



# Geographic telephone numbers

Safeguarding the future of geographic numbers  
(~~Redacted for publication~~)

Consultation

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## Section 1

# Summary

- 1.1 Telephone numbers are fundamental to how residential consumers and businesses use and access telecommunications services. They are a critical national resource. Geographic numbers are fixed-line telephone numbers that begin with the digits '01' and '02'. They are widely recognised, valued and trusted by consumers.
- 1.2 Ofcom is responsible for administering this essential resource and for ensuring that sufficient numbers are available for us to allocate to communications providers ('CPs') so that they can provide a choice of services to consumers.
- 1.3 This consultation invites your views on changes we are proposing to make to how we manage geographic numbers. The proposals are designed to maintain our ability to meet CPs' future requirements for geographic numbers in all areas of the UK. Importantly, this document does not propose changes to any geographic telephone numbers currently in use. Nor is there a risk that numbers will not be available to meet consumers' needs.
- 1.4 The fundamental aim of our proposals is to ensure that consumers' choice of CPs will not be restricted when they want new phone services. Competition has driven many of the benefits that users of telecommunication services currently enjoy. Our proposals are designed to ensure that competition is not constrained in future by the availability of geographic numbers. At the same time, we intend to limit the impact on consumers of measures that may be needed to maintain such unrestricted choice. We propose to achieve this by implementing new mechanisms to manage the allocation and use of telephone numbers.
- 1.5 If, subject to this consultation, we go ahead with our proposals, they would mean, that:
  - phone users in some areas would need to dial the area code when making local calls from fixed-line phones at some point in the future. This would create more numbers in the areas concerned, by allowing use of numbers in which the first digit after the area code is either '0' or '1';
  - CPs would pay, initially in a pilot scheme, for geographic numbers allocated to them in area codes where there are particular concerns about scarcity. The purpose of doing this would be to increase CPs' incentives to use geographic numbers efficiently, and hence to reduce the need to create more numbers in some areas; and
  - we would strengthen our administrative procedures for allocating geographic numbers to CPs and for following up on their use.

## Why we are proposing changes

- 1.6 We maintain forecasts of future availability of new geographic numbers for each of the UK's 610 geographic area codes. Like any forecasts, they are subject to uncertainties. Demand and availability in specific areas is very difficult to forecast accurately. Nevertheless, the current forecasts suggest that if we do not make changes, we risk exhausting stocks of new geographic numbers to allocate to CPs from 2013 onwards, with potentially seven areas running out of new numbers before

2015 and 70 area codes, covering about 21 per cent of the UK population, running out by 2020. We are proposing changes in order to prevent this from happening, because otherwise consumers' choice of providers of new fixed-line services in the areas affected could be restricted, denying them the benefits of competition.

- 1.7 Competition in the provision of voice services has been developing strongly for many years, and there are now some 300 CPs which have allocations of geographic numbers. Under current arrangements, a CP that needs new numbers in an area generally applies to us for a new allocation while a large number of other CPs hold stocks of unused numbers with the same area code. Since our supplies of new numbers in any area code are finite, this could lead to exhaustion of our supplies in some area codes, even though the total quantity of numbers already held by CPs for those areas would exceed local consumers' needs. If this were to happen, consumers could still obtain phone services with new local numbers, but only from CPs with unused numbers from previous allocations.
- 1.8 We currently allocate geographic numbers, without charge, by area code to all CPs that meet eligibility requirements for local numbers. Capacity limitations in older equipment used in some networks require us to allocate numbers in blocks of 1,000 contiguous numbers. An allocation of this size is often larger than the CP requires. While any numbers from the block are in use, the CP cannot return the block to us for allocation to any other CP. Some CPs authorise the use of their allocated numbers by other CPs in block sizes which can be smaller than 1,000 numbers through a commercial arrangement known as 'sub-allocation'. Such arrangements are not used widely even though they could improve the efficient utilisation of the geographic numbers we allocate.
- 1.9 Contrary to our expectations of a few years ago, the capacity limitations in some networks, which constrain our allocations to a minimum block of 1,000 numbers, are not likely to be relieved in the foreseeable future. This is because some CPs' investments in next-generation network ('NGN') technology, which would be capable of removing the limitations, have not progressed at the rate then expected.
- 1.10 Although new local numbers would continue to be available even in areas where we might exhaust our supply of blocks of new numbers, exhaustion would imply that competition, and entry into the market by new CPs, could be reduced. We must therefore consider what changes would be appropriate in order to make sure that geographic numbers across the UK can support competition in fixed-line services for the foreseeable future and that their value to consumers is safeguarded, taking account of existing network constraints.

## Objectives and approach

- 1.11 Our central objective is to ensure that geographic numbers continue to be available to support competition in fixed-line voice services in the foreseeable future. In considering how to achieve this we are particularly mindful that any option for creating new supplies of geographic numbers would involve some disruption to consumers, which we seek to minimise.
- 1.12 One part of our approach, therefore, is to seek to reduce the need for new supplies by proposing appropriate changes to our policies and procedures that could have the effect of reducing our rate of allocation of geographic numbers to CPs.
- 1.13 Despite such changes, however, we consider that we will require new supplies of geographic numbers in some areas in the future. We are therefore at the same time

considering options for providing new supplies of geographic numbers that could be implemented with the least disruption over time.

## Our proposals

### We propose to create new supplies of geographic numbers

- 1.14 The lead times associated with creating more geographic numbers are lengthy and we must therefore agree the most appropriate means to create more numbers now so that plans are ready when they are needed. We propose options to achieve this, setting out possible solutions that could be applied generally wherever new supplies of geographic numbers are needed. Stakeholders are invited to submit their views on any aspect of these proposals, as well as any ideas for alternative or localised solutions. During the course of the consultation, we intend to organise open forums to discuss the proposed options in some parts of the UK likely to be affected in the short term.
- 1.15 A detailed implementation plan will be necessary to apply the chosen options effectively. Following the conclusion of this consultation we propose to establish an industry forum to develop this plan, including:
- an appropriate communications campaign;
  - notice periods for changes and relevant timelines for implementation;
  - the guidelines for automatic responses to misdials;
  - direct consultation with consumers in the affected areas; and
  - any other relevant aspects of implementation that may be raised by stakeholders in this consultation.
- 1.16 The approach to increase the supply of geographic numbers that we currently prefer would require consumers in some areas to include the area code when dialling local phone numbers from their fixed-line phones. We refer to this approach as 'closing local dialling' because it removes local consumers' current ability to dial local numbers without the area code. It would allow us to release for use numbers which start with '0' and '1', and thus increase substantially the quantity of local numbers. Call charges would not be affected by this change. We prefer closing local dialling over other options that we could adopt for creating new supplies of local numbers because consumers who participated in qualitative research on our proposed options strongly preferred it.
- 1.17 While closing local dialling would increase the quantity of local numbers available in each area affected, it is possible that this new supply would eventually also be exhausted in a few of those areas. In such areas, we might need to consider further supply measures in the future. In such cases our proposal is to introduce an overlay code, which would mean that two area codes would apply to the same geographic area at the same time, doubling the quantity of local numbers. We forecast that closing local dialling would defer the need for any overlay codes in any area until at least 2022. In any area where closing local dialling and the introduction of an overlay code are both needed, the overlay code would be introduced some time after local

dialling is closed.<sup>1</sup> For the avoidance of doubt, we are not proposing to change any existing phone numbers through either measure.

- 1.18 We do not currently foresee any risk of number exhaustion in areas covering some 35 per cent of the population.<sup>2</sup> We propose to avoid disruption in those areas, and to confine the impacts of any new supply measures as far as possible to areas that require them.

### **We propose to charge CPs for geographic numbers to incentivise efficient use**

- 1.19 We have historically allocated numbers to CPs free of charge. However, given the increasing scarcity of numbers, we now propose to introduce an annual charge to CPs for the geographic numbers we have allocated to them. This is to increase CPs' incentives to use numbers efficiently and effectively, and hence limit our need to increase the supply of numbers. The objective of a charge would be to signal to CPs the wider costs associated with making numbers available. Thus a CP would implicitly weigh its need for geographic numbers against the cost of number blocks, in terms of the disruption that new supply measures might impose on consumers and on other CPs. As a result, CPs would then generally be more likely to:

- return unused number blocks;
- improve the utilisation of allocated number blocks (e.g. through switching demand from new number blocks to obtaining numbers from the existing stock of numbers held by CPs); and
- reduce demand for new number blocks (e.g. by reducing applications for new allocations to cases where there is genuine value).

- 1.20 Most European countries already charge for geographic numbers and the UK currently stands out as an exception. However, if we were to introduce charging here, we would need to take into account that we face quite different circumstances from those faced by other countries when they introduced charging. Most European countries introduced charging for numbers at an early stage of development in their communications markets. The market in the UK is more advanced with many competing CPs with geographic numbers. Introducing charges now could pose particular risks. For example, there could be disruption to end-users if CPs decide to disconnect services or change phone numbers to free up number blocks to return to Ofcom in order to avoid charges. In addition, we are mindful that charging should minimise any competitive distortion between existing players and new entrants, and between small and large CPs.

- 1.21 We propose to introduce charges for geographic numbers initially in a pilot scheme confined to areas where 100 or fewer 1,000-number blocks remain available for

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<sup>1</sup> Local dialling is only possible between numbers with the same area code. Introducing an overlay code without closing local dialling could confuse callers because they may be unsure which local calls can be dialled without the area code. This could cause consumers to misdial.

<sup>2</sup> Areas with '0' plus two-digit area codes (such as London '020' and Cardiff '029') and '0' plus three-digit area codes (such as Glasgow '0141' and Nottingham '0115') are not likely to run out of numbers. The areas approaching exhaustion now are some other large population centres, for example Brighton, Bournemouth and Aberdeen, with '0' plus four-digit area codes. We also expect particular scarcity issues in 10 rural areas in Cumbria, as well as in Langholm, near Dumfries, all of which still have '0' plus five-digit area codes.

allocation (currently 58 areas).<sup>3</sup> The initial annual charge proposed is 10 pence per number per year applied to all allocated numbers. This would be within the range of 0.06p to 27p charged currently in European countries. Although 10p is higher than the European average charge of 7p, this reflects that we do not propose charges for numbers in area codes where we do not foresee scarcity.<sup>4</sup>

- 1.22 If we go ahead with this proposal, retail charges to consumers may rise to the extent that CPs decide to pass the costs on to their customers. Overall, we anticipate that any price increases to consumers are likely to be modest since our proposal is that charges would be both low and targeted at areas with greatest number scarcity. Assuming CPs spread this cost of number charges under the pilot scheme across all customers, the average increase in prices to consumers would be approximately 10p per year.<sup>5</sup>
- 1.23 We would propose to review the results of the pilot scheme 18 months after its launch. Depending on the outcome of the review we may propose to extend charging to include all UK 'conservation areas' – 590 areas with four- and five-digit area codes.<sup>6</sup> We propose to confine our charges to conservation areas because geographic numbers are plentiful elsewhere. In addition to the scope of the charge, we would also consider the need for any changes to its level.

