



Requests from BT for variation  
to, and exemption from, its  
Undertakings under the Enterprise  
Act 2002 related to IPStream in  
certain geographic markets and  
Wavestream National

Consultation

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## Section 1

# Summary

- 1.1 On 22 September 2005 British Telecommunications plc ("BT") offered, and Ofcom accepted, a set of undertakings ("the Undertakings") pursuant to section 154 of the Enterprise Act 2002 (the "Enterprise Act") in lieu of a reference of certain markets to the Competition Commission. In this Consultation, Ofcom is seeking views from interested parties on a proposed variation to the Undertakings and one request from BT for an exemption from the Undertakings.
- 1.2 The variation relates to the application of Equivalence of Inputs (EOI) in de-regulated markets to IPStream and its successor products supplied by BT. The exemption relates to the requirement for Openreach to provide the input into the Wavestream National product on an EOI basis.
- 1.3 Ofcom is proposing to agree to the proposed variation and the exemption request. Our reasoning is explained in this document.

## Variation related to IPStream and successor products

- 1.4 The Undertakings require BT to provide IPStream and its successor products on an EOI basis in all parts of the UK (excluding the Hull area)<sup>1</sup>. Although no statement on the presence (or absence) of significant market power (SMP) for IPStream was made when the Undertakings were agreed in September 2005, IPStream was considered to be a product of particular importance to communications providers. This was because IPStream based services accounted for 63% of all broadband access connections in the UK at the time while the deployment of local loop unbundling (LLU) was in its infancy. We also recognised that LLU was unlikely to be viable in all parts of the UK, given that LLU economics are driven by scale. It was therefore important that EOI applied to IPStream on a nationwide basis.
- 1.5 However, the broadband market has developed significantly since 2005, to the extent that in the statement of the *Review of the wholesale broadband access markets* published on 21 May 2008<sup>2</sup>, Ofcom defined four separate geographic markets and concluded that BT did not hold a position of SMP in Market 3, which covers 69.2% of homes and businesses in the UK. At the same time, Ofcom concluded that BT did have SMP in Market 1 and Market 2.
- 1.6 BT considered that, subsequent to this finding, it would be appropriate for Ofcom to agree to revoke the EOI obligations on IPStream and its successor products in the de-regulated Market 3. This would provide BT with pricing flexibility in the competitive Market 3 and allow it to provide customised products to different customers if it so chooses.
- 1.7 In this Consultation, we are proposing to remove the EOI obligations for the delivery of IPStream and the successor product IPstream Connect in Market 3 while ensuring that all existing obligations in relation to these products under the Undertakings remain in place for all other geographic markets where BT has been found to hold a position of SMP.

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<sup>1</sup> See Sections 3.1.1(g), 3.1.1(h) and 3.1.2(d) of the Undertakings

<sup>2</sup> [www.ofcom.org.uk/consult/condocs/wbamr07/statement/statement.pdf](http://www.ofcom.org.uk/consult/condocs/wbamr07/statement/statement.pdf)

- 1.8 Variation 14 to the Undertakings added Wholesale Broadband Connect (WBC) to the list of successor products to IPStream (in Section 3.1.2(d)) that BT is required to provide on an EOI basis<sup>3</sup>. In considering whether to remove the obligation to provide IPStream and its successor products on an EOI basis in geographic markets where BT has been found not to have SMP, we are proposing to remove this specific reference to WBC because, as WBC is a next generation network (NGN) product, the requirements of Section 11 of the Undertakings apply. Section 11 requires that BT provides NGN products on an EOI basis where it has been found to have SMP. Therefore, WBC will be required to be supplied on an EOI basis in Markets 1 and 2 but not in Market 3, in line with the requirement on IPStream and IPstream Connect.

### **Exemption related to the Openreach input into Wavestream National**

- 1.9 At the time the Undertakings were formulated it was realised that in the interest of reaching a conclusion in a timely manner, to ensure that the benefits could be felt by consumers as quickly as possible, it would be inappropriate to define all of BT's products to which EOI should apply. Instead, a mechanism was included within the Undertakings to place general requirements on BT regarding the provision of products on an EOI basis, and to allow for exemptions from this requirement where appropriate.
- 1.10 In January 2006, BT provided Ofcom with a proposed list of products (which had not been specifically identified in the original Undertakings) to which EOI should apply and a number of requests for exemptions from Ofcom. In October 2006, Ofcom issued a consultation<sup>4</sup> related to thirteen of these requests, including the Wavestream product. Based on responses to that consultation, Ofcom did not agree to the request for Wavestream. In December 2007, we consulted again on Wavestream<sup>5</sup>. As a result of that consultation, on 20 May 2008<sup>6</sup> Ofcom agreed to BT's exemption request in relation to shorter Wavestream products – Wavestream Connect and Wavestream Regional – but left outstanding the longer Wavestream National product. This was because following discussions with BT about the responses received to the December 2007 consultation, BT provided further information that Ofcom considered to be sufficiently different to that presented in the original consultation to require further consideration.
- 1.11 In this Consultation, Ofcom presents BT's updated exemption request for Wavestream National, along with Ofcom's reasoning for proposing to agree to the request. Ofcom is seeking views from interested parties on this request and Ofcom's reasoning.

### **Requirement to consult and timeframes for consultation**

- 1.12 Section 155 of the Enterprise Act requires that Ofcom consults where it proposes to amend the Undertakings in a material respect. However, in this instance, Ofcom does not consider that the proposed variation and exemption alter the Undertakings in a material respect.
- 1.13 We consider that the variation in relation to IPStream is not material because it reflects the findings of the Wholesale Broadband Access (WBA) market review and the resultant position created by deregulation in Market 3.

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<sup>3</sup> <http://www.ofcom.org.uk/telecoms/btundertakings/exemptionsandvariations/var14.pdf>

<sup>4</sup> <http://www.ofcom.org.uk/consult/condocs/btrequests/>

<sup>5</sup> <http://www.ofcom.org.uk/consult/condocs/wavestream/>

<sup>6</sup> <http://www.ofcom.org.uk/telecoms/btundertakings/exemptionsandvariations/waveredpath.pdf>

- 1.14 Whilst Ofcom does not consider that SMP and EOI are necessarily related, the solution provided by the Undertakings addresses areas where effective and sustainable competition has not developed. Therefore, removing certain requirements arising from the Undertakings from markets where such competition has developed does not materially impact the solution provided by the Undertakings.
- 1.15 We also do not consider the request to exempt the Openreach input into Wavestream National from being provided on an EOI basis to be material as it concerns the operation of mechanisms originally envisaged under the Undertakings. It was anticipated when the Undertakings were agreed that there may be products for which it would not be reasonably practicable for Openreach to provide inputs on an EOI basis and, as such, Section 5.46.2 provided a mechanism to allow BT to request, and Ofcom to agree, exemptions from EOI for these Openreach inputs. BT has requested Ofcom's agreement that it is not reasonably practicable for Openreach to provide an input into Wavestream National on an EOI basis and, as set out in Section 3 of this Consultation, Ofcom proposes to agree to this request.
- 1.16 Whilst Ofcom is not obliged to consult on non-material changes to the Undertakings, we are of the opinion there is value in consulting on this occasion in order to obtain views and comments that will help us in reaching a decision as to whether to agree, or not, to the proposed variation and exemption. We consider in this case that it is appropriate to consult on the proposed variation given that the Undertakings considered IPStream to be a product of significance to communications providers. We also consider it is appropriate to consult on the exemption request for Wavestream National because we have consulted on the Wavestream products previously and said in our statement of 20 May 2008 we would publish further information once BT had reviewed options to provide EOI products on 21CN.<sup>7</sup>
- 1.17 Although Section 155 of the Enterprise Act does not apply in this instance, Ofcom notes that the period stipulated for consultation in the Enterprise Act is a minimum of 15 days. However, it is Ofcom's view that given the scope of these requests, a four week consultation is appropriate. Ofcom intends to publish a final statement with respect to the proposed variation and the exemption request within this Consultation in November 2008.

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<sup>7</sup> <http://www.ofcom.org.uk/telecoms/btundertakings/exemptionsandvariations/waveredpath.pdf>

## Section 2

# Background

- 2.1 On 22 September 2005 BT offered, and Ofcom accepted, a set of undertakings (“the Undertakings”) pursuant to section 154 of the Enterprise Act. The Undertakings addressed issues that had been raised by Ofcom as it considered whether to refer certain markets to the Competition Commission in relation to the provision of fixed telecommunications. The Undertakings were accepted by Ofcom in lieu of making such a reference at that time. Ofcom’s reasons for accepting the Undertakings, together with the Undertakings themselves, are set out in full in the document entitled *Final statements on the Strategic Review of Telecommunications, and undertakings in lieu of a reference under the Enterprise Act 2002*<sup>8</sup>.
- 2.2 The Undertakings included mechanisms to allow for variations to be agreed by BT and Ofcom and for BT to request exemptions from the Undertakings.

### The variations process

- 2.3 Section 18.1 of the Undertakings allows for BT and Ofcom to agree from time to time to vary the Undertakings.
- 2.4 This Consultation includes a proposed variation related to the requirement for BT to provide IPStream and its successor products on an Equivalence of Inputs (EOI) basis in certain markets.

