25 May 2006

BT'S RESPONSE TO OFCOM'S CONSULTATION "TELEPHONE NUMBERING: SAFEGUARDING THE FUTURE OF NUMBERS"

BT would welcome any comments on the contents of this document which is also available electronically at http://www.btplc.com/responses

Comments should be addressed to Howard Erdunast, BT Group Regulatory Affairs Department, pp C81, BT Centre, 81 Newgate Street, London EC1A 7AJ, or by e-mail to howard.erdunast@bt.com.

EXECUTIVE SUMMARY

ES1. BT welcomes Ofcom's wide ranging numbering consultation, "Telephone Numbering: safeguarding the future of numbers". Ofcom's proposals in this consultation generally comprise well-focused tactical measures that seek to address today's issues against a medium term view. BT believes this is the right approach given the current rate of change in the telecoms industry.

ES2. In general, BT's response could be characterised as follows:

- highly supportive of Ofcom's proposals in relation to both geographic number management and protecting consumer interests
- supportive of some of Ofcom's proposed changes to the National Telephone Numbering Plan (NTNP) but concerned by others, particularly the opening of the 03 and 06 ranges.
- uncertain that the market based mechanisms – charging for numbers - discussed would help meet consumer needs or lead to behavioural changes that would positively influence number husbandry, but not opposed in principle

ES3. Ofcom appears to have two main outcomes in view for this consultation: Firstly to create a more customer-oriented framework for understanding numbering; and, secondly to avoid unnecessary enforced number changes for customers. BT fully supports Ofcom in its wish to avoid geographic number changes; for example, by limited extension of conservation measures, and where this proves insufficient, the use of overlay codes. However, to create the clarity and branding that Ofcom proposes, those with existing numbers would need to change them for ones in a conformant range. BT does not believe that Ofcom's proposals here justify such changes; yet without them the outcome would have too many exceptions to be helpful to end users. So, whilst the branding proposals would be highly desirable if we were starting from scratch, the reality is that they do not reflect the true situation if customers are not to change their numbers.

ES4. Happily, in the current framework, services that occupy the same ranges do have more in common with each other on closer inspection than is apparent from Ofcom's description. BT sets out a table at pages 11-16 which shows a comparison of Ofcom's Scheme and BT's holistic view of the current Scheme, with relatively minor amendments to reflect those proposals that we believe will deliver benefits to customers. BT does not therefore agree that the proposed scheme would significantly increase real customer understanding of numbering, services and tariffs

unless some users were to be forced to change their numbers – which is not acceptable. Even supposing that absolute clarity could be made a reality, given the pace of change in the market, BT fears the proposals would reflect usage for possibly only a very brief period. Therefore they are not future-proof.

ES5. We do have concerns at what appear to be Ofcom's optimistic expectations about next generation networks (NGNs). NGNs have the *potential* to support a wide range of new service functionality which may subsequently suggest changes to the use of the UK numbering space. In their first iteration, this may not be deliverable however as BT's initial NGN deployment will be focussed on the replication of existing PSTN capabilities. Enhanced numbering and routeing capabilities actually deployed in the network will require later development and there will be dependencies on vendors. BT sees Ofcom's proposals to open 03 and 06 forthwith as risking foreclosure of options in an unpredictable future; 06 for individual numbering allocated to end users may be such an example, but we do not believe the time is yet right, nor that there is any compunction to predetermine this at this stage. We therefore do believe that 03 or 06 should be reserved for future use.

ES6. We are concerned that Ofcom generally is underestimating the practical and commercial disruption, for customers and providers, of opening and closing new 0X ranges, both at home and overseas. This has already been experienced with the slow take up of the 056 range, and slow reduction of use of the 0500 range. New ranges are not rapidly recognised or understood by customers and take some years to become established. This is why we believe existing numbers should be used more efficiently and that no new number ranges should be opened now.

ES7. Turning to the matter of abuse, BT does not believe that number changes are an effective way to address underlying problems arising from abuse. No number range is immune from the potential for scams, so all ranges should be included in Ofcom's enforcement plans as these problems can and should be addressed direct by swift enforcement action. BT is therefore supportive of any reasonable measures that Ofcom can take to minimise the risk of numbers being misused, allocated to parties with a track record of breaching the ICSTIS code, or infringing other numbering rules and so negatively impacting customers. Ofcom has already said it will do more to address these issues in other consultations.

ES8. Ofcom's market research indicates the need for it to listen very carefully to end users, both called and calling parties. BT believes, for example, that the market research shows that business and residential customers continue to value the reliability of the geographic code as an indicator of location. We know that the link between geographic numbers and location information could weaken with inter-platform number portability over time but nevertheless new customers should be required to have an address in a code area to avail them of its numbering. This is technologically neutral, justifiable and consistent with recent Ofcom decisions, maintaining consumer trust in geographic code areas. Further changes can then be planned in an evolutionary manner.

ES9. Recent Ofcom decisions value geographic numbers more for their tariff than their role as indicators of location. BT believes that this suggests a demand for a new type of non-revenue share range to be available, used for both outgoing and incoming service, without location connotations. It would be tariffed at geographic rates, included in call plans, and designated a "countrywide" location, rather than given a regional or sub-regional identity. Such a range would require a UK address. It would not require 03 to be opened.

ES10. Ofcom's consultation has caused particular concern amongst customers with 05 numbers. With further relevant applications beginning to flow through, BT and its customers would welcome a public commitment from Ofcom to support the 05 range, which is not "reserved for future use" as stated, but has thousands of allocated numbers.

ES11. BT believes that branding 07 as "mobile" is not technologically neutral and is as uncomfortable with 07 being branded "mobile" as Ofcom seems to be with "01/02" being branded "fixed" at a specific location. Nor does it fit well with Ofcom's recent decision to allow mobile services to use geographic numbers, the result of which in any event will undermine the mobile branding of 07. BT believes 07 should be for "individual numbering" or "find me anywhere numbering"; mobile, 070 Personal numbers and radiopaging numbers would fit either description and we note the similar tariffing. With the exception of moving the services to 06, BT does however support other measures Ofcom proposes to curb the abuse of 070 numbers,

ES12. There is a limit to how much tariffing information end users are likely to derive beyond the first one or two digits, as fine gradations are difficult for customers to comprehend and recall. However, a simple scheme, such as Ofcom's proposal that a separate 09 sub-range eg, 098, should in future be set aside for "adult services", would in our view be beneficial.

ES13. In principle, based on the detail provided, BT believes that the level of charges proposed is in our view unlikely to materially influence behaviour and therefore improve number husbandry. This is not of itself a problem since there is no underlying shortage of numbers. However, Ofcom will need to retain numbering expertise and resources to manage a “command and control” system alongside a charging system, to provide a clear policy steer as well as to prevent customer detriment and number exhaustion, the risk of which might otherwise increase in a charging environment. Against this backdrop, we believe that charging would be unlikely to achieve its stated objective.

INDEX

Introduction

1. Ofcom has in this consultation paved the way for the next steps in the evolution of the National Telephone Numbering Plan (NTNP) and the National Numbering Scheme (NNS). As Ofcom states in the summary, numbers are a critical national resource. They are the gateway to communication and provide access to people, services and information. Availability and stability of numbering are valued, as is the information that numbering may convey about the characteristics of the underlying services. BT looks forward to Ofcom's consultation this summer on definitions and detailed revisions to the NTNP. In our view the success or otherwise of differentiating ranges and simplifying the NTNP is to a large extent dependent on this.

2. In effect, Ofcom has combined four consultations into one. In general, BT's response could be characterised as follows:

- highly supportive of Ofcom's proposals in relation to both geographic number management and protecting consumer interests

- supportive of some of Ofcom's proposed changes to the National Telephone Numbering Plan (NTNP) but concerned by others, particularly the opening of the 03 and 06 ranges. BT notes that for the proposals to achieve the clear framework Ofcom seeks, customers would be required to change their numbers. BT does not believe forced number changes are warranted by the objective of what is only arguably a clearer framework, which itself could be short-lived

- uncertain that the market based mechanisms – charging for numbers - discussed would help meet consumer needs or lead to behavioural changes that would positively influence number husbandry, but not opposed in principle

3. BT would be happy to meet with Ofcom and/or other stakeholders to discuss its proposals, and provide relevant supporting evidence in more detail.

Overview of the Numbering Plan

4. Ofcom have set out some imaginative yet appropriately bounded proposals, which BT believes form a strategy capable of addressing today's issues. We are pleased in particular that Ofcom has resisted the temptation to set out a long term vision, although we do have concerns at what appear to be Ofcom's optimistic expectations about next generation networks (NGNs), especially as at the outset they will simply be PSTN replacements. Annex D

is attached containing relevant technical background to this response, relating to both legacy networks and BT's NGN.

5. As stated above, we have some concerns that the top level structure that Ofcom proposes over-simplifies the Numbering Scheme in a manner that on the face of it makes things clearer, but the reality is somewhat different. In our view, distinctions overlap between and within ranges by location, tariff and service. This is as true of Ofcom's proposed Scheme as of the existing Scheme and attempts to change this will prove futile for anything longer than a brief period, given the pace of change and the reality of number portability.

6. BT shares Ofcom's desire for number changes to be avoided. BT has identified three drivers, none of which in BT's view justifies number changes in the foreseeable future.

7. Number changes could be driven by a need to address number shortages, creating new numbering. As a result of numbering policy over the past sixteen years, considerable unused space remains in the six open number ranges, let alone the three undesignated ones. There is no need for customers to change numbers to generate more numbering space.

8. Number changes could be driven by a desire to eradicate problems unassociated with numbering itself. BT does not believe that number changes can alleviate problems, such as those that have affected 070. Any problems that exist should be resolved by measures directly targeted at the problems.

9. Additionally, BT does not believe that forced number changes are justified at the current time by consumer benefits that may arise from branding number ranges and indeed Ofcom has not sought to quantify such benefits.

10. However, any benefits that Ofcom envisages from its proposed branded structure can only be achieved to a sufficient extent to help customers understand numbering better by requiring customers to change numbers to those conforming to the new framework. BT believes that this would be too disruptive to end users to be justifiable anyway, but in view of this it is hard to see how the whole branding idea could work. BT's conclusion is that to a large extent, the adage "if it ain't broke, don't fix it" applies to the Numbering Scheme.

11. In view of this, we set out a table below which describes how numbers are currently used, Ofcom's proposals, the problems BT perceives with Ofcom's proposals and a draft BT proposal.

12. Our proposal seeks to address Ofcom's desire to improve transparency for consumers against the backdrop of the compelling requirement to avoid unnecessary number changes. BT's proposed scheme would be simple to

explain and understand, minimises impact upon customers and preserves more clean options for the future. It should be noted that BT would support an explicit clear ban on all forms of revenue share with third parties in all ranges except 08/09 and, and as we have stated, no forced number changes for existing customers in any ranges.