### **We propose to strengthen administrative procedures for the allocation and use of geographic numbers**

- 1.24 We are also proposing to strengthen the administrative procedures that we use in processing CPs' applications for new allocations of geographic numbers, and in following up on CPs' use of the numbers that we have allocated to them. We consider that these additional measures could also help the effective use of numbers, reducing the need to make more new numbers available.
- 1.25 We are considering the following changes:
- introducing a time-limited reservation step prior to allocation of geographic numbers for some applications. Our initial thoughts on how a reservation process might work are that numbers would be reserved rather than allocated to CPs of whom we have no evidence to suggest that they are operationally ready to put the numbers into use. The reservation would be converted to an allocation upon receipt of such evidence. We would then have more confidence that numbers allocated would be used, and could withdraw reserved numbers quickly when the reservation period ends if there is no reasonable prospect of use;
  - gathering more extensive information on the intended use of the numbers on the application form to inform the allocation decision and to follow up on statements made at the time of allocation; and

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<sup>3</sup> This is a preliminary estimate based on information on the number of blocks available to allocate as at 9 July 2010. Ahead of implementing any proposed pilot scheme we would update the number of blocks available in each area.

<sup>4</sup> If we decide to go ahead with the pilot scheme, approximately eight per cent of allocated UK geographic numbers would be subject to charges. This could increase to approximately 79 per cent if we later decide to extend charging to all 590 conservation areas.

<sup>5</sup> This increase to the consumer's bill is likely to be subject to VAT at 20% (rate from 4 January 2011).

<sup>6</sup> This excludes the conservation area of Isle of Man (01634), which is outside the scope of this review.

- strengthening and broadening our audits, which are successful in withdrawing unused geographic number blocks and informing our knowledge of CPs' number use and utilisation rates.

## **Next steps**

- 1.26 This consultation runs until 18 February 2011. Our proposals potentially affect a wide range of stakeholders and consider issues of relevance to many consumers. We encourage you to let us know your views.
- 1.27 We aim to publish our conclusions in a statement in early summer 2011. Depending on the outcome of this consultation and whether we decide to proceed with our proposals, we expect to consult further on the detailed steps necessary for implementation when we publish the statement.

## Section 2

# Introduction

## The need for this review

- 2.1 Telephone numbers are a critical and, in some cases, scarce national resource. They are fundamental to the communications requirements of consumers and businesses.
- 2.2 Geographic telephone numbers – so called because the first few digits following ‘01’ and ‘02’ provide geographic significance and associate the number with a particular UK location - are the numbers most widely recognised, valued and trusted by consumers. They are also referred to as ‘landline’ or ‘fixed line’ numbers, as they are the type of number used for residential and some businesses’ fixed telephone lines.
- 2.3 Ofcom manages the UK’s telephone numbers under the Communications Act 2003 (‘the Act’). We are responsible for ensuring that sufficient numbers are available to meet demand and for setting the policy on how numbers may be used. We allocate blocks of numbers to CPs so that they can use those numbers to deliver services to their customers.
- 2.4 Our stock of geographic numbers is finite. We are facing challenges in ensuring the ongoing availability of sufficient number blocks to fulfil CPs’ requirements. If we do not meet this challenge successfully, scarcity of numbers may constrain CPs’ ability to compete to provide services to consumers.
- 2.5 Importantly, there are sufficient numbers to provide services to consumers and the current challenges do not present a risk to availability of numbers for consumers’ use. Nor do the current challenges mean that consumers will need to change their existing telephone numbers. The problem lies in ensuring that there is an adequate supply of new number blocks to allocate to CPs in certain geographic areas.
- 2.6 This consultation considers the pressures on geographic numbers’ availability. If we do nothing, and we continue to allocate geographic numbers to CPs at the rate prevailing in the recent past, then we risk running out of new numbers to allocate to CPs from 2013 onwards. Our current forecasts suggest that we may allocate all remaining number blocks to CPs in seven areas before 2015, and in progressively more area codes thereafter, potentially exhausting our existing number supply in 70 area codes, covering about 21 per cent of the UK population, by 2020. We describe our forecasts in more detail in Section 3 and Annex 2.
- 2.7 In light of our forecasts of number scarcity, we are planning for the action required to create additional numbers in areas when needed. Unfortunately, all options for increasing the supply of numbers would necessarily cause some disruption to consumers and businesses. We have looked for the approach that would minimise this likely disruption. First we will work with CPs to reduce the need for new supplies by taking measures to drive efficiency in number use; and second, we will identify which number supply measures are regarded by consumers as the least disruptive.
- 2.8 We have a variety of proposals for our ongoing management of geographic numbers to safeguard their availability in the future, and these are the subject of this consultation.

## Context

- 2.9 There are sufficient geographic numbers currently available to fulfil consumers' requirements. However, the partitioning of these numbers into large blocks for allocation to CPs creates a potential shortage in certain geographic areas. The number of CPs has increased significantly over the last ten years, leading to more competition and cheaper landline bills.<sup>7</sup> This has led to an increasing demand for numbers, despite there being a large pool of unused numbers already allocated.<sup>8</sup> One context for this review, therefore, is that the existing stock of numbers is not being used efficiently and this has led to scarcity in some geographic areas.
- 2.10 Under the current number allocation system, CPs can apply to Ofcom for allocation of numbers in blocks of 1,000 in most areas (known as 'conservation areas') and in blocks of 10,000 numbers in areas with a more plentiful supply ('standard areas'). Number blocks of this size are often significantly larger than actually required by CPs to meet their needs. This is because the block size is determined by technical routing constraints in some long-established networks and not by demand.
- 2.11 Telephone networks analyse the digits of dialled phone numbers to extract (or 'decode') the necessary information for routing and tariffing of calls. Some older networks use equipment designed many years ago to perform this function. The limited capacity of this equipment restricts the number of digits of each dialled phone number that those networks can decode into routing information. This means that the minimum size of block that we can allocate to any network must be sufficiently large to accommodate these restrictions, because the older networks would not be able to analyse sufficient digits in dialled numbers to determine different routes to phone numbers in smaller blocks. For example, we currently allocate numbers in blocks no smaller than 1,000 numbers so networks need not decode the last three digits of any dialled number when routing calls.
- 2.12 We have considered what action CPs with legacy networks could reasonably be expected to take to eradicate the decoding limitations that contribute to inefficient number use. Generally wholesale changes to networks and routing technologies would be required to move to a common practice of allocation below the 1,000-number block level. We consider that making such changes to improve efficiency of use of numbers is unlikely to be economically justifiable.
- 2.13 In 2006 we looked at the tension between block size and CPs' actual number requirement/demand as part of our strategic review of telephone numbers ('the 2006 Numbering Review').<sup>9</sup> We recognised the technical constraints described above and looked forward to an expected transition from traditional time-division multiplex technology to next-generation network ("NGN") technology. NGNs would be capable of removing the technical 'digit decoding' constraints inherent in some long-established UK fixed networks and would allow us to allocate numbers in smaller blocks or even individually.

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<sup>7</sup> See, for example, *Fixed Narrowband Retail Services Market Review* paragraph 3.10 and Figure 3.2. "Competition has also led to real savings for consumers. Despite the removal of the retail price controls ...we have seen a steady decline in the real cost of narrowband services... on a comparable basis." [http://stakeholders.ofcom.org.uk/binaries/consultations/retail\\_markets/statement/statement.pdf](http://stakeholders.ofcom.org.uk/binaries/consultations/retail_markets/statement/statement.pdf)

<sup>8</sup> Based on CPs' responses to our information requests, we estimate that around 77 per cent of geographic numbers allocated to smaller CPs are not in use; whereas around 47 per cent of numbers allocated to the larger fixed-line network providers are not in use.

<sup>9</sup> See 2006 Numbering Review consultation document (published 23 February 2006) and statement (published 27 July 2006) at <http://stakeholders.ofcom.org.uk/consultations/numberingreview/?a=0>

- 2.14 Until 2009 it appeared likely that the operators of traditional networks were planning to replace their core voice switching infrastructure with NGN technology. Removal of the digit decoding constraints would make it possible for CPs to utilise the numbers we allocate more efficiently, and hence our current supplies of geographic numbers could support industry's needs indefinitely. However, BT stepped back from its plan to replace its voice services infrastructure with its NGN design (known as '21CN'), and operators of some other major UK fixed networks do not appear currently to be planning major investments in NGN technology.
- 2.15 We therefore need to revisit the conclusions reached in the 2006 Numbering Review (when we anticipated that NGN technology would significantly change the way that we administer geographic numbers) and consider how Ofcom and CPs can manage geographic numbers more efficiently within the current technological environment to reduce the local exhaustions that we forecast will occur from 2013 onwards.

### General objective of this review

- 2.16 If, hypothetically, our stocks of geographic numbers available for allocation in an area were to run out, there would still be sufficient numbers already allocated to CPs to ensure that consumers local to the area could obtain new fixed-line voice services. However, their choice of provider would be restricted only to those who happen to have geographic numbers remaining from previous allocations. Consumers may then be constrained in their choice of supplier and denied the benefits of competition and new services, and we intend to prevent this from happening.<sup>10</sup>
- 2.17 The general objective of this review, therefore, is to ensure that geographic numbers are available to support competition in fixed-line voice services across the UK for the foreseeable future.

### Our approach

#### Reflecting citizen and consumer interests

- 2.18 In deciding how to address the above objective, we are mindful that any option for creating new supplies of geographic numbers would involve some disruption to citizens and consumers. We consider it appropriate to seek to minimise such disruption, and this consideration has shaped our approach.
- 2.19 A key principle in our approach to furthering consumer interests is the promotion of effective competition.<sup>11</sup> The availability of sufficient and appropriate numbers for CPs to use to compete in the provision of services to consumers helps support competition, as a lack of numbers may create barriers to new entry and expansion in the provision of services. We are, therefore, considering options for providing new supplies of geographic numbers that could be implemented with the least disruption so that plans for new numbers are in place for when required. We discuss these options in Section 4.

<sup>10</sup> This relates to CPs' ability to compete for consumers who want or need a new telephone number for their service. If the consumer wanted to retain an existing number, then number portability (the facility to retain the telephone number when switching providers) would allow the CP to offer service without providing a new number.

<sup>11</sup> Section 3 of the Act states that part of our principal duty is "to further the interests of consumers in relevant markets, where appropriate by promoting competition".

- 2.20 We also take into account the impact of numbering policy on citizens' interests. Telephone numbers are required for routing calls over telecommunication networks and are a vital means of communication, providing access to many essential public services. As a finite national resource, we need to ensure that the value of numbers is reflected in the way that they are used. We also recognise, from our consumer research, that consumers attach significant importance to continuity of 'their' area code and the preservation of its inherent meaning in terms of location significance.<sup>12</sup>

## Policy principles

- 2.21 Our statement *Telephone Numbering – Safeguarding the future of telephone numbers* published on 27 July 2006 ('the 2006 Numbering Review Statement')<sup>13</sup> set out our strategic decisions on how telephone numbers would be managed over the subsequent five to ten years. In that statement we said that in considering numbering policy we would take account of the following principles:

- the numbers consumers want are available when they are needed;
- the numbers consumers currently use are not changed if this is avoidable;
- the meaning which numbers provide to consumers is protected;
- number allocation processes support competition and innovation; and
- consumers are not avoidably exposed to abuse.