### The exemptions process

- 2.5 At the time the Undertakings were formulated it was realised that in the interest of reaching a conclusion in a timely manner, to ensure that the benefits of the Undertakings could be felt by consumers as quickly as possible, it would be inappropriate to consider all BT’s products in the context of whether EOI should apply. Instead, a mechanism was included within the Undertakings to place general requirements on BT regarding the provision of products on an EOI basis, and to allow for exemptions from this requirement where appropriate. This Consultation includes one such request, for the Wavestream National product.
- 2.6 The possibility of there being products and/or services about which a decision would need to be made with respect to EOI was recognised and anticipated in the Undertakings. Section 5.46 of the Undertakings not only sets out the general principle of when EOI will apply (5.46.1) but also sets out a list of products to which EOI will not apply (5.46.1(a) – (i)). In addition, Section 5.46.2 envisaged that there were products which would exist at the date when the Undertakings came into force (22 September 2005) and which AS<sup>9</sup> (now known as Openreach) would supply, but which Ofcom and BT would have to subsequently agree whether or not EOI should apply, or whether the product should be withdrawn from supply by AS.
- 2.7 Under the terms of the Undertakings BT and Ofcom are required to agree the action to be taken in respect of products and services which fall under Section 5.46.2. The original Undertakings gave BT and Ofcom until 21 January 2006 to review these

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<sup>8</sup> [http://www.ofcom.org.uk/consult/condocs/statement\\_tsr/](http://www.ofcom.org.uk/consult/condocs/statement_tsr/)

<sup>9</sup> Since the Undertakings came into effect BT has created Openreach to fulfil the duties (as defined in the Undertakings) of Access Services.

products and determine what should happen to them. This period has subsequently been extended on a number of occasions and most recently was extended until 31 December 2008<sup>10</sup> to allow a decision on Wavestream National to be made.

- 2.8 In this Consultation, Ofcom is publishing a request for exemption for Wavestream National. Ofcom originally consulted on a request for exemption for Wavestream in October 2006<sup>11</sup> and again in December 2007<sup>12</sup>. Based on feedback to those consultations, Ofcom agreed to an exemption request for the shorter Wavestream product variants (called Wavestream Connect and Wavestream Regional) but not for the longer variant, Wavestream National. This was because, following the consultation, in discussions with BT relating to stakeholder feedback to the consultation, BT provided further detailed information that Ofcom considered to be significantly different to that presented prior to the consultation. As a result, Ofcom considered that a further consultation based on this new information would be appropriate. BT has now submitted a revised request for Wavestream National, which is included in this Consultation.

### The process for considering BT's requests

- 2.9 The Enterprise Act requires that Ofcom should "have regard to the need to achieve as comprehensive a solution as is reasonable and practicable to the adverse effect on competition". Ofcom's competition concerns were set out in its *Strategic Review of Telecommunications Phase 2 Consultation Document*<sup>13</sup>. In considering the case for agreeing to variations to, or exemptions from, the Undertakings, Ofcom must consider whether this solution is materially and negatively affected by the variations and exemptions in question.
- 2.10 Section 155 of the Enterprise Act 2002 requires that Ofcom consults where it proposes to amend the Undertakings in a material respect. However, Ofcom does not consider that the variation and exemption contained herein would alter the Undertakings in a material respect.
- 2.11 We consider that the variation in relation to IPStream is not material because it reflects the findings of the WBA market review and the position created by deregulation in Market 3.
- 2.12 Whilst Ofcom does not consider that SMP and EOI are necessarily related, the solution provided by the Undertakings addresses areas where effective and sustainable competition is not sufficiently developed. Therefore, removing certain requirements arising from the Undertakings from markets where such competition has developed does not materially impact the solution provided by the Undertakings.
- 2.13 Ofcom also considers that IPStream and IPstream Connect are also products that will most likely be replaced by its Next Generation Network (NGN) equivalent product WBC in the near future.
- 2.14 We also do not consider the request to exempt the Openreach input into Wavestream National from being provided on an EOI basis to be material as it concerns the operation of the exemption mechanism originally envisaged under the Undertakings as explained above. In particular, with this exemption request, BT

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<sup>10</sup> <http://www.ofcom.org.uk/telecoms/btundertakings/exemptionsandvariations/var15.pdf>

<sup>11</sup> <http://www.ofcom.org.uk/consult/condocs/btrequests/>

<sup>12</sup> <http://www.ofcom.org.uk/consult/condocs/wavestream/wavestream.pdf>

<sup>13</sup> [http://www.ofcom.org.uk/consult/condocs/telecoms\\_p2/](http://www.ofcom.org.uk/consult/condocs/telecoms_p2/)



seeks Ofcom's agreement under Section 5.46.2 of the Undertakings that, in accordance with section 5.46.1(c), it is not reasonably practicable for Openreach to provide the inputs into Wavestream National on an EOI basis.

- 2.15 Furthermore, Ofcom does not consider that the variation and the exemption considered in this Consultation will have a negative impact on the comprehensive solution which the Undertakings aim to achieve. In reaching this view within this Consultation, Ofcom has considered the following factors where appropriate:
- whether there would be, or would likely be, harm to customers of BT, consumers of BT and other communications providers and the wider public in general if the variation or exemption was accepted or not accepted due to, for instance, a reduction in effective competition or disruption to the services customers receive;
  - whether there would be demand from communications providers (other than BT) for an EOI product to which the exemption relates; and
  - the length of time for which the exemption will be granted and whether the amount of resource that would be needed to accelerate development of an EOI product is warranted balanced against other resource requirements (i.e. proportionality).
- 2.16 Whilst Ofcom is not obliged to consult on non-material changes to the Undertakings, we stated in Exemptions Part 1<sup>14</sup> that we would decide whether or not to consult on any such changes in the future on a case-by-case basis. We consider in this case it is appropriate to consult on the proposed variation given that the Undertakings considered IPStream to be a product of significance to communications providers. We also consider it is appropriate to consult on the exemption request for Wavestream National because we have consulted on the Wavestream products previously and said in our statement of 20 May 2008 that we would publish further information once BT had reviewed options to provide EOI products on 21CN<sup>15</sup>.
- 2.17 Although Section 155 of the Enterprise Act does not apply in this instance, Ofcom notes that the period stipulated for consultation in the Enterprise Act is a minimum of 15 days. It is Ofcom's view that in this instance, given the scope of this Consultation document, a four week consultation is appropriate. Following on from this Consultation, Ofcom intends to publish a statement in November 2008.
- 2.18 Ofcom is proposing to agree to the proposed variation and the exemption request from BT. Ofcom's reasons for this position are explained in Section 3. Ofcom invites comments on this approach. The envisaged scope of the proposed exemption is set out in BT's submission contained in Annex 5 to this document. The proposed legal wording of the agreement to the exemption and the variation is contained within Annex 6. This document has been drafted to reflect Ofcom's position prior to the Consultation and will be updated as necessary for the statement to reflect any changes made as a result of considering stakeholder comments.

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<sup>14</sup> <http://www.ofcom.org.uk/telecoms/btundertakings/exemptionsandvariations/requests/>

<sup>15</sup> <http://www.ofcom.org.uk/telecoms/btundertakings/exemptionsandvariations/waveredpath.pdf>

## Section 3

# Ofcom's reasoning with respect to the submitted requests

## Introduction

- 3.1 In this section, Ofcom sets out its position in respect of the proposed variation to, and BT's request for exemption from, its Undertakings under the Enterprise Act and our reasons for adopting this position. Ofcom, through this Consultation, invites comments on the described proposals from interested stakeholders.
- 3.2 The full text of BT's exemption request is reproduced in Annex 5 and the proposed legal wording of the variation and the exemption is set out in Annex 6. Respondents are strongly recommended to consider the text in Annex 5 and Annex 6 before answering the questions which follow. The reasoning Ofcom puts forward in this section in respect of the proposals is based on the information available to Ofcom at the time of publication and Ofcom reserves the right to change its position with respect to the proposals as a result of the consultation process or any other information that comes to light during the Consultation. Any such change will be fully explained in the subsequent statement due for publication in November 2008. The legal wording in Annex 6 reflects Ofcom's current position in respect of the requests.
- 3.3 The Enterprise Act requires that Ofcom should "have regard to the need to achieve as comprehensive a solution as is reasonable and practicable to the adverse effect on competition". Ofcom's competition concerns were set out in its *Strategic Review of Telecommunications Phase 2 Consultation Document*<sup>16</sup>. In considering the case for agreeing to variations and/or exemptions from the Undertakings, Ofcom must consider whether this solution is materially and negatively affected by the variations/exemptions in question. Ofcom does not consider that the variation and exemption contained herein would alter the Undertakings in a material respect were they to be agreed. We explain our reasoning in relation to these considerations below.
- 3.4 Since the acceptance of the Undertakings, BT has branded its Access Services division, as referred to in the Undertakings, as Openreach. Therefore, this document refers to Openreach throughout.

## Variation related to the application of EOI to IPStream, IPstream Connect and Wholesale Broadband Connect (WBC)

- 3.5 The Undertakings currently require BT to provide IPStream and IPstream Connect on an EOI basis in all parts of the UK (excluding the Hull area)<sup>17</sup>. This EOI obligation extends to IP based bit-stream products (currently IPstream Connect and Wholesale Broadband Connect) that are the successors to IPStream irrespective of whether BT has SMP in a relevant market or not.<sup>18</sup> In accordance with Section 3.1.1 of the Undertakings, it should be noted that the obligation to supply IPStream on an EOI basis will cease when IBMC for IPstream Connect is achieved.