AN ANALYSIS OF OFCOM'S PROPOSALS FOR THE NUMBER SCHEME AND SUGGESTED VARIATIONS

13. Ofcom's proposed Numbering Scheme does not include mobile short codes and access codes (short codes starting with the digit "1"). BT believes that a customer-focused number information chart should be comprehensive and, if developed, include these too.

	Current usage	**Ofcom proposal**	**Perceived shortcomings of Ofcom proposal**	**Draft BT proposal**
01 & 02	Historically, location specific geographic numbers with (theoretically) distance related low cost tariffing and a reasonable degree of certainty that the number is used by a customer at a particular geographic location. Following the NVS Statement, numbers can be used for nomadic services. Ofcom has also made it clear that the range is suitable for mobile services. There are currently 5 02X ranges which remain available for allocation. 01 is more exhausted but there are nevertheless 299 undesignated 01XXX ranges.	**Geographic numbers**, as currently, tariff transparency only requirement for geographic numbers, the numbers being useable anywhere in the world, for fixed, nomadic or mobile.	The sum of Ofcom's proposals in this document together with various other recent positions is that, with the possible exception of information about tariff, the significance of numbers in these ranges has the potential to be severely diluted very quickly including for instance that there will be no certainty that the number even remains in the UK. The "traditional fixed phone" symbol proposed does not represent such a broad usage profile, nor that the numbering is used for a wide variety of legacy and cutting edge purposes; voice, fax, computer (VoIP), mobile.	**Geographic numbers**, as per the Ofcom proposal except that a customer should generally have a street address in the area that they request/use a code. Ofcom's symbol proposed for 03 could be used for geographic numbering, subject to market testing.

	Current usage	Ofcom proposal	Perceived shortcomings of Ofcom proposal	Draft BT proposal
03	Reserved for future use	**Countrywide numbers**, for inbound calls to business customers, no revenue share, aimed at public services	New ranges will only be opened by operators at home and abroad if it is commercially attractive to them, and experience suggests that achieving this is not easy, and takes a very long time. Opening 03 to parallel 0870 seems a disproportionate response to the perceived need for countrywide numbers (especially if solely used for the purposes proposed by Ofcom) which could remain unchanged in 0870 or be allocated a decile in a range with other services with which they have commonality. Organisations with 0870 numbers who are prepared to forego revenue share are unlikely voluntarily undergo the disruption that is necessarily a feature of any number change to get, in effect, an identical service in 03. BT believes that Ofcom's recent NTS statement should lead to resolution of the concerns of customers around the current treatment of 0870 calls outside call packages. The opening of 03 would not seem to be of greater benefit.	**Reserved for future use**

	Current usage	Ofcom proposal	Perceived shortcomings of Ofcom proposal	Draft BT proposal
04	Reserved for future use	**Reserved for future use**		**Reserved for future use**
05	Legacy 0500 freephone numbers, location independent services, corporate numbering. Currently 7 (05X) deciles remain available for use	**Reserved for future use**	Significant effort has been applied to open this range both in the UK and abroad. Uses are now beginning to flow through. Ofcom has indicated that it does not intend to force number changes which is the RIGHT response but in that case it is NOT reserved for future use. To change it now might reduce future success with opening ranges internationally. BT has over a million such numbers allocated to it, and sees use continuing to grow.	Label for range needs further consideration. Maintain status quo. A more widely defined "Countrywide" numbering service (geographic numbers where the geographic area is the UK rather than a smaller area) could occupy a part of 05. The numbers might be of the form 05A BCDE FGHJ. BT recognises it would not be easy to adopt a simple descriptor or symbol for the variety of services in and likely to be added to the 05 portfolio. 05 might need separating out in the way Ofcom has broken down 08, ie showing sub-ranges as separate sub-categories.

	Current usage	Ofcom proposal	Perceived shortcomings of Ofcom proposal	Draft BT proposal
06	Reserved for future use.	**Personalised numbers**, incorporating 070 Personalised numbers. Possibly for end-user allocation as and when this becomes achievable and a clear market identified.	New ranges will only be opened by operators at home and abroad if it is commercially attractive to them, and experience suggests that achieving this is not easy, and takes a very long time. Currently, mobile services and thus 07 numbers tend to be used in a personal "find me anywhere" context. This effectively mirrors much of the proposed 06 use It does not seem necessary or desirable to open this range at this stage as it reduces future options.	**Reserved for future use**.
07	Mobile, radiopaging and personal numbering. Currently 5 deciles (07x) numbers remain available for use	**Mobile Numbers** Mobile and radiopaging only	It is possible for geographic numbers to be used for mobile services. Numbering information having thus been diluted, it would be neither technologically neutral nor accurate to imply that mobile services only reside in 07.	The range could be branded "find me anywhere" tariffed at mobile rates or "**Individual numbers**". Maintain status quo. 070 Personal Numbers remain where they are, with measures introduced as proposed by Ofcom, to rein in the worst abuses.

	Current usage	Ofcom proposal	Perceived shortcomings of Ofcom proposal	Draft BT proposal
08	All Inbound services with 080 currently reserved for Freephone. Other 08x numbers are purposed in a number of different ways both by tariff and by service Currently 5 deciles remain undesignated	**Chargeable services** (up to 10ppm), possibly with 08X structure showing 4 different tariff bands, or supplemented by parallel 03 use.	New ranges will only be opened by operators at home and abroad if it is commercially attractive to them, and experience suggests that achieving this is not easy, and takes a very long time. Opening 03 to parallel 0870 seems a disproportionate response to the perceived need for countrywide numbers which could remain unchanged in 0870 (if solely used for the purposes proposed by Ofcom) or be allocated a decile in a range with other services with which they have commonality.. We are not sure "chargeable services" is a helpful description.	The range could be branded "**Inbound services, lower rate**". Low cost inbound number translation services, implementing Ofcom's NTS Way Forward Statement and Ofcom's Option 1. No new tariff structure as tariffs low (but Ofcom's Option 2 for new customers acceptable so long as it doesn't lead to forced number changes for existing customers).

	Current usage	Ofcom proposal	Perceived shortcomings of Ofcom proposal	Draft BT proposal
09	Premium rate services, with a sub-structure that few are aware of or fully understand. Currently 8 deciles remain undesignated	**Premium Rate Services** All adult services in 098. Premium rate services, with or without tariff and/or service structure, allowing calls with open ended tariffs above current ceiling.	BT concerned by "£" symbol for range, when services priced at less than the cost of a stamp, and less than mobile calls, occupy the same range.	This could be branded "**Inbound services, higher rate**". All adult services in 098. Tariff transparency better achieved through price publication under current ICSTIS rules. If Ofcom prefers a structure, maybe it could consider for example 093, call price ceiling of £1; 094, calls up to 25ppm; 095, duration based calls more than 25ppm, less than £1ppm; 096, calls fixed rate £1-£1.50, and £1 - £1.50pm, 097 reserved for Higher Rate PRS (HRPRS), when the time is right.

14. The timing of more substantial changes to the numbering scheme as we move from traditional legacy systems to NGNs, and as fixed/mobile convergence continues will require careful consideration to avoid consumer and service provision problems and aid a seamless transition. As mentioned earlier, problems can only be resolved by effectively addressing the underlying root causes rather than changing the services' numbering. BT believes that the applications for which Ofcom wishes to open 03 and 06 are insufficiently far reaching or distinctive to justify opening and committing 2/9ths of the UK numbering space, leaving only 04 free. Broadly speaking, 03 replicates 0870 and 06 replicates 070. The proposals are unsupported by a cost benefit analysis or market research. We believe that Ofcom overstates the benefits of opening 03 and 06 for the services proposed, and understates the similarities of 0870 to the rest of 08 and 070 to the rest of 07. If Ofcom believes that only sub-divisions of new ranges may be required, BT sees even less need for change. It is the case that new services will come along in future that will need to be accommodated in ranges where inevitably there will be an imperfect fit with existing services, as there can only be nine 0X ranges, so in time, any benefit of moving services from one sub-range to another would dwindle further.

15. As Ofcom acknowledges, the industry is in a state of flux; through inter alia, fixed mobile convergence, the development of NGNs and convergence between the telecoms space and the internet space. Further, changes are likely to include the way telecommunications is tariffed and charged, technological changes, as well as social, demographic and market factors. Nevertheless, telephone numbers will remain core particularly internationally, for years to come, to underpin legacy networks and apparatus in developed and less developed nations, although there other identifiers and technologies that seem likely to co-exist, including, for example ENUM.

16. The rate of industry change should suggest to Ofcom that they should keep options for the future open, and in the absence of strong supportive evidence to the contrary, Ofcom should avoid opening 03 and 06, leaving three virgin ranges available for the future, rather than just one.

17. We are concerned that Ofcom generally under-estimates the practical and commercial disruption for customers and providers of opening **and closing** new 0X ranges, both at home and overseas. This view has been formed following the experience of opening new 118 codes and 056, recognised as being problematic by Ofcom at Q23 of its parallel VoIP consultation. The slow reduction of use of the 0500 range shows how difficult it is to close ranges. New ranges are not rapidly recognised or understood by customers. As such, new 0X ranges should only be opened when a new compelling application cannot feasibly be accommodated in an existing range; 06 for individual

numbering allocated to end users, if the time becomes right, may be such an example.

18. Opening new 0X ranges nationally and internationally has many barriers. These are caused by:

- termination rates (geographic, mobile or other);
- price points (existing or new);
- revenue levels
- revenue share in the range;
- costs on the originating network
- commercial risk.

19. A new geographic range, such as 020 3, which builds upon an existing 0X range, poses few problems and little risk for originating operators. If they do not open it, they risk upsetting their own customers. However if the range has revenue share, the level of commercial risk is high and their customers may be adversely affected.

20. In the UK, Ofcom can work with operators to offset the problems and risks to get a high level of connectivity, as we have with 05. Overseas there is no mechanism, or requirement, for operators to do anything.[1] Overseas operators will only open new 0x ranges if it is commercially viable. Most ranges which host revenue share are seen as high risk and are not opened because of fraud problems. Non revenue share services outside of geographic ranges often have volumes too low to be commercially viable.

21. Where these barriers can be overcome, there still is the problem of customers not recognising the use of new ranges. They are wary of fraud and high charges.

22. These problems are well illustrated by 05. It is only now becoming fully operational, even though it has no element of revenue share.

Protecting consumer interests

23. Consumer abuses must be addressed by swift enforcement action either by ICSTIS (in the case of PRS) or Ofcom. Opening new ranges would simply move the problem elsewhere without tackling the underlying issue. Ironically, such a move may even invigorate the abuse as consumers go through a further period of unfamiliarity and unscrupulous operators exploit this loophole.. In any event, history is dotted with evidence that as one form of

[1] The ITU operational bulletin, which has information on national numbering scheme changes, is only available to members. The ITU has taken steps to improve information flows but they have no authority to get new ranges open.

scam or abuse is stopped or restricted more will arise. Consumer abuse takes many forms as indicated by Ofcom's complaints statistics; some are addressed through trading legislation, yet others have no satisfactory resolution process, are often of higher financial value to the abuser, and higher than any likely penalty. These deliberate abuses are opportunistic and require continuous and rapid activity to identify, police, and eliminate. However, it should be recognised that not all networks can offer the same, or even similar, capabilities in dealing with abuse. For example, the ability to implement network barring differs between networks and technologies. Customer options also vary, with typically no barring for premium rate SMS originated or received on mobiles.