- 2.22 These principles, when applied to geographic numbers, were translated into the following strategic statements on the management of numbers going forward:

- we will take steps now to ensure the availability of geographic numbers for consumers in a manner that maintains their continuity and meaning, and causes consumers the least disruption and cost;
- we will ensure that sufficient numbers are available so that scarcity of numbering resource does not create barriers to entry or service provision. Our management of numbers will be neutral in the treatment of CPs;

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<sup>12</sup> For instance, consumer research conducted in 2005 found that costs to residential consumers of a change to 'their' telephone number were more related to stress and annoyance than tangible financial costs. In a hypothetical situation where telephone companies offered residential consumers a one-off payment in return for agreement to change their phone number, residential consumers said that they would have to be offered £600 on average before they would agree (see paragraph 1.11 of *Numbering Review: Report of Market Research Findings*, published 23 February 2006 at <http://stakeholders.ofcom.org.uk/consultations/numberingreview/research/>). Although our 2010 consumer research found that, overall, consumers' attitudes to change would appear to be much more relaxed than in 2005, the majority of consumers thought it was important to be able to identify the location from the telephone number, and more consumers felt this way in 2010 than in 2005 (64 per cent compared with 52 per cent respectively) - see *Geographic Numbering and Local Dialling: Report of Findings*, published 25 November 2010 at <http://stakeholders.ofcom.org.uk/binaries/consultations/geographic-numbers/annexes/numbering-futuresight.pdf>.

<sup>13</sup> *Telephone Numbering: Safeguarding the Future of Numbers*, 27 July 2006 available at <http://stakeholders.ofcom.org.uk/binaries/consultations/numberingreview/statement/statement.pdf>

- tariff transparency should be retained, so that a caller pays what he/she expects to pay for a call to a geographic number; and
- our policy approach will not hasten the erosion of location significance but will recognise (and not stifle) the effect of network and service evolution on that significance.

2.23 We consider that these principles and strategic statements remain appropriate and relevant to this review. We refer back to these principles throughout this document and use them when evaluating the appropriateness of options for the management of geographic numbers.

## Regulatory duties

2.24 The Act states that our principal duty is to further the interests of citizens in relation to communications matters and of consumers in relevant markets, where appropriate by promoting competition.<sup>14</sup> This duty lies at the heart of everything we do. In carrying out our principal duty, we are required to secure a number of specific objectives and to have regard to a number of matters, as set out in section 3 of the Act. As to the prescribed specific statutory objectives in section 3(2), we consider that securing the availability throughout the UK of a wide range of electronic communications services as particularly relevant to this consultation.

2.25 Section 4 of the Act requires us to act in accordance with the six European Community requirements for regulation. Of particular relevance to this consultation are the first Community requirement to promote competition in the provision of electronic communications networks and services, and the third Community requirement to promote the interests of all persons who are citizens of the European Union. We also take into account the desirability of our carrying out our functions in a manner which, so far as practicable, does not favour one form of, or means of providing, electronic communications networks, services or associated facilities over another; that is, to be technologically neutral.

2.26 We also have a general duty under section 63(1) of the Act in carrying out our telephone numbering functions:

“a) to secure that what appears to them to be the best use is made of the numbers that are appropriate for use as telephone numbers; and

b) to encourage efficiency and innovation for that purpose.”

2.27 Further information on the legal framework for our administration of telephone numbers is provided in Annex 6.

## Impact assessment

2.28 This consultation sets out and evaluates a number of options for managing geographic numbers. The analysis presented throughout the document represents an impact assessment as defined in section 7 of the Act.<sup>15</sup>

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<sup>14</sup> Section 3 of the Act.

<sup>15</sup> Impact assessments provide a valuable way of assessing different options for regulation and showing why the preferred option was chosen. They form part of best practice policy making. This is

## Equality impact assessment

- 2.29 We are also required by statute to assess the effect of functions, policies, projects and practices on race, disability and gender equality. Equality Impact Assessments (EIAs) also assist us in making sure that we are meeting our principal duty of furthering the interests of citizens and consumers.
- 2.30 We have therefore also considered what (if any) impact the issues under consideration may have on equality. These considerations are particularly relevant in considering our approach to increasing the supply of geographic numbers as all potential options would have an impact on consumers – either as a change to dialling behaviour or in the way that area codes function in local areas. The level of impact and disruption caused may vary according to different consumer groups. Where this is an aspect, we have highlighted our consideration of equality issues.

## **General regulatory principles**

- 2.31 We must also have regard to the principles under which regulatory activities should be transparent, accountable, proportionate, consistent, and targeted only at cases in which action is needed, as well as acting in the interest of consumers in respect of choice, price, quality of service and value for money.<sup>16</sup>

## **Scope and links to other Ofcom work**

- 2.32 This consultation relates to geographic telephone numbers only. We are focussing on geographic numbers due to the high level of scarcity in some areas, which is not being experienced in other number ranges. The geographic scope of the review is the UK and does not include the British Isles of Jersey, Guernsey and the Isle of Man.<sup>17</sup>
- 2.33 Our focus on geographic numbers does not mean, however, that this review is being treated in isolation from the rest of the UK's telephone numbering plan and our work in administering numbers. Some of the proposals discussed in this document are intended to influence demand for geographic numbers and, as a consequence, could result in increased demand for numbers in other ranges. Also, some of the options considered for managing numbers more efficiently might potentially be considered for other types of numbers in the future.
- 2.34 As well as conducting this review on geographic numbers, we are also undertaking a review of non-geographic call services. Our proposals in each review are independent although there is potential for decisions made in one review to affect demand for numbers covered by the other. We expect to publish the consultation on non-geographic call services in December 2010.

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reflected in section 7 of the Act which requires that generally we have to carry out impact assessments where our proposals would be likely to have a significant effect on businesses or the general public, or where there is a major change in our activities. However, as a matter of policy, we are committed to carrying out and publishing impact assessments in relation to the majority of our policy decisions – see our guidelines at [http://stakeholders.intra.ofcom.local/binaries/consultations/better-policy-making/Better\\_Policy\\_Making.pdf](http://stakeholders.intra.ofcom.local/binaries/consultations/better-policy-making/Better_Policy_Making.pdf)

<sup>16</sup> Section 3(5) of the Act.

<sup>17</sup> Jersey, Guernsey and the Isle of Man are constitutional dependencies of the British Crown. Although not part of the UK, they use numbers from the UK's telephone numbering plan. They have their own Telecommunications Acts and communications regulators.

## Research and evidence base

2.35 We have undertaken research and formed a significant evidence base to support the analysis and proposals set out in this consultation document, including:

- consumer research on proposals for increasing the supply of geographic numbers. This incorporated qualitative research with 12 focus groups (eight with residential fixed line users and four with businesses) in four locations across the UK (Brighton, Oxford, Bradford and Whitehaven). We also have the results of quantitative consumer research undertaken as an omnibus telephone survey, which we plan to use to track consumer attitudes to geographic numbers and dialling behaviour over time. A report prepared by Futuresight incorporating the results of both pieces of consumer research has been published as a companion document to this consultation (the '2010 consumer research');<sup>18</sup>
- consumer research conducted in 2005 that formed part of the evidence base for our 2006 Numbering Review (the '2005 consumer research').<sup>19</sup> This research provided a comprehensive understanding of residential and business consumers' attitudes associated with telephone numbers. We have compared the results of the 2005 and 2010 consumer research as part of our tracking of consumer attitudes;
- information provided by CPs in response to a series of formal and informal information requests made between August and October 2010. The information provided related to utilisation of allocated numbers in certain areas; the approach to sub-allocation of numbers; network constraints on routing of number blocks; and information in relation to feasibility of potential options for increasing the supply of numbers;
- analysis of CPs' number demand and our forecasts on number block availability;<sup>20</sup>
- a survey of National Regulatory Authorities (NRAs) in CEPT<sup>21</sup> member countries on approaches towards charging for geographic numbers;<sup>22</sup> and
- research on numbers' technical role in network equipment and the feasibility of allocating numbers in smaller blocks.

## Guide to the remainder of this consultation document

2.36 As explained, this document considers our strategic approach to managing geographic numbers and safeguarding their ongoing availability. It provides background, considers the issues and presents proposals in the following sections:

<sup>18</sup> <http://stakeholders.ofcom.org.uk/binaries/consultations/geographic-numbers/annexes/numbering-futuresight.pdf>

<sup>19</sup> *Numbering Review: Report of Market Research Findings*, published 23 February 2006 at <http://stakeholders.ofcom.org.uk/consultations/numberingreview/research/>

<sup>20</sup> See Annex 2.

<sup>21</sup> CEPT (European Conference of Postal and Telecommunications Administrations) consists of 48 members including the UK and covers almost the entire geographical area of Europe. See <http://www.cept.org/> for further information.

<sup>22</sup> See Annex 5.

- in Section 3 we examine the characteristics that make geographic numbers so valued by consumers and in demand by CPs, and explain the current challenges for ongoing number availability;
- Section 4 evaluates options for increasing supplies of geographic numbers and presents our proposed approach to creating more numbers to meet demand in areas where we predict a shortage of new number blocks available to allocate to CPs;
- in Section 5 we discuss how encouraging CPs to use numbers as efficiently as possible could reduce the need to create new numbers. We draw preliminary conclusions on the likely opportunities to reduce our rate of allocation of new geographic number blocks through administrative measures;
- Section 6 builds on the previous section's conclusions that increasing CPs' efficient use of geographic numbers would reduce the need for number supply measures and examines specific proposals to incentivise CPs' efficient use of geographic numbers through charging. We explain the legal framework and regulatory principles of a charging regime and set out the key features of a proposed charging scheme; and
- Section 7 summarises the proposals for managing geographic numbers introduced in the earlier sections of the document and sets out the consultation process and next steps. We include a timeline for potential implementation.

2.37 We have provided supplementary information in a number of annexes, giving additional background and context to aid consideration of our proposals.

*Question 1 Do you have any comments on the objectives and approach to this review of geographic number management? Do you agree with the policy principles that we consider should inform the review?*

## Section 3

# Geographic numbers: background and current challenges

## Introduction

- 3.1 In this section we examine the characteristics of geographic numbers and provide background to inform consideration of the proposals set out for consultation. We consider why these numbers are in high demand from consumers and CPs and what that demand means for the availability of geographic numbers in the future. We then explain how we manage geographic numbers currently and the particular challenges that we face in doing this effectively.

## Definition and characteristics of geographic numbers

### Definition

- 3.2 Geographic numbers are defined in the National Telephone Numbering Plan (the 'Numbering Plan')<sup>23</sup> as:

“a Telephone Number..(from a range of numbers in Part A of the Numbering Plan)...where part of its digit structure contains a Geographic Area Code...(consistent with Appendix A of the Numbering Plan)...that is Adopted or otherwise used for routing calls to the physical location of the Network Termination Point of the Subscriber to whom the Telephone Number has been assigned, or where the Network Termination Point does not relate to the Geographic Area Code but where the tariffing remains consistent with that Geographic Area Code”.

- 3.3 The definition of geographic numbers in the Numbering Plan reflects two key elements – location significance and tariff transparency. These elements are examined below.