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<sup>16</sup> [http://www.ofcom.org.uk/consult/condocs/telecoms\\_p2/](http://www.ofcom.org.uk/consult/condocs/telecoms_p2/)

<sup>17</sup> See Section 3.1.1(g) and (h) of the Undertakings

<sup>18</sup> See Section 3.1.2(d) of the Undertakings

- 3.6 In the *Review of the Wholesale Broadband Access Markets* statement, published on 13 May 2004<sup>19</sup>, Ofcom found that BT's IPStream products, which existed at that time, resided in an intermediate market located between the wholesale broadband access market and retail services market. Therefore, in the review, Ofcom did not assess whether, or not, BT held a position of SMP in the supply of IPStream type broadband access services.
- 3.7 The requirement to provide IPStream on an EOI basis was therefore introduced absent a SMP assessment being conducted. In September 2005, when the Undertakings were being finalised, 63% of all broadband access connections in the UK were based on IPStream whereas LLU was in its infancy, accounting for about 1% of the market. IPStream was therefore considered to be a broadband access product of particular importance and for this reason BT agreed to provide it on an EOI basis.
- 3.8 However, the broadband market has developed significantly since September 2005, as demonstrated by the conclusions in Ofcom's most recent statement, following the WBA market review, published on 21 May 2008<sup>20</sup>.
- 3.9 In the WBA market review, Ofcom concluded that developments to BT's IPStream product since the previous review, such as the introduction of: downstream quality of service; end user speed control; the 'max' (up to 8Mbit/s) products; and the capacity based charging option, meant that IPStream had now developed to the point that it was found to fall within the scope of the WBA market. In addition, Ofcom concluded that four separate, sub-national, markets exist, as follows:
- The Hull area - those areas covered by exchanges where KCOM Group plc (KCOM) is the only operator;
  - Market 1 - those areas covered by exchanges where BT is the only operator;
  - Market 2 - those areas covered by exchanges where there are 2 or 3 operators; and
  - Market 3 – those areas covered by exchanges where there are 4 or more operators.
- 3.10 Given these market definitions, Ofcom concluded that KCOM holds a position of SMP in the Hull area, whereas BT holds a position of SMP in Market 1 and Market 2. However, Ofcom concluded that no operator or group of operators holds a position of SMP in Market 3.
- 3.11 Therefore, the completion of the recent WBA market review has two direct implications for IPStream and its successor products. Firstly, it has been concluded that these products do fall within the scope of the WBA market. Secondly, BT has been found to hold a position of SMP in Market 1 and Market 2 whereas BT has been found not to hold a position of SMP in Market 3.

### **Actions post the May 2008 WBA Market Review**

- 3.12 Subsequent to deregulation and a finding of no SMP in Market 3, BT considers that it is no longer appropriate for it to maintain EOI provisioning for IPStream and its

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<sup>19</sup> [www.ofcom.org.uk/consult/condocs/wbamp/wholesalebroadbandreview/broadbandaccessreview.pdf](http://www.ofcom.org.uk/consult/condocs/wbamp/wholesalebroadbandreview/broadbandaccessreview.pdf)

<sup>20</sup> [www.ofcom.org.uk/consult/condocs/wbamr07/statement/statement.pdf](http://www.ofcom.org.uk/consult/condocs/wbamr07/statement/statement.pdf)

successor products in this market. While Ofcom does not believe that there should be an automatic linkage between SMP and EOI obligations in all circumstances, we think it is appropriate for deregulation to follow the establishment of competition in Market 3 and remove the need for BT to provide IPStream and any successor products in this market on an EOI basis. This will not affect the requirement for BT to supply IPStream and any successor products on an EOI basis in a market where BT has been determined to have SMP. The proposed variation to the Undertakings will provide for this.

- 3.13 Given that the relaxation of EOI requirements on IPStream requires an amendment to the Undertakings and because IPStream is a product of particular importance to communications providers, Ofcom decided that it would consult with industry on the proposed variation.
- 3.14 It should be noted that pending the outcome of this Consultation and in order to permit BT some pricing flexibility, Ofcom granted a narrow temporary exemption to BT on 1 July 2008<sup>21</sup>. This provided BT with a degree of pricing flexibility for the provision of IPStream and its successor products in Market 3 until 31 December 2008 whilst maintaining all other EOI commitments. In addition, it should be noted that BT already has provided voluntary wholesale broadband access price commitments in the form of price floors and price ceilings.<sup>22</sup>

### **Implications of the relaxation of EOI**

- 3.15 Following the WBA market review, BT has been found to hold a position of SMP in Market 1 and Market 2 but not in Market 3. However, the Undertakings require BT to provide IPStream and any successor products on an EOI basis irrespective of whether BT has SMP in an appropriately defined market. This means BT is not able to take advantage of the deregulation that results from the non-SMP determination in Market 3. Therefore, given that competition has been established in Market 3, Ofcom considers it appropriate that the requirement for BT to supply IPStream and any successor products on an EOI basis should be removed in that market. However, it is most important that the removal of EOI in Market 3 does not compromise the EOI obligation in Market 1 and Market 2 where BT has been determined by Ofcom to have SMP.
- 3.16 The proposed removal of EOI obligations on IPStream and any successor products in Market 3 will allow BT to engage in differential pricing between customers of its wholesale broadband services in that market. BT will be allowed to negotiate prices with customers based on individually negotiated contractual terms as in any general business context.
- 3.17 BT will also be permitted to provide different products to customers in Market 3 if it so chooses. However, we consider that the introduction of different products by BT would likely eliminate scale advantages and is therefore unlikely to be of interest to BT.
- 3.18 Further, BT will be able to handle requests for new products and service requests in Market 3 in a manner different than that required in Market 1 and Market 2. In Markets 1 and 2, BT is required to operate a Statement of Requirements (SOR) process which treats requests related to new products / product enhancements from

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<sup>21</sup> [http://www.ofcom.org.uk/telecoms/btundertakings/exemptionsandvariations/bt5\\_090708.pdf](http://www.ofcom.org.uk/telecoms/btundertakings/exemptionsandvariations/bt5_090708.pdf)

<sup>22</sup> [www.ofcom.org.uk/telecoms/loi/bbpricing/](http://www.ofcom.org.uk/telecoms/loi/bbpricing/)

all communications providers, including BT, on a non-discriminatory basis. It must also publish details of SORs it receives. Post deregulation in Market 3, BT will no longer be required to share SOR information in Market 3 with other communications providers. This may lead to concerns about BT's SOR handling in Market 1 and Market 2 and its relationship to SOR handling in Market 3. However, the Undertakings provide for the Equality of Access Board (EAB) to review any issue with respect to the Undertakings and additionally require BT to ensure that the Equality of Access Office (EAO) has reasonable access to any information held by BT that it needs to fulfil its monitoring role, regardless of where that information is held by, or within, BT<sup>23</sup>. This means that the EAB/EAO will continue to be entitled to have access to SORs and information related to product development on IPStream and its successor products in Market 3 in order to ensure compliance in Markets 1 and 2.

### **Rationale for the lifting of EOI obligations in Market 3**

3.19 In light of developments in the WBA market highlighted in Ofcom's May statement<sup>24</sup>, Ofcom believes that EOI obligations on IPStream and its successor products in Market 3 are no longer necessary. Given that competition has been firmly established in this market, all communications providers (including BT) should be permitted to exercise pricing and contractual flexibility without regulatory intervention. This also reflects Ofcom's general strategy and regulatory policy to utilise regulation to encourage competition while withdrawing regulation once effective and sustainable competition has been established.<sup>25</sup>

### **Change in product management for IPStream**

3.20 The Undertakings govern the management and structure of BT Wholesale.<sup>26</sup> The Undertakings further provide for the separate product management of certain products within BT Wholesale divisions. The Undertakings currently place the management of BT Wholesale's SMP products in a separate division, BTWS<sup>27</sup> and products of particular importance to communication providers, including the IPStream product line, are managed by BTS<sup>28</sup>. Other BT Wholesale products can be managed elsewhere within BT Wholesale or in one of the above divisions.

3.21 Ofcom's decision to define sub-national geographic markets in the WBA market review together with the determination that BT holds a position of SMP in Market 1 and Market 2 for the provision of IPStream and its successor products raised the question of which product management unit within BT Wholesale should be responsible for the ongoing product management of its IPStream product line.

3.22 Since IPStream has now been found to reside in a market where BT has been determined to hold a position of SMP, Ofcom and BT have discussed the product management arrangements for IPStream and have agreed it is appropriate, in accordance with the Undertakings, to move its product management from BTS to BTWS, the division of BT Wholesale responsible for the management of SMP

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<sup>23</sup> See Section 10.23 of the Undertakings

<sup>24</sup> [www.ofcom.org.uk/consult/condocs/wbamr07/statement/statement.pdf](http://www.ofcom.org.uk/consult/condocs/wbamr07/statement/statement.pdf)

<sup>25</sup> See paragraph 1.6 of Ofcom's TSR statement at [http://www.ofcom.org.uk/consult/condocs/statement\\_tsr/statement.pdf](http://www.ofcom.org.uk/consult/condocs/statement_tsr/statement.pdf)

<sup>26</sup> See Section 6 of the Undertakings

<sup>27</sup> The corresponding BT product division is known as CNS

<sup>28</sup> The corresponding BT product division is known as VNS

products. Ofcom has agreed to this change by an exchange of letters dated 16 July 2008 pursuant to Section 6.4.3 of the Undertakings<sup>29</sup>.

- 3.23 Within the proposed variation in this Consultation we are updating the text of the Undertakings to reflect this management change. We are not consulting on this amendment which deletes the words 'and IPStream' from Section 6.1.2a) of the Undertakings, but this has been included in the proposed variation text in Annex 6 for completeness.

### **Ofcom's position on the proposed variation**

- 3.24 Ofcom is minded to agree to the proposed variation. The removal of the EOI requirement in Market 3 for the provision of IPStream, and any successor product, follows logically from the conclusions reached in Ofcom's May 2008 WBA market review and will permit BT to have pricing flexibility in competitive geographic markets. At the same time, BT will be required to supply IPStream and any successor products on an EOI basis in markets where BT has been determined to have SMP.
- 3.25 In relation to successor products to IPStream on BT's next generation network, the requirements in section 11 of the Undertakings already require these to be provided on an EOI basis in markets where BT has SMP. Therefore the proposed variation removes WBC from the list of successor products to IPStream explicitly named in the general EOI requirement in Section 3.1.2. WBC will be subject to the requirements of Section 11, which requires WBC to be provided on an EOI basis in Markets 1 and 2 but not in Market 3.