24. Consumer protection from abuse is a key Ofcom, ICSTIS and industry responsibility and effort and resource must focus on this with all relevant stakeholders working together in a coherent manner on an ongoing basis. There is no simple solution to the problem. As Ofcom is aware, BT is supportive of any proportionate measures Ofcom might consider to protect consumer interests. These include keeping the numbering scheme simple and accurate so end users understand, recognise and trust important information it conveys, both that familiar and unfamiliar to them. This includes location information for geographic numbers and broad-brush tariff transparency in all ranges.

25. BT is supportive of ICSTIS price publication rules for PRS, and general price publication measures for all ranges. However, BT does not believe that recorded in-call tariff announcements would be practical, welcomed or proportionate where numbers are used in accordance with the NTNP. Indeed, based on its market research, Ofcom has already noted with concern in its NTS consultation that, in time, consumers would find pre-announcements increasingly annoying and intrusive (paragraph 6.104, 'NTS: A Way Forward', September 2005). BT believes that tariff information should be generally apparent from the dialled number or otherwise available at an appropriate level of detail from other sources offered by their Provider, such as published price lists, or from the adverts with the numbers.

26. BT supports Ofcom ensuring that it has powers and is able to act on mis-use of numbers more quickly, for example by applying the sort of measures it sets out in this consultation where companies or their directors have previously broken numbering rules or ICSTIS guidelines. BT believes it is appropriate for Ofcom to deny further numbering resources, and where possible, withdraw numbering resources from range-holders who have breached particular numbering rules, including the running or hosting of scams. Consumers would certainly expect this action from the regulator. Equally importantly, BT would welcome the further extension of appropriate collaborative processes that lead to a two way flow of information with providers, so that abuse can be stopped by swifter recognition and action by Ofcom along the lines of the industry agreements with ICTSIS in order for

them to exercise emergency investigations where widespread consumer harm is identified by any stakeholder. Problems might go unidentified where consumers may just see a one-off charge, or a charge at too low a level to make a fuss about. Ofcom needs to collaborate with industry to identify and address such problems, which, when scaled up, represent abuse that should be addressed. BT believes that Ofcom-facilitated industry working groups could be key to implementing and maintaining these processes.

Geographic Numbers

27. The UK population has borne much Number Change pain and expense over the past 15-20 years, and having done so, BT believes it is time to reap the dividend, by way of using the space derived more efficiently. BT would endorse Ofcom's proposal that no further forced number changes for end users should be required - the last number change cost BT alone over £50m. Furthermore, BT hopes Ofcom will make it clear that this principle be extended across the NNS as far as possible, including in the 070 Personal Numbering Services (PNS), 0500, 055, 056, 08 and 09 space; where changes are implied by this consultation). BT supports limited extension of Type A conservation areas, subject to technical constraints, with locally selected 01 or 02 overlay codes as a back up and also supports all new 10k allocations in effect to be treated as Type B conservation areas, allocation to end users being initially restricted to a single 1k unit within each 10k block.

28. If Ofcom were concerned that a "barrier to entry" would be created because new providers could only take new codes, while established providers could offer service on a familiar code, this could be overcome by Ofcom "closing" the familiar code for all new use, for a period until the new code became as familiar as the legacy code. This might be based on a measure of penetration, at which time the old code could be reopened and both could be open for use. It is worth noting however that when Ofcom opened 020 3 to provide additional numbering in London, it did not prove necessary to prohibit continued allocation of 020 7 or 020 8 numbers to end users where providers had previously been allocated them.

29. Ofcom and BT have each commissioned market research – see Annex B - that demonstrates that consumers and businesses each value and make use of the geographic location information that can be derived from the dialling code in many ways (notwithstanding the niche out of area products; exceptions that have been around for many years but not at a level that customer confidence could be damaged). BT believes that in order to maintain trust in geographic numbers, the link should be retained and strengthened, as has been the case in almost all of Europe, and beyond. As a minimum, in future, customers acquiring new numbers, or moving, should prove a contractual address within the area of the required code (BT recognises that those determined to flout the provision could probably do so

to some extent though regulation could help address this, and that there would need to be an exemption for a period for products supporting transitions when customers move premises). This, would enable the benefits of the geographic scheme, which the MR shows customers value, to continue for far longer. The requirement could be weakened or strengthened in the future to respond to any change to customer requirements, and Number Portability capabilities: Ofcom is aware from responses to its recent consultation that there is only limited technical capability to meet out of area Number Portability requests. However, we recognise that an address requirement could not be applied retrospectively, as the benefits would be unlikely to justify forced number changes, but the inability to apply the rule retrospectively does not obviate the benefit of applying it going forward, as relatively few out of area allocations will have taken place to date.

30. BT notes additionally that the MR shows customers' appreciation of service distinction, for example differentiating between fixed and mobile. It is not clear how Ofcom's recent decision to make 01/02 numbers available for mobile services is consistent with this consumer benefit, nor Ofcom's proposal here to brand 07 as mobile.

Countrywide numbers

31. BT has been surprised that the 05 location independent range has not taken off as quickly as it had anticipated, notwithstanding the teething troubles regarding securing access. We expected it to be popular with new providers, tariffing their services above and below geographic rates, dependent on the nature of the products. The ability to serve customers taking inherently nomadic services on geographic numbers has arguably constrained competition, as no matter what the underlying costs, retail tariffing of calls to such services has become almost ubiquitous.

32. BT agrees with Ofcom therefore that there is a need for "countrywide" numbering. However, we envisage a wider service description for such an emergent range. Given the clear demand for geographic numbers for such services, one or more deciles in open ranges could be designated for the purpose. The range could support services tariffed at geographic rates included in geographic call plans, and with a revenue share ban, but having no location significance. BT envisages the range being used by businesses and consumers, for inbound and outgoing calls, providing end users with a choice of taking service on a number with an appropriate code for their area, or a number which they could keep when they moved premises, yet without undermining the location information within the remaining pre-existing geographic numbers. The sort of inbound services that Ofcom proposes for 03 could be incorporated within such a range. Such a range would be likely to reduce demand for numbers in ranges under pressure, and would be readily opened up at home and abroad as the commercial model is in place. The

continued absence of countrywide numbering as described will hasten the erosion of location integrity, and undermine citizen/consumer trust in the Numbering Scheme, as has happened for different reasons in 070, 08 and 09. If Ofcom believed that the existence of a "countrywide" category would be detrimental to the Geographic brand, as indicated earlier, such a range could be created in 02 or 05, where much work has already been completed, rather than in 03 where work would have to start once again from scratch in getting the range opened at home and internationally.

33. BT's market research indicates that 36% of consumers would currently like to be able to keep their code and number when they moved outside the code area, foregoing location integrity; at the same time 59% of them thought it more important that a code should denote accurately the location of the customer and would forego the opportunity to retain the number when they moved – 63% more. The statistic is similar for smaller businesses, although it seems to reverse for the largest businesses. The introduction of "countrywide" numbering alongside existing location-centred geographic numbers would consequently allow the market to demonstrate whether new customers continued to place a greater value on having a number identifying their locale, or were shifting towards having a number they could keep when they moved, informing Ofcom whether the balance of customer interests supported further strengthening or subsequent relaxation of the link to location at a future date. In the meantime, the link should be maintained.

34. BT's proposal is consistent with Ofcom's recognition that geographic numbers can be location or tariff focused. It is consistent with the quite strong evidence from consumer research that, *at this time*, relaxing or removing the location and service integrity of existing area codes and numbers would not be welcomed by consumers. Whilst we agree with Ofcom that there are technological changes on the horizon that could erode such integrity, in our view, what is needed is an effective transition path ensuring that consumers are continually informed of and understand any changes that may affect their services.

08 and 03 numbers

35. BT does not believe much change is needed to the 08 Special Services range. Most of the key decisions in 08 have been taken in separate NTS Statements. We do not favour Option 3, ie, the opening of the new 03 range for services that fit in 0845 or 0870. BT does not believe that opening a brand new 0X range would deliver significant benefits for customers or service providers and it would be a most inefficient and unnecessary use of the 03 number range. In any event, BT does not believe that there is a demand for an alternative to 08 for lower cost inbound services. Indeed, had customers or providers wanted such a service in a different range, it would have been available (and still could be) in the almost-new 05 range. Customers are not

quick to recognise the opening of virgin ranges and there is no comparison with number changes where existing numbering is changed en masse which force customers into recognition through the many undesirable consequences.

36. Keeping the Scheme simple will help customers focus on the important aspects of it. Intricate sub-divisions by tariff in the 08 range would seem likely to be of less importance to most customers as the tariffs are relatively low, and therefore a distraction (after all, there is less tariff transparency in both 09 and 07 where calls can cost considerably more than in 08). Therefore, from a number husbandry point of view, and given the relatively low cost of calls in this range we would favour Option 1 over Option 2. It also overcomes the consideration of where pence per call rather than pence per minute or more complex tariffs such as with a time of day/week gradient would go in a more finely differentiated range with potentially narrow tariff bands. Option 1 has the additional benefit that it is clearer that Ofcom is not seeking to exert price control rather than tariff transparency.

37. BT would welcome the return of the “lo-call” and “national rate” banners for 0845 and 0870 in the light of the Statement 'NTS: A Way Forward' and the expectation that 0845 will follow the approach of 0870 in due course. Whilst clarity of where revenue share is banned and where it is permitted could also be helpful to customers of such numbers, as well as those calling them, it is not essential to open a new 0X range to achieve this; such clarity can be conveyed by spelling out the rules around 0870 (and in future we anticipate 0845), in the same fashion that Ofcom has singled out 080 in its proposed Scheme.

38. In considering the 08 space, Ofcom has not referred in this consultation to how or whether it will seek to ease the migration of service providers wishing to move from 0870, which is to become a non-revenue share range, to ranges permitting revenue share following the NTS Statement referred to above. Ofcom could choose to open one or more parallel migration ranges to SPs that wish to retain revenue share rather than retain their number. Such ranges could allow SPs to keep ten of the eleven digits of their number. For example, a customer with the number 0870 1234567 could move to 087X 1234567. Ofcom could set up a number of 08XX blocks each with a set tariff to ease migration, and offer a choice of tariffs. However, consumers might consider this to be backsliding, the nub of the problem migrating to a new range and perhaps worse, they may see providers as almost being encouraged to put up prices, moving to a higher tariffed migration range. At the other extreme, Ofcom could do nothing, service providers taking pot luck with what is available in other ranges, some obtaining a favourable migration path, others experiencing a disruptive one. BT believes that the balance may be for Ofcom to make a single revenue share migration range available, which

replicates the existing 0870 tariff, but removes the link to geographic rates, thereby not facilitating price rises.