### Location significance

- 3.4 The UK is divided into 610 geographic area codes, each covering a different part of the UK (plus three codes that cover the British Isles of Jersey, Guernsey and the Isle of Man). The Numbering Plan sets out each area code and the name of the associated geographic area.<sup>24</sup> We also provide a 'telephone area code checker' on our website to help consumers identify area code location.<sup>25</sup>
- 3.5 We know that consumers highly value the location significance inherent in geographic numbers.<sup>26</sup> The numbers can be seen as 'location brands' that have meaning and worth for the end-user of the number and for those calling the numbers.

<sup>23</sup> The Numbering Plan sets out the telephone numbers available for allocation and any restrictions on how they may be adopted or used. The latest version of the Numbering Plan is available on our website at <http://stakeholders.ofcom.org.uk/binaries/telecoms/numbering/numplan280710.pdf>.

<sup>24</sup> Appendix A of the Numbering Plan.

<sup>25</sup> Area code checker [Ofcom | Telephone area codes](#).

<sup>26</sup> See the 2010 consumer research and our analysis of its findings in Section 4 and Annex 3.

Despite changes in technology that promote the use of numbers in non-location specific ways, such as mobile telephones and Voice over Internet Protocol ('VoIP') technology that allows for nomadic use of geographic numbers, our 2010 consumer research has found that the proportion of consumers who think that geographic significance is important has increased from 52 per cent of those surveyed in 2005 to 64 per cent in 2010.

### **Tariff transparency**

- 3.6 Consumers also value geographic numbers because they generate trust through transparent tariff arrangements.<sup>27</sup> Consumers have a general idea of the cost of calling a number starting with '01' and '02' from their landline and from their mobile phones. Commonly the cost varies according to time of day and calls to geographic numbers often form part of inclusive call package allowances. Overall, the cost of calling geographic numbers is generally low (and understood by consumers to be low) relative to the cost of calling numbers in other ranges.

### **'Out of area' use**

- 3.7 Geographic numbers may be used to provide services that terminate outside of the area associated with the code. There are a number of reasons why end-users might want to use a geographic number from an area different from their actual location, and these reasons generally relate to the value that the end-user places on the number and its location and tariff characteristics. For instance, a number might be requested from a different area to give the impression of localness despite the called party being based elsewhere.
- 3.8 There are two provisos associated with the use of geographic numbers 'out of area'. First, the customer must have specified a telephone number with that area code<sup>28</sup> and second, the cost of calling the number must remain as associated with a call to a number with that area code.<sup>29</sup>
- 3.9 We intend to retain these restrictions as they support certain principles agreed in the 2006 Numbering Review; namely that we will not hasten the erosion of location significance and that tariff transparency should be retained so that a caller pays what he/she expects to pay for a call to a geographic number. These restrictions on 'out of area' use recognise the importance of maintaining the trust that consumers currently have in geographic numbers.

### **Services that may be provided on geographic numbers**

- 3.10 The definition of 'Geographic Number' in the Numbering Plan does not specify or restrict the type of service for which these numbers may be used. Most commonly, they provide the primary means of fixed-line telephone access for residential consumers. Many businesses also use geographic numbers as their contact points, choosing the location and tariff significance provided over non-geographic number

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<sup>27</sup> Our 2005 consumer research (paragraph 4.5 and figure 4.2) found a fairly clear correlation between estimated cost and likelihood to call a number, with residential consumers saying they were less likely to call numbers that they estimate to be more expensive. There also appeared to be some relationship between claimed recognition and likelihood to call. We found that consumers were more likely to respond to an advertisement for something they were interested in if the advert featured a geographic number than any other number type.

<sup>28</sup> Paragraph B3.1.2 of the Numbering Plan sets out this restriction associated with 'out of area' use of geographic numbers.

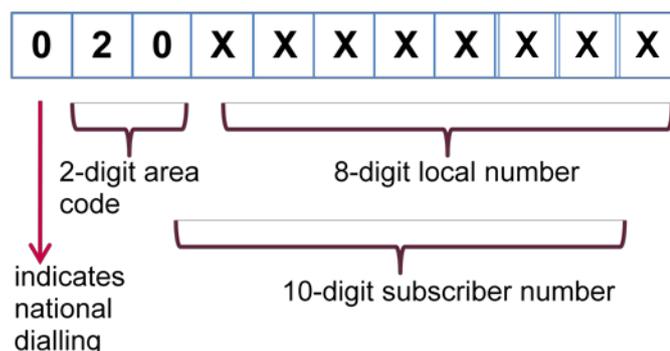
<sup>29</sup> Definition of 'Geographic Number' in the Numbering Plan.

alternatives. Essentially any type of service may be provided on a geographic number as long as its use is in accordance with the definition in the Numbering Plan.

### Structure of geographic numbers

- 3.11 Geographic numbers are generally '0' plus ten digits in length<sup>30</sup> and comprise of an area code (which is the same for all numbers within a specific area) and a local number (which, when taken with the area code, forms the unique subscriber number). The leading '0' denotes national dialling and does not form part of the area code.
- 3.12 The UK telephone numbering plan has been through a number of modifications over past decades to provide tariff and service significance. This has resulted in geographic numbers being clearly recognised by the leading digits '01' and '02'. There have also been a number of changes to increase the amount of numbers associated with certain geographic areas with the highest demand. This has resulted in area codes of different digit lengths ('0' plus two to five digits), with the associated local number being between eight and five digits long. Annex 1 provides more detail on the history of the number plan reorganisation.
- 3.13 The shorter the area code, the longer the local number; and the more numbers available in that area. For technical reasons and to prevent misdials, not all numbers in an area code are available for general use (further explained in paragraph 3.19 below).
- 3.14 A two-digit area code and eight-digit local number, such as the London '020' area code, provides 79 million numbers for that area. There are five area codes in the '2 + 8' digit format created in the year 2000. All these codes have a sufficient supply of numbers available to meet demand beyond the foreseeable future and are categorised as 'standard areas' in the Numbering Plan, with numbers allocated in blocks of 10,000.

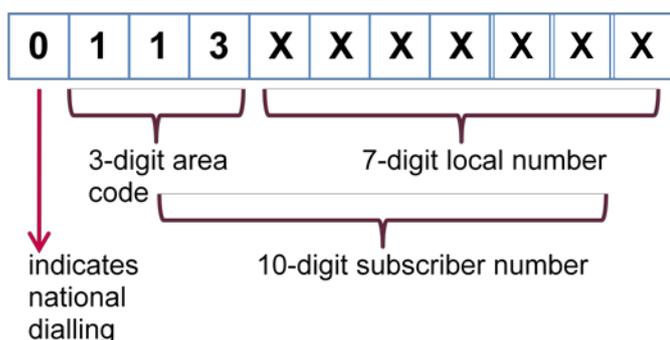
**Figure 3.1 Structure of two-digit area code and eight-digit local number**



- 3.15 A three-digit area code and seven-digit local number, such as the Leeds '0113' area code, provides 7.9 million numbers for that area. This allows for 790 allocations of 10,000-number blocks to CPs and these codes have a sufficient supply of numbers to meet demand for the foreseeable future. The area codes of several big cities are in the '3 + 7' digit format (or '2 + 8' digit format as mentioned above).

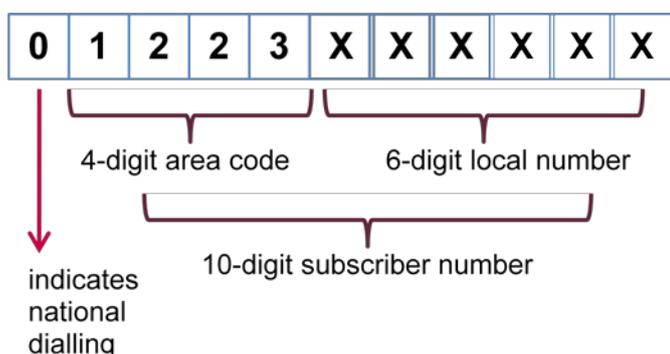
<sup>30</sup> The vast majority of geographic numbers are '0' plus ten-digits in length; however, there remain some '0' plus nine-digit numbers in certain area codes.

**Figure 3.2 Structure of three-digit area code and seven-digit local number**



3.16 In contrast, a four-digit area code and six-digit local number, such as the Cambridge '01223' area code, provides only 790,000 numbers for that area. Originally allocated in blocks of 10,000 numbers, all four-digit area codes are now 'conservation areas' with remaining numbers allocated to CPs in blocks of 1,000. Most UK area codes are in the '4 + 6' digit format. A few four-digit area codes have five-digit local numbers.

**Figure 3.3 Structure of four-digit area code and six-digit local number**



3.17 There are also 11 areas with a '5 + 5' digit format, providing only 79,000 numbers with very localised geographic significance. There is also one area code (Brampton 01697(X)) that has numbers with both four- and five-digit area codes.

### Local dialling

3.18 The UK has what is known as an 'open dialling plan' to facilitate consumer dialling of local telephone numbers. This means that calls between geographic numbers with the same area code can be dialled without the code (i.e. by dialling the local number only). The Numbering Plan makes it an obligation for CPs to provide the local dialling facility to their customers.<sup>31</sup>

3.19 The ability to dial numbers locally without the code means that local numbers beginning with '0' and '1' cannot be used. This is because numbers starting with those digits have certain other significance for networks. A leading '0' signifies a national call (or international call if '00' is dialled), whereas the digit '1' denotes a network or short code, such as the '112' emergency service number or '118XXX' directory enquiry numbers. We have also protected from use local numbers beginning with the digits '99' to prevent potential misdials to the '999' emergency services number.

<sup>31</sup> Paragraph B3.1.3 of the Numbering Plan sets out that the local dialling facility must be provided to end-users by CPs who adopt geographic numbers.

## How geographic numbers are distributed from Ofcom to end-users

- 3.20 Ofcom administers the UK's telephone numbers and allocates blocks of contiguous numbers to CPs. All CPs are eligible to apply for the allocation of numbers from Ofcom. A CP is "...a person who provides an Electronic Communications Network or provides an Electronic Communications Service".<sup>32</sup>
- 3.21 Once a number block has been allocated to a CP, it must 'adopt' the numbers in order for them to be useable. Adoption essentially means getting the allocated numbers built onto CPs' networks so that calls can be routed and delivered to the correct end-user. CPs are expected to adopt numbers within six months of allocation.
- 3.22 Responses to information requests have shown that CPs do not levy a charge for the data management amendment process ('DMA') associated with opening another CP's numbers on their network so that their customers can call the numbers. The time taken from request to completion of this process varies across networks and generally takes from between one week and 60 working days.
- 3.23 Once the process of number adoption has been concluded, the CP can give out the numbers to their consumer and businesses customers. There may be a number of different service provider layers between the CP holding the number block allocation and the end-user. For example, the numbers might be assigned to either i) the end-user directly – this is the most common practice; or ii) another CP (i.e. sub-allocation of the numbers), who will then assign them to service providers or end-users; or iii) a service provider, who may package the number with a service for provision to an end-user. However, regardless of the number of parties involved, it is the CP allocated the numbers by Ofcom that is responsible for ensuring that the numbers are used in accordance with regulation (including conditions of use in the Numbering Plan and obligations under General Condition 17 on the Allocation and Adoption and Use of Telephone Numbers ('the Numbering Condition')).<sup>33</sup>

## Demand for geographic numbers

- 3.24 Although it may appear unlikely at first sight that end-users' demand for geographic numbers is growing at all, since the number of fixed phone lines has been falling steadily over several years,<sup>34</sup> it remains the case that allocation of geographic numbers increases year-on-year. Some reasons for this are offered below.
- 3.25 Growth in demand can occur locally, in districts where the residential population and/or the number and size of businesses are increasing, driving local demand for fixed-line numbers.
- 3.26 Another more general explanation for continuing demand despite the falling number of fixed phone lines might be increasing use by businesses and other organisations of direct dial-in ('DDI'). This facility allows every phone in an organisation to have an individual number that can be dialled directly from the public network without need of the organisation's switchboard. An organisation that uses DDI usually has more numbers than phone lines, because not all of its extensions are likely to be used

<sup>32</sup> Definition of a 'Communications Provider' taken from the Definitions and Interpretations section of the consolidated version of the General Conditions as at 30 July 2010  
<http://stakeholders.ofcom.org.uk/binaries/telecoms/ga/cvoqc300710.pdf>.

