



Variation to BT's Undertakings under the Enterprise Act 2002 related to Fibre-to-the-Cabinet

(~~ⓧ~~Redacted for publication)

Statement

Publication date:

11 June 2009

Contents

Section		Page
1	Summary	1
2	Introduction	4
3	Consideration of responses to the Consultation and Ofcom's conclusions	6

Annex		Page
1	Legal text of the variation	18
2	Legal text of the variation showing changes to the text proposed in the Consultation	24

Section 1

Summary

- 1.1 This Statement relates to BT's investment in super-fast broadband using Fibre-to-the-Cabinet technology ("FTTC"). It sets out and explains our decision to agree to a variation to BT's Undertakings under the Enterprise Act 2002 in relation to that investment.
- 1.2 The variation allows BT's Openreach division to control and operate electronic equipment necessary to provide super-fast broadband services using FTTC. Before this variation came into effect Openreach was not allowed to control and operate electronic equipment in BT's access network.
- 1.3 On 3 March 2009 we published a consultation document¹ describing the variation proposal and explaining why we were inclined to agree to it. The document launched a consultation ("the Consultation") and invited comments on our reasoning and on our initial conclusions. The Consultation closed on 17 April 2009.
- 1.4 We received 12 written responses. None opposed in principle the proposition that Openreach should be able to control and operate the electronic equipment necessary to provide services using FTTC. However, a number of concerns were raised, particularly about the adequacy of BT's proposed commitments as they related to its wholesale active products and to the passive inputs it would make available, in the event of reasonable demand, to allow CPs to build their own FTTC-based network by deploying equipment in street cabinets.
- 1.5 Before agreeing the variation we considered each of the issues and concerns raised by the responses. Where appropriate, we have sought modifications to the variation that BT subsequently agreed. We explain our considerations in this Statement.
- 1.6 Respondents raised a number of points about Openreach's FTTC Generic Ethernet Access ("GEA") wholesale product. We consider that this active (or electronic) wholesale product could be important in enabling effective competition in the provision of super-fast broadband services to consumers. One concern raised was the possibility that GEA may not offer sufficient flexibility to allow CPs to differentiate their retail propositions. We agree that such flexibility is important to enable effective downstream competition, and have previously consulted on technical requirements which set out the goals that an active wholesale product should achieve². BT has confirmed to us that it intends that GEA will reflect fully the goals described in those requirements. We have therefore agreed with BT a change to the variation to make this intention manifest. We recognise that this change does not provide detailed product specifications, and consider that the appropriate process for their development is engagement between Openreach and CPs.
- 1.7 We have also considered requests to make Openreach's obligations in respect of its consultation more explicit, and to assure further transparency in Openreach's approach to its consultations. Following these considerations, we have agreed with BT changes to the variation which commit Openreach more explicitly to develop its

¹ *Proposed variation to BT's Undertakings under the Enterprise Act 2002 related to Fibre-to-the-Cabinet*, see <http://www.ofcom.org.uk/consult/condocs/fttc/>

² *Ethernet Active Line Access: Updated Technical Requirements*, see <http://www.ofcom.org.uk/telecoms/discussnga/eala/updated/updated.pdf>

product roadmap by consulting with its customers and to document clearly the reasons for the decisions it takes on questions put forward in its consultations on active FTTC products.

- 1.8 Some respondents were concerned that the proposed deadline of 2011 for Openreach to consult on the demand for and design of FTTC passive inputs and related backhaul products was too late. They argued that Openreach should consult before BT's FTTC deployment begins in order to ensure that the needs of CPs wishing to build their own FTTC equipment in street cabinets are taken into account in the full extent of the deployed network. We acknowledge CPs' concerns regarding the proposed timing of Openreach's consultation on the demand for passive inputs and on its FTTC solution design. BT has argued that a consultation now would be premature, since there does not appear to be clear demand for passive products and stakeholders will not have had any practical experience of FTTC products and deployments. BT also points out that CPs with near-term requirement for passive inputs can submit Statements of Requirements ("SoR") to Openreach.
- 1.9 Nevertheless, we consider it important that CPs have an early opportunity to express their views, and have therefore started discussions with CPs to update our view of the level of interest in investment in super-fast broadband based on Openreach's passive inputs and to elicit CPs' considered views on the requirements for FTTC passive inputs and related backhaul products. Depending on the merits of any proposals emerging from these discussions, they may feed into our review of the wholesale local access market, which we expect to initiate later this year.
- 1.10 A number of respondents wanted to see greater clarity in BT's commitments concerning co-location of CPs' equipment in BT's street cabinets. We intend them to mean that CPs should be able to co-locate their street FTTC equipment with BT's, and that where such an arrangement is contemplated it would need to address, in addition to commercial and technical feasibility, any legitimate concerns by Openreach in respect of the security of its own electronic and related equipment. BT has represented to us that, if demand for passive products materialises, Openreach will seek to deploy, where commercially viable, solutions which permit the use of cabinet designs which meet such concerns. This could be achieved for example by using either a common shell or a modular design which allows for separate access to electronics with sufficient security, common power feeds and additional fibres where required. In addition, following further review, we have also agreed with BT a clarification of the legal wording to the effect that, subject to reasonable demand, a CP's FTTC equipment should only be located in the vicinity of BT's street cabinet where it is not commercially or technically feasible (for example due to planning constraints) to attach it to, or otherwise integrate it with, BT's cabinet.
- 1.11 Some respondents also wanted to see greater assurance in the variation about equality of access to Openreach's passive inputs for FTTC. Following discussion with BT, we have agreed that the Equality of Access Board (EAB) will monitor Openreach's provisions of such inputs according to metrics to be agreed between BT and Ofcom.
- 1.12 We consider that the agreed changes to the legal text of the variation, while providing clarification to the proposals presented in the Consultation, are not material and we therefore do not consider it necessary to consult again. In light of these changes and of our considerations in relation to the other concerns raised by respondents to the Consultation, we have decided that it is appropriate for us to agree to the modified variation. This Statement sets out the considerations that led us to this decision. The legal agreement between BT and Ofcom giving effect to the variation is at Annex 1.

This variation does not prejudice the outcome of our forthcoming reviews of the wholesale broadband access and wholesale local access markets and any remedies we may impose pursuant to any findings of significant market power in those reviews.

