

TELEFÓNICA O2 UK LIMITED RESPONSE TO:

"REVIEW OF THE WHOLESALE LOCAL ACCESS MARKET"

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TELEFÓNICA O2 UK LIMITED RESPONSE – OFCOM REVIEW OF THE WHOLESALE LOCAL ACCESS MARKET

SECTION 1: EXECUTIVE SUMMARY

Introduction

- Telefónica O2 UK Limited (O2)¹ welcomes the opportunity to respond to Ofcom's Review of the Wholesale Local Access Market (the WLA Market Review).
- O2 is a leading communications company for consumers and businesses in the UK, with 21.299 million mobile customers and over 591,500 fixed broadband²³ customers as at 31 December 2009.
- O2 agrees with Ofcom that this is an important market review. Ofcom's proposals (in respect of both current and next generation broadband) matter for consumers because:

"...ultimately they will affect the price, choice and availability of critically important retail services ..."

4. It is important to keep this customer focus in mind when considering the remedies Ofcom proposes.

¹ Telefónica O2 UK Limited (O2) is part of Telefónica Europe plc which is a business division of Telefónica S.A. and which owns O2 in the UK, Ireland, Slovakia, Germany and the Czech Republic, and has 49.2 million customers.. Telefónica is the world's largest integrated telecommunications operator, and the largest in Europe in terms of market capitalisation. Its activities are centred mainly on fixed and mobile telephony, with broadband as the key tool for the development of both.

 $^{^{2}}$ On 1 October 2009, O2 UK entered the business fixed telecommunications market with the launch of its full communications service to small and large businesses.

The importance of a balanced regulatory regime

5. O2 is supportive of a balanced regulatory framework that encourages efficient and timely investment by all market players - not just by the incumbent alone in current generation access (CGA) and next generation access (NGA). Local Loop Unbundling (LLU) has helped provide the opportunity for O2 to differentiate itself in the marketplace. As such, we welcome Ofcom's determination to retain it for Current Generation Access and, in respect of Next Generation Access, to develop remedies which, in so far as is possible, replicate the opportunity for competition which LLU affords. Ofcom has a primary duty to "promote" competition, its decision should not lead to a foreclosure or reduction of competition in the future market for broadband services.

Making it all work for customers

- 6. In October 2007 O2 launched its fixed broadband service using the Be broadband network (Be was acquired in 2006). Based on LLU and using ADSL2+, O2 has been able to differentiate itself in the market by making it easy and straightforward for customers to connect to broadband. We have been able to achieve this by being able to control for ourselves the end to end customer experience, for example:
 - O2 branded customer CPE;
 - a simple "self install" connection for customers;
 - clear O2 branded customer experience and support.
- 7. Customers (including first time broadband customers) have responded well to this approach and O2 has been ranked highest in customer satisfaction for both UK fixed and mobile broadband customers according to the J.D. Power and Associates UK Mobile and Fixed Broadband Studies 2009 and 2010⁴.

⁴ <u>http://www.o2.com/media_files/05022009_UK_Broadband_ISP.pdf</u> http://businesscenter.jdpower.com/news/pressrelease.aspx?ID=2010036

Promoting competitive differentiation for customers

- 8. We believe that it is imperative that Ofcom seeks to promote a similar level of competitive differentiation in the future NGA based broadband market, in the interests of consumers.
- 9. At present, the BT GEA product, with its absence of a "wires only" option, severely restricts our ability to deliver this type of end to end customer experience in an NGA world. If this goes uncorrected it will effectively be a retrograde step for customers. The lack of a "wires only" solution significantly curtails communication providers' ability to deliver on a range of customer benefits (see Annex A).
- 10. Accordingly, we believe there remains work to be done in respect of a truly "fit for purpose" virtual access product. We also believe developments are required to underpin "fit for purpose" Physical Infrastructrue Access (PIA) and Sub-Loop Unbundling (SLU) remedies. Before we discuss these aspects in more detail in this response, we believe that it is also important to raise another element of Ofcom's approach which we believe needs careful consideration the artificial constraints Ofcom places on the use of its proposed remedies.

Artificially constraining the product set will limit the rollout of NGA

11. Mobile is very much a part of the NGA landscape and the UK vision for NGA should not be restricted⁵. The prospect of LTE networks, with many hundreds of Mbit/s throughput means that mobile operators need to contemplate a greater use of fibre backhaul. Investment in infrastructure to support mobile networks could act as the demand side stimulus to drive greater supply-side availability of NGA, but only if Virtual Unbundled Local Access (VULA) and

⁵ For example, see para 1.44, "Delivering super-fast broadband in the UK", Ofcom Statement, 3 March 2009

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

PIA are available for use in mobile networks. The current remedies appear to restrict the use of PIA and VULA for this purpose, whereas BT itself is under no such restriction as to the nature of services it provides over its own physical infrastructure (or using its virtual products).

O2 recommendations

General

12. We welcome a number of the steps Ofcom has taken in the WLA Market Review. For example, proposing to define the attributes which VULA (and hence BT's GEA product) should meet in order to allow competing providers to control and differentiate their own propositions is a good starting point. Furthermore, we also believe that Ofcom is right to propose physical access remedies at this stage.

The risk of gaming

- 13. However, as things stand, we think there remains incentive for BT to game Ofcom's proposals to their advantage whilst at the same time continuing to roll out its own NGA deployments. BT plans to pass 4M homes by summer 2010 and BT has of course just announced plans for more extensive rollout of fibre to around two thirds of homes by 2015⁶⁷. Areas of concern for us include:
 - BT's GEA product isn't yet fit for purpose⁸ to enable us to deliver an "end to end" customer experience and BT proposes not to revisit

⁶ <u>http://www.btplc.com/News/Articles/ShowArticle.cfm?ArticleID=B6241B17-F6F9-43E1-954C-D88EFD2150FC and http://news.bbc.co.uk/1/hi/10111724.stm</u>

⁷ As the CSMG report accompanying the WLA Market Review observes [page 8]:"...BT's recent [October 2009] announcements suggest it is re-using its existing civil infrastructure in its FTTP deployment. Should this be the case, the cost to BT of deploying NGA will be significantly lower than that of a competitor that needed to construct alternative infrastructure.

⁸ And indeed the very construction of BT's GEA product indicates that BT is seeking to retain a significant degree of control and value for itself – in contrast with that which has to date been the case for LLU (and indeed even in some places in contrast to current generation wholesale bitstream products such as IPStream which does not include a bundled modem).

communications providers Statement of Requirements in this respect for 3 years⁹;

- Even when the product becomes fit for purpose there is a significant risk of margin squeeze and this will increase risks for CPs and potentially dampen demand;
- Self build requires both PIA and SLU (and cabinet arrangements), and so the attractiveness of PIA is limited significantly by BT's cost structure for SLU;
- Whilst BT's Undertakings¹⁰offer to meet reasonable demand for cabinet sharing/ co-location, operationally and cost wise the risk of foreclosure remains;
- BT does not provide a VULA VDSL connection in exchange-only areas (around 11% of lines), meaning that the only superfast broadband option for customers is a BT fibre line – perpetuating BT's position in those areas which have above average concentrations of higher value SME customers. Whilst, the ANFP plan does not currently allow for the provision of VDSL in these areas, such restrictions are not present in other European countries. We think the UK plan needs to be reviewed and we would welcome Ofcom's support for this work.
- 14. It is important that the regulatory regime protects against these foreclosure risks. As it stands, BT is accelerating its rollout ahead of regulatory intervention, and there is the real risk that this will present the market with a fait a complis of the existing solution. For this remedy to be effective, it must ensure that a fit for purpose (i.e. wires only) VULA product is available across all of BT's NGA footprint. And in respect of physical access, we would wish to see the risk of foreclosure addressed in the PIA, SLU and cabinet arrangements.

⁹ Openreach Wires Only Statement of Requirements Response, SOR 6596, December 2009 ¹⁰http://www.ofcom.org.uk/telecoms/btundertakings/consolidated.pdf

Improve VULA

- 15. Our approach to broadband has been all about making it easier and simpler for customers to connect and get a great broadband experience – including a hassle free "plug and go" router connection. Our focus on the "end to end" customer experience has been well received.
- 16. We believe the availability of a "wires only" connection will provide significant benefit to customers (and the market)¹¹. Not least in avoiding the complexity of BT's current GEA solution which installs a new "intelligent" network termination equipment box/ face plate (termed SSFP) in customer premises (to which the customer router would be connected). This isn't going to be a great customer experience: two boxes (Openreach/BT branded modem plus customer STB/WiFi router) plus two power supplies and interconnecting cables etc. Plus of course opportunity for a BT engineer to visit our customer. Wires only is already available in Germany and we believe New Zealand have announced a trial.
- 17. BT has objected to "wires only" on grounds that the higher speed broadband standards are not sufficiently stable to enable CPE compatibility with the cabinet based BT equipment. BT is pushing to locate intelligence in the network terminating point (which it will control). We think BT's objection is unreasonable. There is considerable work going on the standards front such that FTTC standards are likely to be stable in 6-9 months (although, FTTP is likely to take longer). Issues of compatibility can be addressed via publication of standards and equipment accreditation.
- 18. BT could publish the interim standard it is using for its cabinet electronics so we can provide our own compatible CPE. A suitable type approval process could be agreed for the same. We fully recognise the need for VDSL modems to interwork effectively, what we are not content with is BT prescribing the

¹¹ See Section 3.

CPE or sending their own engineer to install it. This is unnecessary interference with the downstream product.

19. We believe that the overriding consumer benefits of "wires only" are clear and that there is sufficient clarity on the timeframe for standards stability that Ofcom could proceed now to require that a "wires only" solution is provided within a suitable roadmap structure. BT could now publish the interim relevant standards and a suitable type approval process established. Furthermore, a trial of "wires only" could also be established relatively quickly. The consumer electronics market is pretty adept at this. We believe this would be a reasonable and constructive approach.