<sup>33</sup> The Numbering Condition is reproduced as an annex to the Numbering Plan.

<sup>34</sup> See, for example, *The Communications Market 2010*, Figure 5.29, p. 309, available at  
<http://stakeholders.ofcom.org.uk/binaries/research/cmr/753567/UK-telecoms.pdf>.

simultaneously. Furthermore, many CPs are making increasing use of VoIP technology to provide DDI, and this allows an organisation to use its data access lines to support voice services, avoiding the need for any dedicated phone access lines at all.

- 3.27 Increasing use of applications that enable service providers to associate (and later disassociate) quickly and at low cost one or more numbers with one phone apparatus may also help explain end-users' growing use of geographic numbers. Callers can reach that phone by dialling any of the numbers that service providers assign to it. (Callers may in addition reach the same phone by dialling the number originally assigned by the provider of the phone's access line). This capability is used currently, for example, in classified advertisements that publish a temporary phone number unique to each advertiser.
- 3.28 In another example, businesses might advertise a series of unique telephone numbers in different business directories, allowing the directory provider's CP to detect each call dialled to the advertised number, route it to the advertiser's phone, and insert a short recorded voice message (a 'call whisper') audible only to the advertiser advising that the caller saw the number in its directory.
- 3.29 The 'call whisper' service described above helps businesses to monitor the effectiveness of advertisements and is an example of an increasing number of 'value-added' applications being provided by CPs and service providers to businesses on geographic numbers. Other forms of call statistics can be provided, as well as features such as time of day/day of week/area based call routing, voicemail messaging and interactive voice response (IVR) auto call attendants. In the past, such features would have been more traditionally associated with non-geographic numbers, such as chargeable 08 numbers. However businesses, recognising consumers' preference for calling geographic numbers and that lower call costs can entice more calls, have created a growing demand for these features to be provided on geographic numbers.
- 3.30 A final example of how demand for geographic numbers exceeds the number of fixed-lines might relate to a business operating from a central location and serving customers in parts of the country that cover a number of different area codes. The business may want to give the appearance of a local presence and can achieve this by using several geographic numbers, one local to each of the area codes of its customers, with all calls routed to its central location.
- 3.31 CPs are in the business of providing communications services to their customers and to a large extent their requirement for numbers is guided by consumer preference and demand. Consumers tend to recognise, value and trust geographic numbers above other number types. Appreciation of consumer attitudes inevitably leads to CPs' desire for geographic numbers to offer to their prospective customers, and a stock of geographic numbers is required to compete with other CPs and to show availability of numbers when tendering for business. Also, as consumers value the location significance inherent in the area code, CPs often seek allocations of numbers in a wide range of area codes so that they have a supply of local numbers to offer customers in different areas.

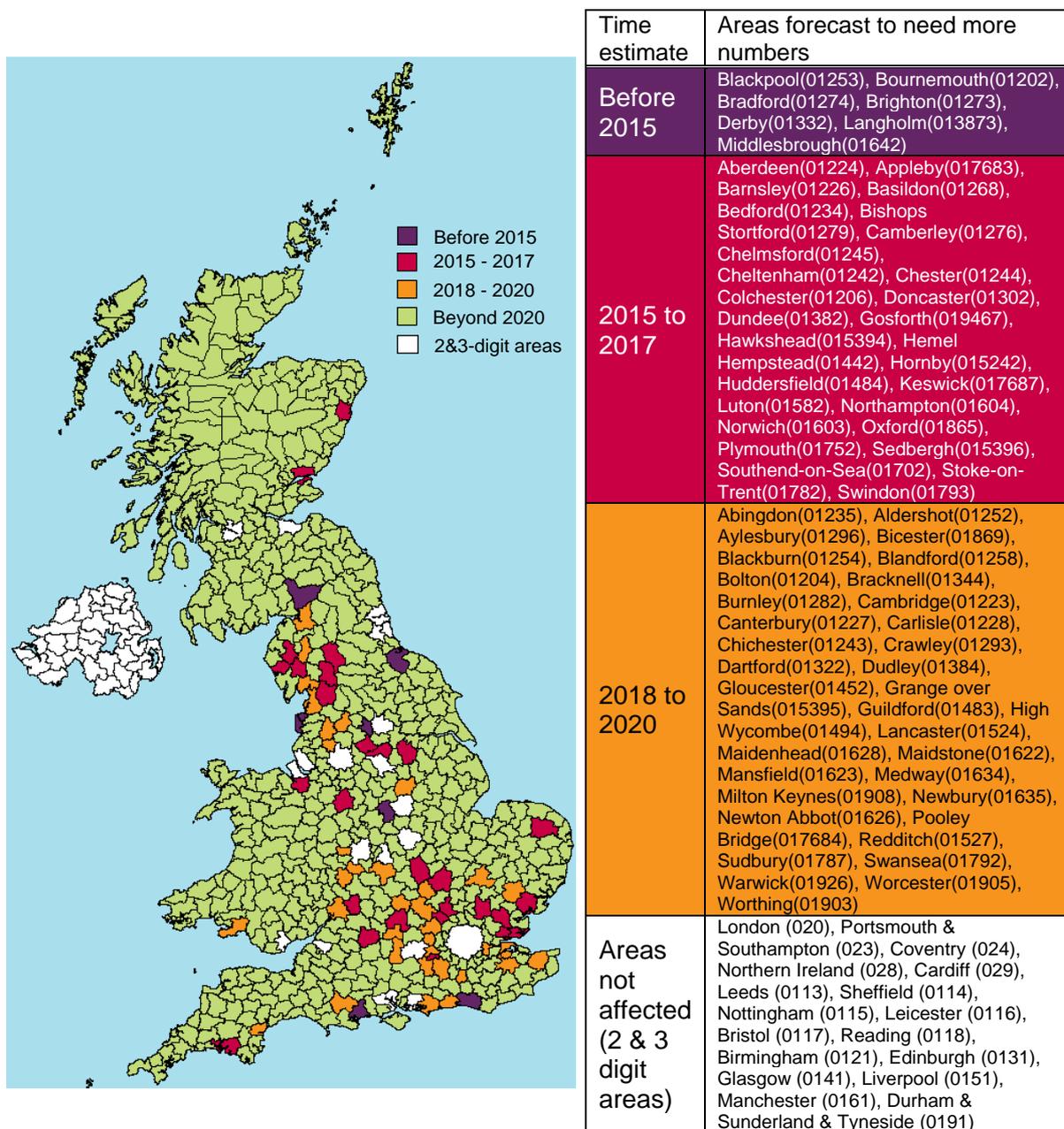
### **Our forecasts for number demand and availability**

- 3.32 Based on current number demand trends and the availability of numbers, we forecast that 70 areas may need new numbers by the end of 2020. Figure 3.4 shows a map

and list of these areas along with an estimate of when they are at risk of running out of number blocks to allocate to CPs.

- 3.33 The forecast summarised in Figure 3.4 is based on data we held on number block status and allocation records as at 9 July 2010. It is therefore a 'snapshot' of relevant data and the forecast for each area will oscillate over time (for instance, each time we allocate a block of numbers in an area to a CP or a block of numbers is withdrawn from a CP there may be an effect on the forecast).

**Figure 3.4:**<sup>35</sup> Forecast of areas that may require more numbers before end 2020



3.34 The forecast is necessarily subject to uncertainties. It is based on historical allocation trends, adjusted where required to take account of changes in demand resulting from current administrative measures (described later in this section).<sup>36</sup> However, the forecast does not attempt to quantify the potential effect of the further measures proposed in Sections 5 and 6, which are designed to improve utilisation and reduce demand for number blocks.

<sup>35</sup> The map provided in Figure 3.4 depicts the area covered by the scope of this review. Land mass outside the scope of this review (i.e. Jersey, Guernsey, Isle of Man and the Republic of Ireland) is not depicted.

<sup>36</sup> The methodology used for our forecast model is explained Annex 2.

- 3.35 In addition, the forecast will be affected by future events and influenced by many variables, including local developments, consumer demand, business decisions by individual CPs, and development of new applications and technologies.
- 3.36 The specific area codes where local new number supply measures prove to be necessary over the next ten years and the corresponding dates may therefore differ significantly from our current forecast summarised in Figure 3.4.

## Challenges for managing geographic numbers

### Why are there challenges if there are sufficient numbers to meet end-user demand?

- 3.37 As set out in Section 2, the general objective of this review is to ensure that geographic numbers are available to support competition in fixed-line voice services for the foreseeable future. This objective is being considered within the context of impending number shortages in some geographic areas.
- 3.38 It may seem surprising that such a review is necessary when the UK numbering plan provides for two billion geographic telephone numbers, allowing for over 32 geographic numbers for every person in the UK.<sup>37</sup> Indeed, we have already allocated over 420 million geographic numbers across the UK, representing almost seven numbers per person.
- 3.39 Generally speaking, shortages can occur because the theoretically-available two billion geographic numbers have to be fragmented so that they can:
- provide the location significance that consumers continue to value highly;
  - meet legacy network technical routing constraints (i.e. that calls are routed according to a minimum block size of 1,000 numbers); and
  - support competition. New entrants and service expansion, and correspondingly demand for numbers, grows year-on-year. The geographic numbering plan currently accommodates approximately 300 CPs with direct allocations of geographic numbers from Ofcom and we allocate roughly 7,000 geographic number blocks per year.
- 3.40 The nature of this fragmentation can be illustrated by using the example of a consumer wanting a Bournemouth telephone number from a particular CP:
- the two billion numbers with geographic meaning are reduced to one million numbers with the Bournemouth area code '01202';
  - this reduces to 790,000 numbers, as local numbers beginning with 01202 0 and 01202 1 cannot be used for technical reasons while local dialling is allowed, and numbers beginning with 01202 99 are protected to avoid '999' misdials; and
  - numbers are available from blocks of 1,000 allocated to the consumer's chosen CP.

<sup>37</sup> It is worth noting that numbers are not just associated with premises or consumers. They are also used to identify routing paths and may, for instance, result in multiple numbers being used by one end-user.