Section 2

Introduction

- 2.1 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 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*³ ("the TSR").
- 2.2 Section 18.1 of the Undertakings allows for BT and Ofcom to agree from time to time to vary the Undertakings.
- 2.3 This Statement sets out and explains our decision to agree to a variation to the Undertakings related to BT's investment in infrastructure to deliver super-fast broadband using fibre-to-the-cabinet technology ("FTTC").
- 2.4 The variation allows Openreach to control and operate the electronic equipment in BT's access network necessary to deliver super-fast broadband using FTTC. Prior to our agreement to this variation the Undertakings did not permit Openreach to control and operate such equipment.
- 2.5 In addition, the variation includes commitments by BT to help make sure that it provides:
- fit-for-purpose wholesale FTTC active products on the basis of equivalence of inputs ("EoI"); and
 - options for Communications Providers ("CPs") to invest in their own active solutions using BT's passive inputs.
- 2.6 On 3 March 2009 we published a consultation document⁴ describing the variation proposal and explaining why we were inclined to agree to it. The document launched a consultation ("the Consultation") and invited comments on our reasoning and on our initial conclusions. The Consultation closed on 17 April.
- 2.7 We review in this Statement the responses we received and explain our considerations in relation to them. We also explain the reasoning that led to our decision to agree the variation⁵ as modified following further discussions with BT aimed at addressing concerns that respondents raised.

³ See http://www.ofcom.org.uk/consult/condocs/statement_tsr/

⁴ See <http://www.ofcom.org.uk/consult/condocs/fttc/>

⁵ Openreach will also require systems support to manage the FTTC infrastructure, and Ofcom has considered such systems as part of its current proposals on BT's commitments regarding systems separation in the Undertakings. See paragraph 3.54 of the consultation document entitled *Reprioritizing BT's remaining Undertakings commitments on information systems separation*, published on 29 May 2009 at http://www.ofcom.org.uk/consult/condocs/btundertakings/btundertakings_condoc.pdf

- 2.8 It should be noted that this variation does not prejudice the outcome of our forthcoming reviews of the wholesale broadband access and wholesale local access markets and any remedies we may impose pursuant to any findings of significant market power in those reviews.

Section 3

Consideration of responses to the Consultation and Ofcom's conclusions

Introduction

- 3.1 We received responses to our consultation document from Orange, Cable & Wireless, Sky, Talk-Talk Group, BT, Tiscali, Scottish & Southern Energy, the Federation of Communication Services ("FCS"), Intellect, in tempore Advisory and from a consumer. Parts of two of these responses were confidential. We received in addition one confidential response from [§<].
- 3.2 Respondents who commented on whether Openreach should be allowed to control and operate electronic equipment necessary to provide super-fast broadband services using FTTC agreed that it should be allowed to do so⁶.
- 3.3 However, some industry participants would like BT's commitments in relation to both active and passive products to be strengthened. The views of respondents and our considerations and conclusions are described below.

General considerations

Respondents' views

- 3.4 Sky and Talk-Talk Group are concerned that the variation as proposed in our consultation document offered inadequate protections to safeguard competition based on passive products in the long term.
- 3.5 Sky flags that our acceptance of BT's request to build its active products without using a standard upstream passive input removes an important Equivalent of Inputs ("Eoi") point in the value chain, and thereby renders passive inputs less attractive to competitors in the longer term. It describes this as a policy change designed to support BT's own investment in FTTC. Sky accepts that, in the context of super-fast broadband, it may be sensible that we focus in the short term on the development of wholesale active products, in view of lack of manifest demand for passive products. Nonetheless, it argues that we should not neglect passive products in light of the important part they play in competition in current broadband. In Sky's view, insufficiently effective passive products could lead to an outcome in which competition in super-fast broadband would amount only to all CPs purchasing the same inflexible wholesale active product with little opportunity for innovation, and this could ultimately undermine the development of the retail market.
- 3.6 Talk-Talk Group argues that if options for competition based on passive inputs are not retained, the UK will be solely dependent on BT for investment in FTTC, with consequences of delayed and inefficient investment, lack of innovation, poor and

⁶ For Talk-Talk Group this position is conditional on Openreach's GEA product being made more "unbundled" than is proposed today. Sky says that Openreach should be permitted to offer GEA only if this product is at the more flexible end of the scale of Ofcom's technical requirements for Active Line Access.

excessively-priced wholesale products and weakened retail competition. It posits that the key question for Ofcom is: what regulatory and legal obligations should apply to make it possible for alternative FTTC operators to rely on the fitness-for-purpose of passive products? Talk-Talk Group recognises the risk that, in the absence of firm demand for such products, the costs involved in making them fit for purpose could be wasted, and that there therefore needs to be a trade-off that imposes a proportionate set of remedies. It acknowledges that we have described this trade-off in our Consultation, but asserts that the obligations we proposed are insufficient to ensure that regulation will allow competition based on passive inputs.

- 3.7 Orange observes that this variation will not be sufficient to create the right regulatory environment for next-generation access. It advises that a broader programme of work is required to ensure that a competitive environment is put in place to deliver maximum benefit to end-users, including price regulation and reviews of the wholesale local access and wholesale broadband access markets.
- 3.8 In the course of the Consultation some respondents have raised questions concerning pricing of both active and passive products. In its written response Orange asks that BT's obligations concerning passive inputs should extend to EoI in relation to pricing.
- 3.9 [§].

Ofcom's considerations

- 3.10 Our objectives in agreeing this variation to BT's Undertakings are to deliver benefits to consumers by supporting early investment in super-fast broadband and, where appropriate, promoting competition.
- 3.11 We reported in our Statement, *Delivering super-fast broadband in the UK*⁷ ("the Super-fast Broadband Statement") that the economic and practical advantages of active products and the uncertainty over the economic viability of passive alternatives have led the industry to express strong interest at this stage in active products, while there have been no firm expressions of interest so far in investment based on passive inputs.
- 3.12 We agree with both Sky and Talk-Talk Group that the experience in current broadband suggests that passive inputs could offer greater potential scope than active products for downstream innovation and differentiation. However, we consider that it would be neither appropriate nor proportionate to require BT to incur material additional costs at this stage to prepare to produce passive inputs for CPs' future consumption because there is little evidence at present that these inputs will find substantial application. Requiring BT to incur such costs now could have the effect of deterring or limiting its investment without delivering significant offsetting benefit to consumers. Stakeholders should also bear in mind that we may consider passive remedies where this is appropriate following future market reviews such as, for example, our forthcoming review of the wholesale local access market.
- 3.13 In agreeing this variation with BT we have therefore sought commitments designed to maximise the opportunity for effective and sustainable competition based on BT's wholesale active products. This is because we consider that such products correspond to the point in the value chain downstream of which competition is most likely to be effective and sustainable. We have also sought commitments from BT

⁷ See http://www.ofcom.org.uk/consult/condocs/nga_future_broadband/statement/statement.pdf

intended to provide the option for competition based on passive inputs to develop over time.