09 numbers

39. BT believes there is a limit even in 09 to what customers will readily recognise from the number alone to differentiate between the characteristics of underlying services. Clearly, the existing 09 sub-structure confers little benefit on stake-holders and should not be maintained. Any new structure should be kept simple. Nevertheless BT agrees it is important for customers to be able to differentiate adult content services, at any tariff. BT supports the proposal that these occupy a single part of 09, say 098. However, allocating for example 100 million numbers to services such as charity donation lines, or to narrow tariff bands, is unlikely to gain traction with end users.

40. Given the ICSTIS publication rules, and the general lack of sophistication of available call barring products, the case for a sub-structure now does not seem strong, with plenty of numbering still available in 090/091and as such, a decision could be deferred. As an alternative, BT has presented a tariff transparent scheme for 09 in the Scheme shown earlier, as it understands that the case for tariff transparency is stronger in 09 than it is in say 07 or 08, given the often higher charges. However, it may distract customers from perhaps the more important message, that 098 contains adult services.

41. BT believes, that in the short to medium term, tariff transparency is better achieved through price publication rules and number structure than through compulsory recorded pricing announcements. Ultimately, BT has concerns that as tariff structures become more sophisticated and complex, no Numbering Scheme could provide tariff transparency.

42. BT suggests that tariffs continue to be set in 09 at the 100k level rather than the 10k level. Whilst the latter is more numbering efficient, the former is up to ten times more cumbersome in terms of conveying accurate pricing information to end users, for example in price lists/pricing tables. Such a burden would be unwelcome and costly for Providers and equally unwelcome and complex for consumers.

43. In order to protect Providers and customers from frauds and scams, BT would also urge Ofcom not to permit Providers to change the tariff of a block once it has been allocated (clearly more difficult in any event if tariffs are set at the 100k level).

44. Ofcom may also wish to consider the extent to which tariff proliferation in 09 is beneficial. 09 could readily become exhausted if providers sought particular blocks, and to get them, they selected a new tariff, only fractionally different from an existing tariff, say 52.5ppm rather than 50ppm or 55ppm. Without control, it is easy to see 09 becoming exhausted very quickly with

little if any end-user benefit. Indeed, for this reason, if unchecked, 09 is arguably the decile most likely to exhaust soonest (Ofcom's consultation dated 11 May 2006 "Supplying numbers for 09 premium rate services and codes to facilitate mobile number portability is perhaps a symptom of this).

05 numbers

45. BT believes the 05 range should be strongly supported rather than described as "experimental" and potentially closed down. Whilst LIECS have been slow to take off, we expect more services that will increase the take-up of 05 numbering. We understand from Ofcom that it is not the intention to close the range but, with further relevant applications beginning to flow through, BT and its customers would welcome a public commitment from Ofcom to support the 05 range on an ongoing basis. As illustrated in Ofcom's published vision of the plan, there is no other space in the NTNP set aside for non-revenue share tariffs unlinked to geographic rates. Much of the hard work has now been completed to secure ubiquitous access to 05. However, there are still gaps in access, and BT would appreciate Ofcom helping to ensure that 05 is nationally and internationally available, certainly before it seriously considered opening 03/06.

07, 06 and 070 numbers

46. BT believes that moving the Personal Numbering range to 06 will do little to address the current mis-use or consumer detriment. What it might do is render 06 very unattractive for wider use, such as end user allocated numbers, in future. BT does not believe that a strong consumer focused case for 06X in preference to 070 for Personal Numbers has been made. BT believes that the measures proposed to clean up 070 could and should be implemented without requiring customers to change their numbers.

47. BT welcomes Ofcom's recognition that it is not yet practicable to allocate numbers directly to end users as opposed to Communications Providers. BT recognises that in future when individual numbers can be technically supported, and the regulatory regime can effectively address any resulting abuses that might emerge, this may well be desirable, and either 06 or existing ranges could then become an appropriate home for Universal Communications Identifiers (UCIs). BT would emphasise that such a development in future could be compromised if 070 services were to migrate to 06X now.

48. BT is unclear why the 07 range should any more be branded "mobile" than the 01/02 ranges should be branded "fixed"; in fact, allowing geographic numbers to be used for mobile services dilutes any effort to create such a brand. In one sense, 07 is already being recognised as a range for individual

or personal numbers. In this technologically neutral "find me anywhere" way, the range is distinct from geographic numbers, which tend to identify locations, areas, groups of people such as families and office roles. At the very least, BT seeks parity of treatment by Ofcom of geographic and mobile numbers. That is, given that Ofcom has decided that nomadic and mobile services tariffed like traditional fixed numbers are entitled to geographic numbers, non-mobile services tariffed like mobile services should be entitled to mobile numbers.

Market based mechanisms

49. With Ofcom's statement at para A4.55 that "At this stage in our analysis, Ofcom can say that the intention in introducing a charge would not be to raise revenue or increase the cost base of the industry, but to increase efficiency", BT is not opposed in principle to Ofcom making charges for numbers, however based on the assessment presented, BT is unclear what the basis for charging is.

50. BT believes that three premises must be fulfilled before Ofcom is justified in introducing a charge for blocks of numbers,

- There must be a shortage of numbers
- The level of any charge must be sufficient to influence behaviour
- The benefits must outweigh the costs

51. BT believes that at this stage, any number shortage could be addressed by Ofcom not only without the need for disruptive and costly number changes but without charging for numbers by designating unused numbering space tactically. Even if one ignored the closed 03, 04 and 06 ranges and the possibility of changing the designation of under-utilised 01 open sub-ranges to improve their utilisation, so that they serve conservation areas there is no shortage: 299 out of a potential 1000 01XXX ranges are still undesignated (250 - a quarter of the total - of which, have never been used); only 50% of 02 ranges are designated, with those opened being only lightly used; 07 is also only 50% designated; whilst 05 is less than 5% designated, 08 less than 10% designated and 09 less than 20% designated. Whilst a degree of customer education may be required so that end users understand any change, there is no underlying shortage and we would re-iterate our belief that even with significant planning and branding, any resulting transparency will be very short-lived.

52. Furthermore, in practice there is little providers can do to reduce any number block charge where companies have been allocated number blocks prior to any shortage, and once customers have been allocated numbers from

them (some of which may have been exported to other providers). Anything which influences behaviour a posteriori would equate to an encouragement of customer disruption through number changes and therefore not in keeping with the spirit of Ofcom's general approach. An equitable charging scheme that would be effective and cost justifiable should neither act as a barrier to entry to new providers nor penalise companies with a numbering legacy that has arisen over time as networks evolved over decades. Thus, applying a charge on a company that it could not have reasonably predicted, and about which it can do nothing, appears as problematic as charging new entrants for numbering that existing providers acquired for free.

53. Especially given it is not Ofcom's intention to raise additional revenue - presumably number charges would be off-set by reductions in admin fees - it is difficult to envisage a charge level targeted at potential perceived problem areas of the Scheme that would not be a barrier to entry, but would influence behaviour.

54. However, assuming that a cost efficient system can be developed, which is both beneficial and focussed, addresses the perceived problems and is at least cost neutral (ie economically efficient), BT would be likely to be supportive of a charge that did not::-

- adversely impact say fixed providers rather than mobile providers (ie was technologically neutral), whose numbering scheme is inherently more efficient, as it does not need to convey location or tariff information,
- place a disproportionate burden on providers with systems as opposed to systemless providers

lead to a degradation of the Scheme, for example, allow a company to allocate all fixed customers 020 numbering.

Annex A

Answers to Ofcom's questions

Question 1 What are your views on the strategic principles that Ofcom proposes to apply to its numbering policy decisions?

BT would add two strategic principles to the four listed in the bullets at paragraph 3.15. BT believes that Ofcom's decisions should be **evidence-based**, such as on market research, and that they should be informed by a **cost/benefit analysis**, reflecting what is technologically, practically and economically feasible, at what cost and in what time scales.

Question 2 What do you think are consumers' key current views on numbering, how do you think those views will change, and how should Ofcom's current decisions take those changes into account?

Both calling and called parties derive meaning from numbers, mainly about who is calling, from which location, in some instances using what sort of device and at what cost. That is reflected well in both BT's and Ofcom's market research, summarised in Annex B.

The social and competitive landscapes, network technologies and services, are changing rapidly. In this context, as there is no service presented by Ofcom that cannot be offered effectively under the current NTNP, Ofcom should only consider making small incremental changes while monitoring developments. These include:

- more and diverse services, especially those for individuals, from and to fixed and mobile networks
- intelligent devices that deliver applications independent of network
- call applications (and price) changing during a call as customers opt-in to applications during the same call
- increasingly innovative access, call and application packages
- off-switch pricing

Any revised scheme should be customer focused, memorable and understandable. Price indications can only be at a very general level.

Question 3 What do you think are the main ways in which technological developments will change the focus of numbering policy decisions, and

how should Ofcom's current decisions take these developments into account?

BT believes that numbering policy decisions should primarily be customer focussed rather than technologically led. Technology is an enabler. That said, technological developments, in particular the evolution of NGNs, have the potential to influence numbering policy decisions in a number of areas including:

* greater location flexibility and granularity for allocation of geographic numbers
* deployment of new types of service which may require new parts of the UK numbering scheme to be opened up
* alternative means of implementing number portability.

In the case of BT, initial NGN deployment (via 21CN) will be focussed on the replication of existing PSTN capabilities. Moving from the inherent potential of NGNs to enhanced numbering and routeing capabilities actually deployed in the network will require development that is not included in the current 21CN programme and there will be dependencies on vendors. Further detail on this is included in Annex D.

The introduction of NGNs has the potential to support a wide range of new service functionality. As indicated by Ofcom, this may suggest further changes to the use of the UK numbering space. Such changes are likely to have an impact on numbering and routeing capabilities, and for this reason BT believes it is very important that a long term vision of future use of the UK E.164 space (and indeed beyond E.164), taking on board the interests of all stakeholders, is separately developed.

Question 4 Do you have any comments on Ofcom's assessment of the current challenges to the Numbering Plan, in terms of a) number availability, b) transparency, or c) consumer abuses?

Number availability in the UK is excellent. The limited problems can be readily addressed by contained measures that need not be disruptive to end users, industry or other stakeholders.

The amount of information that can be communicated in the plan is restricted, with only broad indications of service possible, mainly at the 0X level with few exceptions, eg 0800. BT believes that Ofcom could, respond to the market research commissioned following its decision to make geographic numbering available for new voice services, by making the meaning of geographic numbers more robust and yet maintaining such supply to New Voice Services.

The root of much customer abuse lies with revenue share. Its availability however has delivered many benefits to end users. That said, adequate protection for consumers and other stakeholders is needed through ongoing pro-active engagement between Ofcom, ICSTIS, other consumer groups and industry.

Question 5 Do you agree that the extension of conservation measures is the best approach to take before the impact of NGNs eases the pressure on geographic number demand?

Yes, and BT particularly welcomes Ofcom's move away from number changes to generate additional numbering. BT supports Ofcom's view that in most cases it should be possible, to implement conservation measures, subject to the technical considerations described in Annex D. Ofcom needs to recognise that NGNs will not immediately ease the pressure for geographic numbers, and there are likely to be both customer and technical requirements for differentiation by geographic number for some time to come.