**Question 1:** *Based on the information presented in this Consultation, do you agree that Ofcom should remove EOI obligations on BT for the provisioning of IPStream in Market 3? If not, please explain why.*

### **Exemption related to Wavestream National**

- 3.26 BT's Wavestream product provides a Wavelength Division Multiplexing (WDM) capability to end-users who require very high bandwidth services to be provided to exacting standards. Each Wavestream system provides a connection between two end-user sites and is capable of supporting up to 32 individual wavelengths. Each wavelength provides a very high bandwidth connection (up to 10Gb/s) and turning up additional wavelengths once a system is installed can be done very quickly and at relatively low incremental cost. The Wavestream product includes Network Terminating Equipment (NTE) that allows a number of different protocols to be supported, including Ethernet, Synchronous Digital Hierarchy (SDH) and data-centre specific applications.
- 3.27 BT splits the Wavestream product into 3 options:
- Wavestream Connect, which provides connections up to 35km;
  - Wavestream Regional, which provides connections up to 70km; and
  - Wavestream National, which provides connection beyond 70km.

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[http://www.ofcom.org.uk/telecoms/btundertakings/exemptionsandvariations/070808\\_UndertakingsIPStream.pdf](http://www.ofcom.org.uk/telecoms/btundertakings/exemptionsandvariations/070808_UndertakingsIPStream.pdf)



## Previous Consultation

3.28 BT has previously requested exemptions from providing the Openreach input into the Wavestream product set on an EOI basis and we have consulted on this twice (on 18 October 2006<sup>30</sup> and 20 December 2007<sup>31</sup>). The second of these consultations sought views on a request by BT seeking the following:

- for Wavestream Connect and Wavestream Regional, an exemption until 31 December 2008 (the day after which will be the RFS date) to allow BT to move the supply of Wavestream Connect and Wavestream Regional onto Openreach provided EOI products and until 31 December 2010 to allow for the migration of the installed base of Wavestream Connect and Wavestream Regional circuits onto the EOI products; and
- an exemption for Wavestream National to run until 31 December 2010 by which time it would be reviewed.

3.29 In the consultation of 20 December 2007, we explained why BT was asking for different exemptions based on the different architecture of the products. We said that Wavestream Connect and Wavestream Regional employ a dedicated fibre path end-to-end using fibre in the Openreach access and backhaul network, whereas Wavestream National only employs a dedicated fibre path as far as BT's core WDM network whereupon each wavelength is routed over the shared WDM network infrastructure. We explained that this meant that Openreach could supply an EOI solution for Connect and Regional, but that we did not consider it was practical for Openreach to provide an EOI input into the Wavestream National product.

3.30 We asked:

*Do you agree that Ofcom should agree to this request to exempt Wavestream Connect and Wavestream Regional until 31 December 2008 (and to 31 December 2010 for existing contracts) and Wavestream National until 31 December 2010 from being provided on an EOI basis from Openreach? If you do not, please explain why.*

3.31 Based on responses to this consultation question, on 20 May 2008 we agreed to an exemption<sup>32</sup> that requires BT to move the provision of the Openreach input into Wavestream Connect and Wavestream Regional onto an EOI basis from an RFS date of 1 January 2009 and to migrate existing customers onto the EOI solution by 30 September 2010.

3.32 We did not agree to the request for exemption for Wavestream National. All respondents except BT disagreed with the request. There were a number of common points raised by respondents in disagreeing with Ofcom's proposal to agree to the request. These were that:

- communications providers should be able to use the same Openreach access and backhaul capabilities as BT;
- because there is an interface at the boundary between the Openreach and BT core networks which includes connection through active network elements, this potentially allowed a practical point of interconnection to be developed;

<sup>30</sup> <http://www.ofcom.org.uk/consult/condocs/btrequests/>

<sup>31</sup> <http://www.ofcom.org.uk/consult/condocs/wavestream/>

<sup>32</sup> <http://www.ofcom.org.uk/telecoms/btundertakings/exemptionsandvariations/waveredpath.pdf>

- segmenting a Wavestream National circuit into separate backhaul and core segments would not necessarily have a negative impact on consumers in terms of functionality or cost because there is active equipment already provided at the backhaul/core boundary, which should allow for a cost effective EOI interface to be developed without significant loss of feature capability;
- the coverage of the BT network provides a competitive advantage, particularly given that some applications for which Wavestream is attractive tend to require connection to locations not generally close to other communication providers' networks; and
- the timeframe for the exemption, which was proposed to run until 31 December 2010 with the opportunity for Ofcom and BT to review it was too long and the conditions for any review were not stated.

3.33 In addition, whilst some respondents agreed that it was not appropriate to make elements of BT's core network available on an EOI basis, others stated that the supply of the end-to-end Wavestream National product on an EOI basis, including the core elements, should be considered. Several respondents also stated that Openreach should provide dark fibre.

3.34 One respondent highlighted concern over the statement in the request that Wavestream Regional circuits over 70km should be treated as National circuits and should be exempted.

### **Ofcom's Position on Wavestream National following the consultation**

3.35 Ofcom re-engaged with BT to discuss the responses to the consultation. In particular, we asked BT to provide further details about why the active equipment at the boundary between the backhaul and core networks could not support an EOI interface. We also asked for more information on the circuits described as Regional circuits over 70km. In response to these questions BT told Ofcom that:

- the equipment used in the core network by BT does not support standard interfaces for wavelength interconnection and, in addition, the supplier is no longer supporting developments of such interfaces on this product. BT also indicated that the current equipment used to support Wavestream National is close to capacity. Therefore, developing an EOI point between the backhaul network and the shared core infrastructure in BT's current network is not practical; and
- in relation to the Regional circuits over 70km, some users of Wavestream require a dedicated point-to-point connection, in particular where the applications running over the circuit have exacting performance requirements. Some of these circuits are longer than the 70km allowed in the Regional product. BT referred to these circuits as Regional circuits over 70km in its request. However, these circuits use a section of core fibre and include a fibre splice at the connection of the backhaul network and core network without the inclusion of active equipment at this point.

3.36 It was Ofcom's view that this information provided by BT following consultation was sufficiently different to that on which we originally consulted that a new request was



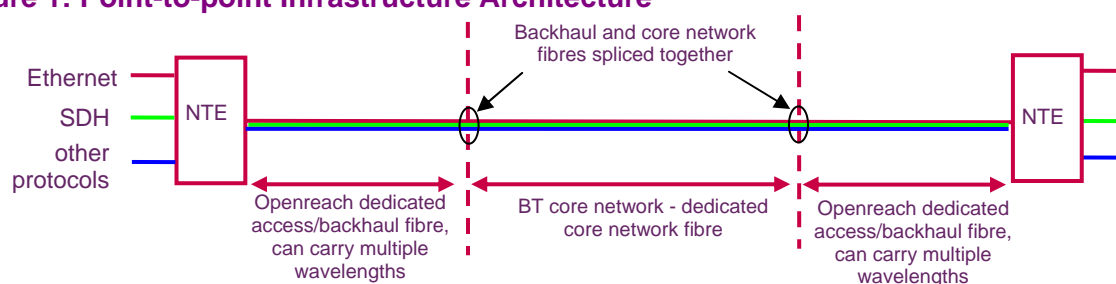
needed and that further consultation would be required. We therefore did not agree to BT's request for Wavestream National in our statement of 20 May 2008<sup>33</sup>.

## BT's Updated Request

3.37 BT's has submitted an updated request. This explains that there are two different customer requirements that Wavestream National serves. Some of the solutions that customers run over Wavestream have certain strict performance and security requirements. This means some customers demand a dedicated, point-to-point solution. Other customer requirements can be supported over a shared network infrastructure, where this is available. This has resulted in two different network infrastructures being developed:

- Dedicated point-to-point (sometimes referred to as Wavestream Regional overlength/extended) - a point-to-point fibre connects each of the customer's locations to the nearest BT core node. These backhaul fibres are then directly connected (via a fibre splice) to a dedicated fibre that connects across the BT core network, giving the customer an end-to-end dedicated fibre. Figure 1 below shows this solution.

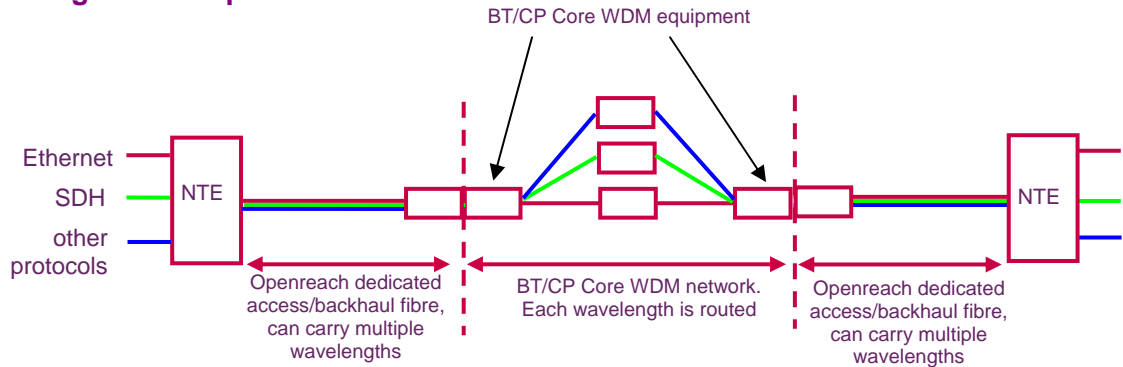
**Figure 1: Point-to-point Infrastructure Architecture**



- Shared Infrastructure: a point-to-point fibre connects each of the customer's locations to the nearest BT core node. Each separate wavelength is then routed individually across the shared BT core network infrastructure – different paths may be taken by each wavelength. The NTE and core network WDM equipment use proprietary interfaces that do not fully conform to industry standards. The equipment used to supply the shared infrastructure approach is no longer supplied or developed. Therefore, BT is now supporting new requirements for Wavestream National using the point-to-point approach, even though some of these customers' requirements could be met with a shared infrastructure solution. BT proposes to develop an EOI based shared infrastructure solution on 21CN, using equipment based on international standards. Figure 2 below shows this solution.