- 3.14 We recognise that this variation will not by itself provide the regulatory certainty to support substantial investment by CPs wishing to use BT's passive inputs to build their own FTTC electronics. We intend to continue to work with the industry to promote competition in super-fast broadband, including, where appropriate, the use of passive inputs. We agree therefore that the variation should be viewed as a component of our programme of work on next-generation access, and have outlined the contents of this programme in the Super-fast Broadband Statement⁸.
- 3.15 Our forthcoming reviews of the wholesale broadband access and wholesale local access markets will provide us with opportunities to look at the demand for passive inputs to FTTC again. If we conclude that BT has significant market power in markets relevant to FTTC following those reviews, we will consider what remedies additional to the commitments in this variation are appropriate at that time. We plan to start these market reviews later this year.
- 3.16 We have set out in the Super-fast Broadband Statement our policy on pricing of super-fast broadband products. In accordance with that policy, while BT has freedom to set prices for its active wholesale products such as GEA, we will continue to monitor pricing for behaviour that suggests anti-competitive motives or effects. The case for any charge controls may be considered, following a future review of a relevant market, if we find that BT's wholesale active products fall within a market in which it has significant market power.
- 3.17 Having concluded that it would not be proportionate to require BT to provide passive inputs on the basis of EoI, we consider that it would also not be appropriate to require EoI in relation to their pricing, as requested by Orange. We note that under the findings of the current wholesale local market review BT is subject to a cost-orientation obligation in relation to its provision of sub-loop unbundling and such ancillary services as may be reasonably required for its use. Further consideration of any safeguards related to pricing of passive inputs may be appropriate following any finding of significant market power in our forthcoming review of the wholesale local access market.
- 3.18 [Redacted]

Active products

Respondents' views

- 3.19 Sky and Talk-Talk Group believe that it would be in Openreach's interest to increase the features of its active product, and so move up the value chain, raise charges and optimize revenues. They warn that this could result in reduced flexibility available to downstream CPs and in increased cost, which could restrict innovation and opportunities for differentiation when compared with a more basic active product. Sky goes on to argue that if Openreach is to sell an active product which is at the deepest level where competition is effective and sustainable, Ofcom should ensure that this product does in fact match that description.

⁸ See Section 10 of the Statement at http://www.ofcom.org.uk/consult/condocs/nga_future_broadband/statement/statement.pdf

- 3.20 To address this potential issue, both Sky and Talk-Talk Group suggest that it would be appropriate for Openreach's Generic Ethernet Access product ("GEA") to meet the requirements set out in Ofcom's *Ethernet Active Line Access ("ALA") Technical Requirements* document⁹. They report that currently GEA falls short of these requirements in a number of respects. They refer to four specific areas which they believe are important if GEA is to meet the ALA requirements, namely: the use of virtual local area networks ("VLANs"); CPs' management of quality of service ("QoS") parameters; support for multicast functionality; and the optional management by CPs of their end-users' DSL ports.
- 3.21 Sky and Talk-Talk Group assert that it is important for BT to address the areas where GEA falls short of the ALA requirements before mass rollout begins. They suggest that Ofcom could give its approval for Openreach to offer GEA on a trial basis only, but that any future approval for mass rollout would be conditional upon Ofcom certifying that GEA meets the ALA requirements.
- 3.22 Orange recommends that Ofcom should have directions-making powers to give specificity to what it sees as BT's generic fitness for purpose obligation in relation to its active products.
- 3.23 C&W is concerned that the wording of Openreach's obligation to consult on its active products leaves too much scope for Openreach to offer a product which does not meet its customers' needs. One respondent has also made representations to us during the consultation period asking us to provide greater assurance of transparency in Openreach's consultations on its active products. Scottish & Southern Energy comments on the principles and practice of Openreach's consultations. It considers that Openreach should be seeking to publicise its consultations on FTTC actively, including the industry's monthly Commercial Forum. It also believes that the minimum consultation period of two weeks, mentioned in paragraph 5.54(ii) of the variation, is too short, and suggests that this should be extended to a minimum of 12 weeks for significant consultations on new subject matter. It also suggests that Openreach's consultation principles should themselves be subject to consultation.
- 3.24 Some respondents have drawn our attention to other specific features that they would like to see in GEA. Orange and C&W ask that GEA should not be tied to the customer's rental of a PSTN line. Talk-Talk Group wants end-users who receive a voice service using MPF to be able to continue to do so once they are connected to a super-fast broadband service delivered using GEA. C&W and [X] highlight possible restrictions in the points of handover. C&W would like to see commonality of systems and processes between those for super-fast broadband and those for current broadband access products, and states that SLAs offered by Openreach should address the requirements of business users.

Ofcom's considerations

- 3.25 We agree that Openreach's wholesale active product should enable competition at the deepest level where it is effective and sustainable, and consider it very important that GEA should fulfil this objective. Our consideration in this regard is based on responses to our consultation on super-fast broadband, reported in the Super-fast

⁹ An updated version of these requirements is available at <http://www.ofcom.org.uk/telecoms/discussnga/eala/updated/updated.pdf>

Broadband Statement, in which a number of CPs expressed strong interest in using wholesale active products.

- 3.26 We confirm that our *Ethernet ALA Technical Requirements* document describes what we consider are key characteristics of wholesale active products. However, the purpose of that document is not to specify such a product but to guide the creation of standards for products that will support competitive delivery of services to end-users. It is therefore not informed by specific product requirements (whether or not they have already been agreed by the industry) nor does it contain sufficiently precise detail to substitute for a product specification. Using it as a basis for our certifying in future whether GEA is ready for mass rollout, as is suggested by some respondents, therefore risks introducing undue uncertainty and this could deter investment. We therefore do not consider it appropriate to follow this suggestion.
- 3.27 Nevertheless, we consider it important to ensure that the engagement between Openreach and CPs in developing active wholesale products should be framed by the expectation that the resulting products will achieve the goals described in the *Ethernet ALA Technical Requirements* document. BT has confirmed to us that it intends that GEA will reflect these goals fully. We have therefore agreed with BT a change to the wording of the variation in paragraph 5.54(i) to make this intention manifest, committing Openreach to consider the *Ethernet ALA Technical Requirements* document in its consultations on GEA. We recognise that this change does not achieve the certainty that would be provided by detailed product requirements, and consider that such requirements can only be developed in engagement between Openreach and CPs. We do not consider it appropriate to intervene in this engagement at present.
- 3.28 In addition to the explicit commitments in the legal text of the variation, BT has represented to us that Openreach will:
- 3.28.1 Clearly identify all major aspects of the *Ethernet ALA Technical Requirements* document in its published GEA Roadmap, with target dates and plans for considering and addressing them. Such a product specification will necessarily evolve over time as further functionality is added into the product in line with customer feedback, and will need to take account of CP priorities, support system releases and financial and commercial considerations.
 - 3.28.2 Clearly identify major issues raised by CPs in their responses (with regards to GEA functionality) in its published GEA Roadmap, with plans for considering and addressing them and with target dates where appropriate.
 - 3.28.3 Participate in and take full account of the work of relevant standards bodies with regard to the development of any standards which evolve as part of the implementation of the *Ethernet ALA Technical Requirements* document. Openreach has made its intention clear that not only will it be an active member of such bodies, but that where commercially and technically viable, it will align its products to such standards.
 - 3.28.4 Maintain transparency of its customer engagement process, starting with the publication of the GEA Roadmap, by publishing further detailed information on its website, and by continuing to maintain both the NGA Forum and its Trial Working Groups.