- 3.41 Nevertheless, there are 790,000 numbers to cover the Bournemouth area code's population of approximately 410,000 people in 210,000 residential and businesses premises.<sup>38</sup> Competition in provision of communications services in Bournemouth is high, with 82 CPs allocated 01202 number blocks. This demand from CPs has left us with only 40 spare blocks of 1,000 numbers. Based on current demand trends, we forecast that unless we take action we risk running out of blocks of 01202 numbers to allocate to CPs within the next three years.<sup>39</sup>
- 3.42 The 'Bournemouth illustration' above demonstrates that there are sufficient geographic numbers available to meet reasonable consumer demand, however, the division of numbers into areas and blocks for allocation leads to low utilisation rates, resulting in scarcity of numbers to meet ongoing CP demand. To varying degrees, the story is similar across all four- and five-digit area codes. In many areas, the ratio of available phone numbers to local population exceeds that of Bournemouth, yet scarcity occurs due to the level of CP demand.
- 3.43 The challenge for Ofcom and CPs, therefore, is how to ensure that geographic numbers are available to support competition in fixed-line voice services for the foreseeable future within the constraints of technical feasibility, the regulatory framework and in line with our policy principles.

## **What are we doing currently to meet those challenges?**

### Improving utilisation rates

- 3.44 As discussed above, what appears to be an ample supply of numbering resource to meet demand becomes fragmented to promote meaning, reflect technical routing capabilities and support competition. The 2006 Numbering Review, in its analysis of geographic number management, focussed on improving CPs' utilisation rates and positioned this as key to the effective management of geographic numbers and for offsetting the need for number supply measures.
- 3.45 We have allocated significantly more numbers to CPs than both residential and business consumers actually use. In 2006, we estimated that the average utilisation rate of allocated numbers across all CPs was 15 per cent.<sup>40</sup> Looking at our forecast of future demand, we calculated that even a modest improvement in utilisation could have a significant effect on the ability of supply to meet demand.
- 3.46 We describe below the actions we have taken over the last four years to improve utilisation. As part of the current review, we obtained information from 43 CPs on utilisation of allocated numbers (either provided on a sub-set of areas or as average figures). We found that on average 23 per cent of geographic numbers allocated to smaller CPs were utilised, whereas an average of 53 per cent of geographic numbers allocated to the larger fixed network CPs were in use. Although the methods for

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<sup>38</sup> Source: the 2001 Census and Ordnance Survey data. The data used for estimating the number of business and residential premises was the mapping of BT exchanges on UK postcodes and the number of premises per postcode reported in the Ordnance Survey.

<sup>39</sup> This assessment is based on data as at 9 July 2010.

<sup>40</sup> This figure was calculated using the total amount of geographic numbers in BT's directory enquiries database (known as the OSIS database) in each area and uplifting it by 20 per cent to cover DDI numbers not included in the database. We then compared these totals with the amount of numbers allocated in each area to provide average utilisation rates per area and across all geographic areas.

calculating the rates were different in 2006 and 2010 our findings suggest that average utilisation rate has improved.

### Allocation of smaller number blocks: Conservation Areas and Standard Areas

- 3.47 Originally we allocated all geographic numbers in blocks of 10,000. In 2002, we decided to reduce the block size to 1,000 numbers in nine areas that we forecast would run out of available blocks to allocate to CPs within two years. This decision introduced the concept of 'Conservation Areas'.
- 3.48 Conservation areas work by reducing the amount of numbers allocated in a block by 90 per cent. This can more closely align the size of allocation to the level of demand and therefore significantly increase utilisation of allocated numbers. This has no effect on competition or on CPs' ability to secure sufficient numbers, as multiple 1,000-number blocks can be allocated if justified demand is demonstrated.
- 3.49 We monitored the impact on networks' abilities to route numbers appropriately and established that further conservation areas could be supported.<sup>41</sup> As part of the 2006 Numbering Review, we decided to extend the definition of a 'Conservation Area' to mean "a geographic area that Ofcom believes has a realistic expectation of number exhaustion within the next five years". Between 2005 and 2008 we introduced conservation measures in a further 246 areas.
- 3.50 Last year we undertook a further review of geographic number availability, resulting in all remaining '0' plus four-digit area codes (except for Jersey and Guernsey) becoming conservation areas with numbers allocated in blocks of 1,000. There are now a total of 590 conservation areas in the UK (excluding the Isle of Man).<sup>42</sup>
- 3.51 These actions have been successful in prolonging number availability. On average, we have seen an 87.5 per cent decrease in allocation rate in an area following reduction of block size. The introduction of conservation measures in nine areas in 2002, when a critically low supply of remaining blocks led to a forecast of less than two years availability, has meant that number blocks are still available in those areas, although the stocks of numbers have now dwindled considerably.
- 3.52 The remaining 17 areas cover larger cities and have two- or three-digit area codes. These are still characterised as 'Standard Areas'<sup>43</sup> since we have sufficient numbers remaining for their area codes without requiring conservation measures at this time. Numbers continue to be allocated in blocks of 10,000, with the condition that they should only be used in units of 1,000 numbers to facilitate number withdrawal should conservation measures be imposed in the future.<sup>44</sup>

### Audit and unused number block withdrawal

- 3.53 We undertake periodic audits of CPs' use of allocated numbers, focussing on the geographic areas experiencing the highest level of number block shortage. The goal of this audit is to identify any allocated but unused 1,000-number blocks (either as

<sup>41</sup> See the report by Intercai Mondiale entitled *Finer Digit Analysis of Telephone Numbers for Routing Purposes* of 11 August 2005:

<http://stakeholders.ofcom.org.uk/consultations/numberingreview/digitanalysis>

<sup>42</sup> The Numbering Plan sets out the 591 area codes with conservation status. This figure includes the Isle of Man (01634), which is not within the scope of this review.

<sup>43</sup> A 'Standard Area' is defined in the Numbering Plan as "a geographic area that Ofcom believes does not have a realistic risk of exhaustion within the next five years".

<sup>44</sup> Paragraph B3.1.7 of the Numbering Plan.

numbers allocated in 1,000-number blocks or 1,000-number units from blocks allocated at the 10,000 number level pre-conservation). Once identified, we seek CPs' voluntary consent for us to withdraw the unused numbers and return them to the pool of blocks available for allocation. To be withdrawn, the 1,000 number unit must comprise of contiguous numbers ending in the digits '000' to '999' and every number must be free. These requirements derive from the capacity limitations described in paragraph 2.11 and which constrain the minimum size of blocks that we can allocate.

- 3.54 Audit and unused number block withdrawal have contributed significantly to the ongoing availability of number blocks and have improved utilisation rates due to the withdrawal of blocks with zero utilisation. The 2009 audit, for instance, covered 54 CPs with allocations in the 21 areas with the fewest remaining blocks available for allocation at that time. It resulted in the withdrawal of over 1,000 blocks of numbers and extended the availability of numbers in those areas considerably. We recognise, however, that the more times we audit a particular area, the less likely we are to get a significant level of block returns. This is because the most fruitful supply comes from historical allocations made at the 10,000-number block level.

### Using a rule-based number allocation process

- 3.55 We use a rule-based system of allocation of numbers to CPs, requiring completion of a set of questions in a specified application form that focuses on establishing whether the applicant is a CP and whether it has an operational requirement for the numbers requested.
- 3.56 The first time a CP applies for numbers from Ofcom, it is required to complete the annex to the application form. This enables us to understand the nature of its network and its arrangements for interconnecting with other CPs so that calls can be carried across different networks.
- 3.57 To apply for number blocks (which are allocated on a 'first-come first-served' basis from those shown as available on our website),<sup>45</sup> the applicant is required to set out the details of the intended use of the numbers, including timescales for implementation, forecast utilisation and service proposals. The CP is also required to provide utilisation figures for any allocations it may already have in the same area and these figures need to justify the allocation of additional numbers.
- 3.58 We apply more stringent measures of assessment if i) the CP is applying for a block in a conservation area where it already has an allocation; ii) the CP is applying for more than one block at a time in a conservation area; or iii) if the CP is requesting the allocation of a block of numbers from an area that has less than 20 blocks of 1,000 numbers left for allocation. These measures may include requesting evidence of firm customer orders for the numbers; further detail on plans to market the numbers; and whether sub-allocation has been considered as an option (particularly if low utilisation rates are forecast).
- 3.59 We usually expect service providers<sup>46</sup> to seek sub-allocation of numbers from CPs, and, where they have not sought sub-allocation, to provide justification for seeking a

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<sup>45</sup> The National Numbering Scheme provides a day-to-day record of number block status. It is available on our website at <http://stakeholders.ofcom.org.uk/telecoms/numbering/telephone-no-availability/numbers-administered/>.

<sup>46</sup> Providers of Electronic Communications Services (ECS) as opposed to providers of Electronic Communications Networks (ECN).

direct allocation of numbers. Sub-allocation of numbers facilitates the sharing of a number block among multiple providers and thereby improves the effective utilisation of a number block.

- 3.60 In accordance with the Act, we must determine a request for number allocation within three weeks of receiving a completed application form and the provision of any additional information requested.<sup>47</sup>

**Are these measures sufficient to meet the challenges in managing geographic numbers and ensure ongoing availability in all geographic areas?**

- 3.61 We earlier identified that the challenges to managing numbers in the most efficient way result from their fragmentation to provide meaning (in the form of location significance and tariff transparency), functionality (in line with legacy networks' decoding capabilities) and to promote competition (by meeting CPs' demand). Faced with these challenges, we consider that improving utilisation of allocated numbers is necessary. The measures described in the preceding paragraphs are designed to have that effect.
- 3.62 However, our forecasts demonstrate that despite the effect of the current set of administrative measures, we are destined to run out of numbers in around 70 areas within the next ten years.
- 3.63 In light of our forecasts, we need to:
- plan our approach for increasing the supply of numbers in areas that are at risk of running out; and
  - consider whether additional measures can be taken to improve the utilisation of existing numbers.
- 3.64 We now consider these two key elements of geographic number management in more detail. In the next section we focus on number supply measures. In Section 5, we look at whether we can reduce the impact of fragmentation on utilisation of geographic numbers. In Section 6 we continue to examine that issue by considering how charging for geographic numbers might incentivise CPs to use numbers more efficiently.

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<sup>47</sup> Section 58(4)(b) of the Act.