<sup>33</sup> <http://www.ofcom.org.uk/telecoms/btundertakings/exemptionsandvariations/waveredpath.pdf>

**Figure 2: Proposed Shared Infrastructure Architecture**



3.38 BT's new request for Wavestream National (over 70km) therefore seeks the following:

- exemption until 31 December 2010 from providing a shared infrastructure solution on an EOI basis until a 21CN product can be launched with an RFS date of 1 January 2011. The exemption would mean the point-to-point solution would be used for new supply until 31 December 2010 for all customers, and existing customers would remain on the non-EOI shared infrastructure solution because, as we explained earlier, there is no capacity available on the current generation Wavestream National shared infrastructure solution;
- exemption for the installed base of shared infrastructure circuits from migration onto the 21CN solution shared infrastructure from the RFS date for the EOI shared infrastructure solution until the Installed Base Migration Complete (IBMC) date of 31 December 2015, unless, following review, Ofcom and BT agree a different date or scope of the exemption. The exemption will be reviewed every two years, the first such review to be completed by the end of 2012, to take account of BT's 21CN plans and the outcome of BT's discussions with its customer base; and
- exemption to allow point-to-point systems to continue to be supplied on an ongoing basis. This would also allow the installed base of point-to-point provisions to remain in place. The exemption for these point-to-point systems requires Ofcom and BT to review this exemption before the end of 2012 to agree whether to continue the exemption, move supply onto an EOI basis or withdraw the product.

3.39 Each of these is considered below, including how they relate to comments raised in response to the previous consultation.

**Exemption from providing a shared infrastructure solution on an EOI basis until a 21CN product can be launched in December 2010**

3.40 Communications providers argued, in response to the previous consultation, that an EOI point could be provided in the shared infrastructure architecture. However, as stated above, the equipment used in the current shared infrastructure approach is no longer manufactured or developed by the supplier. This equipment does not support industry agreed standards and so equipment from alternative suppliers cannot be used instead. Therefore, BT argues it is not possible to develop an EOI solution based on this equipment.

- 3.41 Under the proposed exemption, BT will develop an EOI solution on 21CN by 31 December 2010. BT's 21CN deployment is based on international standards. BT has said the earliest achievable date for launching this solution, given 21CN deployment timescales and the plans of equipment suppliers to support the relevant standards, is December 2010.
- 3.42 Whilst we understand that communications providers will be concerned about the date for providing this product on an EOI basis, given also the length of time the exemption request has been outstanding, we consider that the approach proposed by BT delivers an appropriate EOI solution for shared infrastructure solutions. The timescale has a similar end date as other exemptions Ofcom has agreed and which depend on 21CN for the solution. We have reviewed timescales with BT and believe that, given the dependency on the rollout of 21CN and the systems development that would be required to support this solution on 21CN, it would not be reasonable to expect BT to meet an earlier RFS date.
- 3.43 We also agree with BT that providing a solution based on the current equipment is unlikely to be possible.
- 3.44 Therefore, Ofcom is minded to agree to this part of BT's request because it provides an EOI solution to meet many customers' needs.

### **Exemption for installed base of shared infrastructure circuits**

- 3.45 BT has indicated that it has not finalised the date when the legacy core network will be closed down. In addition, BT has not been in a position to discuss migration from the old shared infrastructure supply to the new shared infrastructure with its customers, given that the design of the 21CN products is not finalised.
- 3.46 This migration will require a complete change-out of the solution, possibly including NTE. Therefore this is likely to be a lengthy process. The exemption requires the migration to be complete by the end of 2015, and allows for the date by which migration should be completed to be reviewed once BT has progressed with the EOI solution and has discussed migration with customers.
- 3.47 Ofcom is aware that a migration completion date so far into the future may cause concern amongst communications providers. However, given the complex nature of some of the solutions supported on the existing infrastructure, and the possible requirement to change out all the NTE as well as core equipment in order to support service on 21CN, our view is that until the EOI product is developed and the work involved in migrating onto this product is understood, it would not be appropriate to set an earlier date. The exemption allows for a review of its scope and duration every two years, the first such review to be completed by the end of 2012. Thus it allows for Ofcom and BT to agree to an earlier IBMC date following such a review.

### **Exemption to allow point-to-point systems to continue to be supplied on an ongoing basis**

- 3.48 BT has also requested an exemption for the point-to-point solution. It proposes to use this approach to meet customer requirements until it has developed the 21CN based shared infrastructure solution. Once the EOI solution for the shared infrastructure is in place, BT will continue to supply the non-EOI point-to-point solution only where customer requirements demand this because there will still be certain functionality, performance and security requirements that drive customers to insist on a dedicated point-to-point approach.

- 3.49 Ofcom considers that wherever possible Openreach should provide an EOI input into products supplied by BT's downstream division. In the case of the point-to-point architecture, Ofcom does not consider it practical for Openreach to provide an EOI product. As explained in section 3.37, in the point-to-point infrastructure there is no active equipment. The backhaul fibre provided by Openreach and the core fibre provided by BT are spliced together to form the connection. To create an EOI product from Openreach, the circuit would need to be split into sections. This would require active equipment to be inserted, resulting in the same approach as the shared infrastructure approach and would mean some customer requirements could not be met.
- 3.50 Some communications providers have suggested that dark fibre could provide an EOI solution without having to provide active equipment. However, Ofcom does not consider dark fibre to be the appropriate solution to the specific issue related to providing Wavestream National on an EOI basis and still consider the points we raised in our Statement on Exemptions Part 2, published 20 December 2006,<sup>34</sup> to be relevant. These points were explained at the time as:
- “Ofcom continues to believe that the availability of dark fibre on an EOI basis as a tactical response to the issues outlined here has the potential to undermine investment in infrastructure across a range of wholesale and retail services beyond the ones identified in these requests. This is possible because the scale and ubiquity of Openreach's network is greater than any competitor communication provider's network and it is highly likely therefore that in the majority of cases it would be more economic for a communications provider to lease fibre from Openreach than to use existing or build their own access and core infrastructure. Additionally, those communications providers who have not built their own network could rapidly establish one using Openreach fibre undermining the investment of those communications providers who have invested significant amounts over a number of years in their own networks. Ofcom further believes that with the availability of dark fibre from Openreach there would be little incentive to purchase any of the other Openreach fibre based connectivity products. For these reasons Ofcom remains of the view that under the current circumstances it is not appropriate for Openreach to provide dark fibre on an EOI basis as an upstream input into these products.”
- 3.51 Some communications providers also suggested that if an EOI product could not be supplied for the access and backhaul sections out of Openreach, BT should be required to provide an end-to-end product. However, such a product would include core network, and this would extend the scope of the Undertakings to provide core infrastructure on an EOI basis. Ofcom believes there is competition in the provision of core networks which could be undermined if it was possible to purchase elements of the BT core network on an EOI basis.
- 3.52 Ofcom is minded to agree to this request because not agreeing to the request would require BT to withdraw the point-to-point product as it cannot provide it on an EOI basis. Product withdrawal would, in Ofcom's view, result in significant consumer detriment. Ofcom is aware that agreeing to the exemption for the point-to-point solution may result in limited competition in the provision of service to some customer locations but believes the consumer detriment of withdrawal of the product outweighs

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<sup>34</sup> <http://www.ofcom.org.uk/consult/condocs/btrequests/statement/statement.pdf>

this. However, Ofcom considers that it is appropriate to review the application of this exemption to ensure that the point-to-point solution is only used when the EOI shared infrastructure solution cannot be used (once available) to meet customer requirements, and to consider whether technology developments mean that at some future stage this exempted solution is no longer required (for example if all customer requirements can, in future, be supported using the EOI shared infrastructure solution) or whether this solution may be moved onto an EOI basis.

- 3.53 The exemption requires this review to be completed before the end of 2012. Upon completion of this review (which may be concluded prior to 31 December 2012), Ofcom and BT may agree either that: an extension to the exemption is appropriate; or that an Openreach product should be provided on an EOI basis. However, if an agreement is not reached at the conclusion of the review, Ofcom and BT will be required to agree a reasonable date for withdrawal of the Wavestream dedicated-fibre product.
- 3.54 In addition, where customer requirements can be met using the EOI solution to be delivered on 21CN, BT should use the EOI solution. Ofcom expects the Equality of Access Office (EAO) to monitor BT's use of the point-to-point infrastructure solution to ensure it is not used inappropriately where the EOI shared infrastructure solution could have been used.

### **Ofcom's proposal on BT's request**

- 3.55 For the reasons explained above Ofcom is minded to agree to BT's request. The request commits BT to provide an EOI solution to meet a significant portion of customer requirements. This shared infrastructure solution meets the need expressed by respondents to the previous consultation for an EOI product provided at the backhaul/core boundary, although Ofcom notes that, as this is based on 21CN, communications providers will not benefit from this solution for two years. We do not think it is practical for Openreach to provide an EOI input into the point-to-point solution that some customer requirements need, and believe that it would be detrimental to consumers not to grant an exemption for this architecture. Finally, whilst we expect BT to migrate customers onto the EOI shared infrastructure solution as soon as possible, we propose to agree to this exemption request allowing an extended timeframe (subject to review) due to the complex nature of some of the customer networks supported on the current product.