Question 6 Do you agree that the use of overlay codes is the best backstop approach in the event that extended conservation measures are not sufficient to meet demand for geographic numbers?

Yes. There are technical constraints and implications arising from implementing overlay schemes which are outlined in Annex D, but BT supports Ofcom's view that it is the best backstop approach where conservation measures are not sufficient to meet demand for geographic numbers. There is usually more than one clear option for overlay in each code area, and BT suggests that when the need arises, Ofcom develops an overlay options plan, and consults locally on which would be the best option in each individual area, or group of areas.

Question 7 Do you agree that Ofcom should continue to respect the geographic identity of numbers until consumer understanding of the impact of technology change evolves further, and what do you consider is the best way to develop that consumer understanding?

Yes. This is supported by both BT's and Ofcom's market research.

Question 8 Do you agree with Ofcom's proposal to open a new '03' number range for non-geographic, non-revenue sharing services?

No. BT believes that such services would be better served by numbers from ranges already open. Ofcom must also consider the practical and economic issues in making new ranges operational both in the UK and from overseas.

Question 9 How should the '03' range be structured, in terms of tariffs and services?

BT does not believe 03 is an appropriate or viable option.

Question 10 How should the '08' range be structured, in terms of tariffs and services?

The 08 range should remain as currently structured, taking account of Ofcom's NTS statement and Ofcom's Option 1. Option 1 as well as Option 2 provides sufficient unused numbering space should Ofcom wish to make available a customer "friendly" number migration path for 0870 customers who change their number to retain a revenue share. BT trusts that Ofcom will reinforce its intention to hold to its time table set out in the recent NTS Statement.

Question 11 Which broad approach should Ofcom take to structuring the '09' range, and if a re-structured '09' range is preferred how would you arrange the different types of '09' services (e.g., according to price per minute, price per call, inclusion of adult content)?

BT agrees with Ofcom that adult services of any tariff should occupy a discrete 09X range, and that 098 is as good as any. BT sees merit in both Ofcom's Option 2, delivering meaning only through ICSTIS price publication rules, and through a structured Scheme. BT has proposed one possible sub-structure in the table at pages 11-16. On balance, BT perhaps prefers the former approach, as experience suggests that most customers generally do not readily recognise codes other than geographic codes beyond the first two digits, with only a handful of exceptions such as 0800. Additionally, the future is likely to start to divorce the number dialled and the price of the call, so disruptive changes for a short period seem unwarranted.

Question 12 Should any specific PRS service categories be identified or segregated in order that parents can block access by their children (e.g., sexually explicit content, gambling)? Is there merit in having a general 'adults only' classification, including a range of services to which access might be restricted on the grounds of content, or might consumers wish to apply different rules for different types of content?

See BT's answer to Q11. 'Adults only' may be a category that could successfully be recognised by most people, although BT does not believe it is likely to be possible in the short term (with legacy networks) for many customers to bar calls to these ranges separately from other 09 prefixes. Ofcom is separately consulting on supplying further 09 numbers, for Sexual Entertainment Services (SES). BT believes that if there is to be a sub-range, it should be for SES or adult services. Separate sub-ranges for non-SES adult services at a later date would not be welcome.

Question 13 Are there any practical means by which the Numbering Plan could provide improved mobile tariff transparency?

Tariff transparency is poorer in the 07 range than anywhere else in the Scheme. Inbound call tariffs are higher than in all ranges except 09. As such, it would be difficult for Ofcom to justify disruptive reforms of tariff transparency in other ranges without addressing 07. However, mobile tariff transparency could only be improved following an upheaval of the 07 numbering and tariffing regime (for example requiring tariff consistency from the code, with the effect that on-net/off-net benefits are averaged across all calls), which Ofcom has not sought to cost justify at this time.

Question 14 Do you agree that personal numbers should have a tariff ceiling (or recorded message) to restore trust in those numbers? If so, what level, and should that ceiling include the cost of recorded messages?

Numbering should not be the prime vehicle for tariff transparency especially in number ranges accommodating many complex tariffs. Customer contracts and clear information from those advertising numbers, if necessary under an ICSTIS type scheme, would be better. BT believes that a tariff ceiling could help curb some of the worst abuses. BT also envisages that some of the problems currently associated with 070 may migrate to other 07 ranges as Ofcom starts to allocate numbers to companies yet to be in a position to demonstrate the delivery, for example, of mobile services.

Generally, BT shares Ofcom's view that in-call tariff announcements where numbers are used in accordance with the Scheme would not deliver the sort of consumer benefits often assumed.

Question 15 Do you agree with Ofcom's proposals to move personal numbers (with the same consumer protection provisions) to the '06' range and to pursue the direct allocation of numbers to end users as proposed at some point in the future?

BT does not believe that Personal Numbers should move to 06.

BT believes that the time has not yet arrived when it would be right to pursue end user allocation of numbers. BT would be pleased to engage in a review with Ofcom and industry in the future as the concept starts to evolve.

Question 16 Do you have any comments on the use of the 05 number range?

BT does not consider the 05 range to be experimental. There are many customers using it and investing in it. Demand is growing rapidly now that connectivity is at a level that makes the range effective. It could also be a preferable home for Ofcom's suggested application of 03.

Question 17 Do you agree that Ofcom's overall proposals for a future Numbering Plan are coherent and comprehensive, and do you have any comments on the timescales in which the changes should be implemented?

Ofcom's proposals seem coherent and comprehensive; however BT does not believe they are more complete or comprehensive than the existing scheme, or the alternative BT proposes. Ofcom's Scheme does not accurately reflect the world as it is. For example, it omits a home for non-geographic fixed services at tariffs other than geographic that preclude revenue share – services currently using 05 numbering. It also oversimplifies the functions of the 0X ranges. Ofcom's proposals to open two new 0X ranges for services each currently occupying a small fraction of numbering ranges seems to fail the tests of being objectively justifiable and proportionate, as set out at Section 60.2 of the Communications Act 2003.

In terms of the timescales in which Ofcom's proposals could be implemented, it really depends on what is meant by "implemented". BT would consider that this refers to the landscape resembling Ofcom's table on page 4 of the consultation. This would require unpopular forced number changes and new ranges being implemented internationally. As such, BT believes that were such a vision pursued, it would take several years to be implemented to the extent that it could be described as being in effect.

Question 18 Do you agree with the principle of using consumer protection tests in numbering in order to limit consumer abuses, as long as the relevant legal tests are met? Do you have any suggestions for what tests would be appropriate or any conditions that should be met to pass such tests?

BT supports the principle of consumer protection tests to address the wide range of concerns arising from the abuse of number ranges. The detail of any protection test should be developed and reviewed regularly by all stakeholders working together. Any test should:-

- be practicable
- deter and prevent abuse
- remedy abuses quickly
- be even handed and
- not cause market entry problems.

Question 19 Do you support the proposal to extend the tariffing provisions of the Numbering Plan so that they apply to customers of all providers on all types of network?

BT believes that tariff transparency can only be partially achieved through numbering alone. BT believes that insofar as numbering can deliver benefits to end users, there is no reason why the customers of companies other than BT should not benefit, although Ofcom (and BT) recognises that it needs to stay the right side of the thin line between tariff transparency and tariff control. BT does not believe that it would be feasible to extend the tariff provisions to apply to payphones, for reasons expanded on separately to Ofcom in response to its NTS consultations.

Question 20 How do you think the new Numbering Plan could be effectively communicated to consumers?

The changes discussed in this consultation document and BT's variations can be effectively communicated through business as usual processes.

Question 21 What are your views on Ofcom's analysis and the different options for number charging?

BT does not believe that charging for numbers at a cost recovery level will cause behavioural change to support number conservation. If charging were above cost recovery, although it could affect behaviour, it could then lead to barriers to entry and/or a significant burden of charges for existing allocations.

BT would support charging at a level to recover the costs of a dedicated numbering unit in Ofcom. At the same time, BT would expect that the costs recovered through charging would offset the payment of general admin fees to Ofcom.

Without a parallel “command and control” process, market mechanisms may create an environment in which shortage or exhaustion might be catalysed rather than diminished.

Question 22 Which, if any, numbers might appropriately be allocated using a value-based charge?

There should be no numbers charged for on the basis of value. There are few if any number blocks that would attract a value based charge, as most numbers are by definition almost replicable, within different ranges. Taking Ofcom’s example, the number 777777(7) could follow almost any prefix/code, eg 0800, 0808, 0801, 2, 3 etc. In any event, the existence of Number Portability would suggest that any benefit might be ephemeral and as such BT would expect few potential range-holders to be tempted to meet a significant value based number block charge. BT accepts that the dynamics might change should end-user allocation become viable, when this subject could perhaps be revisited.

Question 23 Do you have any other comments on Ofcom’s proposals for numbering as discussed in Section 5, or any other suggestions for how Ofcom might revise the current Numbering Plan or its administration?

BT’s suggestions are summarised in our suggested alternative numbering plan in the table at pages 11-16 and described in more depth throughout this response.

Question 24 What do you think of Ofcom’s proposed general approach to managing geographic numbers?

BT applauds Ofcom’s desire to minimise change for existing customers through its management of the geographic ranges. However, Ofcom, like regulators throughout most of Europe, should protect the location integrity of the geographic dialling code and as such end users should generally only be able to use a dialling code when they have a physical address in the area denoted by the code. This would not be a constraint on most new voice services, would better protect the supply of popular codes and would no more stifle innovation in the UK than where such an approach has been taken elsewhere in Europe.

Question 25 Do you have detailed evidence or suggestions on the variables likely to influence demand for geographic numbers, how those variables will change over time, and how Ofcom should develop a demand model?

The variable that most affects demand for any number type is Ofcom's own numbering policy decisions; who may be allocated numbers, on what basis, service definitions, and so on. Beyond that, Ofcom should monitor CP demand and utilisation levels on one side, and track demographic changes, including government proposals for urban development and growth and technological changes on the other.

Question 26 Do you agree with the specific proposal for how to extend conservation measures, including the extension to areas with a number shortage predicted in the next five (rather than two) years?

Yes, BT supports Ofcom's changes to allocation rules in "standard areas" and the limited extension of conservation areas to the extent forecast by Ofcom.

Question 27 Do you consider there to be any upper limit, in terms of technical feasibility, on the number of areas in which conservation measures could be used?

The implementation of conservation areas is dependent on the availability of decode and other switch resources. In terms of BT's network, it should be possible to accommodate the proposed conservation areas. There may be capacity for further areas, subject to the scarcer switch resources not being used in relation to numbering in other ranges being allocated at the 1000 rather than 10,000 block level. There remains the possibility, depending upon how the numbering scheme or network has evolved or changed in the mean time, that there could be implementation difficulties with any specific conservation area.

Question 28 Do you agree with Ofcom's assessment of the impact of conservation measures on stakeholders?

In general, yes, noting comments made elsewhere within this response.