- 3.29 Based on a suggestion raised by one industry stakeholder during the consultation process, Ofcom has also considered whether it may be necessary to involve the OTA in facilitating the discussion and prioritisation of industry requirements for the GEA active product. Our view is that, in developing the new technology of FTTC, Openreach is likely to have a strong incentive to develop fit-for-purpose products. We therefore consider that Openreach should be given the opportunity to take the lead unambiguously in engaging with its customers and developing the product according to their requirements, and that the OTA should not be involved. Nevertheless, we will re-evaluate the need for intervention in the event that we find in future substantive evidence that this engagement is not proving effective.
- 3.30 We consider that it would not be appropriate to follow in this variation the suggestion made by Orange that we should equip ourselves with direction-making powers in relation to the fitness-for-purpose of GEA. It should be noted that we have the ability to issue directions as part of any remedies pursuant to any finding of significant market power following a review of the relevant market¹⁰.
- 3.31 On the issue raised by Orange and C&W who ask that GEA should not be tied to the customer's narrowband voice service (or what may otherwise be termed as a naked GEA variant), Ofcom considers that this is a request worthy of further investigation. We note that this request would likely result in a reconsideration on the allocation of common costs by Openreach, as currently common costs tend to be recovered mainly via the narrowband voice service. It may also require some further product development by Openreach. This being said, if CPs have demand for such a product, we would encourage them to work with Openreach to specify their precise requirements.
- 3.32 On the requirement identified by Talk-Talk where it wants end-users who receive a voice service using MPF to be able to continue to do so once they are connected to a super-fast broadband service delivered using GEA, we note that this should be technically possible, but is likely to require some product development. We would therefore encourage communications providers who require such a product to work with Openreach to specify the precise requirements.
- 3.33 In response to concerns expressed by C&W about the wording in the variation describing Openreach's obligations to consult on the development of its active products, and to further representations made to us, we have also agreed with BT to modify and add to the legal wording of the consultation commitments in 5.54(i) and (ii). The changes are designed to commit Openreach more explicitly to develop its product roadmap by consulting with its customers and to document clearly the reasons for the decisions it takes on questions put forward in its consultations on active FTTC products. We agree with Scottish & Southern Energy that it would be appropriate for Openreach to publicise its consultations widely in order to make sure that as many as possible of its customers have an opportunity to express their views. In relation to the appropriate period of consultation, we note that the requirement is for a reasonable consultation period, with two weeks being only a minimum. We expect therefore that, where the contents of a consultation warrant it, Openreach will allow an appropriately longer period for responses.
- 3.34 We note that CPs have a number of specific technical and commercial requirements that they would like to see fulfilled by Openreach as it rolls out GEA. We consider that effective engagement between Openreach and its customer CPs is likely to be

¹⁰ Ofcom can also issue directions under Section 15 of the Undertakings in the event of breach of the Undertakings by BT

the best method to ensure that the product is developed appropriately and in line with CPs' requirements. The commitments offered by BT in the variation in relation to the development of active products are designed, among other things, to assure the effectiveness of that engagement. They include specific obligations that Openreach will adopt and adhere to a product roadmap, developed by an effective, appropriate and transparent consultation process with its customers.

Passive Inputs

Respondents' views

Consultation on design of FTTC

- 3.35 Sky and Talk-Talk Group question the timing proposed for Openreach's consultation to assess demand for, and CPs' views on its designs of, FTTC passive inputs and related backhaul products. They are concerned that the proposed deadline of 2011 for this consultation is too late, arguing that BT has incentives to foreclose future competition based on passive inputs. They argue that there are design steps which BT could take now which are likely to entail minimal additional costs but which could make passive-based access much more attractive in future, and cite some examples of such steps.
- 3.36 Sky argues that, as a condition of varying the Undertakings, Openreach should be required to consult on passive inputs before it starts mass rollout of FTTC. The designs could be reviewed again in 2011 to make sure that they remain appropriate. Talk-Talk Group similarly argues that the design review process should start now. Both Sky and Talk-Talk Group suggest that the design review process should be overseen by the OTA.
- 3.37 C&W would also like to see Openreach's consultation begin straight away, since Openreach has announced deployment to 29 exchange areas from early 2010, and since it has already installed pilot infrastructure in Whitchurch and Muswell Hill.
- 3.38 Where design changes that would facilitate later passive-based competition involve material cost, Sky and Talk-Talk suggest that Openreach be required to offer industry the option to pay the incremental cost of the upgrade on a location-by-location basis as it rolls out its network. CPs making such contributions to Openreach's costs would be able to use the facility at a later date.

Equivalence of Inputs

- 3.39 Talk-Talk Group is critical of our reasoning in proposing not to require Openreach to provide passive inputs on an EoI basis. It questions some of the figures we reported in our Consultation on BT's estimates¹¹ of the costs entailed in doing so, and casts doubt on the extent of the practical difficulties which Openreach has flagged as posing a risk to the quality of the end-user's experience. It states that we have not weighed the benefits of applying EoI, which it believes could amount to hundreds of millions of pounds, against the costs, and maintains that we have not considered how

¹¹ Talk-Talk Group refers among other things to BT's estimate of the percentage increase in its backhaul costs, finding them surprisingly high. We summarized BT's estimates of various cost increases in our consultation document, and quoted specifically BT's estimates of the percentage increase in backhaul interface costs at paragraph 3.19. Talk-Talk Group may have mis-interpreted these estimates as referring to backhaul costs overall, while they actually referred only to the interface costs associated with backhaul.

Eol could be applied to different components. Talk-Talk Group believes that we should consider whether Eol is applied to some or all passive products.

- 3.40 Sky reports that it fails to understand why BT's estimates of the additional costs entailed in producing systems, processes and interfaces which would enable passive inputs to be provided to CPs other than BT are so high. It urges us to interrogate BT's estimates more critically. It considers that, based on BT's figures which we presented in our Consultation, it may be pragmatic not to require Openreach to confine its consumption to fully equivalent passive inputs in producing FTTC GEA. Nevertheless, it underlines the significance of our not requiring Openreach to do so, which it sees as marking the abandonment of one of the central principles in promoting competition in current generation broadband.
- 3.41 Sky asks that, in order to give confidence to future investors at the passive layer, we signal our intention to ensure that, once demand emerges, Openreach's passive inputs will be as consistent as possible with Eol. Sky suggests that we could do this by identifying the passive components which it is practicable to provide on Eol basis; and to compare stringently, in relation to passive components which cannot be so provided, performance achieved in Openreach's own use with that achieved by competing CPs. It also notes that CPs wishing to invest in physical infrastructure will need information from Openreach on items such as cabinet "rating", provisioning and management systems. It also suggests that we state our intention that the processes for ensuring the consistency, as far as possible, of Openreach's passive inputs with Eol should be overseen by the OTA.