**Question 2:** *Based on the additional information presented in this Consultation, do you agree that Ofcom should agree to the proposed exemption request for Wavestream National? If you do not, please explain why.*

## Annex 1

# Responding to this consultation

## How to respond

- A1.1 Ofcom invites written views and comments on the issues raised in this document, to be made **by 5pm on 1 October 2008**.
- A1.2 Ofcom strongly prefers to receive responses using the online web form at <http://www.ofcom.org.uk/consult/condocs/eoi/howtorespond/form>, as this helps us to process the responses quickly and efficiently. We would also be grateful if you could assist us by completing a response (see Annex 3), to indicate whether or not there are confidentiality issues. This response cover sheet is incorporated into the online web form questionnaire.
- A1.3 For larger consultation responses - particularly those with supporting charts, tables or other data - please email [diptendu.mitra@ofcom.org.uk](mailto:diptendu.mitra@ofcom.org.uk) attaching your response in Microsoft Word format, together with a consultation response cover sheet.
- A1.4 Responses may alternatively be posted or faxed to the address below, marked with the title of the consultation.
- Diptendu Mitra  
Floor 4  
Ofcom  
Riverside House  
2A Southwark Bridge Road  
London SE1 9HA
- Fax: 020 7981 3333
- A1.5 Note that we do not need a hard copy in addition to an electronic version. Ofcom will acknowledge receipt of responses if they are submitted using the online web form but not otherwise.
- A1.6 It would be helpful if your response could include direct answers to the questions asked in this document, which are listed together at Annex 4. It would also help if you can explain why you hold your views.

## Further information

- A1.7 If you want to discuss the issues and questions raised in this consultation, or need advice on the appropriate form of response, please contact Diptendu Mitra on 020 7981 3195.

## Confidentiality

- A1.8 We believe it is important for everyone interested in an issue to see the views expressed by consultation respondents. We will therefore usually publish all responses on our website, [www.ofcom.org.uk](http://www.ofcom.org.uk), ideally on receipt (when respondents confirm on their response coversheet that this is acceptable).

- A1.9 All comments will be treated as non-confidential unless respondents specify that part or all of the response is confidential and should not be disclosed. Please place any confidential parts of a response in a separate annex so that non-confidential parts may be published along with the respondent's identity.
- A1.10 Ofcom reserves its power to disclose any information it receives where this is required to facilitate the carrying out of its statutory functions.
- A1.11 Please also note that copyright and all other intellectual property in responses will be assumed to be licensed to Ofcom to use in order to meet its legal requirements. Ofcom's approach on intellectual property rights is explained further on its website at <http://www.ofcom.org.uk/about/accoun/disclaimer/>

### Next steps

- A1.12 Following the end of the consultation period, Ofcom intends to publish a statement in November 2008.
- A1.13 Please note that you can register to receive free mail Updates alerting you to the publications of relevant Ofcom documents. For more details please see: [http://www.ofcom.org.uk/static/subscribe/select\\_list.htm](http://www.ofcom.org.uk/static/subscribe/select_list.htm)

### Ofcom's consultation processes

- A1.14 Ofcom seeks to ensure that responding to a consultation is easy as possible. For more information please see our consultation principles in Annex 2.
- A1.15 If you have any comments or suggestions on how Ofcom conducts its consultations, please call our consultation helpdesk on 020 7981 3003 or e-mail us at [consult@ofcom.org.uk](mailto:consult@ofcom.org.uk) . We would particularly welcome thoughts on how Ofcom could more effectively seek the views of those groups or individuals, such as small businesses or particular types of residential consumers, who are less likely to give their opinions through a formal consultation.
- A1.16 If you would like to discuss these issues or Ofcom's consultation processes more generally you can alternatively contact Vicki Nash, Director Scotland, who is Ofcom's consultation champion:

Vicki Nash  
Ofcom  
Sutherland House  
149 St. Vincent Street  
Glasgow G2 5NW

Tel: 0141 229 7401  
Fax: 0141 229 7433

Email [vicki.nash@ofcom.org.uk](mailto:vicki.nash@ofcom.org.uk)

## Annex 2

# Ofcom's consultation principles

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

### Before the consultation

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

### During the consultation

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

A2.4 We will make the consultation document as short and simple as possible. In general we will include a summary of no more than two pages, although in this Consultation we have provided additional background information in the summary to more fully explain the reason for the Consultation. We will try to make it as easy as possible to give us a written response. If the consultation is complicated, we may provide a shortened Plain English Guide for smaller organisations or individuals who would otherwise not be able to spare the time to share their views.

A2.5 We will consult for up to 10 weeks depending on the potential impact of our proposals. In this case, given the limited scope of the consultation and the date of publication, we believe a period of four weeks is sufficient.

A2.6 A person within Ofcom will be in charge of making sure we follow our own guidelines and reach out to the largest number of people and organisations interested in the outcome of our decisions. Ofcom's 'Consultation Champion' will also be the main person to contact with views on the way we run our consultations.

A2.7 If we are not able to follow one of these principles, we will explain why.

### After the consultation

A2.8 We think it is important for everyone interested in an issue to see the views of others during a consultation. We would usually publish all the responses we have received on our website. In our statement, we will give reasons for our decisions and will give an account of how the views of those concerned helped shape those decisions.



## Annex 3

# Consultation response cover sheet

- A3.1 In the interests of transparency, we will publish all consultation responses in full on our website, [www.ofcom.org.uk](http://www.ofcom.org.uk), unless a respondent specifies that all or part of their response is confidential. We will also refer to the contents of a response when explaining our decision, without disclosing the specific information that you wish to remain confidential.
- A3.2 We have produced a coversheet for responses (see below) and would be very grateful if you could send one with your response (this is incorporated into the online web form if you respond in this way). This will speed up our processing of responses, and help to maintain confidentiality by allowing you to state very clearly what you don't want to be published. We will keep your completed coversheets confidential.
- A3.3 The quality of consultation can be enhanced by publishing responses before the consultation period closes. In particular, this can help those individuals and organisations with limited resources or familiarity with the issues to respond in a more informed way. Therefore Ofcom would encourage respondents to complete their coversheet in a way that allows Ofcom to publish their responses upon receipt, rather than waiting until the consultation period has ended.
- A3.4 We strongly prefer to receive responses via the online web form which incorporates the coversheet. If you are responding via email, post or fax you can download an electronic copy of this coversheet in Word or RTF format from the 'Consultations' section of our website at [www.ofcom.org.uk/consult/](http://www.ofcom.org.uk/consult/).
- A3.5 Please put any confidential parts of your response in a separate annex to your response, so that they are clearly identified. This can include information such as your personal background and experience. If you want your name, address, other contact details, or job title to remain confidential, please provide them in your coversheet only so that we don't have to edit your response.

## Cover sheet for response to an Ofcom consultation

### BASIC DETAILS

Consultation title:

To (Ofcom contact):

Name of respondent:

Representing (self or organisation/s):

Address (if not received by email):

### CONFIDENTIALITY

What do you want Ofcom to keep confidential?

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

### DECLARATION

I confirm that the correspondence supplied with this cover sheet is a formal consultation response. It can be published in full on Ofcom's website, unless otherwise specified on this cover sheet, and I authorise Ofcom to make use of the information in this response to meet its legal requirements. If I have sent my response by email, Ofcom can disregard any standard e-mail text about not disclosing email contents and attachments.

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

Name

Signed (if hard copy)

## Annex 4

# Consultation questions

**Question 1:** *Based on the information presented in this Consultation, do you agree that Ofcom should remove EOI obligations on BT for the provisioning of IPStream in Market 3? If not, please explain why.*

**Question 2:** *Based on the additional information presented in this Consultation, do you agree that Ofcom should agree to the proposed exemption request for Wavestream National? If you do not, please explain why.*

## Annex 5

# BT's exemption request

### **Product: Wavestream "National"**

### **Legal basis: sub-paragraph a) of the second sentence in section 5.46.2**

#### **1. Product description and reasons for request**

Wavestream products are retail wavelength-based services offering managed, unprotected and protected, point-to-point services. This request is in relation to these longer Wavestream circuits which are in excess of 70km radial distance (referred to here as "Wavestream National services"). Shorter Wavestream Connect and Regional services were covered in a separate request and exemption agreed with Ofcom on 20 May 2008.

Current Wavestream National services have been delivered using two methodologies. The prevailing methodology used to be a shared-fibre approach to extend reach using wavelengths derived from a pre-existing core Dense Wavelength Division Multiplexing (DWDM) network. This approach requires an NTE at each customer premise extended over dedicated fibre and connecting directly to the existing DWDM electronics at BT's core nodes. There are capacity limitations with the pre-existing core DWDM Network and its technology. Since there is no suitable additional equipment available to be purchased, this has restricted more recent deployments using this approach.

As a result of these limitations, most recent delivery of these longer distance circuits has deployed the same methodology as employed for shorter distance (Regional) Wavestream services, i.e. a dedicated fibre route and terminal NTEs using intermediate amplifier electronics to obtain the extended reach capacity. Additionally, specific customer requirements for resilience and security mean that many customers insist upon dedicated rather than shared capacity.

It is therefore expected that there will be a continuing need for both approaches, i.e. shared and dedicated fibre Wavestream National Services.

BT is conducting more detailed feasibility assessments into how shared-fibre Wavestream National services can be delivered in a 21CN environment using Openreach EOI inputs for access/backhaul portions. Initial output from these assessments suggests that, with early agreement to this approach, it could be delivered in late 2010. Given the cost structure and limited capacity of the existing legacy shared infrastructure and the customer service impacts of migration, BT wishes to continue to support the existing customers' services until this legacy network is withdrawn. That withdrawal date would effectively serve as an "IBMC" for the legacy shared-fibre Wavestream National services but is not known at this stage, although it may be around 2015.