The risk of margin squeeze on VULA

- 20. In the retail market, the pricing of BT's Infinity retail product (that uses BT Openreach's FTTC solution) is aggressive compared to the wholesale VULA FTTC pricing. Furthermore, BTs costs for VULA are mainly fixed, yet Openreach's pricing for FTTC includes a substantial variable data "throughput" element.
- We have previously provided Ofcom with modelling scenarios showing how
 the variable data throughput element can result in a margin squeeze [³<....]
- 22. Ofcom has previously said that it will act if it sees evidence of a margin squeeze¹². We are interested to hear Ofcom's view on the scenarios we have provided to Ofcom. Clearly, the prospect of a margin squeeze will dampen the appetite of investors in VULA.

¹² For example, in its joint (with BIS) submission to the European Commission¹² regarding its draft NGA Recommendation, Ofcom explains: "the UK recognises the importance of NRAs remaining vigilant to the risks in the distortions in competition that could result from particular pricing approaches applied by SMP operators. This could include issues of margin squeeze. Specifically, the UK strongly supports the need to be vigilant against margin squeeze practices. Indeed the UK NRA, Ofcom, has stated explicitly that in relation to NGA: "Wherever we [Ofcom] were to see evidence of or the risk of margin squeeze, we would expect to take action to prevent it. This may include to exercising our competition law powers and moreover reviewing our overall approach to pricing."

23. Indeed, it would be helpful if Ofcom could provide greater clarity and guidance as to how it will deal with any margin squeeze¹³. In particular, how it would apply the current proposed remedy sets to such a situation. For example, the Wholesale Broadband Access Market Review refers to an approach which sees margin squeeze as equating to a constructive refusal to supply as well as relying on the general access and non-discrimination conditions "safeguarding" against margin squeeze¹⁴. Also, how will Ofcom engage the reasonable charges requirement in FAA11.2?

Improve the outlook for physical infrastructure access

- 24. We support Ofcom in proposing obligations on BT in relation to access to ducts/ poles. However, in order to provide a credible option for self-build, we believe a number of aspects need to be addressed, including:
 - BT's cost structure for SLU continues to make self build challenging this should be addressed¹⁵;
 - ii) We would like to see options for sharing space in BT's active FTTC cabinets¹⁶;

¹³ Clarity is important, since in the Ofcom/BIS joint submission to the Commission, it is considered that a tailored approach to the issue at hand is best rather than a "mechanistic" approach: "flexibility in the approaches that NRAs may adopt in relation to margin squeeze tests set in place of cost orientation obligations and urges against the use of generalised, mechanistic criteria to perform ex ante margin squeeze tests in this fast evolving part of the sector;"

¹⁴ See [5.203] and [5.409]

¹⁵ Ofcom remarks that whilst interest in physical access appears to be increasing to a limited degree, given the economic challenges (and technical limitations in respect of FTTP) the overriding interest in access options to date appears to be heavily focussed on VULA. To a degree there is a "Catch 22" arising here given the unattractive pricing structure of SLU [and its lack of any developed commercial SLA] means that it is difficult to develop a business case which would drive interest. Furthermore, the accompanying components of self build (duct access and cabinet deployment/ sharing arrangements) do not exist in any commercial form at this stage.

¹⁶ For example, we would wish to see options for sharing space in active cabinets – something which is not part of BT's current portfolio or indeed, as we understand it, plans. For example, in practice BT could publish a specification for acceptable equipment and communications providers could work with that and seek access accordingly. This option would take a significant amount of cost out of connecting active to passive cabinets (including less for BT if other communications providers share) and also be more acceptable from a local environmental point of view, mitigating a plethora of street furniture and its associated challenges. Whilst BT are exposed to the cost of extra cabinet space this could be addressed through BT inviting commitment to space each time they plan to deploy. Lack of cabinet sharing also leads to foreclosure issues with suitable sites – there will be many locations where one active cabinet will work but two or more will not.

- iii) Don't unduly restrict PIA applications to a predetermined vision of NGA competition in particular, do not limit the opportunities for mobile network deployment to drive fibre demand;
- iv) Where existing ducts are full, BT should be under an obligation to provide alternative ducts or dark fibre.
- 25. We discuss these in more detail later in our response.

Concluding introductory remarks

26. This is an important Market Review. As Ofcom notes:

"Together, the decisions taken (following consultation) in the WLA and WBA market reviews will affect how competition and investment in broadband services will develop in this important stage for NGA networks." [2.13]

- 27. O2 recognises the balance Ofcom seeks to strike in the combination of remedies on BT outlined in the WLA Consultation¹⁷. It is important to ensure that the remedies secure a competitive evolution path for the market, rather than foreclose NGA to BT's retail and wholesale competitors. In its combination of remedies, O2 believes that Ofcom must:
 - Secure the right balance such that the remedies form a coherent approach as a whole¹⁸ (alongside BT's Undertakings and Ofcom's approach in the Wholesale Broadband Access Market Review),

¹⁷ Indeed as the CSMG report accompanying the WLA Consultation notes: "As demonstrated through LLU, passive access – where sustainable – can create dynamic efficiencies by enabling innovation by competitive network investment. Conversely, active access risks a loss of service differentiation and innovation, unless it provides deep control into the underlying network"

¹⁸ Something we have made clear in previous responses. As Ofcom notes, "We have been considering for some time, in consultation with many stakeholders, the appropriate regulation to promote investment and competition in NGA ...this market review represents a major part of implementing the strategic approach that we have developed over this period".



enabling markets to determine the best way of delivering superfast broadband for customers;

- ii) Ensure that the remedies themselves will deliver "fit for purpose" (Openreach) solutions whether active or passive, and
- iii) Ensure that the opportunity for competition (whether active or passive access based solutions) is not foreclosed, particularly in light of BT's accelerating NGA rollout programme¹⁹.
- 28. We are proud that O2's broadband products and services have won many accolades. Our commitment to customers is at the heart of what we say in this response, particularly in relation to the appropriateness of Ofcom's VULA and PIA remedies along with Ofcom's assessment as to how well Ofcom's existing products meet those regulatory remedies. We believe some developments to Ofcom's proposed remedies are required in order to create a balanced, coherent approach for customers.
- 29. O2 is able to draw on its perspective in the UK market both as a new broadband player (based on unbundling) and as an established mobile player and, in addition, O2 has the benefit of other Telefónica companies' experience in other EU territories as either new entrant or incumbent players. As such, we believe our perspective can be a useful litmus test for Ofcom in finding the right balanced remedies.
- 30. As Ofcom notes in the WLA Market Review, industry needs to work together to develop a clear vision of what "fit for purpose" access products look like. We support this approach and have engaged with other major customers of

¹⁹BT has announced significant extensions to its fibre rollout on a number of occasions: in October 2009, BT announced an extension of its FTTP rollout target to 2.5M homes by 2010 (up from 1M homes by 2012) and in May BT announced a major expansion of BT's fibre investment programme. http://www.btplc.com/News/Articles/ShowArticle.cfm?ArticleID=B6241B17-F6F9-43E1-954C-D88EFD2150FC

Openreach (Talk Talk, Sky, Cable and Wireless and Orange) to develop technical input in this respect²⁰.

31. We would be pleased to discuss our comments in greater detail if that will help Ofcom.

²⁰ Using Catalyst Communications Consulting Limited to prepare a compendium of technical inputs for the process.

SECTION 2: THE WHOLESALE LOCAL ACCESS MARKET REVIEW

Importance of the market review (and proposed remedies)

- 32. This is an important review. Not only for current copper based networks (CGA) and next generation access (NGA) networks but also, as Ofcom emphasises, for customers²¹: "*These proposals matter for consumers because ultimately they will affect the price, choice and availability of critically important retail services…*" [1.2].
- 33. O2 welcomes this customer focus, particularly in relation to the appropriateness of Ofcom's VULA and PIA remedies along with Ofcom's assessment as to how well Ofcom's existing products meet those regulatory remedies.
- 34. It is important to ensure that the remedies are right for the evolution of the market. And furthermore, to ensure that options for further or developing future competition are not foreclosed.
- 35. Ofcom notes that the WLA is "*critical to all fixed line services*" [1.3]. We believe the opportunity to use VULA and PIA within mobile network deployments should also not be foreclosed. Mobile models can drive demand for VULA and PIA and in so doing drive fibre availability.

Overall, O2 sees Ofcom's proposals as generally positive

36. O2 believes Ofcom is right to emphasise that it is important for the market to decide on the best way of competing (rather than regulators). The risk of regulators seeking to pick winners is commonly recognised.

²¹ And Analysys Masons notes in its Final report for Ofcom Operational models for shared duct access 1 April 2010 : "The move to NGA networks will be one of the most fundamental changes in telecoms infrastructure since the introduction of market competition". http://www.ofcom.org.uk/consult/condocs/wla/operational_models.pdf

- 37. O2 is supportive of a balanced regulatory framework that encourages efficient and timely investment by all market players - not just by the incumbent alone in current generation access (CGA) and next generation access (NGA). Local Loop Unbundling (LLU) has helped provide the opportunity for O2 to differentiate itself in the marketplace. As such, we welcome Ofcom's determination to retain it for Current Generation Access and, in respect of Next Generation Access, to develop remedies which, in so far as is possible, replicate the opportunity for competition which LLU afforded.
- 38. We also support Ofcom's approach to seek to address market power at the deepest sustainable level informed by a pragmatic reflection and analysis of the viability of infrastructure based competition.
- 39. Indeed, Ofcom's intent to support the development of a mixed economy of active and passive based competition, to recognise the importance to UK consumers of securing both investment and competition and more generally ensuring that its approach is flexible enough to respond to differences in market conditions across the country is understandable, and a direction of travel which we support.
- 40. Overall, we see Ofcom's proposals as a positive step. However, there remain some critical issues for NGA which need to be addressed to help support the opportunity for competition that LLU currently provides. We believe that it is essential that there is a clear roadmap to delivery of a fit for purpose VULA product. Furthermore, we also see opportunities for a mixed economy with physical access products to the benefit of competition and customers. We don't wish to see these opportunities foreclosed.