Co-location

- 3.42 Sky, Orange, Tiscali and the Federation of Communication Services have asked that we clarify BT's obligations in relation to location of CPs' FTTC equipment in street cabinets, which are referred to in the legal wording in the definition of FTTC Passive Inputs and in section 5.56(i).

Ofcom's considerations

Consultation on design of FTTC

- 3.43 We acknowledge CPs' concerns regarding the proposed timing of Openreach's consultation on the demand for and design of FTTC passive inputs and related backhaul products. We also consider it important that CPs who have a genuine interest in making use of FTTC passive inputs have an early opportunity to express their requirements. We have therefore started discussions with CPs to update our view of the level of interest in investment in super-fast broadband based on Openreach's passive inputs. Should we find clear and significant interest in such investment, as part of our input to the wholesale local access market review which we will initiate later this year we will engage with Openreach and other interested CPs to elicit considered views on requirements for FTTC passive inputs and related backhaul products¹².
- 3.44 In the meantime, we note that under the Undertakings Openreach is obliged to consider statements of requirements submitted by CPs, irrespective of any SMP

¹² It should be noted that there are ongoing obligations on BT to provide sub-loop unbundling on reasonable request under the findings of the current wholesale local access market review.

findings in relevant markets. It is also now required, under section 5.56(i) of this variation, to ensure that it meets CPs' reasonable demand for FTTC passive inputs.

- 3.45 We clarify, in respect of any eventual demand by a CP willing to pay the incremental cost corresponding to an alteration of Openreach's design, on a location-by-location basis or otherwise, that we would be inclined to interpret such willingness as evidence supporting the reasonableness of such demand under section 5.56(i). In such an eventuality, we would expect the CP to pay in addition an appropriate proportion of the common costs once it starts using the passive inputs, in accordance with the cost recovery principles set out in paragraphs 8.40-8.46 of the Super-fast Broadband Statement.

Equivalence of Inputs

- 3.46 We consider that our agreement to the variation does not represent an abandonment of the principles we adopted following the TSR. Following our agreement to the variation, the Undertakings continue to focus regulation on the most upstream point of the value chain downstream of which competition is likely to be effective and sustainable. On the basis of the evidence available today in relation to super-fast broadband, we consider that point to correspond to the provision of fit-for-purpose active wholesale bit-stream products having the key characteristics set out in our *Ethernet ALA Technical Requirements* document. BT has committed in the variation that Openreach will provide such products on the basis of EoI, in line with the conclusions of the TSR. Furthermore, BT's commitments in the variation provide options to develop passive inputs to allow effective and sustainable competition further upstream to emerge over time.
- 3.47 We summarised in the Consultation the case that BT set out to us in arguing for the variation. As part of this case BT compared estimated costs involved in maintaining the *status quo* of separation of passive components and active electronics within BT with the costs assumed in its base case, which assumes that both passive and active components would be controlled and operated by Openreach. In this way, BT's comparison provided estimates of the additional costs incurred in maintaining the separation, which were due to inefficiencies of operation of FTTC by separate BT divisions. We considered these estimated additional costs together with the currently uncertain sustainability of investments by other providers using BT's passive inputs for super-fast broadband, and concluded in favour of allowing Openreach to control and operate the electronics as the most likely way to support investment in super-fast broadband at the present time.
- 3.48 Given this conclusion, provision by Openreach of the passive inputs on the basis of strict EoI would require that Openreach, in producing its active products, consumes those inputs in exactly the same way that other CPs might consume them. It would therefore need to create an internal trading arrangement, with a formal commercial interface within its own organisation for all transactions involving those inputs.
- 3.49 The impacts of such an arrangement are difficult to quantify with certainty, but they would include significant additional costs and complexity, particularly in the development and operation of processes and systems to support internal transactions and hand-offs that would otherwise not be required. The main beneficial impact at this stage in the development of super-fast broadband would be to offer greater confidence to potential investors interested in using BT's passive inputs. However, this would not remove other uncertainties that face such potential investors at present, most notably in the economic viability of this form of investment.

- 3.50 In light of the current absence of serious interest in passive inputs for super-fast broadband we consider that imposing such an arrangement would risk creating an unnecessarily complex and costly operating model for Openreach without delivering effective and sustainable competition based on passive inputs. We therefore conclude that requiring Openreach to provide passive inputs on the basis of Eol would not be proportionate.
- 3.51 In seeking to provide options for the development of competition based on passive inputs we therefore sought commitments from BT that would deliver as much of the equality of access achieved by Eol as is reasonable without going as far as requiring the creation of a formal internal trading arrangement within Openreach. This was the reasoning that led to BT's commitments in paragraph 5.57 in the variation. In response to points raised by respondents to the Consultation, we have further agreed with BT to add words to that paragraph to the effect that the EAB will monitor Openreach's compliance with those commitments.
- 3.52 We consider that in respect of certain important practical aspects of network operation, BT's commitments in paragraph 5.57 should give the same level of confidence in equality of access to potential investors as Eol might have done. For example, in ongoing operations of the passive inputs, such as connection of end-users' copper wires to ports in the electronic equipment in street cabinets, we consider that it should be practicable and cost-efficient for Openreach to perform such operations for competing CPs no differently from how it performs them for itself, and that Openreach, in compliance with BT's commitment in paragraph 5.57(i) of the variation, should therefore do so. Furthermore, BT has committed in paragraph 5.56(iv) of the variation that it will design its systems and processes from the outset to make this possible and cost-effective.
- 3.53 Such close similarity to Eol may not be practicable or cost effective in other aspects of network operations, particularly processes associated with the deployment of the infrastructure rather than its ongoing operation. For example, in constructing its street cabinets, it may not be cost-effective for Openreach to provide additional space to allow for the possibility that CPs may in future decide to invest in their own FTTC infrastructure. If a CP's reasonable demand for such space occurs subsequent to Openreach's deployment of its own equipment in a street cabinet then it may not be cost-efficient or practicable for Openreach to re-build its existing cabinet to accommodate the CP's equipment. One way Openreach could then meet such demand would be to construct an enclosure specific to the CP's equipment which it would then attach to its own cabinet. In that case, BT's commitment in paragraph 5.57(ii) would mean, among other things, that, as far as possible, the same amount of space, power capability, cooling and ventilation will be made available to the competing CP as is available to Openreach.
- 3.54 Close similarity to Eol may also not be practicable or cost-effective in relation to the interface between the FTTC equipment in the street cabinet and backhaul. The variation does not affect Openreach's obligations in relation to the provision of backhaul, and these would therefore apply to any backhaul provided by Openreach to connect to a CP's FTTC equipment in a street cabinet. However, the variation would allow Openreach to provide backhaul to its own FTTC equipment in a street cabinet in a way that it would not be required to make available to other CPs. This could take the form of dark fibre connecting directly Openreach's FTTC equipment in a street cabinet with equipment in an exchange building.