Question 29 Do you agree that Ofcom should pursue these additional ways to improve number utilisation and, if we do, how would stakeholders be impacted and what practical issues are involved?

BT supports Ofcom in widely considering additional ways of improving number utilisation. However, with each of these, the devil would be in the detail. As such, options should only be introduced following further consultation with stake-holders. In the case of number pooling, withdrawing

and re-allocating un-used 1000 parts of 10k blocks feasibility will be limited by legacy network constraints.

Forced number changes are not necessary, including those of customers with four or five digit local numbers. Other measures, such as overlays, are appropriate.

Question 30 What are your views on overlay codes, and Ofcom's assessment of them, as a fallback option to increase number supply? What should be the maximum number of areas where overlay codes are introduced?

BT supports the use of overlay codes where conservation measures fail to meet demand for geographic numbers in particular areas. BT shares Ofcom's view that the use of overlay is preferable to number changes for customers. However, introducing new NNGs can be problematic especially on System X exchanges as explained more fully in Annex D so their use should be kept to a minimum. Where the need arises, the options and the difficulty of implementation should be considered in each case prior to local consultation.

Question 31 What are your views on closing the scheme, and Ofcom's assessment of it, as a fallback option to increase number supply?

BT's customers value the local dialling facility and therefore, whilst technically it is a relatively straightforward option, we do not support closure of the scheme at this time. In any event, closing the Scheme creates far less additional numbering than overlays. Please see Annex C for further thoughts on overlays.

Question 32 What are your views on wide area codes, and Ofcom's assessment of them, as a fallback option to increase number supply?

BT is opposed to Wide Area Codes insofar as they are a euphemism for a code or number change for existing customers. Using 02 codes as overlays in a cluster of code areas where each has a number shortage may be a good option, extending local dialling to a wider area. This may be one option that could be put to local people and their representatives for consideration in areas where numbering is due to exhaust.

Question 33 Might wide area codes be appropriate in regions with a strong identity and, if so, which specific regions are suitable for wide area codes?

It is difficult to believe that many customers would be willing to endure a code and/or number change for a political end. A decision to move to a WAC for any region of the United Kingdom, should have the full backing of regional government, for example, the Welsh Assembly or Scottish Parliament.

Question 34 Do you agree with Ofcom's assessment of the problems with current 08 and 09 in terms of information clarity and consumer perceptions?

Broadly, yes.

Question 35 Which of these options for current 08 services do you think is best in terms of a) increasing consumer transparency and b) minimising the costs of re-structuring the 08 range?

BT does not believe that existing customers with 08 numbers should undergo a forced number change and there is limited consumer benefit to be gained in terms of tariff transparency by re-structuring 08. BT supports Ofcom's Option 1, and is opposed to Option 3, opening the 03 range, as outlined elsewhere. BT believes Ofcom may wish to consider making available a "migration range", to ease any number change for 0870 users wishing to move to a range supporting a revenue share. This could readily be accommodated under Options 1, 2 or 3.

Question 36 How might early migration to the '03' range be encouraged?

BT believes following the recent NTS Statement that customers are well served by 0870 (and 0845). Either of Options 1 or 2 obviates the need to open 03 for what appears to be an uncompelling proposition, unsupported by evidence or market research. 03 in fact duplicates an existing range in a manner that seems somewhat incompatible with Ofcom's duties under, for example Section 60(2) of the Communications Act. BT does not believe that opening 03 would be "objectively justifiable" or "proportionate".

Question 37 Is it more important to indicate price per minute or price per call, and does this vary for different types of PRS service? What granularity of PRS tariff information should be given to consumers by the Numbering Plan?

Different customers have different requirements. Ofcom might wish to research the relative importance of different metrics for conveying price information. However, in practice, few customers are likely to recognise fine tariff gradations should 09 be structured in such a way and BT would not be

very hopeful that a detailed structure would be overly useful. ICSTIS price publication rules are likely to be more accurate and useful than stratifications of numbering. BT has nonetheless put forward a proposition that may be worth trying that could reinforce ICSTIS rules.

Question 38 Should there be any PRS number ranges with no tariff ceiling?

PRS tariffs with no ceiling already exist; they are in the form of five digit short codes, used from mobile phones. It is thus difficult to justify their continued existence with technological neutrality in mind without facilitating the same from fixed phones. BT's suggested tariff structure for 09 reserves numbering space for such services.

That said, BT would be concerned if such ranges were introduced without ensuring that customers and industry were fully protected from mis-use, scams and abuse.

Question 39 What is the typical turnover of 09 numbers, and what does this mean for migration timescales to a new 09 Plan? How could Ofcom structure the 09 range or take other steps to promote voluntary migration of 09 services?

BT does not believe Ofcom should be considering forced number changes in the 09 range. It is unlikely that it would be undertaken voluntarily, unless SPs at the same time were given the opportunity to cherry pick numbers (inefficiently) from new number blocks. It is assumed that Ofcom and most stakeholders would not wish this.

BT does not have a complete picture of turnover at this time and will provide the information separately.

Question 40 Do you agree that that part of the 07 range which is currently unused (071-075) should be reserved for mobile services, with the aim of establishing 07 as a mobile 'brand'?

BT does not believe it to be any more appropriate to brand 07 mobile than Ofcom appears to believe 01/02 should be branded "fixed within the location identified by the dialling code". It is suggested that unused numbering is reserved for general and not a particular future use. If Ofcom may wish to set out a function for reserved numbers, BT would suggest "individual numbers" or "follow me anywhere" numbers. 071 and possibly 072 should be set aside for expansion of 070 Personal Numbers if say 073-075 is set aside for "mobile numbers".

Question 41 Should Ofcom reserve specific sub-ranges within the 071-075 range for new mobile multimedia services, in the interests of promoting consumer awareness and tariff transparency, and if so how?

No. BT neither thinks that this reflects the way these services will develop, nor that tariff transparency is likely to become clearer in a sub-range than elsewhere in 07. Indeed there are already higher priced video calls and lower priced text messaging using the same mobile numbers as voice calls.

Question 42 Do you support the use of 100,000-number blocks in allocating mobile numbers to new mobile voice providers?

Ofcom sees a convergent and technological neutral environment. In that context, BT believes that 07 allocations should be aligned with other ranges such as 01 and 02 in consultation with all stakeholders.

Question 43 Based on the above analysis, if Ofcom were to introduce a charge ceiling on calls to 070 numbers, which of the following levels should be adopted; i) 10 ppm ii) 15 ppm iii) 20 ppm iv) something else ?

BT has no strong view on whether a ceiling should exist or the level at which it should be set. BT suggests that any tariff ceiling should be enforceable across the industry and applied evenly across the whole of 07, mobile and Personal Numbers.

Question 44 Would a requirement to make tariff information clearly available to purchasers of personal numbering services at the point of sale, either in addition to, or instead of a call ceiling, be an effective means of providing tariff transparency on personal numbers?

As Ofcom recognises, it is the caller of 070 numbers rather than the purchaser of the PN Services that needs to be aware of the price of calls to 070 numbers. BT believes that ICSTIS type price publication requirements would be the most effective way to achieve tariff transparency, possibly alongside a single tariff ceiling across 07.

Question 45 If a new sub-range is made available for personal numbering services, how long should the current '070' sub-range remain available for existing providers, in order to minimise migration costs?

BT does not believe that there is a persuasive case for requiring customers with numbers in any range to change their numbers at the current time given the abundance of available numbering. The benefits Ofcom seeks from such

a change do not seem to be cost-justified, and can equally be achieved by imposing new rules on 070/07. BT believes that duplicating or replacing the existing range in the manner proposed is not premised on customer demand, is inefficient in numbering terms and therefore somewhat incompatible with Ofcom's duties under, for example Section 60(2) of the Act. BT does not believe, for example, that opening 06 would be "objectively justifiable" or "proportionate".

BT believes that two years should be the minimum period for a number change where a customer is forced to relinquish their number but based on experience of previous sunset ranges, it may be that users would resist change for far longer (0500 is a good example).

Question 46 What issues do you think would need to be resolved before Ofcom makes individual numbers available for direct allocation to end users?

Direct Allocation to end users would require significant new and changed industry processes and the issues in need of resolution would depend on how direct allocation would be implemented. This would need to be the subject of separate detailed consultation by Ofcom, together with a regulatory option appraisal and cost benefit analysis. This would ensure that commercial and technical factors have been fully explored. Issues include:-

- Ofcom's ability to enforce numbering rules on any end user
- Ofcom's need for sufficient resources to manage the new work effectively
- Adequate funding from direct allocation fees
- Consumer protection mechanisms
- Minimum block sizes
- Consumer understanding of call charges to such numbers
- Bi-lateral interconnection arrangements, in the UK and overseas
- Technical feasibility.

Question 47 What do you consider to be the main strengths and weaknesses of the current rules-based system of UK number allocation?

The strengths of the current system are that it is simple and consequently cheap to administer, and is transparent. There is a published method/route for allocations making it straightforward and consequently easy to use with applications based on stated proposed use. The system is simple with no entry barriers and importantly the 'process' delivers a degree of consistency.

Weaknesses of the current system take a number of forms.

- Bad applicant history does not preclude numbers being allocated
- No mandatory reporting of misuse
- No appeal mechanisms for questionable allocations; an appeal system would require protection from vexatious complaints.
- Ranges may be used other than for the purpose stated when applying for them.
- No clear mechanism for the review and recovery of allocations.
- Not all rules sit well together or applied consistently
- No disincentive of profligate applications
- Free allocations can lead to inefficient use
- No rules on sub-allocation.
- No effective rules on incoming international calls, evidenced by dialler fraud to +44 870…..

Question 48 Do you agree with these principles for number charging?

We agree with the principles set out by Ofcom for cost-based number charging, although we note that it is not always possible to apply them consistently in practice. BT does not believe that value based charging can be implemented without raising barriers to entry or placing an undue burden on CPs and their customers. BT notes that there have been problems with value based charging systems in other countries.

Question 49 What are your views on Ofcom's assessment of the issues to be considered in setting and reviewing number charges? For example, should other issues be considered in developing charging proposals?

BT believes there are a number of issues, beyond those identified by Ofcom, that require consideration. We would like to see an assessment of the level of charge that might incentivise allocative efficiency. We also feel the information requirements and therefore costs of number charging have been underestimated. In the context of value-based charging, there is an issue arising from the initial allocation of numbers to some providers but not to others, which the latter may view as discriminatory. It is also unclear how the impact of NGNs on number allocation affects the medium to long term suitability of Ofcom's preferred pricing approach. BT believes that a dedicated numbering resource in Ofcom should be adequately funded from any number charges. However it would also expect the current annual fees to Ofcom would also be reduced.

Question 50 Do you agree that charging for numbers could disincentivise economically inefficient behaviour, and incentivise economically efficient utilisation?