There is no practicable, in either economic or technological senses, approach identified by which longer distance Wavestream National dedicated fibre requirements can be delivered utilising a sectionalised build from two or more standalone access Openreach EOI inputs and core components.

However where the customer's business requirements can be met technologically by either shared fibre or dedicated fibre solutions, BT will aim to deploy the shared fibre approach. This exemption request seeks an exemption under sub-paragraph (a) of the second sentence in section 5.46.2 of the Undertakings to enable Openreach to:

- Continue to support new BT Global Services supply of Wavestream National services utilising shared-fibre delivery, without making similar services available externally until a new 21CN shared-fibre Wavestream National product consuming EOI inputs from Openreach becomes available. This will be achieved by 31 December 2010, the day after which will serve as an RFS date, unless otherwise agreed with Ofcom.
- Continue to support the installed base of Wavestream National services utilising shared-fibre delivery, without making similar services available externally, until 31 December 2015, the day after which will serve as an IBMC date, unless otherwise agreed with Ofcom, and subject to a review every two year in terms of both scope and duration of the exemption in relation to Wavestream National (shared-fibre), the first such review to be completed by 31 December 2012, unless otherwise agreed with Ofcom.
- Continue to support on an enduring basis both the installed base and new BT Global Services supply of Wavestream National services utilising dedicated-fibre delivery, without making similar services available externally, subject to a review every two years in terms of both scope and duration of the exemption in relation to Wavestream National (dedicated fibre), the first such review to be completed by 31 December 2012, unless otherwise agreed with Ofcom.

BT requests an exemption under section 5.46.2a) to enable Openreach to continue to supply existing inputs into the BT Wavestream National portfolio without Openreach having to productise or make such inputs available externally, as described above. This includes support of such wavelength, speed and/or interface upgrades on those circuits as are included as options in the relevant Wavestream National contracts.

## **2. Legal basis, scope and duration**

- Legal basis: sub-paragraph (a) of the second sentence in section 5.46.2
- Scope: exemption from section 5.46.1
- Duration:
  - exemption for Openreach's inputs into BT Global Services' Wavestream National (shared-fibre) services as follows:
    - up to and including 31 December 2010, the day after which will serve as an RFS date, unless otherwise agreed with Ofcom; and
    - in respect of the installed base until 31 December 2015, the day after which will serve as an IBMC date, subject to a review by Ofcom and BT every two years in terms of both scope and duration of the exemption, the first such review to be completed by 31 December 2012, unless otherwise agreed by BT and Ofcom. Following such a review Ofcom and BT may agree to modify the scope or duration of the exemption.
  - exemption for Openreach's inputs into BT Global Services' Wavestream National (dedicated-fibre) services as follows:

- into the installed base of BT Global Services Wavestream National (dedicated-fibre) services
  - Into new supply of BT Global Services Wavestream National (dedicated-fibre) services ordered between the date on which this exemption takes effect and the RFS date for Openreach inputs into the new supply of BT Global Services' Wavestream National (shared-fibre) services.
  - into new supply of BT Global Services' Wavestream National (dedicated-fibre) services as of the RFS date for Openreach inputs into new supply of BT Global Services' Wavestream National (shared-fibre) services, only to the extent strictly necessary to meet customer functionality requirements which cannot be met using the Wavestream National (shared-fibre) service.
- The exemptions regarding Openreach inputs into BT Global Services' Wavestream National (dedicated-fibre) services shall be subject to a review every two years in terms of both scope and duration of the exemption, the first such review to be completed at the latest by 31 December 2012, unless otherwise agreed with Ofcom.

Following such a review, Ofcom and BT will agree either that

- (i) section 5.46.1(c) shall continue to apply; or
- (ii) Equivalence of Inputs will be required, on appropriate and reasonable RFS and IBMC dates to be agreed between Ofcom and BT; or
- (iii) the BT Global Services' Wavestream National (dedicated-fibre) services shall be withdrawn from sale or supply by BT on appropriate and reasonable dates to be agreed between Ofcom and BT.

If no agreement is reached between Ofcom and BT with respect to (i) section 5.46.1(c) continuing to apply or to (ii) EOI applying, then product withdrawal under (iii) shall apply.

- In this exemption:
- "WaveStream National" circuits mean all WaveStream circuits of a radial distance in excess of 70km, irrespective of design solution, including services as currently configured and such wavelength, speed or interface upgrades as included as options for those services in the product specification published by BT on its website or elsewhere from time to time, unless BT and Ofcom agree otherwise, in particular following modifications to the definition of Backhaul Products in the Undertakings consequent upon the conclusion of the Business Connectivity Market Review.
  - "Installed base" means relevant BT circuits ordered or installed prior to the date on which this exemption takes effect.

### **3. Identification of the products involved**

Wavestream uses Dense Wavelength Division Multiplexing (DWDM), a technology that transmits multiple wavelengths of light along a single fibre. Wavestream offers customers up to 32 channels, each of 2.5Gbit/s or 10 Gbit/s over a single dedicated fibre pair with duplicated path options for improved availability. This results in an upgradeable service for Wavestream National with a very high upper bandwidth limit of 32 x 10Gbit/s with the trade-off that there is a significant cost for the electronics involved. Wavestream products are protocol independent and available throughout mainland UK. Customers for Wavestream

require flexibility, resilience, extremely low latency and security, which means that for many customers dedicated rather than shared fibre solutions are required. BT Global Services currently sells three Wavestream products of which the first two (Connect and Regional) were dealt with in a separate request and the third (National) is the subject of this request:

**Wavestream Connect** is constructed from a short-distance dedicated fibre route of up to 35km radial length (subject to fibre route distance of 70km) and terminal NTE without intermediate electronics.

**Wavestream Regional** service is similar to Wavestream Connect but uses intermediate amplifier electronics to obtain an extended reach capability.

**Wavestream National** uses two different approaches to meet its longer distance requirements; either the same dedicated fibre approach deployed for Wavestream Regional, or a different shared-fibre approach, using wavelengths derived from a pre-existing core DWDM network. In both approaches, provision of Wavestream National requires an NTE at each customer premise extended over dedicated fibre; in the shared-fibre approach, the dedicated fibre connects directly to the existing DWDM electronics at BT's core nodes.

Further details about BT's Wavestream product can be found at:

[http://www2.bt.com/btPortal/application?origin=mb\\_content\\_detail.jsp&event=bea.portal.framework.internal.portlet.event&pageid=mb\\_pns\\_catalogue&portletid=mb\\_pns\\_catalogue&wfevent=link.Product&com.bea.event.type=linkclick&oLDesc=link+to+product&oSiteArea=mb.corp&oPjsp=mb\\_content\\_detail.jsp&oPt=mb\\_pns\\_catalogue&oLName=mbpnsproduct&oOjsp=mb\\_prod\\_detail.jsp&oPg=mb\\_pns\\_catalogue&siteArea=mb.corp&PorS=products&productDetail=products/Wavestream.xml](http://www2.bt.com/btPortal/application?origin=mb_content_detail.jsp&event=bea.portal.framework.internal.portlet.event&pageid=mb_pns_catalogue&portletid=mb_pns_catalogue&wfevent=link.Product&com.bea.event.type=linkclick&oLDesc=link+to+product&oSiteArea=mb.corp&oPjsp=mb_content_detail.jsp&oPt=mb_pns_catalogue&oLName=mbpnsproduct&oOjsp=mb_prod_detail.jsp&oPg=mb_pns_catalogue&siteArea=mb.corp&PorS=products&productDetail=products/Wavestream.xml)

For the purpose of this exemption, Wavestream Connect and Regional refer to circuits which are up to 35km and 70km radial distance respectively, while Wavestream National refers to circuits which are in excess of 70km radial distance.

#### **4. Description of the way in which the product is provided on terms other than EOI**

There is currently no EOI input into retail Wavestream. The systems and processes for providing, maintaining and repairing Wavestream products do not sit within Openreach but rely on Openreach inputs (in particular fibre circuits, civil works and engineering services provided under an internal trading agreement) which are neither formally productised nor available to other CPs.

#### **5. Description of the solution proposed**

Openreach will support the new supply of BT Global Services Wavestream National (shared-fibre) business from 31 December 2010 with appropriate input products, available on an EOI basis. Openreach will provide new input products on an EOI basis to CP customers, who will be restricted from using these products to build or extend core networks or where the intent is to replicate a core network. The IBMC date with respect to the installed base of BT Global Services Wavestream National (shared-fibre) services underpinned by these Openreach EOI input services is 31 December 2015. This is subject to a review every two years, the first such review to be completed at the latest by 31 December 2012, unless otherwise agreed by BT and Ofcom; following such a review Ofcom and BT may agree to modify the scope or duration of the exemption.

Providing a similar approach for Wavestream National (dedicated-fibre) is not practicable, so an enduring exemption is requested subject to a review every two years in terms of both

scope and duration, the first such review to be completed by 31 December 2012. The treatment of legacy Wavestream National circuits will also form part of that review. Ofcom and BT may agree to carry out that review at a later date.

As of the RFS date for Openreach EOI inputs into new supply of BT Global Services Wavestream National (shared-fibre) services, the exemption relating to Openreach inputs into the new supply of Wavestream National (dedicated-fibre) services is only to the extent strictly necessary to meet customer functionality requirements which cannot be met using the Wavestream National (shared-fibre) service underpinned by those Openreach EOI inputs.

To the extent that the Business Connectivity Market Review leads to subsequent modifications to the definitions of backhaul products, or networks, in the Undertakings which would impact upon these EOI products' distance-related limits, BT and Ofcom will review their applicability to this exemption. The scope of any such review will be to ensure that the restrictions on the use of these products (i.e. that they cannot be used to build or extend core networks) are consistent with the other connectivity products in the Openreach portfolio. Any change to the product definition that arises from such a review would apply to new supply only, and would be implemented over a timeframe adequately reflecting the practicalities of delivery and the competing priorities for BT investment and resources. The retail Wavestream National name will be retained by BT Global Services, as will the existing customer relationships.