Current Generation Broadband – lessons learnt

41. O2 believes that the UK experience with LLU aptly demonstrates the benefits broadband competition can deliver for customers. Indeed, we believe it is common ground that, as Ofcom notes in its "Super-fast broadband context

and summary for Ofcom's consultation"²² (which accompanies the consultation):

"The current generation of broadband services in the UK have become a success story with competition, based largely on local loop unbundling, driving choice and innovation, low prices and high take up". [1.1]

42. Furthermore, Ofcom summarises its regulatory approach to current generation as:

"Over the past few years, much of Ofcom's focus has been on enabling competition in the market to stimulate innovation and deliver competitive prices be encouraging efficient investment by competing providers in local loop unbundling. This allows other operators to physically take over or share BT's copper lines into homes and businesses and develop their own retail proposition." [2.2]

43. And, again notes:

"This approach has delivered significant benefits, resulting in wide broadband availability, high take-up and extensive choice of services at ever reducing prices. It has also enabled Ofcom to deregulate large parts of the intermediary market for wholesale broadband services which support the retail offers made in the market." [2.3]

44. It is, as Ofcom recognises, important to "continue to deliver effective regulation of CGA networks at the same time as supporting a smooth transition to NGA networks" [1.10]. We believe that it is important for NGA that the remedies provide no less an opportunity for vibrant competition than has been experienced with CGA.

²² <u>http://www.ofcom.org.uk/consult/condocs/wla/context.pdf</u>

45. We believe it is common ground from experience with LLU that a combination of fit for purpose product, priced appropriately²³ and coupled with robust management/ ordering processes is necessary.

Ofcom's market analysis

- 46. We note Ofcom's Market Definition analysis, Market Power Assessment and Ofcom's proposed Remedies to address the Market Power it finds.
- 47. As explained above, we believe opportunity to use VULA and PIA for mobile/ wireless NGA deployments should also not be foreclosed. Mobile/wireless models can drive demand for VULA and PIA – and in so doing drive fibre availability. Ofcom makes clear that the general definition of NGA:

"...encompasses the delivery of broadband by different technologies and architecture, such as fibre deployments (e.g. FTTC and FTTP), upgrades to cable, terrestrial fixed or mobile wireless services as well as improvements to current broadband services (e.g. VDSL)." [3.46]

48. And elsewhere, Ofcom also explains that, in respect of PIA:

"However, we propose that BT's PIA obligation should be subject to an important limitation. Namely BT should be required to provide PIA, together with such ancillary services as may be reasonably necessary for the use of that access, if, and only if, such access and services are to be used by [other communications providers] for the purpose of deployment of broadband access networks servicing multiple residential and business customers." [9.48]

²³ In Ofcom's Consultation: "A New Pricing Framework for Openreach, May 2008, Ofcom remarks: "The ability of Communications Providers to compete at the infrastructure level has been a key driver of the nature and extent of competition. LLU has given operators the flexibility to offer differentiated services to their customers, allowing true diversity in service offerings. In particular, the reductions in LLU and WLR charges in November 2005 and January 2006 (described in Section 2) clearly provided a major stimulus to competition. The significant expansion of choice and, consequently, take up have been attributable in large part to the changes in the wholesale pricing regime and the implementation of the Undertakings entered into by BT." [3.9]

http://www.ofcom.org.uk/consult/condocs/openreach/openreachcondoc.pdf

- 49. In this respect, we understand Ofcom's proposals are not in principle to restrict the use of PIA for mobile/ wireless solutions "*for the purpose of deployment of broadband access networks servicing multiple residential and business customers.*" Otherwise, such a restriction would mean BT itself could not deploy mobile/ wireless solutions over its own infrastructure.²⁴
- 50. However, Ofcom also remarks that the proposed (PIA) remedy is to promote competition and infrastructure investment in the deployment of both FTTC and FTTP NGA access networks such that the remedy is limited to the deployment of access networks for "broadband and telephony services; and SLU backhaul services between cabinets and service MDF sites." [7.150]. Thus Ofcom explains that the installation of cables for backhaul circuits or leased lines would not be permitted. Although, Ofcom will consider whether it would be appropriate to extend the scope of the remedy to other services in the relevant market reviews. [7.151]
- 51. The approach to PIA appears to be in stark contrast to VULA which Ofcom determines must be "service agnostic":

"We therefore consider that, like LLU, VULA should be a generic access product. That is, it should provide service agnostic connectivity. VULA should therefore only be limited by the inherent capabilities of the access technologies deployed." [7.240]

- 52. We support this "service agnostic" approach in respect of VULA²⁵. And it appears to us that it should be replicated in respect of PIA.
- 53. However, Ofcom's approach appears to create uncertainty (and asymmetry with VULA's service agnostic requirement) in the services that can be run

²⁴ For example, precluding a BT FON service.

²⁵ Indeed, this approach has, as Ofcom explains elsewhere, relevance to the inclusion of VULA within the WLA market review (something we support): "We consider that non-physical remedies can be imposed in the WLA market as long as they have the right characteristics, in that they provide being met by a virtual product that offers the same features as a physical product." [7.9]. It is therefore important to ensure that VULA meets that test.

between active and passive remedies. For example, at 3.122 Ofcom maintains (mobile and fixed) wireless solutions are excluded. However, presumably Ofcom is not proposing that PIA is unavailable for the deployment of BT FON and femtocells (or indeed other wireless station deployments such as e.g. picocell or larger or public wifi²⁶) for residential or business customers? Such deployments will fall squarely within that permitted under [9.48]: "for the purpose of deployment of broadband access networks service multiple residential and business customers."

- 54. Equally, it is unclear why PIA applications are restricted to "cabinet to the exchange" rather than a more permissive and unrestricted approach allowing deployment for NGA per se.
- 55. Ofcom's proposed limitations on the use that can be made of PIA need careful reflection. BT will, after all, not be restricted from using Ducts and Poles for its own services.

Ofcom's proposals

- 56. O2 believes, like Ofcom, that the regulatory principle established in the Ofcom Telecommunications Strategic Review²⁷ remains relevant to Ofcom's approach to both Current Generation Access (CGA) and Next Generation Access (NGA), namely: "securing investment and competition at the deepest level in the network that is effective and sustainable."
- 57. Of com surmises that whilst current generation broadband required significant investment to make it a success, *"super-fast broadband will require much*

²⁶ We do not believe options for use of PIA for public Wifi should be prohibited (either in building (presumably this would be allowed) and outdoor). The option to exploit the pole access part of PIA to put WiFi kit on BT poles would also be interesting. We would certainly want to make sure BT couldn't exploit its position in respect of ducts and poles to foreclose on street WiFi (or earn a monopoly rent from the same.)

²⁷http://www.ofcom.org.uk/consult/condocs/statement_tsr/

higher levels of investment as it involves new cabling as well as new electronic equipment. This carries uncertainty and risk".²⁸ [2.15].

- 58. And whilst Ofcom emphasises that: "Effective and sustainable infrastructure competition tends to give rise to the greatest benefits in terms of the mix of lower prices and faster innovation" [1.13], Ofcom concludes that "The evidence suggest that where BT deploys an NGA network, the most cost effective and straightforward way to support competition is to allow [other communications providers] to access that new network, rather than to invest in their own parallel NGA infrastructure." [1.27]
- 59. Accordingly, Ofcom proposes a VULA remedy which Ofcom considers will offer the best prospects for reproducing the kind of competition in NGA (at least in the short to medium term) that LLU has provided for CGA. We support Ofcom's intent for VULA here.
- 60. However, whilst Ofcom's approach is to focus on "active access" remedies (at least initially), Ofcom also makes clear that it considers that remedies which allow other communications providers to deploy their own infrastructure "could have a significant role to play" [1.32]. Accordingly, to compliment its VULA remedies, Ofcom proposes, a PIA remedy and a SLU remedy for NGA (with SLU also continuing to apply for CGA).
- 61. Ofcom's intent is that its PIA remedy, proposes a firm timeline for BT to develop and implement usable products and processes. Ofcom's aim being:

"to reduce the barriers to entry, and to equip [other communications providers] with the relevant information on their choices. It will then be for the market to determine the best way of competing, which may differ between areas and between [communication providers]". [1.32]

²⁸ Ofcom "Super-fast broadband – Context and summary for Ofcom's consultations on wholesale local access and wholesale broadband access markets", 23 March 2010.

62. Accordingly, Ofcom proposes a combination of remedies: both "active access" and "passive access". As we say earlier, Ofcom's intent to: i) support the development of a mixed economy of active and passive based competition; ii) to recognise the importance to UK consumers of securing both investment and competition and, iii) more generally ensuring that its approach is flexible enough to respond to differences in market conditions across the country, is understandable and a direction of travel which we support.

The combination of remedies

- 63. O2 recognises the balance Ofcom seeks to strike in the combination of remedies on BT outlined in the WLA Consultation.
- 64. As above, we note that Ofcom conclude in respect of active access remedies:

"the evidence suggests that where BT deploys an NGA network, the most cost effective and straightforward way to support competition is to allow OCPs to access that new network, rather than to invest in their own parallel NGA infrastructure. This is why we are proposing the VULA obligation on BT." [1.27];

65. And that in respect of the passive remedies Ofcom propose:

"As well as providing OCPs with the opportunity to compete with BT's and Virgin media's NGA deployments, these WLA remedies [physical infrastructure access and sub loop unbundling] will give OCPs the opportunity to deploy NGA services. We consider that having a choice of remedies available to suit different location is in the best interests of consumers across the UK, and may help to limit the prospects of a digital divide in the delivery of NGA services."

66. O2 believes LLU provides a clear signal as to the opportunities for competition which passive access solutions can engender. Nonetheless we also recognise the rationale Ofcom cites in respect of active access solutions.

In providing opportunity for a mixed economy, it is essential that not only does Ofcom ensure both active and passive remedies are "fit for purpose" but also finds the right overall balance with these remedies, In addition, it is key to ensure that opportunities for competition and investment are not foreclosed.