Co-location

- 3.55 In respect of the wording in the definition of FTTC Passive Inputs and section 5.56(i) concerning location of CPs' equipment in street cabinets, we intend this to mean that CPs should be able to co-locate their street FTTC equipment with BT's and that where such an arrangement is contemplated, it would need to address, in addition to commercial and technical feasibility (for example, such as planning constraints), any legitimate concerns by Openreach in respect of the security of its own electronic and related equipment. BT has represented to us that, if demand for passive products materialises, Openreach will seek to deploy, where commercially viable, solutions which permit the use of cabinet designs which meet such concerns. This could be achieved for example by using either a common shell or a modular design which allows for separate access to electronics with sufficient security, common power feeds and additional fibres where required.
- 3.56 Following further review of section 5.56(i) we have also agreed with BT a clarification of the legal wording to the effect that, subject to reasonable demand, a CP's FTTC equipment should only be located in the vicinity of BT's street cabinet where it is not commercially or technically feasible to attach it to or otherwise integrate it with BT's cabinet.

Other points

Respondents' views

- 3.57 [REDACTED].
- 3.58 C&W proposed that BT should be required to install wavelength-division multiplex passive optical network ("WDM-PON") splitters in its street cabinets. According to C&W this would enable fibre brought to the cabinet to be split and blown down the duct in the access network on a per customer basis.
- 3.59 We have received a number of comments with suggested textual amendments to the legal wording.

Ofcom's considerations

- 3.60 [REDACTED].
- 3.61 Consideration of the merits of the fibre-to-the-premises ("FTTP") arrangement proposed by C&W, and its technical and commercial feasibility, are outside the scope of our considerations in relation to this variation, which concerns FTTC. We would nevertheless welcome informal discussion of this proposal to help us understand its potential merits more generally.
- 3.62 We have made modifications to the legal text, as appropriate to reflect the clarifications made to the substantive position agreed with BT. We have not incorporated all the requested changes as we did not consider that any additional clarification was required to the text of the legal wording or in the alternative there are existing mechanisms within the Undertakings framework or alternative processes (such as market reviews) exist to address such concerns.

Conclusions

- 3.63 We have taken into account all points raised by respondents to the Consultation in relation to this variation to the Undertakings, and have set out in this document our considerations in relation to the points raised.
- 3.64 We consider that the agreed changes to the legal text of the variation, while providing clarification to the proposals presented in the Consultation, are not material and we therefore do not consider it necessary to consult again. In light of these changes and of our considerations in relation to the other concerns raised by respondents to the Consultation, we have decided that it is appropriate for us to agree to the modified variation.
- 3.65 We have therefore duly signed the variation agreement. The final legal text of the variation agreement is set out in Annex 1. For reference we also attach a version in Annex 2 which highlights the changes that have been made to the legal text presented in the Consultation.

Annex 1

Legal text of the variation

Variation of the Undertakings given to Ofcom by BT pursuant to the Enterprise Act 2002 – Variation Number 19

Variation related to Fibre-to-the-Cabinet

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) Ofcom published a statement entitled "Delivering super-fast broadband in the UK" on 3 March 2009 ("the NGA Statement");
- (d) Ofcom has set out its approach to cost recovery in relation to the assessment of the costs that BT could recover in meeting the commitments it has offered relating to FTTC Passive Inputs (as defined in this Variation) in paragraphs 8.40-8.46 of the NGA Statement;
- (e) Ofcom will conduct a review of the development, provision, and operation of FTTC and other related technological developments during the course of 2011 ("the Review");
- (f) it is intended that the findings of the AS consultation required by Section 5.55 of the Undertakings will be taken into consideration as part of the Review;
- (g) it is not intended that the provisions of Section 5.54 should require AS to create any separate new processes over and above those which exist as at the date of this variation provided existing AS processes satisfy these obligations;
- (h) the provisions of this variation do not replace or alter any SMP Conditions imposed upon BT pursuant to the Communications Act 2003 (as amended); and
- (i) BT and Ofcom have agreed to vary the Undertakings as hereinafter appears.

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 2.1 "Definitions" is amended by adding the following new definitions:

“**BT Active FTTC Product**” means an Ethernet based Bitstream Network Access product offered by AS as of the date it is available for order and provided over the entirety of FTTC.”

“**FTTC**” means a network structure for access at End-Users’ premises at fixed locations in which optical fibres connect a node in an Exchange to a Local Access Node contained in a street cabinet, and copper wires connect the End-Users’ premises to the Local Access Node contained in the BT street cabinet.”

“**FTTC Passive Inputs**” means:

- (i) access to the copper wires that connect the End-User premises to a Local Access Node contained in the BT FTTC street cabinet;
- (ii) the provision to a Communications Provider of a FTTC street cabinet (which for the avoidance of doubt could include a cabinet facility attached to or otherwise integrated with a BT FTTC street cabinet), cooling, ventilation and power therein where practicable, and copper tie-cables, where required; and
- (iii) the various associated components of the Physical Layer of BT’s Access Network connecting the Local Access Node in the BT FTTC street cabinet and the End-Users premises to the extent that these components are only to be used in connection with the provision of services that are run over the entirety of FTTC.”

“**NGA Statement**” means Ofcom’s Statement entitled “Delivering super-fast broadband in the UK” published on 3 March 2009.”

- 2.2 In section 2.1 “Definitions”, the definition of “Exchange” is amended by adding the words “and FTTC” after the words “section 7”.
- 2.3 Section 5 is amended as follows:

(i) The following words shall be added at the start of section 5.13: "Save as permitted by section 5.51,"

(ii) New sections 5.51 to 5.60 shall be inserted after section 5.50 as follows:

"Next Generation Access

5.51 AS may control and operate the assets contained within the Transmission Layer of BT's Access Network and the Transmission Layer of BT's Backhaul Network where required to test, build, implement and operate a BT Active FTTC Product.

5.52 To the extent that BT offers a BT Active FTTC Product it shall be provided by AS until such time as or to the extent that the BT Active FTTC Product is determined not to fall within a market for Network Access in which BT has been determined from time to time by Ofcom as having SMP.

5.53 If AS provides a BT Active FTTC Product pursuant to Section 5.52, it shall be provided in ways which ensure that:

- (i) it has robust and scalable processes and systems supporting provision, migration, monitoring and fault repair such that Communications Providers using that product are able to provide their End-Users with a reasonable experience (in terms of delivery within reasonable timescales and with minimal disruption);
- (ii) its availability, in such locations as that product is offered, satisfies reasonable Communications Providers' demand;
- (iii) it conforms to appropriate industry standards;
- (iv) the contracts for its provision include SLAs; and
- (v) there is timely delivery against the product roadmap developed in accordance with section 5.54."

5.54 If AS provides a BT Active FTTC Product pursuant to Section 5.52:

- (i) AS shall ensure that it is developed in accordance with a product roadmap developed through effective and appropriate ongoing consultation with AS's customers. The consultation process must consider, on an on-going basis, the specification of that product, the Ofcom Ethernet Active Line Access, Updated Technical Requirements published on 3 March 2009 as amended from time to time and monitor the development, operation and deployment of that product.

