 4.29 BT pointed to the need for clarity of how a calculation of a fee for spectrum in these bands would relate to other services to ensure that there would be no disparity of treatment of stakeholders using other spectrum for similar purposes.
- 4.30 While the comments received demonstrate that it would be premature to speculate now on the fee calculation mechanism, Ofcom confirms for clarification that fees are intended to apply after the expiry of the current licensing periods, from January 2016 (for BFWA licences) and from March 2023 (for Spectrum Access licences). Ofcom intends to conduct further work and will fully consult on proposals in time to set a fee level before 2016.

Q4 Do you agree that Ofcom should offer this variation to other BFWA licence holders?

- 4.31 All respondents who commented on this question agreed that the variation, if granted, should be available to others without discrimination. UK Broadband indicated in its response that it would be seeking the variation in respect of the BFWA licences it holds.

Section 5

Decisions and next steps

5.1 Having considered the responses to the Consultation and our statutory duties, for the reasons set out in this statement we have decided to vary the 28GHz BFWA licences held by Urban Wimax Limited and Cable and Wireless UK as soon as practicable so as to

- extend the duration of the licence indefinitely beyond the current expiry date of 31 December 2015;
- apply, where applicable, the technical terms of Interface Requirement 2048 (IR 2048) in order to align with other 28 GHz licences; and
- apply, from January 2016, administered incentive pricing per geographic region at a rate yet to be determined but which will be decided as part of (or in parallel with) the fees review for fixed link bands.

5.2 Ofcom will offer this variation, on request, to other BFWA licence holders.

Annex 1

List of non-confidential responses received

BT Plc

European Satellite Operators Association

Everything Everywhere Limited

GlobeCast UK Ltd

Inmarsat

O3b Limited

UK Broadband Limited

UK Space

UK Space Agency

Vodafone

WHP Wilkinson Helsby