## Section 4

# Providing new supplies of geographic numbers

## Introduction

- 4.1 As described in Section 3,<sup>48</sup> we forecast, based on current demand trends and availability of numbers, that certain areas in the UK might need more geographic numbers in the foreseeable future. In this section we present the options we are considering for creating more geographic numbers, provide a summary of our assessment of their potential impacts, and, based on this analysis, set out the options we currently prefer. Our detailed assessment of the impacts is set out in Annex 3.
- 4.2 We recognise that any introduction of new supplies of geographic numbers would bring about some level of disruption to consumers and to CPs. Accordingly, we set out in Sections 5 and 6 proposals designed to reduce the need for such new supplies. However, whether or not we decide to implement any or all of those proposals following this consultation, we consider it likely that new supplies of geographic numbers will be needed in some parts of the UK in the coming years.
- 4.3 Our forecast of the need for new supplies of geographic numbers is described in detail in Annex 2. Its current predictions of the area codes where new supplies will be required, and of the corresponding dates, are subject to considerable uncertainties, as set out in paragraph A2.48 of that annex, and those predictions are likely to change over time. Notwithstanding these uncertainties, we need to plan our approach to increasing the number supply based on our forecasts so that CPs can prepare in advance for implementation. We currently understand that the timescale required by CPs to prepare to implement measures to provide new supplies of numbers is likely to be two years from the date we conclude on our policy regarding such measures. Consumers will also need a notification period sufficient to allow them to become accustomed to the changes and to make any adjustments that may be necessary, for example re-programming local numbers in contact lists that may be stored in fixed-line telephones. Our analysis of the potential options for increasing number supply includes consideration of Ofcom's previous consultation on this topic<sup>49</sup> and additional evidence from consumer research.<sup>50</sup> Our analysis extends only to areas with four- or five-digit area codes,<sup>51</sup> excluding the British Isles of Jersey, Guernsey and the Isle of Man.
- 4.4 We recognise that, in addition to setting out our preferred option for increasing the supply of geographic numbers as part of this consultation, the industry will need to develop a detailed plan in order to implement the chosen option effectively. Following the conclusion of this consultation we propose to establish a forum to develop this plan with the industry, including:

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<sup>48</sup> See paragraphs 3.32 to 3.36.

<sup>49</sup> The 2006 Numbering Review Consultation and Statement, see footnote to paragraph 2.13 for website links.

<sup>50</sup> The 2005 and 2010 consumer research.

<sup>51</sup> Areas that currently have two- and three-digit area codes are not at risk of number exhaustion for the foreseeable future.

- an appropriate communications campaign;
- notice periods for changes and relevant timelines for implementation;
- the guidelines for automatic responses to misdials;
- direct consultation with consumers in the affected areas; and
- any other relevant aspects of implementation that may be raised by stakeholders in this consultation.

4.5 The discussion in this section develops options for solutions applicable generally where and when new supplies of geographic numbers may be needed. Stakeholders are invited to submit their views on any aspect of this discussion. We are also interested in ideas that stakeholders might have for any alternative solutions that might be more appropriate in specific locations. During the course of the consultation, we intend to organise open forums to discuss the proposed options in a few areas of the UK likely to be affected in the short term.

4.6 In light of the nature of the issues under consideration, at this stage our assessment of the impact on stakeholders is largely qualitative. We would encourage respondents to submit any quantitative evidence they might have to support the arguments they make in response to this consultation.

## Potential number supply measures

### The 2006 Numbering Review

4.7 In February 2006, we published a consultation<sup>52</sup> as part of the 2006 Numbering Review. In that consultation we described how the rapid growth in new telecommunications services was placing pressure on existing supplies of geographic numbers. We asked stakeholders for their views on the following number supply options:

- overlay codes: this option would introduce an additional area code so that, thereafter, the area would be served by two different codes simultaneously (see description in paragraph 4.21);
- closing local dialling across the UK:<sup>53</sup> this option would involve closing local dialling – requiring that the area code be included when making local calls from fixed-line phones - on a UK-wide basis (see paragraph 4.21 for a description of closing local dialling); and
- wide areas codes: this option would involve changing the area codes of consumers in the affected areas. It would combine areas into larger regions, increasing the supply of numbers.

4.8 In the 2006 Numbering Review Statement, we stated that our preferred option for increasing the supply of numbers was the introduction of overlay codes. Important

<sup>52</sup> *Telephone numbering: Safeguarding the future of numbers*, consultation document published 23 February 2006, available at

<http://stakeholders.ofcom.org.uk/binaries/consultations/numberingreview/summary/numbering.pdf>.

<sup>53</sup> This option was referred to as ‘closing the numbering scheme’ in the 2006 Numbering Review but is called ‘closing local dialling’ in this document to provide consistency in terminology with this review.

factors motivating that preference were that existing numbers would not need to change and that "they are suited to solving a localised need for more numbers – which is the predicted demand scenario".<sup>54</sup> In contrast, closing local dialling across the UK would affect all UK consumers and citizens who use fixed-line phones, and wide area codes would require some consumers to change their telephone numbers.

- 4.9 However, we noted that overlay codes would be suitable if relatively few (i.e. up to a total of 50) area codes were likely to exhaust. Closing local dialling across the UK would only be desirable if the need for more numbers was more than a local need. Other schemes that involved changing numbers, such as wide area codes, would only be considered if the UK needed a significantly widespread increase of numbers due, for instance, to unprecedented demographic changes.

### **Formulating appropriate options for increasing the supply of numbers**

- 4.10 We have taken the conclusions that we reached in the 2006 Numbering Review Statement as our starting position for this consultation and consider whether new evidence supports maintaining this position or indicates that a different approach would be appropriate. In particular, we look at whether the following options should be reconsidered:

- making no change to number supply;
- introducing measures that involve a change to current numbers, including the option of 'adding extra digits' to existing numbers; and
- adopting supply measures that affect all areas of the UK.

- 4.11 These options are discussed in turn below.

#### We consider that changes are necessary where number exhaustion could occur

- 4.12 Where number supply exhaustion occurs, we would not be able to allocate new number blocks to CPs. In that event, while pre-existing services would not be disrupted, local consumers' choice of providers of new services would be restricted to CPs which had numbers available from their previous allocations. This would not be appropriate because it could deny local consumers the benefits of competition. Furthermore, the European electronic communications framework states that "Member States shall ensure that adequate numbers and numbering ranges are provided for all publicly available electronic communications services"<sup>55</sup> and Ofcom is specifically required to secure the availability throughout the UK of a wide range of electronic communications services under section 3(2)(b) of the Act. For both these reasons we do not propose to consider further the option of making no changes to increase the supply of numbers in areas that are close to running out.

#### We are not proposing measures that would require changes to existing phone numbers

- 4.13 In the 2006 Numbering Review consultation we recognised that the introduction of wide area codes - which would involve changing consumers' phone numbers - would cause consumers and businesses to bear certain costs, including material costs

<sup>54</sup> Paragraph A1.7 of the 2006 Numbering Review Statement.

<sup>55</sup> Framework Directive Article 10(1).

(such as changes to business stationery and signage), as well as significant inconvenience.<sup>56</sup> In the 2006 Numbering Review statement, we concluded that we would only consider potential solutions that would involve changes to existing phone numbers if the UK needed a significantly widespread increase of numbers. We describe later in this section measures that could address the demand we forecast for the medium-to-long term and that would not involve changes to existing numbers. Due to the associated costs and inconvenience, the existence of alternatives, and the current absence of evidence to suggest a significantly widespread requirement, we continue to prefer supply measures that would not involve changes to existing phone numbers.

- 4.14 From the consumer's standpoint, one simple way to address number shortage might be to add extra digits to all existing numbers. This would add a very large amount of extra numbers to all areas of the UK and would solve number shortage for a long time. However, we consider that there are significant potential problems with this approach.
- 4.15 Although adding a digit would create more numbers, current constraints in some networks' technical ability to decode dialled digits would mean that the size of each number block would increase while the quantity of number blocks available for allocation would not.<sup>57</sup> The larger block size would allow us to allocate fewer blocks to meet demand from larger CPs. However, this would not help reduce the rate of allocation of number blocks to many smaller CPs whose utilisation of blocks of the current size is often low. Adding a digit is therefore not likely to achieve our central objective of ensuring that we can allocate geographic numbers to CPs in future to support competition.
- 4.16 In addition, if the solution was only implemented locally, the potential for confusion may be high for those dialling the longer numbers from elsewhere – they may not expect to dial numbers of different lengths depending on the destination. Furthermore, those living locally could face problems having a longer than standard number length - for example, when completing forms that ask respondents to fill in phone numbers, particularly where they restrict the length of the response, such as electronic forms. Alternatively, if the solution was implemented across the UK, the impact and cost could be considerable – all consumers and businesses would face number changes. Furthermore, UK-wide implementation would extend the impact to consumers who do not live in areas where exhaustion of existing number supplies is currently foreseeable, causing disruption to more consumers than would arguably be necessary. This option is also likely to impose substantial implementation costs. For example CPs might require significant changes to their networks in order to recognise numbers with '0' plus 11 digits, and the communications plan to inform consumers of the change would also be significant.
- 4.17 For these reasons, we do not consider that adding additional digits to existing numbers, or any other supply measures that would require changes to existing numbers, would be an appropriate response to the current forecast of demand for numbers.

*Question 2 Do you agree that we should not consider further at this stage options that would change existing numbers?*

<sup>56</sup> The 2006 Numbering Review consultation, paragraph A1.71-A1.73. See <http://stakeholders.ofcom.org.uk/binaries/consultations/numberingreview/summary/numbering.pdf>

<sup>57</sup> The effect of these capacity limitations on the size of number blocks is explained in paragraph 2.11.

Current forecasts indicate that local rather than UK-wide solutions are likely to be more appropriate

- 4.18 In the 2006 Numbering Review Statement we concluded that ‘local’ supply options – that is, supply measures that impact only those areas experiencing number shortage - were preferable. We consider that this is likely still to be the case. Our current forecast indicates that during the next ten years 70 area codes, serving 21 per cent of the UK’s population, could require new supplies of numbers. Of the remaining area codes, some are at very little risk of number exhaustion in the foreseeable future - particularly those areas that currently have two- or three-digit area codes, which serve 35 per cent of the population.<sup>58</sup> A solution applied across the UK would therefore cause potentially unnecessary disruption to at least 35 per cent of the population, and could cause disruption to a further 44 per cent of the population much earlier than may prove necessary.
- 4.19 Furthermore, our forecasts of the need for new supplies of numbers are subject to significant uncertainties, as explained in Annex 2, paragraph A2.48. If we were to adopt a UK-wide supply measure now, based on our current forecasts, it is possible that this would prove premature and lead to unnecessary disruption for a large number of consumers and businesses.
- 4.20 Nevertheless, we recognise that there could be benefit in a consistent approach across the UK, particularly in enabling more effective communication of any change to consumers, perhaps using mass media, and in ensuring uniformity in the use of dialling. Therefore, in the future, if the number of area codes that need new supplies of numbers was to rise steadily, adopting a UK-wide approach – including closing local dialling across the UK – could become appropriate, and would remain an available option after local implementation.

*Question 3 Do you agree that local solutions are appropriate based on our current forecasts of anticipated requirement of more numbers?*

Local solutions that would not require existing phone numbers to change

- 4.21 In light of the above evaluation, we now focus on methods for creating new geographic numbers which would not require changes to existing phone numbers and which could be implemented locally. We consider that there are two approaches to increasing the number supply that could meet these criteria, and that they are not mutually exclusive. They are:
- a) **Closing local dialling:** callers making local calls from fixed-line phones would need to dial the area code as well as the local number. For example, the area code for Oxford is ‘01865’. A caller dialling an Oxford number from a fixed-line phone that is also in Oxford can currently simply dial the local six-digit phone number, for example ‘678 123’. If local dialling were closed in Oxford, the same caller would need to dial the full telephone number, including the area code. Using the same example, the caller would need to dial ‘01865 678 123’. For the avoidance of doubt, closing local dialling would not affect the charges payable for local calls.