The incentive effect of any charge would be dependent on the level at which a charge is set against both the value of the business that the numbering would attract and the extent to which it were possible for CPs with numbers to be able in practice to reduce its number charge by returning the numbering to Ofcom, or onward trade it. BT believes such opportunities may be extremely limited in ranges where customers were already using such numbering. The level of any charge at the same time would need not to be a barrier to entry, and not be a tax on industry. It is difficult to see how these conflicting demands of a charging regime might be reconciled. Given that there is no shortage of numbers, the question is whether it is a problem that needs to be addressed.

Question 51 What internal changes would communications providers have to make, and at what cost, to support charging for numbers? Would these changes be preferable to earlier and more widespread use of conservation measures and (limited) changes to increase geographic number supply?

BT cannot assess with any degree of certainty the changes it might need to make without a clearer vision of how a market mechanism might work, and for which number ranges. The indications so far are that as there is no underlying shortage of numbers, and that charging that would influence behaviour would be at a level that would be likely to act as a further tax on the industry and at the same time constitute a barrier to entry. Conservation measures, overlays and even possibly closing the Scheme would be preferable to what BT believes appears from the information put forward here by Ofcom to be an administratively burdensome yet ineffective, charging regime.

Question 52 How might existing number allocation rules be reduced if charging for numbers was introduced?

BT does not believe that charging for numbers in a manner that does not act as a barrier to entry can be introduced without there being a “command and control” system regulating the supply of numbers, according to need. As such, while successful number charging may reduce the need for some activities like auditing the use of numbers, it may require two sets of rules and an increased burden on both Ofcom and industry; rules around need rather than ability to pay, and trading rules.

Question 53 What are your views on this illustrative charging mechanism, and would you suggest any changes or alternatives to it?

Whilst a forward-looking one-off charge for number allocation followed by subsequent annual charges may be a reasonable charging mechanism in principle, one difficulty of applying it in practice is how to deal with existing numbers that have been obtained for free. Retrospective charging for these existing numbers when providers cannot effectively choose to reduce their exposure to them is inappropriate.

Ofcom suggests many different factors that could be used in designing the exact charge and, whilst these may accord with its high level charging principles, without some clear priorities they may create complexity, misunderstanding and an unnecessary cost.

Question 54 How would charging for number blocks affect consumers?

The impact on consumers would depend on the level of the number charge. Operators may attempt to recover part of the additional cost through a secondary market, and pass the remainder on to customers. However, there is a possible additional indirect detriment, as Ofcom may find it more difficult to enforce the sort of consumer protection measures it proposes in an environment where companies mis-using numbers have paid or are paying for them relative to one in which these companies are obtaining them free of charge.

Question 55 What impact do you think charging for numbers would have on sub-allocation? Should Ofcom encourage or facilitate sub-allocation and, if charging were introduced, would changes be needed to the process of sub-allocation to facilitate trading?

Successful number charging will incentivise operators to use sub-allocation to raise revenues from unused numbers. Sub-allocation and trading are essential to achieve improved allocative efficiency. At least one essential element of a good trading platform is transparency in terms of knowledge of what numbers are available and sought, from and by whom, and at what prices.

Question 56 Which types of consumer abuse do you think Ofcom should particularly attempt to address through its numbering policy decisions?

Clear anti-fraud mechanisms are needed in relation to HRPRS. Stronger powers with a wider remit for ICSTIS must be considered. All abuse needs to be acted upon to protect consumers; all cases are important. In order to deal effectively with abuse, it needs to be understood end to end so that it can be

eradicated. Removal of obligations upon network operators to connect or open number ranges used for fraud/abuse will enable immediate steps to be taken to protect customers and industry.

Ofcom needs to work together with industry forums and stakeholders to prevent and counter abuse swiftly and effectively.

> *Question 57 Which number ranges and types of originating communications provider do you think should be covered by an extension of the Numbering Plan's tariffing provisions? What practical issues are involved, and how would this vary according to the number ranges and service providers involved?*

BT believes that for practical reasons, public payphones should be exempted from some of the provisions of the NTNP, for practical reasons. BT would be prepared to discuss measures on a case by case basis.

> *Question 58 What do you think of the potential conditions proposed by Ofcom for inclusion in a consumer protection test for number allocation, including the proposals that numbers should not be provided to anyone with a particular track record of persistent and/or serious consumer abuse?*

BT supports the application of conditions addressed in Q.58. As with other consumer protection measures, there will be an ongoing need for work to:

- continually improve protection,
- to implement a sustainable and appropriate process; and
- to add requirements as situations evolve and are raised through industry reporting.

A consistent and transparent application of the criteria is essential. .

> *Question 59 Are there any other circumstances in which it may be appropriate for Ofcom to refuse number allocations?*

There are many potential reasons for refusal of allocations. These include

- representation from CP's relating to activities that are considered 'abuse';
- poor justification by reference to tightened service descriptions;
- negative information on the applicant and/or company;
- unsatisfactory credit vetting/financial checks.

Ofcom could also utilise AIT information formally requested from CPs.

Question 60 Would you support the use of a consumer protection test as a basis for withdrawing number allocations? What kind of considerations should Ofcom apply in any such test, and what would be the practical issues involved in applying such a test?

BT supports the use of consumer protection tests to withdraw allocations. However more clarity is required regarding:- :

- what measures will be used;
- who will police the ranges and how
- who will investigate and enforce a breach of any rules;
- what exactly could be withdrawn;
- impact upon legitimate end users in that range.

There is a need for further cross industry work with Ofcom.

Question 61 What consumer abuses do you think might occur in the future, and what steps might Ofcom take now in its numbering policy in order to reduce the potential for such abuses?

New technologies and innovative services bring considerable benefits for customers but new opportunities for abuse. Ofcom needs to show a readiness to use its existing powers, in a generally light touch regulatory regime to get the balance right. The application and enforcement of applicable legislation is essential. .

The Fraud Forum could support Ofcom, although its constitution may need widening and it may need formalised rules for membership.

Annex B

Consumer Market Research

Market Research Context

B1. Two of the most significant proposals Ofcom is seeking to introduce/continue relate to relaxing the location and technological service integrity of landline numbers. Location integrity has meant that landline subscribers associate the 01273 area code, for example, with a fixed location in Brighton; service integrity has meant that landline subscribers associate that 01273 area code with a traditional PSTN phone service, not with mobile or nomadic services.

B2. This clarity of location and service integrity for area and number codes has created many benefits for consumers and businesses. Among other things, clarity has facilitated the memory of numbers, call tariff transparency, and trust.

B3. Given these benefits, the key policy question for Ofcom's proposals now is whether they are supported by findings from consumer research. If they are not, the risk is that uncertainty, confusion and mistrust relating to location and tariffs create a consumer detriment. This means consumers will not access and pay for some services that they otherwise would. If this is the case, Ofcom's proposals would damage consumer interests rather than protect and promote them.

BT's Market Research Findings

B4. Market research commissioned by BT from NOP last November indicates that consumers perceive three big advantages from geographic and service integrity of area and number codes.

B5. First, the location integrity of area codes promotes trust as to where callers are and where businesses are located.

B6. NOP found that whilst 80% of its sample of 1,461 consumers would call a business offering a landline number, only 25% would do so if a mobile number was offered. Half of respondents would feel uncomfortable calling a business offering only a mobile number, compared to only 3% offering only a landline number. Approximately one-third of those uncomfortable calling mobile-only businesses cited the risk of fraud and deception and not knowing where the person or business is as the factors causing their discomfort. In fact, the importance placed on being able to trust the location signified by area

codes was so strong that more consumers expressed a preference for it (59%) than for the ability to take their number with them when moving home (36%).

B7. Second, the service integrity of area codes promotes trust as to where callers are, where businesses are located and clarity as to call charges.

B8. NOP found that 85% of consumers would be concerned if they could no longer tell from the area code whether a person or business was located in the UK or elsewhere.

B9. Third, area codes facilitate memorising numbers.

B10. NOP found that whilst 75% of its consumers would remember the landline numbers of friends and family, only 5% would do so for the mobile number. The principal reason for this was the characteristics of landline numbers – knowledge of area codes and ability to use short dialling within area means landline numbers are, for consumers, effectively shorter.

Ofcom's Research Findings

B11. Market research commissioned by Ofcom from Futuresight are largely consistent with the NOP findings.

The location integrity of area codes promotes trust

B12. Futuresight found that approximately 50% of consumers believe the location integrity of area codes to be important. Ofcom appear to be slightly dismissive of this response, attributing it to "emotional and practical reasons".

B13. However, the consumer response is supported by businesses. Ofcom reports that businesses in particular value the demonstration of local presence and the ability of area codes to encourage local trade. For these reasons, businesses said they would be concerned about the loss of geographic identity and the arising potential confusion over location.

Service integrity of area codes promotes trust in location and clarity of call charges

B14. Ofcom reports that consumers are less likely to call numbers perceived by them as expensive and that, in general, consumers already tend to over-estimate the cost of calls to most numbers. In other words, even with service integrity there are inhibitors arising from perceived call costs. If such integrity is relaxed consumers will worry about the costs of calling other platforms like mobile and VoIP even if Ofcom maintains call costs as though the call is is to the location their area code suggests.

B15. Whilst Ofcom reports that 9 out of 10 consumers would use information sources like phonebooks to find the cost of different calls, in an increasingly fragmented voice market with multiple platforms and service providers it is unlikely that such sources could easily provide the clarity of call charges required to remove the consumer detriment.

Area codes facilitate memorising numbers

B16. Futuresight find that about 6m consumers aged 65+ use fixed line phones only, and that 50% of this age group use local dialling. Almost 50% of consumers in general dial numbers from their landline phones from memory.

B17. These figures indicate that use of mobile phone memories for storing numbers is simply not an option for a significant proportion of adults. They also indicate that, as Ofcom puts it, local dialling is "not without some benefits", in that it facilitates dialling by consumers in general.

Conclusions

B18. Trust is an increasingly important issue in the delivery of effective telecommunications services. It is, for example, increasingly threatened by confidence-reducing developments in the public Internet space such as SPAM, SPIT, malware, spyware, phishing, viruses, hacking, and keylogging.

B19. Consumer market research clearly indicates that the location integrity, or trust value, of area codes is very highly valued by consumers and businesses. Current Ofcom policy initiatives have the potential to reduce this integrity, develop a further barrier to trust in the overall telecommunications system, and potentially provide a further opportunity for the exploitation of consumers through misrepresentation of location. Voice calling should not be undermined in this way.

B20. A consistently strong theme across the consumer research is uncertainty of actual call costs – even though there is still a large degree of service integrity. Relaxing this integrity will bring together what Ofcom describes, on the one hand, as low tariff transparency in mobiles with, on the other hand, reducing location integrity of area codes. The result will be greater uncertainty and confusion.

B21. Finally, a third consistently strong theme is that area codes facilitate the use of landlines to make calls, for all consumers, but particularly those without mobiles (predominantly older consumers). Relaxing location and platform integrity would, over time, result in an increasing proportion of numbers requiring full dialling, which will have a disproportionately adverse effect on such consumers.

B22. **Thus, the quite strong evidence from consumer research is that, *at this time*, relaxing or removing the location and service integrity of area codes and numbers would not be welcomed by consumers. Whilst we agree with Ofcom that the technological changes that erode such integrity are inevitable, the major challenge lies in developing an effective transition path so that consumers understand the changes taking place in their services and continue to trust them**.