67. Ofcom notes "It should be acknowledged that there are challenges in developing competition bases on SLU or PIA. However, we nevertheless believe that these remedies could have a significant role to play" [1.32]. We share this view. But we are also concerned to ensure that the opportunities are not foreclosed. Indeed, as Ofcom outlined in its Superfast Broadband Statement:

"In order to retain the possibility of future passive competition in fibreto-the-cabinet there may be opportunities to design network upgrades in a manner that avoids unnecessarily foreclosing the possibility of such competition. Simply by taking account of the prospect of later competitive entry, design principles might be adopted which give rise to very little or no additional cost at the time of initial deployment but that lower entry barriers subsequently." [1.27]²⁹

68. These limitations are discussed in greater detail in the remainder of this response.

²⁹ Delivering super-fast broadband in the UK, Ofcom Statement, 3 March 2009 http://www.ofcom.org.uk/consult/condocs/nga_future_broadband/statement/statement.pdf

SECTION 3: OFCOM'S PROPOSALS IN RESPECT OF VIRTUAL UNBUNDLED LOCAL ACCESS (VULA)

General

- 69. As we mention earlier, O2's approach to broadband has been all about making it easier and simpler for customers to connect and get a great broadband experience – including a hassle free "plug and go" router connection. Our focus on the "end to end" customer experience has found success and won us numerous accolades.
- 70. As an investor in LLU we welcome Ofcom's intent that VULA should provide access in a way that is similar to how LLU provides access in Current Generation Access³⁰ (i.e. in terms of flexibility etc).

VULA key characteristics

- 71. Accordingly, we welcome Ofcom's proposal to specify the characteristics of VULA under its remedy proposals in order to achieve this vision. We support Ofcom's desire to replicate the success of LLU.³¹ We also welcome Ofcom's view that "*the benefits of VULA would be greater if it is provided as a 'raw' product, which allows OCPs to decide key elements of their offering*" [7.226].
- 72. We agree that a product which provides communication providers with a sensible base upon which they can control and build differentiated propositions to as close as degree as possible as LLU is desirable. We therefore welcome Ofcom's proposals on VULA "key characteristics" [7.231].

³⁰ "The intention is that VULA would provide access to the NGA network in a way that is similar to how LLU provides access on the CGA network" [1.19].

³¹ As Ofcom emphasises: "LLU has proven to be an effective remedy in allowing competitors to offer competing services to consumers, based on CGA. Consumers have benefited from alternative providers offering different products and services and varying price levels. LLU also provided opportunities for innovation in the delivery and quality of those services, and in alternative providers own backhaul and core networks" [7.221]

- 73. However, we also believe that the characteristics set currently proposed has a number of limitations which undermine the ambition of supporting competition and customer choice in a similar fashion to LLU.
- 74. Our main areas of concern are set out below.

Wires only

- 75. We are concerned that Ofcom has not mandated "wires only". "Wires only" would enable O2 the flexibility to provide optimised CPE equipment for our customers (whereas at the moment, it is proposed BT will control the broadband modem). It would also reduce the blurring (in the customer eyes) of who is serving them. At the moment, under BT's current product, there is much room for BT to place itself between us and a customer.
- 76. Having discussed the consumer benefits of wires only³² [7.275], Ofcom remarks:

"whether greater consumer benefits could be realised by moving the active electronics from the NTE and into the CPE remains an open questions, the answer to which is likely to depend on a number of factors, such as operational issues and interface standardisation". [7.277]

77. And then goes on to conclude:

"It is our current understanding that the standards are not sufficiently mature, for either FTTC (VDSL) or for FTTP (GPON), to enable a wiresonly presentation to be readily implemented. This suggest that it would not be straight forward to adopt a wires-only interface for GEA today, whether it is based on FTTC or FTTP. In light of this, BT's proposed

³² "[OCPs] suggest that it would be simpler (for the consumer) and more efficient if the active (Ethernet) functionality of the NTE was included in the CPE. Thus only one "box" in the consumer premise would need to be locally powered. This has resulted in some CPs suggesting that the NTE should not contain any active electronics and should instead simply provide a passive connection to the wire or fibre – an arrangement commonly referred to as 'wires-only'". [7.275]

Ethernet presentation would seem to be a sensible option at present. However, it is possible that things may changes in the future making wires-only more viable. If this is the case then the situation can be reassessed." [7.278 and 7.279].

- 78. O2 believes that Ofcom is right to consider standards³³ and operational aspects. However, in contrast to Ofcom, we conclude that these aspects are sufficiently addressable to enable Ofcom to be clear that wires only should form part of the VULA characteristics to be delivered.
- 79. On the issue of interface standardisation, O2 believes that for FTTC, standards are likely to be stable within a sufficiently near term for Ofcom to include a remedy in respect of wires-only in this review. NICC contributions conclude that there is something like a 6 to 9 month timetable for stable and proven interoperability for VDSL2 and for GPON around 18 months away.
- 80. We believe that this should enable Ofcom to include in its remedies a requirement on Openreach to make the FTTC wires only product available in accordance with that period as part of a defined road-map evolution. In the interim, we also believe that BT could publish the interim standard it is using for its cabinet electronics so we can provide our own compatible CPE. A suitable type approval process for the same could be established. We fully recognise the need for VDSL modems to interwork effectively, what we are not content with is BT prescribing the CPE or sending their own engineer to install it. This is unnecessary interference with the downstream product.
- 81. The other question Ofcom raises is that of "operational issues". We are not convinced that the operational concerns raised by BT in its refusal of the industry's SoR are significant and indeed cannot be addressed relatively easily.
- 82. In our view, there are a range of customer (and competition) benefits that flow from a "wires only" VULA capability. These are discussed in Annex A.

³³ Indeed, in relation to standardisation, we believe that BT should follow all the relevant standards for VULA.

We believe the interface standardisation issues raised are addressable – stable standards are approaching and issues of compatibility can be addressed via publication of standards and equipment accreditation. The consumer electronics market is pretty adept at dealing with this. Accordingly, given the benefits of a wires-only solution, we believe Ofcom should move to include it within its FTTC remedies.

Virtualisation/ Service functionality attributes

83. We believe that a key characteristic of VULA should be to provide sufficient control to CPs over ports, quality of service and other service parameters to enable downstream service differentiation and changing customer demands. This is in line with Ofcom's view that "the benefits of VULA would be greater if it is provided as a 'raw' product, which allows OCPs to decide key elements of their offering" [7.226].

"Stand alone" VULA

84. We note that Ofcom intends that VULA should be a "stand alone" product [1.37]. We believe greater clarity would be helpful as to what Ofcom envisages "stand alone" means in practice.

Open ATA

- 85. We support Ofcom's proposal that to meet the VULA requirements, 'open ATA' (which include voice control for interconnecting CPs) will be a requirement if the voice ATA is embedded (as BT proposes in respect of FTTP).
- 86. For FTTC VULA we would expect BT to continue to offer the existing copper access solutions (WLR and FMPF), enabling customers to retain complete freedom of choice in their selection of telephony and broadband.

System interfaces

- 87. We believe that the evolution of the existing GEA FTTC/FTTP experience towards 'wires only' requires more product development than just the broadband technology specifications. In particular, the inter business systems interfaces require enhancement to enable communication providers to install, manage and operate the services. We consider that Ofcom should be giving the matter their attention, particularly with respect to the potential for BT to leverage SMP via its dominant but proprietary B2B system (EMP).
- 88. Accordingly, we believe that a clear roadmap is required detailing when specific system interface features to support wires only will be available. This must go hand in hand with the product development roadmap itself.
- 89. For example, the 'Wires only' systems interfaces should be enhanced in a timely manner to enable:
 - Dynamic Line Management including speeds/performance and profiles handling;
 - Test, diagnostics and reporting including statistics (real time and historic), reports and management tracking including outages;
 - Product management including the ability to manage end user package speeds, device identification while also allowing transparent through for CP specific device management; and
 - Appointing services to enable timely and customer friendly experience with migrations to/from GEA products.

Ofcom's assessment of GEA vs VULA

General

90. We welcome Ofcom's review of the degree to which Openreach's active product (GEA) meets Ofcom's VULA specification. Ofcom identifies some existing differences between VULA and GEA, which Ofcom proposes need to

be addressed (i.e. the GEA product needs to be developed to conform to the VULA requirements).

- 91. O2 welcomes, and supports such a gap analysis. We believe that some additional gaps over and above those which Ofcom identifies also need to be adequately addressed to create a "fit for purpose" VULA product.
- 92. Annex C provides more detail, but in summary, key gaps are set out below.

Service agnostic

93. As it stands, we do not consider that GEA would meet standalone VULA and open ATA key characteristics.

Un-contended access

- 94. We support Ofcom's proposal that a key VULA characteristic is an "uncontended access connection" coupled with control options [7.242].
- 95. However, Openreach's GEA product documentation makes clear that both FTTC and FTTP are based on some degree of contention³⁴.

Control of CPE equipment

96. As per the above discussion in relation to wires only, we believe GEA (FTTC and FTTP) fails to meet this key characteristic.

Roadmap for evolution of GEA to VULA

97. The above gaps need to be addressed if GEA is to meet the VULA remedy. We suggest that a roadmap is agreed which can form the basis of GEA to

³⁴ As we understand it from discussions with Openreach, the shared fibre link is Ethernet based, and the customer connection a CP buys has max and min speeds (40mbps and 15mbps) respectively. The max speed the end user gets at quiet times depends on the VDSL component and their distance from the cabinet, and may be less than 40mbps. However, at busy times the Ethernet component may presumably slow down (with increased latency), and BT won't invest in more capacity until the 15mbps is about to be breeched. So this means our customer experience depends on traffic levels from other CPs on the same cabinet. We would probably prefer to be able to buy uncontended bandwidth on the Ethernet link, and we decide how to share that between our customers. As such, we don't believe the product is, in practice, uncontended.

VULA. We would be happy to work with other communication providers and BT in this respect.

Pricing of Openreach's Generic Ethernet Access (GEA) products

General

- 98. We believe a balanced set of remedies is important. We believe that the approach to the remedies in relation to the definition of VULA (key characteristics) along with the approach to SLU and PIA should be complemented by an appropriate approach to pricing such that in combination the remedies form a coherent framework to address the market power identified.
- 99. Ofcom is proposing not to regulate VULA prices in order to avoid disincentivising BT's rollout of NGA and provide maximum pricing flexibility to BT. We support the proposal to give BT pricing flexibility. We also believe that it is important to ensure that the regulatory framework can respond appropriately to issues.