BT Global Services retains the right to construct customer solutions, including Wavestream services, using non-BT fibre.

## **6. Justification for the exemption and impact on CPs**

The exemption is required to protect existing contractual commitments and to provide a transitional period during which customers are still able to support their existing and future business requirements with DWDM circuits in excess of 70km radial distance, while a new 21CN BT Wavestream National shared-fibre solution, underpinned by appropriate EOI inputs from Openreach, is developed and implemented. In the case of dedicated-fibre point to point Wavestream National services the exemption recognises the fact that customer requirements mean that it is not practicable, in functionality terms, to deliver dedicated-fibre Wavestream National services using a sectionalised build from two or more standalone access and core components.

Other CPs use similar dedicated-fibre approaches to the specialised customer requirements in this area, and the exemption will ensure that customer choice in relation to such services is maintained by enabling BT to continue to offer and support Wavestream National services. The provision of shorter distance Wavestream circuits on an EOI basis was agreed with Ofcom on 20 May 2008 and these shorter circuits, along with Wavestream National circuits using a shared solution that will be supported on an EOI basis on 21CN under this exemption, form a substantial majority of Wavestream services.



## Annex 6

# Proposed legal wording for agreement of exemptions and variations

## Proposed variation related to the obligation to supply certain Wholesale Broadband Access Products on an Equivalence of Input basis.

### WHEREAS:

(a) British Telecommunications plc ('BT') has given Ofcom certain undertakings ('the Undertakings') which took effect on 22 September 2005, pursuant to the Enterprise Act 2002;

(b) by virtue of section 18.1 of the Undertakings, BT and Ofcom may from time to time vary and amend the Undertakings by mutual agreement;

(c) BT and Ofcom have agreed to vary the Undertakings as hereinafter appears.

(d) For the avoidance of doubt, the EAB shall remain able to review the handling of the Statements of Requirements submitted to BT from BT's Downstream Divisions and external Communications Providers for IPStream, when launched IPstream Connect and Wholesale Broadband Connect irrespective of whether BT has SMP in a market for Network Access or market which includes these products.

### NOW THEREFORE:

It is hereby agreed between BT and Ofcom pursuant to section 18.1 of the Undertakings that the Undertakings are varied as follows:

#### 1. Definitions and interpretation

1.1. Words or expressions hereinafter appearing have the same meanings as in the Undertakings.

1.2. References hereinafter to section numbers are references to section numbers in the Undertakings.

#### 2. Variations to the Undertakings

2.1. Section 3.1.1 (g) shall be deleted and replaced as follows:

“g) IPStream, where it is provided by BT in a Network Access market or markets in which BT is determined by Ofcom to have SMP;”

2.2. Section 3.1.1 (h) shall be deleted and replaced as follows:

“h) IPstream Connect where it is provided by BT in a Network Access market or markets in which BT is determined by Ofcom to have SMP; and”

2.3. Section 3.1.2 (d) shall be deleted and replaced as follows:

“d) The IP based Bitstream Network Access product IPstream Connect that is the successor to IPStream where it is provided by BT in a Network Access market or markets in which BT is determined by Ofcom to have SMP; and”

2.4. Section 6.1.2(a) shall be amended by deleting the words “and IPStream”.

### 3. Effect

3.1 These variations of the Undertakings take effect on [to be inserted] 2008.

Signed for and on behalf of British Telecommunications plc

Signature \_\_\_\_\_

Name \_\_\_\_\_

Position \_\_\_\_\_

Date \_\_\_\_\_

Signed for and on behalf of Ofcom

Signature \_\_\_\_\_

Name \_\_\_\_\_

Position \_\_\_\_\_

Date \_\_\_\_\_

## **Proposed legal wording relating to the exemption from EOI of the Openreach inputs into Wavestream National**

### **WHEREAS:**

- (a) BT has offered and Ofcom has accepted Undertakings pursuant to the Enterprise Act 2002, which took effect on 22 September 2005 (the "Undertakings");
- (b) BT has requested Ofcom to agree that certain sections of the Undertakings shall not apply to certain products, and to agree the application of section 5.46.2 to certain products;
- (c) On 18 October 2006, Ofcom published a Consultation in relation to Wavestream;
- (d) On 14 November 2007, BT submitted a second request in relation to this item;
- (e) On 20 December 2007, Ofcom published a consultation document outlining BT's second requests in relation to this item and invited representations about any of its proposals;
- (f) On 20 May 2008, Ofcom published a Statement setting out exemptions and agreements among others in relation to Wavestream Connect and Regional, and indicated that it intended to publish a further consultation document specifically with respect to Wavestream National;
- (g) On 3 September 2008, Ofcom published a consultation document outlining BT's request in relation to Wavestream National and invited representations about any of its proposals;
- (h) Ofcom having received responses to the consultation document and having considered every such representation duly made to it in respect of the proposals has decided to agree to this exemption request;
- (i) This agreement wording between Ofcom and BT sets out this exemption (as set out in BT's requests annexed hereto); and
- (j) Access Services as referred to in the Undertakings has been established as Openreach since 22 January 2006.

### **NOW THEREFORE:**

#### **Ofcom and BT hereby agree:**

1. Pursuant to sub-paragraph (a) of the second sentence in section 5.46.2, BT and Ofcom hereby agree that section 5.46.1 (c) shall apply:

- (a) with respect to AS inputs into BT Global Services' Wavestream National (shared-fibre) services, as follows:
  - (i) into BT Global Services' Wavestream National (shared-fibre) services up to and including 31 December 2010, the day after which will serve as an RFS date, unless otherwise agreed with Ofcom; and

- (ii) into BT Global Services' Wavestream National (shared-fibre) services in respect of the installed base until 31 December 2015, the day after which will serve as an IBMC date, subject to a review by Ofcom and BT every two years in terms of both scope and duration of the exemption, the first such review to be completed at the latest by 31 December 2012, unless otherwise agreed by BT and Ofcom. Following such a review Ofcom and BT may agree to modify the scope or duration of the exemption.
- (b) with respect to AS inputs into BT Global Services' Wavestream National (dedicated-fibre) services, as follows:
- (i) into the installed base of BT Global Services' Wavestream National (dedicated-fibre) services.
  - (ii) into new supply of BT Global Services' Wavestream National (dedicated-fibre) services ordered between the date on which this exemption takes effect and the RFS date set out under sub-paragraph (a)(i) for AS inputs into the new supply of BT Global Services' Wavestream National (shared-fibre) services.
  - (iii) into new supply of BT Global Services' Wavestream National (dedicated-fibre) services as of the RFS date set out under sub-paragraph (a)(i) for AS inputs into new supply of BT Global Services' Wavestream National (shared-fibre) services, only to the extent strictly necessary to meet customer functionality requirements which cannot be met using the Wavestream National (shared-fibre) service.
- (c) The exemptions under sub-paragraph (b)(i), (ii) and (iii) regarding AS inputs into BT Global Services' Wavestream National (dedicated-fibre) services shall be subject to a review every two years in terms of both scope and duration of the exemption, the first such review to be completed at the latest by 31 December 2012, unless otherwise agreed by BT and Ofcom.

Following such a review, Ofcom and BT will agree either that

- (i) section 5.46.1(c) shall continue to apply; or
- (ii) Equivalence of Inputs will be required, on appropriate and reasonable RFS and IBMC dates to be agreed between Ofcom and BT; or
- (iii) the BT Global Services' Wavestream National (dedicated-fibre) services shall be withdrawn from sale or supply by BT on appropriate and reasonable dates to be agreed between Ofcom and BT.

If no agreement is reached between Ofcom and BT with respect to sub-paragraphs (c)(i) or (ii), then sub-paragraph (c)(iii) shall apply.

2. In paragraph 1 of this Agreement:

"Wavestream National" circuits mean all Wavestream circuits of a radial distance in excess of 70km, irrespective of design solution, including services as currently configured and such wavelength, speed or interface upgrades as included as options for those services in the product specification published by BT on its website or elsewhere from time to time, unless BT and Ofcom agree otherwise, in particular following modifications to the definition of

Backhaul Products in the Undertakings consequent upon the conclusion of the Business Connectivity Market Review.

"Installed base" means relevant BT circuits ordered or installed prior to the date on which this exemption takes effect.

### **Definitions and interpretation**

Words or expressions in this Agreement have the same meaning as in the Undertakings.

References in this Agreement to section numbers are references to section numbers in the Undertakings.

For the avoidance of doubt, where it is herein agreed that the requirements of section 5.46.1 do not apply:

- (a) information that would otherwise fall within the definition of Commercial Information, shall only do so if it relates to SMP Products; or, in the case of sections 6.10.3, 6.13 and 6.14, to products and services described in section 6.1.2.
- (b) the requirement to provide the particular product or service by means of EOI systems and processes will also not apply and existing processes and systems may continue to be used. Such usage of existing processes and systems may continue beyond the dates that trigger systems separation obligations under sections 5.44, 5.45 and 8.5 of the Undertakings. However, this does not affect BT's obligations under sections 5.44, 5.45 and 8.5 of the Undertakings.

### **Notices**

Notices to be given under this Agreement shall be in writing.

Signed for and on behalf of British Telecommunications plc

Signature \_\_\_\_\_

Name \_\_\_\_\_

Position \_\_\_\_\_

Date \_\_\_\_\_

Signed for and on behalf of Ofcom

Signature \_\_\_\_\_

Name \_\_\_\_\_

Position \_\_\_\_\_

Date \_\_\_\_\_