Annex C

Closing the Geographic Scheme

C1. Closing the Scheme is not BT's favoured option for creating additional useable geographic numbers. An overlay code generates several times more numbers and is less disruptive to the generality of customers. Ofcom could theoretically close the Scheme for just the areas that are exhausting, however BT believes that this would simply lead to confusion.

C2. However, BT would point out that the providers of mobile services appear to benefit in number husbandry and operational terms by 07 numbering being a closed scheme. They (and possibly some VoIP providers) also appear to benefit from using geographic numbers as though they too were closed.

C3. By requiring callers to dial the full number, mobile providers can also take advantage of short codes starting with digits other than access codes with the first digit "1". These are used to provide easy to dial revenue share services, often at higher tariffs than those currently permitted in 09. Allowing such dialling from mobile 07 numbers but not from fixed geographic numbers does not seem to be justifiable or technologically neutral.

C4. BT is also keen to ensure a level playing field such that were geographic numbers to be used by mobile providers, that such numbers are used as both way working (ie the network CLI is that of the ported geographic number) and that local dialling is facilitated in accordance with the NTNP, para B3.1.1 "Geographic Numbers shall not be Adopted or otherwise used other than where part of the digit structure contains a relevant Geographic Area Code as set out in Appendix A to the Plan".

C5. There are two alternatives to retaining the provision, which could be technologically neutral. One would be to close the Scheme, thereby the UK reaping a numbering dividend, in the form of local numbers with the so-called "local numbers" starting with the digits "1" and "0" coming into use, as they are in 07. However, this could be disruptive to the customers of all companies.

C6. The second is to give the choice to Providers whether they wish to retain local dialling for their customers or remove it. In removing the facility, the same opportunity to use the same short codes as the mobile providers on an equivalent basis should be ensured by Ofcom.

Annex D

D1. Introduction

The purpose of this annex is to provide more detail to support BT's views on the use of conservation measures and overlay schemes in the legacy network. It goes on to explain the differences between legacy narrowband circuit switched networks and NGNs from the point of view of routeing and number allocation, and the potential to relieve the pressure on geographic numbers and enable number portability and the use of individual numbers. It discusses what will be available on day one of 21CN implementation and what will require further development. It focuses on geographic numbers (used in a way in which the geographic significance remains valid) to demonstrate the principles involved.

D2. Legacy networks

In order to route calls from origin to destination, legacy networks make routeing decisions on a switch by switch basis. Each switch examines the received digit string (usually the number dialled by the caller) and determines where to onward route the call. This routeing decision is based on decode information contained in each switch. The more digits that must be examined to determine the correct routeing, the more decode that is required. Different switch types implement this decode information in different ways, but in all cases the amount of decode resource available is finite. Historically, the amount of decode in both the AXE and System X switches has been dimensioned on the basis that numbers were allocated to CPs in blocks of 10,000, under which regime it was necessary, on interconnect calls, to decode to the 10,000 number level (the so called *E digit discrimination*) to determine the correct routeing.

D3. Conservation Areas

D3.1 The introduction of number allocation in blocks of 1000 numbers (*F digit discrimination*) in conservation areas considerably increases the demand for decode resource (as well as a number of other types of switch resource). Issues of decode capacity are well understood and have been examined in detail by the Intercai report. It is recognised that the allocation of smaller number blocks is not insulated from other regulatory measures, with the adoption of other numbering ranges e.g. 03 and 06, potentially compromising the extent to which finer digit analysis could be carried out in the future.

D3.2 In addition to the decode block resource, there are other switch resources that are also finite. These other switch resources are provided with decode blocks to enable calls to be routed to the correct point in the network. With the allocation of new number blocks, the provision of new switch

standards to enable routing to the network end point may also be necessary. Although the Intercai study did not comment on these other resources directly, it was acknowledged that further work was required to understand these limitations in the same way as has been done with decode blocks.

D3.3 Both switch types have been through a last time buy with manufacturers, one of which has since been split up and part of the company sold on. BT does not anticipate making any further significant investment in legacy switches.

D3.4 Overall, although there is a limitation, it should be possible to support the additional conservation areas proposed, and therefore BT supports Ofcom's proposal.

D4. Overlay

D4.1 Overlay codes require the use of more than one NNG e.g. 01273 & 01272 or 01073 to be used for a single geographic area. Although AXE10 switches can support this, we set out below concerns for its provision on System X switches. Roughly two thirds of BT's switches are System X and one third AXE10. AXE10 & System X exchanges both (together) serve a geographic area. Therefore if an overlay code was introduced, it would affect both technologies. For this reason, BT strongly supports the use of conservation areas to husband geographic numbers, with overlay being used as a last resort in preference to number changes or losing the local dialling facility by closing the scheme.

D4.2 The following information provides an idea of the System X and AXE10 limitations.

<u>System X Digital Local Exchange (DLE)</u>

D4.3 A System X DLE can only support customers from twenty different NNGs. Approximately 20% of existing DLEs support ten or more NNGs with 2% of those supporting fifteen or more NNGs.

D4.4 In theory, four NNGs are supportable on System X concentrators. The support of a different NNG on a concentrator requires the use of an additional resource called a Point of Origin (POO). Although there are a number of these, existing customers have been allocated POOs from across the range for services such as 'Soft Dial Tone' and 'CallMinder'. Switch Manager, BT's work management tool, cannot support the provision of more than one NNG per concentrator..

D4.5 In addition each concentrator is split into Line Controller Groups (LCG) that support 128 lines each. Each LCG can only support customers from the same NNG. (A concentrator has approximately 2000 lines). Customers are

currently split across the LCG's and would require re-jumpering (a short break in service for the customer to free up LCG so as to support different NNGs.

D4.6 It would in theory be possible to increase the number of concentrators. However, the last time buy was completed some time ago, and Marconi have since ceased manufacturing this equipment. BT does not have stockpiles of concentrators and any additional concentrator provision would need to be sourced from existing lightly loaded concentrators which would also require re-jumpering and a break in service for customers.

D4.7 In theory, switch development may be possible e.g. increase in POO charge groups, as Marconi do still have some software developers for their remaining business. However, it is economically inefficient to make any further investment in the legacy network beyond meeting essential requirements where there is no viable alternative.

AXE10 DLE

D4.8 In theory, the AXE10 concentrator can support as many NNGs as required, although the switch software limits that, due to other software resources required for each NNG on a DLE. A DLE has the use of 512 B Origins (BO) although only 256 can be made available for customer use (Design limitation). Each NNG requires a minimum of two (one for origination and one for termination). BOs are used within the switch for all number and routing activities. There is a limitation on the number of spare BOs available for use. Only 256 Charge Groups (CG) can be provided on a DLE with 1 CG per NNG.

D4.9 As with Marconi, BT has gone through a last time buy with ETL and concentrators have the same scarcity problems. Although ETL are providing elements within 21CN, they may find it difficult additionally to support any legacy equipment manufacture even if we were prepared to make the investment.

D5. NGNs

D5.1 Architecturally, NGNs are very different from legacy networks, and call routeing works in a quite different way. An NGN architecture as described below is potentially able to support a more flexible and granular number allocation regime of the type referred to by Ofcom in the consultation document (as well as alternative interconnect models). However, it is important to note that 21CN (and, it is believed, NGNs to be deployed by other CPs) will not be able to support such a regime at day 1 and further development will be required. Therefore, some care is required in terms of when and how NGNs will relieve the pressure on geographic numbers, and enable the extensive use of individual numbers. For this purpose, we are

taking individual numbers to mean the allocation of numbers on a one by one basis to end users, who would choose their operator, and originating operators would have to do their routeing on a number by number (not block) basis

D5.2 The following (very high level) description of a normal BT controlled PSTN call set-up originating and terminating within BT's 21CN is intended to highlight the differences between NGN and legacy architectures given the current understanding of 21CN development.

- The Multi Service Access Node (MSAN) serving the calling party collects dialled digits from the caller, and forwards these, using the H.248 protocol, to its parent call server (henceforth referred to as the originating call server)
- The originating call server (CS) (provided that the destination can be uniquely identified by examination of the dialled digits) forwards the destination number to a centralised routeing database (RDB) within the BT network, using the ENUM protocol (unless the number resides on the originating CS)
- The RDB returns a SIP Uniform Resource Identifier (URI) for the called party, again using ENUM. This will in general be of the format <destination number> @ <destination call server>
- A SIP-I signalling message containing this SIP URI is sent from the originating to destination call server
- The destination call server responsible for the terminating point within the BT network signals call arrival to the MSAN using H.248
- If the call is able to proceed, IP addresses and port numbers for origin and terminating points are exchanged in signalling messages, enabling a media path via which the calling and called parties can speak.

Calls to numbers that are not controlled by a BT 21C PSTN Call Server are routed via gateways to the NGS network. To work within the existing interconnect arrangements, this routing is dependent on both the origin of the call and the dialled number (ie number block). For this reason the routing analysis for non BT 21C controlled numbers uses digit analysis in the call servers only and does not use the RDB. Our current thinking, subject to ongoing discussions on NGN interconnect, is that this 'origin based routing' capability will be needed for NGN interconnects also.

Deployment and development

D5.3 In the case of 21CN, the initial focus will be on PSTN replacement. Thus the Pathfinder deployment in South Wales will use call servers based on the processors used in BT's AXE10 DLEs. As such, these call servers will inherit the routeing capabilities and quantitative attributes which apply to the AXE10s. To achieve the full potential of the 21CN architecture, it is

recognised that significant enhancement of the initial capabilities of the PSTN call servers and other network elements will be required.

D5.4 To relieve the pressure on geographic numbers and enable number portability and the more extensive use of individual numbers, some of the major areas requiring enhancement from a numbering and routeing point of view in the context of PSTN replacement are as follows:

- Enhancement of the RDB. Initially this will only be able to establish the identity of the destination call server if this can be uniquely determined by inspection of the destination number. In cases where identification of the destination call server requires inspection of both origin and destination number (as is the case for interconnect calls), this will initially be performed by the originating call server. The RDB will require enhancement to allow it to determine the destination call server based on origin and destination numbers. This requirement may not persist in the long run as alternative commercial interconnect models evolve.

- Re-dimensioning of data tables to reflect the general trend towards finer routeing granularity. The main areas affected will be number of lines of decode and quantity of 100 number blocks, but there will be knock-ons into other areas.

D5.5 BT is currently in dialogue with its 21CN suppliers on these aspects but it must be stressed that no development is yet committed or timescaled.

D5.6 It must additionally be remembered that the introduction of NGNs also has the potential to support a wide range of new service functionality. As indicated by Ofcom, this may suggest further changes to the use of the UK numbering space. Such changes are likely to have an impact on numbering and routeing capabilities, and for this reason BT believes it is very important that a long term vision of future use of the UK E.164 space (and indeed beyond E.164), taking on board the interests of all stakeholders, is separately developed.