Risk of margin squeeze between VULA and downstream products

100. We believe Ofcom needs to give careful consideration to the risk of "margin squeeze" via the GEA product. Openreach's GEA product is not subject to a regulated price control and furthermore, Openreach pricing has a "variable" throughout element.³⁵ Both of which could be exploited. Indeed, we have provided Ofcom with modelling scenarios showing how the variable data throughput element can result in a margin squeeze – [3<....].</p>

³⁵ Openreach currently propose that GEA will incorporate an element of bandwidth usage charging, even when the service is connected to the infrastructure of the CP using it at the first Openreach Ethernet switch and, hence, there appears to be no directly related cost driver. As Ofcom makes clear, VULA should be un-contended [7.241] (and hence the VULA/GEA cost base is usage insensitive). The current throughput related GEA model is not consistent with dedicated/ uncontended/ local access VULA and does not appear to be linked to fundamental cost drivers.

101. Ofcom is of course on record regarding its approach to acting swiftly to prevent margin squeeze in its joint submission (with BIS) to the European Commission³⁶:

"...the UK recognises the importance of NRAs remaining vigilant to the risks in the distortions in competition that could result from particular pricing approaches applied by SMP operators. This could include issues of margin squeeze. Specifically, the UK strongly supports the need to be vigilant against margin squeeze practices. Indeed the UK NRA, Ofcom, has stated explicitly that in relation to NGA: "Wherever we [Ofcom] were to see evidence of or the risk of margin squeeze, we would expect to take action to prevent it. This may include to exercising our competition law powers and moreover reviewing our overall approach to pricing."

102. We believe that Ofcom should provide greater clarity/ guidance as to how it would deal with any margin squeeze. We support Ofcom's proposal to retain the requirement for reasonable charges in condition FAA11.2 and we suggest Ofcom could confirm how it might apply the reasonable charges condition to address margin squeeze issues.

Discriminatory pricing

103. Ofcom proposes to introduce a specific and strict "no undue discrimination" condition (FAA11.3) in respect of the provision of VULA (mirroring in effect the BT Undertakings EoI requirements) including price and service levels³⁷. [9.34]. It would be helpful if Ofcom could clarify whether this approach provides the same breadth of application as the more general condition it replaces (FAA3). For example, how will the stricter condition apply to pricing

 $^{^{36}}$ Joint UK submission from the Department for Business, Innovation & Skills and Ofcom to the second public consultation on a revised draft

Recommendation on regulated access to Next Generation Access networks July 2009

http://www.ofcom.org.uk/telecoms/discussnga/publications/UK_NGA_response_FINAL.pdf

 $^{^{37}}$ i.e. that BT shall not provide VULA services to itself unless it provides them to 3^{rd} parties at the same time on an EoI basis.

where BT's downstream divisions and other CPs consume VULA type products in different ways such as: under accredited install³⁸, variants of VULA offering CPs enhanced levels of control ('virtualisation') or where there are different consumption of bundles (e.g. VULA+WLR versus VULA+MPF)? If there is a narrower scope of application for the stricter obligation that will not address the likely manner in which VULA will be consumed, then would it not make sense for Ofcom to retain the more general non discrimination condition too?

Migration and switching

- 104. The pricing of migration and switching services can of course influence the dynamics of competition. For example, where new entrants are attempting to gain market share at the expense of incumbents, or different players are consuming different types of switching product.
- 105. We understand that in situations where there is no cost-orientation condition, Ofcom has previously used a 'reasonable charges' condition to impose costoriented prices for migrations. For example, in 2004, Ofcom intervened³⁹ to set charges for migrations in the wholesale broadband access market using SMP Conditions EA1.1 and EA1.2⁴⁰. In view of the importance of migrations in facilitating competition (and the risk of discrimination in favour of BT's own downstream business), Ofcom decided that it was fair and reasonable to set the charges on a cost-oriented basis. For clarity, it would be helpful for Ofcom to confirm that it will take the same approach with VULA migrations (including migrations to, from and between GEA/VULA).

³⁸ Currently for FTTC, at the time of service installation Openreach can also install the CP's equipment, including for example a BT Vision device

³⁹ 'Direction concerning ADSL Broadband Access Migration Services; and a Determination to resolve a dispute between Tiscali, Thus and BT concerning ADSL Broadband Access Migration Services Final Statement', Ofcom, 9 August 2004

⁴⁰ In the 2008 WBA market review, Ofcom decided to drop the "reasonable charges" wording from condition EA1.2 on the basis that to retain it would be at odds with Ofcom's decision not to impose price regulation. Although CPs argued for the wording to be retained, they were unable to identify any compelling scenarios where it would be needed, given that the obvious issues had already been addressed. The current situation with VULA is very different and more akin to the WBA market in 2005 – at such an early stage of market development many new issues can be expected to arise, and it is important for Ofcom to retain the flexibility to deal with them.



Remedies

- 106. In light of the above we have the following comments on Ofcom's proposed remedies.
- 107. We support Ofcom's decision to retain the reasonable charges wording in condition FAA11.2. It would provide greater certainty if Ofcom clarifies how it will use the condition to address margin squeeze issues.
- 108. Of com should clarify if it interprets the FAA11.2 "reasonable cost" condition to mean 'cost-oriented' pricing, for example, in respect of migration charges.
- 109. It is not clear if the stricter non-discrimination obligation Ofcom proposes in respect of VULA addresses adequately addresses all of the likely consumption patterns for VULA which would otherwise have been covered under the more general non-discrimination condition. If not, then both FAA3 and FAA11.3 are needed (or FAA11.3 needs to incorporate the breadth of FAA3).

SECTION 4: PASSIVE ACCESS REMEDIES

General

- 110. We support Ofcom's proposal to retain passive access remedies for Current Generation Access and to introduce passive remedies for Next Generation Access. The benefits of passive access based competition have been well recognised in relation to current generation competition and, moreover, notwithstanding the challenges for next generation access, there has we believe been a common recognition that the opportunity for passive access based competition must not be foreclosed⁴¹.
- 111. As the CSMG Report⁴² accompanying the WLA Consultation notes:

"In its 2008 consultation on super-fast broadband, Ofcom noted that whilst active and passive products both have different strengths, and a mix of both are likely to be necessary, Ofcom considers that "passive products offer the most desirable means to promote competition where economically sustainable."⁴³

112. And furthermore, as Ofcom set out in its Statement "Delivering Super-fast Broadband in the UK"⁴⁴:

"Ofcom has a central role to play in enabling both investment and competition in super-fast broadband. To do this, we will: ...safeguard the opportunity for further competition based on physical infrastructure, by facilitating fair opportunities for companies to synchronize their investments with BTs deployments, should reasonable demand arise, and encouraging network design that takes future potential competition into account"

⁴¹ Indeed, at [7.79] Ofcom observes "However, there has recently been a surge of interest in deploying networks to support higher speed applications and services. We therefore cannot rule out the possibility that SLU will become an attractive proposition at some point in the future.

⁴² http://www.ofcom.org.uk/consult/condocs/wla/csmg.pdf

⁴³ "Delivering super-fast broadband in the UK, Ofcom, 23 September 2008"

⁴⁴ <u>http://www.ofcom.org.uk/consult/condocs/nga_future_broadband/statement/</u>

113. As we have explained at the outset of this response, we believe the opportunities for a mixed economy of access solutions must not be foreclosed. Ofcom explains that it has yet to see significant demand for passive access at this stage (although, accepts this may change over time). Demand may naturally be uncertain at this stage, nonetheless, we believe that passive access is advantageous for a variety of reasons, not only those that Ofcom highlight but also without credible options (i.e. remedies) for passive access, Openreach has reduced incentive to develop and price fit for purpose active solutions. Indeed, as other providers' responses to Ofcom's Consultations in respect of varying BT Undertakings make clear, we are not alone in this view.⁴⁵

Current Generation Access

114. We support Ofcom's proposal to retain the existing remedies. As above, we believe LLU is a demonstrable success in terms of enabling the market to deliver choice and innovation for customers.

⁴⁵ As Ofcom's "Variation to BT's Undertakings under the Enterprise Act 2002 related to Fibre-to-the-Cabinet" June 2009 notes: "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 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."



Next Generation Access

Opportunities for a mixed economy of access products

- 115. Ofcom concludes⁴⁶ that whilst VULA may offer the best prospects for reproducing the kind of competition in NGA (at least in the short-to- medium term) that LLU has provided in CGA, there is nevertheless potential for other WLA access remedies to contribute to delivering competition and NGA investment. ⁴⁷ Ofcom notes that SLU can be used (in combination with duct access) to deploy an FTTC network and PIA can be used to deploy an FTTP network and/ or for FTTC backhaul.
- 116. Ofcom considers these remedies to be appropriate because they can enable other communications providers to deploy NGA infrastructure in areas where BT does not deploy its network or before BT deploys in some areas (VULA only allows competition at the pace at which BT rolls out its FTTC and FTTP network); technology developments could change the relative costs over time of PIA/ SLU compared with VULA; and the relative benefits of providing NGA services in different ways are currently unclear and the type of services and level of demand may change in due course to give more support to SLU and/or PIA.
- 117. O2 believes that Ofcom is right not to discount the opportunities for competition based on passive access but, at the same time, to be realistic as to the challenges involved. Indeed, Ofcom remarks: "passive remedies (SLU and PIA) "*could have a significant role to play*" [1.32].