- (ii) AS will set out in published guidelines the consultation principles it will follow for consultations related to FTTC. These principles will include the setting out of the objectives of each consultation and the questions it will ask, the decisions they will inform, the timescale and process for responses, and how responses will be considered to ensure transparency. They will provide for a reasonable consultation period of not less than two weeks, other than in exceptional circumstances. They will also provide for publication of a statement explaining the decisions made, together with objective reasons, with clear linkages to the questions raised in the consultation.

5.55 AS shall conduct a consultation with industry in order to assess the demand for and Communications Providers' views on the design of FTTC Passive Inputs and Backhaul Products provided over the optical fibre part of FTTC. AS shall complete this consultation within three months of such time as End-Users in 1million premises are taking services based on a BT Active FTTC Product or at the latest during the course of 2011. The consultation process will address the needs of Communications Providers wishing to invest at the time of BT's upgrade programme as well as the reasonably foreseeable needs of those considering investing at some future time.

5.56 AS shall:

- (i) ensure that it meets reasonable demand (including willingness to pay according to Ofcom's approach to cost recovery as set out in paragraphs 8.40-8.46 of the NGA Statement) for FTTC Passive Inputs from Communications Providers wishing to locate their FTTC equipment in a Communications Provider's FTTC street cabinet facility (i) attached to or otherwise integrated with the BT FTTC Cabinet; or, if it is not technically or commercially viable for BT to do so, (ii) in the vicinity of the BT FTTC street cabinet, whether at the same time as AS installs its BT FTTC street cabinet or at some future time, where practicable and recognising that all reasonable security measures need to be adhered to.
- (ii) in designing the capabilities around its FTTC street cabinet deployment (the "Street Cabinet Solution"), adopt design principles relating to the provision of power and optical fibre availability that will enable other Communications Providers to locate their own equipment at or in the vicinity of BT's FTTC street cabinets in the most cost-efficient manner possible, all where practicable.
- (iii) taking into consideration the findings of the consultation with Communications Providers (as set out in section 5.55), review and modify its design principles for the Street Cabinet Solution, where practicable, to facilitate meeting reasonable future demand for FTTC Passive Inputs cost effectively.

- (iv) in designing its systems for a BT Active FTTC Product, where practicable, adopt design principles that make it possible in future to enable the delivery of FTTC Passive Inputs on the basis provided in section 5.57 .

5.57 This section will apply to the provision of FTTC Passive Inputs by AS until such time or to the extent that: they are determined by Ofcom to fall within a market for Network Access in which BT has not been determined from time to time to have SMP; or they are not included in SMP Conditions imposed upon BT following such a market review concluded after 01 June 2009 in which BT has been determined from time to time by Ofcom as having SMP.

- (i) In providing any FTTC Passive Inputs, AS shall use the same components, processes and systems it uses itself for the purposes of its BT Active FTTC Product where reasonably practicable and on the most cost-efficient basis.
- (ii) Where AS cannot provide FTTC Passive Inputs in accordance with sub-para (i), it shall provide FTTC Passive Inputs as far as possible to the same specifications with the same functionality and performance as the inputs it uses itself for the BT Active Product.

The EAB shall monitor the provision of the FTTC Passive Inputs pursuant to this section in accordance with appropriate metrics to be agreed by BT and Ofcom.

5.58 BT will by 31 December 2011 review with Ofcom whether sections 5.51-5.57 need to be varied, superseded or released in light of the FTTC deployment and relevant FTTC market and technological developments and may agree either that:

- (i) no changes to these sections of the Undertakings are required; or
- (ii) additional commitments, variations to, or release of, existing obligations in these sections, are required.

For the avoidance of doubt, if BT and Ofcom are not able to reach agreement sub-paragraph (i) above shall apply.

5.59 If Ofcom materially changes its approach to cost recovery in relation to the assessment of the costs that BT could recover in meeting the commitments in relation to FTTC Passive Inputs (as that approach to cost recovery is set out in paragraphs 8.40-8.46 of the NGA Statement), then Sections 5.55 to 5.57 will cease to apply.

5.60 Sections 5.51 to 5.59 of the Undertakings will cease to apply for any future deployments in the event that the number of End-User premises capable of

being served by a BT FTTC enabled cabinet does not exceed 500,000 by 31 December 2010 unless otherwise agreed by BT and Ofcom.”

3. Effect

3.1 These variations of the Undertakings take effect immediately upon signature hereof on behalf of both parties.

Signed for and on behalf of British Telecommunications plc

Signature _____

Name _____

Position _____

Date _____

Signed for and on behalf of Ofcom

Signature _____

Name _____

Position _____

Date _____

Annex 2

Legal text of the variation showing changes to the text proposed in the Consultation

Variation of the Undertakings given to Ofcom by BT pursuant to the Enterprise Act 2002 – Variation Number {19}

Variation~~Proposed variation~~ related to Fibre-to-the-Cabinet

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) Ofcom published a statement entitled "Delivering super-fast broadband in the UK" on 3 March 2009 ("the NGA Statement");
- (d) Ofcom has set out its approach to cost recovery in relation to the assessment of the costs that BT could recover in meeting the commitments it has offered relating to FTTC Passive Inputs (as defined in this Variation) in paragraphs 8.40-8.46 of the NGA Statement;
- (e) Ofcom will conduct a review of the development, provision, and operation of FTTC and other related technological developments during the course of 2011 ("the Review");
- (f) it is intended that the findings of the ASOpenreach consultation required by Section 5.55 of the Undertakings will be taken into consideration as part of the Review;
- (g) it is not intended that the provisions of Section 5.54 should require AS to create any separate new processes over and above those which exist as at the date of this variation provided existing AS processes satisfy these obligations;
- (h) the provisions of this variation do not replace or alter any SMP Conditions imposed upon BT pursuant to the Communications Act 2003 (as amended); and

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

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 2.1 "Definitions" is amended by adding the following new definitions:

“**BT Active FTTC Product**” means an Ethernet based Bitstream Network Access product offered by AS as of the date it is available for order and provided over the entirety of FTTC.”

“**FTTC**” means a network structure for access at End-Users’ premises at fixed locations in which optical fibres connect a node in an Exchange to a Local Access Node contained in a street cabinet, and copper wires connect the End-Users’ premises to the Local Access Node contained in the BT street cabinet.”

“**FTTC Passive Inputs**” means:

- (i) access to the copper wires that connect the End-User premises to a Local Access Node contained in the BT FTTC street cabinet;
- (ii) the provision to a Communications Provider of a FTTC street cabinet (which for the avoidance of doubt could include a cabinet facility attached to or otherwise integrated with a BT FTTC street cabinet), cooling, ventilation and power therein where practicable, and copper tie-cables, where required; and
- (iv) the various associated components of the Physical Layer of BT’s Access Network connecting the Local Access Node in the BT FTTC street cabinet and the End-Users premises to the extent that these components are only to be used in connection with the provision of services that are run over the entirety of FTTC.”