⁴⁶ [1.27 – 1.30]

⁴⁷ "At this point, we consider VULA to be the primary focus of NGA competition, to supplement the continuing effective LLU remedy over at least the next four years. Our economic analysis suggests that VULA is very likely to be the most cost-effective NGA remedy to support competition. However, we think that both SLU and access to BT's ducts and poles could also play a part in supporting competition, as well as investment in NGA. Partly, this is because VULA will only be available where BT deploys its NGA network." [1.22]



SLU and PIA remedies are positive steps – but they need to be complemented by cabinet access arrangements and allow flexibility

- 118. We support Ofcom in proposing SLU and PIA remedies. However, we also believe that both need to be combined with a suitable approach to cabinet sharing/ co-location. Access to SLU and PIA is of little use for infrastructure competition if access to cabinet sharing or co-location is foreclosed⁴⁸.
- 119. There are a number of developments to the physical access remedies that would help self-build work more cost-effectively. We discuss these in respect of FTTC and FTTP below. Schematically, we see the key elements of a fit for purpose set of physical access to be as follows:

<mark>[⊁.....]</mark>

120. And in respect of FTTP

<mark>[⊁.....]</mark>

121. To help self build options work more cost effectively, the individual physical access remedies need to be fit for purpose and to form a coherent whole. At the moment, in the current framework, there remains the risk that the opportunity for self build will be foreclosed, notwithstanding Ofcom's assessment that propositions based on passive products may have an important role to play.

BT's cost structure for SLU continues to make self build challenging

122. No specific remedy is proposed for access to BT's FTTC cabinets. Whilst, BT has given voluntary undertakings to seek to meet reasonable requests under the BT Undertakings⁴⁹ and a general "access remedy" is proposed, we

⁴⁸ [BT's current deployment of FTTC retains its current passive cabinet and runs a tie cable to its new active cabinets, ours and/or theirs.

⁴⁹ As Ofcom notes under its Statement on the variation to the undertakings in respect of FTTC: 1.10 "A number of respondents wanted to see greater clarity in BT's commitments concerning co-location of

believe that the risk of foreclosing competing providers' options for cabinet sharing/own deployment needs to be addressed. Without this, in effect, there is a missing piece of the jigsaw (i.e. SLU and Duct access is of no use if there is insufficient space to either share or co-locate cabinets).

- 123. BT's current deployment of FTTC retains its current generation "passive" cabinets and runs a tie cable to new FTTC "active" cabinets. So for us to self build we need access to the passive cabinet (using SLU) to run a connection to our own equipment (either in a separate cabinet or located in BT's own active cabinets). However, BT's charges for elements such as tie cables, new footway box and (potentially a bigger cabinet (£8K-10K) if there is no space in the existing one⁵⁰) are a significant disincentive.
- 124. BT's product set hands the tie cable over in a footway box, and requires building a new box for every communication provider who wants to access a cabinet. There is no option to 'break-into' BTs existing footway box, or for the communications provider to build their own duct/cable route into the passive cabinet. This creates a high entry barrier, min £600/cab ground works, plus £760 for the tie cable.

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" http://www.ofcom.org.uk/consult/condocs/fttc/statement/

 $^{^{50}}$ If there is space but no free connectors, the Openreach price is £1829.11 for a connector upgrade. Standard Openreach sub-loop unbundled cable sizes are 20, 50 and 100 pair (a typical cabinet serves c300-400 subscribers), we would envisage an FTTC enabled cabinet to be dimensioned for c300 subs with a 100 pair cable initially deployed. Were BT to introduce a big tie cable for its own active cabinet, this would foreclose the market to other Communications Providers.

125. Furthermore, there is no option for us to self provide our own tie cable. BT charge between £27-42 per year rental for the tie cable. We would like to see the cost justification for this pricing level.

Opportunities for sharing space in BT's active FTTC cabinets

- 126. We would wish to see options for sharing space in active cabinets. However, this is not part of BT's current offering although there are commitments under the BT Undertakings (see above). Nor does BT plan to offer this we understand. However, in practice, we think a commercial product could be developed which would enable BT to invite commitment in good time from competing providers to take cabinet space as BT itself deploys. Such arrangements could reduce the costs (for both BT and the requestor[s]) and also address the bottleneck of cabinet space. Lack of cabinet sharing also leads to foreclosure issues with suitable sites there will be many locations where one active cabinet will work but two or more will not.
- 127. Telefónica is required to offer a commitment order process in Spain in some limited circumstances (although, deployment is not the same since Spain does not use cabinets to any significant degree). Furthermore, in Germany, the regulator has intervened to address the risk of cabinet foreclosure (both Vodafone and O2 filed cases). And, in relation to FTTP, the CSMG report "Economics of Shared Infrastructure Access Final Report"⁵¹ which accompanies the consultation notes:

"Whilst the acceleration of NGA deployment in Britain is likely to be applauded from several quarters, it presents a major challenge to the competitive structure of the fixed broadband sector. Specifically for BT's FTTP network, passive access in the form of local fibre unbundling is not practical given BT's technology choice of GPON. TO satisfy prospective regulatory requirements for wholesale access, BT

⁵¹ ibíd.

has instead proposed an active product, Generic Ethernet Access (GEA)." [page 8]

128. Accordingly, in the same fashion that we believe that any active access product should be fit for purpose, we consider that fit for purpose passive solutions are needed. Furthermore, the risk of foreclosure of passive solutions must be addressed. A possible option here could be to set a migration path to passive access on Equivalence of Inputs (EoI) in a similar fashion to the "Installed Base Migration Complete" (IBMC) concept established in the original BT Undertakings. In this manner, there would be a disincentive to foreclose access since BT would risk bearing the cost retrofitting its rollout to provide EoI access.

The use of PIA should not be restricted to certain services and architectures

- 129. Ofcom explains that PIA can only be used for competing FTTC/ FTTP deployment of broadband and telephony services and backhaul between cabinets and LLU exchanges. As we explain earlier, in practice PIA could offer self build deployment opportunities in combination with other elements such as SLU. In these circumstances, a provider might wish to connect with the BT duct network at an intermediate point and use the final drop, rather than to interconnect at the local exchange (as the current PIA remedy appears to assume). We do not consider that this type of option should be precluded. Indeed, intermediate connection options would afford opportunity for innovation in self build options (rather than the "one size fits all" approach which the current remedy appears to impose). We think that this will be beneficial.
- 130. Currently, Ofcom's approach limits PIAs attractiveness to mobile and thus does little to encourage greater platform competition. For example, Ofcom has previously been clear that NGA includes wireless deployments and furthermore, that the economics of PIA may well be attractive for mobile backhaul deployments. Why permit carrying traffic from a femtocell/ BT FON service yet prohibit carrying traffic from a base station? In Spain, access to ducts is not restricted and is used by Vodafone and Orange for mobile backhaul (other players are also using it for leased lines something Ofcom



also appears to bar). We see no reason why UK should have an artificial constraint here. PIA should be service agnostic (as per LLU and VULA).

131. Mobile deployments can encourage demand and thereby greater fibre availability. This is something to be encouraged rather than restricted. As Ofcom explained in its Statement on Delivering super-fast broadband in the UK Promoting investment and competition ⁵²:

> "The UK should not limit its longer term vision for super-fast broadband to today's plans or technologies. This is just the start. In the future, we would hope that companies continue to invest in new technologies including fibre-to-the-home and evolutions of other technologies such as mobile broadband, fixed wireless and satellite, to deliver ever improving qualities of service and new, innovative applications. Without this ongoing development, there is a risk that the potential consumer, citizen and economic benefits will not be fully realised." [1.44]

Dark fibre

132. We believe that the obligation of access to ducts/ poles could be complemented by an obligation of providing alternative ducts path or providing dark fibre in case there is no space in existing ducts/ poles. Dark fibre is required as an alternative in Spain (and may be reinstated as a requirement in Germany after previously being removed). The BSG PISWG⁵³ makes suggestions in this respect.

Exchange only lines

133. Exchange only lines (that do not pass via a Cabinet) currently form circa 11% of Openreach's copper access lines, and are typically used to direct feed close adjacent areas (e.g. town centres, larger properties/MDUs) and recent industrial estate developments. We believe that users served by such lines should have access to services comparable to those provided via FTTC/FTTP.

⁵² <u>http://www.ofcom.org.uk/consult/condocs/nga_future_broadband/statement/statement.pdf</u>

⁵³Broadband Stakeholder Group: Passive Infrastructure Standards Working Group

- 134. Openreach have proposed that exchange only lines would be served via Brownfield FTTP. However this relies on intensive deployment efforts to bring FTTP to the 'spot' coverage of exchange only fed lines. We believe these users would thus be very late on any deployment path (with surrounding cabinet areas benefiting from cabinet based service).
- 135. At present copper based VDSL2 services are not permitted to be provided directly from the exchange within the UK (unlike various other European countries). We propose that Ofcom should move to enable exchange based VDSL2 to be made available for exchange only lines

FTTP

- 136. Ofcom notes that under BT's GPON architecture physical unbundling of fibre is only possible at the passive optical splitter [7.43] and that "Given that there is likely to be a high number of passive splitter locations and that the process for disconnecting/ reconnecting end use fibres will require significant manual intervention, this type of fibre unbundling is likely to be costly and impractical". [7.44]
- 137. We also note that Ofcom also concludes that "the reality is that in the UK even in large metropolitan areas there is very little dark fibre deployed in eh access network. Dark fibre therefore does not present a realistic option for competition at this point in time." [8.18] Furthermore, that the technologies that may deliver wavelength unbundling are not expected in the timeframe of this market review but that this may become an effective remedy for a future review [8.19]. Furthermore, Ofcom generally considers that to the extent that VULA provides an effective access remedy, it would not be appropriate to require a multi-fibre access solution.



Roadmap for PIA – Reference Offer remedy

138. There will be a range of detailed implementation issues that will need to be dealt with as part of the Reference Offer (RO) process. Ofcom suggest BT and industry could start considering contents of a PIA RO before the formal RO process kicks in (any pre-work could shorten the formal regulatory process). We are supportive of this and we welcome BT's recent moves to establish industry workshops to begin this process. The Broadband Stakeholder Group (BSG) has also undertaken some work to develop a PIA service requirement outline⁵⁴. This work in many way mirrors the PIA remedy described in the Ofcom WLA Market Review and could act as the baseline from which a SOR definition can be built for discussion with Openreach as the basis for the RO (along with developing common engineering standards for network build and interconnect, and industrialising processes). Building on work done can help accelerate the timetable to completion of the RO. In addition, Ofcom has also recently published the Analysys Mason report⁵⁵, which examines the constituent parts of PIA operational processes:

> "When formulating the operational model for a duct access offer, it is important to clearly define its key constituents:

- framework to record infrastructure access requests
- mechanism for providing infrastructure plans
- approaches to determine available space and survey procedures
- approaches to and engineering principles for allocating space in ducts and poles
- procedures for cable deployments in shared infrastructure
- procedure to update infrastructure plans
- framework to monitor Service Level Agreement (SLAs)"

⁵⁴ BSG PISWG – Outline requirements for a network element "passive access" product set.

⁵⁵ http://www.ofcom.org.uk/consult/condocs/wla/operational_models.pdf

- 139. Analysys Mason concludes that whilst an iterative approach is likely to be optimal for developing the operational model (in part to avoid slowing down development of the PIA RO itself), consistent industry engagement will be essential. "*In order to facilitate the incremental development of the operational model, we recommend monthly meetings between the Openreach, the CPs and the regulator to provide feedback on operational issues and provide input into how the model could be improved.*"⁵⁶ We welcome Openreach's establishment of industry working groups.
- 140. Against this backdrop, we believe there is real opportunity to accelerate he timetable for RO preparation ahead of the regulatory timetable.

SLU pricing

141. BT's current deployment of FTTC retains its current passive cabinet and runs a tie cable to its new active cabinets. GEA FTTC effectively utilises Sub-Loop Unbundling (SLU) with added cabinet based VDSL modem and backhaul to the appropriate local exchange. However, as it stands, SLU is not an Equivalence of Input into downstream products and Ofcom provisionally concludes [8.61] that BT's GEA should not have to consumer upstream products (e.g. PIA and SLU) on an Eol basis. Although, BT's Undertakings will, in Ofcom's view, require BT to provide FTTC passive products using the same components, processes and systems as BT uses (where practicable and cost efficient). In terms of pricing, Ofcom notes:

> "We are aware that recently some CPs have expressed concern over some of BT's published SLU charges. These concerns seem to mainly relate to ancillary services, such as surveys and footway box and duct re-arrangements, rather than the core SLU access services. We consider that, in the short term, the specification and charges for the various ancillary services will be best resolved through industry negotiation backed up by our dispute resolution powers. In the longer term, if sufficient demand for SLU does materialise it may then be

⁵⁶ <u>http://www.ofcom.org.uk/consult/condocs/wla/operational_models.pdf</u>



appropriate to consider the case for introducing an SLU charge control' [7.1.1].

- 142. And, "we consider that the charges for SLU (if it is required) should be cost orientated on the basis of LRIC+, but that it is too early to set charge controls. [7.104].
- 143. Whilst we note Ofcom's rationale, we nevertheless remain concerned at SLU pricing. Per subscriber connection/cease charges are high as BT maintains the need to send an engineer to the cabinet to execute each work item individually. Effectively completing less work than for an equivalent FTTC connection, for a premium price. There is no option for volume orders, or coordinating work between communications providers (including BT Retail) or aligning works orders with routine maintenance visits. Any upside there is windfall for BT.
- 144. We do not believe that SLU is "fit for purpose". Given the likely combined use of PIA and SLU we believe Ofcom could usefully facilitate industry-BT engagement over SLU as it is doing for PIA. We see three main strands to such engagement:
 - i) Fixes to the existing SLU product set commercial, technical and process
 –addressing the non-exhaustive list of issues mentioned above;
 - New elements needed to extend the SLU product set: for example different permutations of active cabinet sharing;
 - iii) An appropriate suite of options for backhaul: these might include variants of BES/Gig E, PIA based service elements, or access to dark fibre.
- 145. We would therefore support BT-industry negotiations over the SLU product definition, with the aim of establishing within a fixed timescale a clear view of the product set that would best meet industry requirements. The OTA has previously played an invaluable role in resolving process issues associated with LLU, and we believe their involvement in any industry engagement with BT over the SLU product could be equally beneficial. In summary, we believe that Ofcom should:

- Set a timetable for Openreach to negotiate with industry the characteristics of a fit for purpose SLU product set (in the same way as it is proposing to mandate for PIA);
- ii) Allocate OTA resource to facilitate industry engagement with BT over SLU product and process issues.

SECTION 5: CONCLUDING COMMENTS

- 146. As we explain earlier, this is an important review. Not only for current copper based networks (CGA) and next generation access (NGA) networks but also, as Ofcom emphasises, for customers: *"These proposals matter for consumers because ultimately they will affect the price, choice and availability of critically important retail services..."* [1.2].
- 147. O2 welcomes this customer focus. We are proud that O2's broadband products and services have won many accolades. Our commitment to customer is at the heart of what we say in this response, particularly in relation to the appropriateness of Ofcom's VULA and PIA remedies along with Ofcom's assessment as to how well Ofcom's existing products meet those regulatory remedies.
- 148. It is important to ensure that the remedies are right for the evolution of the market. And furthermore, to ensure that options for further or developing future competition are not foreclosed. We believe developments are necessary to VULA, PIA and SLU to make them truly 'fit for purpose'.
- 149. In this response we make a number of recommendations in relation to Ofcom's approach. We would be very happy to discuss them in detail with Ofcom.

Telefónica O2 UK Limited June 2010

ANNEX A

Generic benefits that accrue from a "wires only" option⁵⁷

- i) Customer Experience. A single box solution is the current operating model for DSL-based broadband across the UK. Consumers expect a single box in their home. Deviation from this core principle is likely to lead to considerable confusion through the entire customer journey, from provisioning through support.
- Enhanced provision process (e.g. to allow migration from existing offering to VULA/GEA to be better managed from the end user perspective) due to avoidance of dual-installer scenarios and 2-box test, signoff and interaction management.
- iii) A single device is greener. It requires fewer materials and power consumption than a 2-box solution.
- iv) A single device is more cost effective, due to consolidation of casing, power, electronics and peripherals. To illustrate the point, 40% penetration of Openreach's 10m homes passed by 2012 could quite conceivably result in CPE expenditure of >£250m across Openreach and Industry. Reducing this total cost base is to the benefit of both industry and consumers.
- v) CP branding. CPs invests a considerable amount in the positioning of their brands to consumers. This is diluted by the presence of Openreach branded and/or unbranded broadband hardware; given that CPs provide the service, CPs should be able to position a clear undiluted brand within the home.
- vi) Operational costs. Introducing additional single points of failure is inevitably going to increase the operational cost to both Openreach and CPs. Allied to this, a single device managed by the CP will result in simpler support processes, quicker diagnostics and improved CP performance monitoring. The net effect will be fewer faults passed through to Openreach. We recognise the concern of Openreach to provide a stable service, however standards-based technology solutions are available that would facilitate Openreach being provided with the

⁵⁷ Source: Catalyst Communications Consulting Limited analysis in consultation with BSkyB, Cable and Wireless Worldwide, Orange, O2 and TalkTalk.

relevant device information by CPs to enable it to manage its copper lines effectively.

- vii) Service innovation. It is within the realm of the CP to provide services to customers. A 2-device solution will continually beg the question of who is providing services to end users. We believe this is not in industry's interests. A notable example is the specific innovation opportunity relating to 3G around dynamic and seamless fixed-mobile convergence. In a 2-box solution, the CP Ethernet router has to control this switchover one step divorced from the last mile status.
- viii) The corollary to this is that a 2-box solution leaves a wide open door for BT to continue to stack functionality into their electronics, stymieing innovation by other CPs. For example, whilst CPCA is welcome given the current operating model, the development obstacles would fall away were wires-only to be present, enabling CPs to innovate on voice and messaging (video calling, wideband codecs etc...)
- ix) Unambiguous 'Demarcation' points can be agreed to smooth out fault diagnosis responsibility. Currently, within exchange-based broadband the NTE5 is the demarcation; this is 'blurred' with the GEA modem and also with the data extension kit.
- x) An early transition to the 'wires-only' model will enable an eased migration from the existing trial/pilot launch base. Delay will require a higher impact, managed transition for an increased/established user base.
- xi) A mobile provider wishing to use VULA for cell site backhaul would rely on CPEs with special functionality not found in residential devices. Being dependent on Openreach to develop and deliver CPEs with this capability constrains a mobile provider's options and slows deployment, and experience has shown that the number of changes to the service supplying a typical cell site is such that the simpler the service the better.



ANNEX B

Standards Status⁵⁸

FTTC "wires-only" status

Standards

The standards for VDSL2 have been published by the ITU and ETSI and of these the key physical layer transmission standards upon which interoperable silicon depends have been available for three to four years.

The UK ANFP was updated to incorporate VDSL2 three years ago.

In addition, Ethernet OAM standards from the ITU and IEEE have been published for three or four years and VDSL2 modems including proven and working Ethernet OAM functionality are already being deployed in the UK.

REFERENCES

- [1] ITU G.993.2, Very high speed subscriber line transceivers 2 (VDSL2), 2006
- [2] ITU G.993.2 Amendment 1, Very high speed digital subscriber line transceivers 2 (VDSL2) Amendment 1, April 2007.
- [3] ITU G.997.1, Physical Layer Management for Digital Subscriber Line (DSL) Transceivers, 2009
- [4] ETSI TS101271 v1.1.1, Access Terminals Transmission and Multiplexing (TM); Access transmission system on metallic pairs; Very High Speed digital subscriber line system (VDSL2), January 2009.
- [5] NICC ANFP issue 4, ND1602, March 2007.
- [6] IEEE 802.1ag, Virtual Bridged Local Area Networks Amendment 5: Connectivity Fault Management.
- [7] ITU Y.1731, OAM Functions and Mechanisms for Ethernet-based Networks, 2006

⁵⁸ Source: Catalyst Communications Consulting Limited analysis in consultation with BSkyB, Cable and Wireless Worldwide, Orange, O2 and TalkTalk.

Interoperability Test Plans

The Broadband Forum Functional and Performance test plans for VDSL2 have been thoroughly worked through by all key VDSL2 silicon and equipment vendors over the last three years. The Functionality test plan was published in 2009 and the Performance test plan is expected to be published in March 2010.