“**NGA Statement**” means Ofcom’s Statement entitled “Delivering super-fast broadband in the UK” published on 3 March 2009.”

2.2 In section 2.1 "Definitions", the definition of "Exchange" is amended by adding the words "and FTTC" after the words "section 7".

2.3 Section 5 is amended as follows:

(i) The following words shall be added at the start of section 5.13: "Save as permitted by section 5.51,"

(ii) New sections 5.51 to 5.60 shall be inserted after section 5.50 as follows:

"Next Generation Access

5.51 AS may control and operate the assets contained within the Transmission Layer of BT's Access Network and the Transmission Layer of BT's Backhaul Network where required to test, build, implement and operate a BT Active FTTC Product.

5.52 To the extent that BT offers a BT Active FTTC Product it shall be provided by AS until such time as or to the extent that the BT Active ~~FTTC~~ FTTC Product is determined not to fall within a market for Network Access in which BT has been determined from time to time by Ofcom as having SMP.

5.53 If AS provides a BT Active FTTC Product pursuant to Section 5.52, it shall be provided in ways which ensure that:

- (i) it has robust and scalable processes and systems supporting provision, migration, monitoring and fault repair such that Communications Providers using that product are able to provide their End-Users with a reasonable experience (in terms of delivery within reasonable timescales and with minimal disruption);
- (ii) its availability, in such locations as that product is offered, satisfies reasonable Communications Providers' demand;
- (iii) it conforms to appropriate industry standards;
- (iv) the contracts for its provision include SLAs; and
- (v) there is timely delivery against the product roadmap developed in accordance with section 5.54."

5.54 If AS provides a BT Active FTTC Product pursuant to Section 5.52:

- (i) AS shall ensure that it is developed in accordance with a product roadmap ~~developed through~~ adopted in the course of effective and appropriate ongoing consultation with ~~AS's customers~~ industry. The consultation process must consider, on an on-going basis, the specification of that product, the Ofcom Ethernet Active Line Access,

Updated Technical Requirements published on 3 March 2009 as amended from time to time and monitor the development, operation and deployment of that product.

- (ii) AS will set out in published guidelines the consultation principles it will follow for consultations related to FTTC. These principles will include the setting out of the objectives of each consultation and the questions it will ask, the decisions they will inform, the timescale and process for responses, and how responses will be considered to ensure transparency. They will provide for a reasonable consultation period of not less than two weeks, other than in exceptional circumstances. They will also provide for publication of a statement explaining the decisions made, together with objective reasons, with clear linkages to the questions raised in the consultation.

5.55 AS shall conduct a consultation with industry in order to assess the demand for and Communications Providers' views on the design of FTTC Passive Inputs and Backhaul Products provided over the optical fibre part of FTTC. AS shall complete this consultation within three months of such time as End-Users in 1million premises are taking services based on a BT Active FTTC Product or at the latest during the course of 2011. The consultation process will address the needs of Communications Providers wishing to invest at the time of BT's upgrade programme as well as the reasonably foreseeable needs of those considering investing at some future time.

5.56 AS shall:

- (i) ensure that it meets reasonable demand (including willingness to pay according to Ofcom's approach to cost recovery as set out in paragraphs 8.40-8.46 of the NGA Statement) for FTTC Passive Inputs from Communications Providers wishing to locate their FTTC equipment in a Communications Provider's FTTC street cabinet facility (i) attached to or otherwise integrated with the BT FTTC Cabinet; or, if it is not technically or commercially viable for BT to do so, (ii)~~or~~ in the vicinity of the BT FTTC street cabinet, whether at the same time as AS installs its BT FTTC street cabinet or at some future time, where practicable and recognising that all reasonable security measures need to be adhered to.
- (ii) in designing the capabilities around its FTTC street cabinet deployment (the "Street Cabinet Solution"), adopt design principles relating to the provision of power and optical fibre availability that will enable other Communications Providers to locate their own equipment at or in the vicinity of BT's FTTC street cabinets in the most cost-efficient manner possible, all where practicable.

- (iii) taking into consideration the findings of the consultation with Communications Providers (as set out in section 5.55), review and modify its design principles for the Street Cabinet Solution, where practicable, to facilitate meeting reasonable future demand for FTTC Passive Inputs cost effectively.
- (iv) in designing its systems for a BT Active FTTC Product, where practicable, adopt design principles that make it possible in future to enable the delivery of FTTC Passive Inputs on the basis provided in section 5.57 .

5.57 This section will apply to the provision of FTTC Passive Inputs by AS until such time or to the extent that: they are determined by Ofcom to fall within a market for Network Access in which BT has not been determined from time to time to have SMP; or they are not included in SMP Conditions imposed upon BT following such a market review concluded after 01 June 2009 in which BT has been determined from time to time by Ofcom as having SMP.

- (i) In providing any FTTC Passive Inputs, AS shall use the same components, processes and systems it uses itself for the purposes of its BT Active FTTC Product where reasonably practicable and on the most cost-efficient basis.
- (ii) Where AS cannot provide FTTC Passive Inputs in accordance with sub-para (i), it shall provide FTTC Passive Inputs as far as possible to the same specifications with the same functionality and performance as the inputs it uses itself for the BT Active Product.

The EAB shall monitor the provision of the FTTC Passive Inputs pursuant to this section in accordance with appropriate metrics to be agreed by BT and Ofcom.

5.58 BT will by 31 December 2011 review with Ofcom whether sections 5.51-5.57 need to be varied, superseded or released in light of the FTTC deployment and relevant FTTC market and technological developments and may agree either that:

- (i) no changes to these sections of the Undertakings are required; or
- (ii) additional commitments, variations to, or release of, existing obligations in these sections, are required.

For the avoidance of doubt, if BT and Ofcom are not able to reach agreement sub-paragraph (i) above shall apply.

5.59 If Ofcom materially changes its approach to cost recovery in relation to the assessment of the costs that BT could recover in meeting the commitments in relation to FTTC Passive Inputs (as that approach to cost recovery is set out in

paragraphs 8.40-8.46 of the NGA Statement), then Sections 5.55 to 5.57 will cease to apply.

5.60 Sections 5.51 to 5.59 of the Undertakings will cease to apply for any future deployments in the event that the number of End-User premises capable of being served by a BT+ FTTC enabled cabinet does not exceed 500,000 by 31 December 2010 unless otherwise agreed by BT and Ofcom.”

3. Effect

3.1 These variations of the Undertakings take effect immediately upon signature hereof on behalf of both parties.

Signed for and on behalf of British Telecommunications plc

Signature _____

Name _____

Position _____

Date _____

Signed for and on behalf of Ofcom

Signature _____

Name _____

Position _____

Date _____