REFERENCES

- Broadband Forum (BBF) Technical Report, VDSL2 Performance Test Plan, TR-114, Expected March 2010
- [2] Broadband Forum (BBF) Technical Report, VDSL2 Functionality Test Plan, TR-115, November 2009

Industry Plugfest event support

The Broadband Forum has organised seventeen VDSL2 interoperability plugfests over the last four years focussing on both chipset vendors (eleven events) and system vendors (six events). These plugfests have been used to enhance a specific interoperability test plan which has then be used to guide the development of the formal test plans for VDSL2.

REFERENCES

[1] Broadband Forum (BBF) PD-139: Interoperability Test Plan for VDSL2 Plugfests

FTTP "wires-only" status

WT-247 - Part1 (ONT) GPON Conformance Test Plan – Part 1 (ONT)

This test plan describes a series of tests that may be used to verify whether particular GPON ONT implementation conforms to TR-156 functional requirements and adopts the configuration recommendations described in the ITU-T "OMCI Implementer's Guide".

WT-247 – Part 2 (OLT) GPON Conformance Test Plan – Part 2 (OLT)

This test plan describes a series of tests that may be used to verify whether particular GPON OLT implementation conforms to TR-156 functional requirements and adopts the configuration recommendations described in the ITU-T "OMCI Implementer's Guide".

WT-255 GPON Interoperability Test Plan

This test plan describes a series of tests that may be used to verify whether particular, identified combinations of GPON OLT and GPON ONU implementation are interoperable when configured for the particular service deployment models described within TR-156. The prerequisite to go through WT-255 is to be compliant with WT-247 (part 1 and part 2)

Timetable for standards completion:

- WT-247 Part 1 ONT Conformance by end of 2010
- WT-247 Part 2 OLT/ONT Conf by mid 2011
- WT-255 GPON Interop in 2011
- NOTE Some testing for WT-247 will begin in 2010



ANNEX C

BT's GEA products and the proposed VULA characteristics – gap analysis

The following analysis⁵⁹ highlights those areas in which BT's GEA product fails to meet the proposed VULA characteristics set out in Ofcom's remedy proposals.

1. Local: interconnection should occur locally

Key Characteristic: Interconnection, by the access seeker, should occur locally; that is at the first technically feasible aggregation point. In practice this is likely to be in the local serving exchange where the first Ethernet switch is located.

Ofcom assessment: "It is our understanding that BT's GEA product, as provided by Openreach, extends between the end user premise and the local serving exchange. In the case of FTTC the local serving exchange is the site where FTTC deployments are aggregated. In the case of FTTP the local serving exchange is the site where the FTTP 'head end' equipment is accommodated. Further, FTTC and FTTP will share the same local serving exchanges. BT's current plan is to have about 800 to 1000 of these local serving exchanges. These proposed GEA arrangements would seem to be compatible with our VULA requirements." [7.268]

Conclusion: GEA is broadly compliant with the VULA attributes

2. Service agnostic: should be able to support a multitude of services

Key Characteristic: VULA should be a generic access product. That is, it should provide service agnostic connectivity. VULA should therefore only be limited by the inherent capabilities of the access technologies deployed.

⁵⁹ Source: Catalyst Communications Consulting Limited summary in consultation with BSkyB, Cable and Wireless Worldwide, Orange, O2 and TalkTalk.

Ofcom assessment: 'In the case of BT's FTTC-based GEA products the basic connectivity does appear to be service agnostic. However, there is potentially an issue in the way that BT is tying the availability of this product to other products/services, such as MPF or WLR. In order to meet the VULA requirements BT would need to make a stand-alone version of this product available." [7.269]. In the case of BT's FTTP-based GEA products, again the basic connectivity does appear to be service agnostic. However, there is a complication in that BT has chosen to embed an ATA into the NTE, which currently is a necessary part of the GEA product. Although, this voice ATA does not belong in this market, we are aware that there are good economic and commercial reasons for embedding it in this way. Therefore, to the extent that a voice ATA is inherently embedded into the GEA product we consider that access to this should be made available in accordance with the VULA requirements. In practice, this would mean that the voice ATA functionality should not extend beyond the local serving exchange and control over the voice ATA functions should be provided to the interconnecting CP. [7.270]

Gap analysis - FTTC – in some senses, the "full MPF" equivalent "standalone VULA" is needed to replicate the full range of inputs in the "LLU world", but it forces the CP into a "derived voice" rather than fully PATS compliant "baseband voice" telephony offering. However, there doesn't seem to be an alternative approach, other than to revert to WLR. FTTP – "open ATA" and "wires only" offer contrasting means of making the access product more service agnostic.

Conclusion: GEA will be broadly compliant when "standalone" and "open ATA" are available.

3. Un-contended: dedicated capacity should be available to the end user

Key Characteristic: The connection, or capacity, between the consumers' premises and the local serving exchange where interconnection takes place should be dedicated to the end user, i.e., the connection should be un-contended.

Ofcom assessment: It is our understanding that BT's GEA products, based on both FTTC and FTTP technology, are ostensibly un-contended. That is, there is sufficient capacity in the access network to ensure that the peak demands on end users can always be supported.

Conclusion: The Ofcom position appears to be incorrect – GEA is based on some degree of contention according to the published service descriptions:

For FTTC, the GEA product documentation states:

"Within the overall Peak Information Rate for the product, a 20Mbit/s 'Prioritisation Rate' (PR) will also be applied. When a CP sends traffic at an instantaneous rate above the Prioritisation Rate, this traffic may be discarded if there is Openreach **network congestion**.

We would expect that under congestion, each GEA Data Port will receive the lower of the Prioritisation Rate, or their current line rate.

The CP can mark traffic as either "Can drop" or "Should not drop" using 802.1p markings as described in the SIN. This marking is optional. Where the CP has marked frames as "Should not drop" in the CVLAN, "can drop" and unmarked frames are always dropped from that CVLAN first. The use of frame marking by a CP for one end user has no impact at all on traffic for any other end user."

For FTTP, similarly:

"Within the overall Peak Information Rate (PIR) for the product, a downstream 20Mbit/s 'Prioritisation Rate' (PR) will be applied. When a CP sends traffic at an instantaneous rate above the Prioritisation Rate, this traffic may be discarded if there is **network congestion**. We would expect that under congestion, each GEA Data Port will receive the Prioritisation Rate.

The CP can mark traffic as either 'Can drop' or 'Should not drop' using 802.1p markings. This marking is optional. Where the CP has marked frames as 'Should not drop' in the CVLAN, 'can drop' and unmarked frames are always dropped from that CVLAN first. The use of frame marking by a CP for one end user has no impact at all on traffic for any other end user."

Conclusion: **GEA fails to meet the VULA characteristics**. VULA symmetry and contention obligations should, in the first instance, only be constrained by the technical capacity of the network architecture. It is important to differentiate between innate technology constraints and those that are the result of specific OR design decisions which may be driven by short term cost minimisation concerns, but could also be the result of more strategic design choices to limit the capability of the downstream CP to use VULA as an input for some types of service deployments. A more appropriate approach would be for Openreach to provide the service unrestricted to downstream suppliers. Each end user connection should be uncontended and offered as a single access product to the Service Provider, subject to a proper evaluation of network economics and feasibility.

For FTTC, it may only be a question of uprating the backhaul capacity from the street cabinet. For FTTP, constraints on splitter ratios and individual end user bandwidth limits will need to be agreed.

4. Control of access: sufficient control of the access connection should be made available

Key Characteristic: CPs would need freedom of control in order to provide different types of service and, potentially, also vary the QoS parameters in delivering those services to enable them to effectively compete with other providers.

Ofcom assessment: In the case of BT's FTTC-based GEA products, we understand that BT is currently offering three generic profiles, each with a different trade-off between line speed and line stability. In addition BT is applying dynamic line management to the connection. This would appear to offer the interconnecting CP with a reasonable level of control. However, should additional profiles or greater

control be required by CPs we would expect BT to met reasonable requests. BT's FTTP-based GEA products are not as advanced as its FTTC-based GEA products and consequently there is less information available about control options associated with BT's FTTP-based GEA products.

Gap analysis: **GEA fails to meet the VULA attributes.** The current committed Openreach product plans fall well short of what is technically and operationally feasible. Whilst discussion continues on how profiles can be managed and real-time performance monitored and managed, there is no current product road map that demonstrates convergence with reasonable CP expectations.

5. Control of Customer Premises Equipment ("CPE"): sufficient control of CPE should be available.

Key Characteristic: Allowing CPs the freedom to choose CPE provides the flexibility needed to ensure CPs are able to differentiate how they deliver services to their customers. Restricting the type of CPE (other than in accordance with generally recognised and accepted standards) would limit CPs ability to offer differentiated and innovative products.

Ofcom assessment: "BTs current presentation of its GEA products is an Ethernet port on the NTE. Ethernet is a common and well understood standard and so it should be relatively straight forward to connect GEA to consumer premises equipment (CPE), such as computers, routers, TV decoders, etc. It is our current understanding that the standards are not sufficiently mature, for either FTTC (VDSL) or for FTTP (GPON), to enable a wires-only presentation to be readily implemented. This suggests that it would not be straight forward to adopt a wires-only interface for GEA today, whether it is based on FTTC or FTTP. In light of this, BT's proposed Ethernet presentation would seem to be a sensible option at present."

Conclusion: FTTC fails to meet the VULA attributes, given the current status of standards. FTTP is currently compliant on the same basis, but Ofcom should impose an obligation to provide "wires only" when standards allow, perhaps with an appropriate "trigger". The NICC contribution from Gavin Young et al,

established a 6 to 9 month timetable for fully stable and proven interoperability for VDSL2. That should mean that Ofcom mandate Openreach to make the FTTC "wires only" product available within that period as part of a defined road-map evolution. FTTP will take longer but Ofcom should still seek a clear and unequivocal commitment from Openreach to implement. Additionally, delivery of an "Open ATA" capability via the CPCA work should not be used as a rationale for not providing "wires-only".