<sup>58</sup> There are 17 areas served by two and three-digit area codes. They are Northern Ireland; Durham, Sunderland and Tyneside, which share the code 0191; London; Leeds; Portsmouth and Southampton, which share the code 023; Birmingham; Manchester; Cardiff; Bristol; Leicester; Coventry; Nottingham; Sheffield; Reading; Liverpool; Glasgow; and Edinburgh.

Closing local dialling would increase the local supply of numbers by approximately 25 per cent, by allowing us to allocate local six-digit numbers that start with '0', '1', and in some cases the digits '99'. We explain in paragraph 3.19 why we do not allocate such numbers while the facility to dial numbers locally without the code remains available.

- b) **Overlay codes:** this approach would introduce a new area code that would 'overlay' the original area code so that two areas codes would apply to the same geographic area simultaneously. This option would double the supply of local numbers. For example, in Milton Keynes the area code is '01908'. If an overlay code, say '01802', was introduced, some new numbers in Milton Keynes would start with '01802'. These numbers would be as local to Milton Keynes as those starting with '01908' and it would cost the same to make local calls to either of these numbers from any local fixed-line phone.

- 4.22 It is possible to implement overlay codes in different ways. For example, it is possible to close local dialling at the same time, or to introduce an overlay code without closing local dialling. We discuss these possibilities in more detail in paragraphs 4.24 to 4.25.
- 4.23 We discuss below specific options which use these local approaches to provide new supplies of numbers. The discussion distinguishes between four- and five-digit area codes because of the different pressures on number supplies in these areas.

### Options for providing new supplies in four-digit area codes

- 4.24 We propose that new supply measures would be introduced in a four-digit area code only once our pre-existing supplies of number blocks for that area fall below a 'trigger level'.<sup>59</sup>
- 4.25 The discussion above of possible approaches to increasing the supply of geographic numbers suggests that we should consider the following options, which are combinations of closing local dialling and the introduction of overlay codes:
- i) option 1: Close local dialling, and introduce an overlay code later if necessary. Local dialling would be closed if and when supply of local numbers falls below the trigger level. If and when supplies of new numbers in that area code subsequently should fall below the trigger level again, we would introduce an overlay code to cover the same geographic area;
  - ii) option 2: Overlay with local dialling open (symmetric local dialling). An overlay code would be introduced if and when supply of local numbers falls below the trigger level. Local dialling of calls between numbers with the same area code would remain available. Callers could therefore use local dialling in some calls, but would need to know the area codes both of the dialled number and of the originating number to determine whether they would need to include the area code when dialling each call;
  - iii) option 3: Overlay with local dialling open (asymmetric local dialling). Like option 2, an overlay code would be introduced if and when supply of local numbers falls

<sup>59</sup> An appropriate trigger level would be determined as part of the industry's detailed implementation plan. For example, according to our forecast, 20 blocks of 1,000 numbers would sustain existing supplies of numbers for approximately one to two years in most four-digit areas if we do not apply the critical conservation measures which are described in Annex 2.

below the trigger level. Local dialling would also be continued – however in this option local dialling would only work for calls to phone numbers with the original area code, regardless of the code of the originating local number. All local callers, irrespective of the area code of the local number from which they call, could omit the area code when dialling numbers with the original code, but would always need to dial the new area code when calling numbers with that code; and

- iv) option 4: Overlay with simultaneous closure of local dialling. An overlay code would be introduced and local dialling would be closed at the same time, requiring the area code to be dialled for all local calls (i.e. local dialling would be closed and an overlay code applied if and when supply of local numbers falls below the trigger level).
- 4.26 We consider that all four of the above options could provide long-lasting supplies of new geographic numbers in four-digit code areas. However, we do not propose considering options 3 and 4 in depth, as we explain below.
- 4.27 While option 3 is similar to option 2, it would involve a different implementation of local dialling with an overlay code. An advantage of option 3 would be that local consumers could use local dialling without needing to know the area code of the number from which they are calling, as the network would route the call to a number with the original code by default. However, this option could perpetuate a preference by local consumers and businesses for numbers with the original code, because, in all circumstances, making calls from a local fixed-line phone to local numbers with the original code would require dialling fewer digits than making calls to numbers with the new code. This could lead to enduring competitive disadvantage for those CPs which would only have allocations of numbers with the new code.
- 4.28 Option 4 would be a variant of option 1 in that an area would see closure of local dialling and the appearance shortly thereafter of some local subscriber numbers with a new area code. It may be premature in many areas to introduce an overlay code at the time that local dialling is closed because, as is explained in Annex 3, closing local dialling could provide sufficient new supplies of numbers in most areas to last many years. In the few areas where this may not be the case, if and when the introduction of an overlay code proves necessary, the timing between closure of local dialling and the introduction of a new area code could be decided as part of a detailed local implementation plan.
- 4.29 We therefore focus the following discussion of proposed number supply measures on options 1 and 2.

### **Assessment of options 1 and 2 for four-digit area codes**

- 4.30 Selecting the right approach is a matter of balancing the interests and preferences of all parties, including local residents, consumers more generally, businesses and CPs. We set out our assessment of the impacts of the options in detail in Annex 3.
- 4.31 Although we would expect that the new supplies of geographic numbers created by option 1 would last longer than those created by option 2, both options have the potential to increase the supply of geographic numbers well into the foreseeable future in four-digit areas, and hence to make sure that the numbers that consumers want are available when they are needed in those areas.
- 4.32 Based on historical demand trends, we estimate that closing local dialling (the first stage of option 1) could extend the supply of numbers by an average of 14 years in

the four-digit areas which are likely to need a new supply in the next ten years. We therefore consider that closing local dialling is likely to defer the need for introducing any overlay codes for a considerable amount of time in many areas. The extent that CPs' future demand differs from those historic trends will affect the extent to which the outcome differs from this estimate. For example, if we decide, following this consultation, to implement the policy proposals set out in Sections 5 and 6, then CPs' demand for number allocations could reduce, and hence defer further the need to introduce any overlay codes.

- 4.33 The 2010 consumer research found that business and residential consumers almost unanimously preferred closing local dialling to overlay codes. Maintaining geographic identity was valued much more highly than the facility for local dialling<sup>60</sup> and all businesses and almost all residential users preferred to lose local dialling rather than introduce a new code into their area.<sup>61</sup>
- 4.34 Both options 1 and 2 could cause significant difficulties for vulnerable consumers, and neither option appears to offer such consumers a clear advantage over the other. Some consumers could find the change in dialling behaviour required by closure of local dialling (option 1) difficult to learn or adopt, and some may need assistance re-programming numbers stored in fixed-line phones. On the other hand, if option 2 were chosen, some consumers in the affected areas could find the introduction of a second area code difficult to understand.
- 4.35 The likelihood that consumers would misdial calls is also an important factor to consider. Under option 1, once local dialling is closed, a call made to a local number without the area code would consist of too few digits (i.e. five or six digits rather than 11 dialled digits) and the call would fail. However, networks could trap such misdials and apply a network announcement advising the caller to redial inserting the area code. Under option 2, where two codes would apply to an area and local dialling is permitted, callers may attempt to dial a number with the other area code locally. If the corresponding number in the other area code was active, the call would be put through to the wrong consumer.
- 4.36 Our assessment of the key impacts associated with each option is summarised in Figure 4.1 below.

**Figure 4.1 Summary of our assessment of the impacts of options 1 and 2**

Option	Advantages	Disadvantages
<b>Option 1: Close local dialling, introduce an overlay code later if necessary</b>	<p>Would maintain existing association between a geographic area and only one area code for as long as possible</p> <p>Defer the need for overlay codes, whose introduction could be more disruptive to consumers and to competition</p> <p>Changes dialling behaviour prior to</p>	<p>Would affect everyone in the area who uses local dialling resulting in the need to dial more digits and change pre-programmed numbers stored as local numbers</p> <p>Two-stage process, so potential to have greater impact on consumers and CPs in those areas where an</p>

<sup>60</sup> For example, 40 per cent of respondents thought local dialling was "important" in our research, compared to 64 per cent who stated that being able to tell the location from the telephone number was "important". See page 11 of *Geographic Numbering and Local Dialling – the 2010 consumer research*.

<sup>61</sup> Page 4 of the 2010 consumer research.

	introduction of overlay codes, which could make their subsequent introduction easier	overlay code is ultimately required
<b>Option 2: Overlay with local dialling (symmetric dialling)</b>	<p>Reduces the number of people that are affected by the number supply change in the short term</p> <p>Would not require a change to existing dialling behaviour</p>	<p>Would hasten the introduction of overlay codes, which, according to our research, consumers do not favour</p> <p>Could distort competition between CPs because CPs with a larger stock of numbers with the original code could have an advantage</p> <p>Could create a disadvantage (at least initially) for consumers and businesses that are given numbers with the new area code</p> <p>More likely to confuse people affected by the change and result in misdialling of locally dialled calls</p> <p>Could hasten the erosion of geographic significance</p>

*Question 4 Do you agree with our assessment of the options for providing new supplies of numbers in four-digit code areas, as presented in Section 4 and in Annex 3?*

### **Preliminary conclusions for four-digit area codes: we prefer option 1**

- 4.37 Our detailed assessment of options 1 and 2 is set out in Annex 3. Having considered the impacts of the two options we currently prefer option 1 (closing local dialling in affected areas followed by the introduction of overlay codes when and where necessary) as the better option for both residential and business consumers and for competition between CPs in four-digit areas.
- 4.38 Option 1 would increase the number supply in four-digit areas in a way that would safeguard existing geographic significance for as long as possible, maintaining the established association between a geographic area and only one area code. Furthermore, the change in dialling behaviour that it would require in affected areas in the short term, after local dialling is closed, appears to be largely acceptable to most consumers. This option would also defer the need for overlay codes, which consumers appear to perceive as reducing the geographic significance of numbers, and which could lead to confusion and misdials, and may potentially distort competition between CPs.
- 4.39 Although we recognise the potential for significant negative impacts on vulnerable consumers as a result of our preferred option, we consider that the alternative option could also present them with significant difficulties, including misdialled calls routed to an active line rather than to a recorded message and potential confusion about which numbers are local and which are not. Option 2 may therefore not be preferable to option 1 from the point of view of vulnerable consumers. We also consider that impacts on vulnerable consumers resulting from our preferred option could be

mitigated by effective communication and careful implementation, including the use of network announcements to advise on misdialled calls.

- 4.40 We stress that we are proposing a two-staged implementation (closing local dialling first and then introducing an overlay if and when necessary). Closing local dialling could provide sufficient new supplies of geographic numbers in many areas for more than ten years. A small number of areas might require a further increase in supply of numbers within less than ten years after the first stage. More detailed consideration of the plans for those particular areas would be required to determine the most appropriate timing for introduction of overlay codes. Finally, we note that our preferred option could involve closing local dialling in 61 four-digit area codes in the next ten years – according to current forecast. Implementation would require a communication campaign in each area. We recognise that, while a UK-wide communication campaign could be more effective, it would mean closing local dialling throughout the UK, and could therefore cause unnecessary disruption to consumers who live in areas not likely to need new supplies of numbers in the foreseeable future. We consider that if the number of area codes needing new supplies of numbers rises steadily in future, closing local dialling throughout the UK could become appropriate, and we propose that it should therefore remain an available option after local implementation.

*Question 5 Do you agree that closing local dialling followed, if necessary, by the introduction of an overlay code should be the preferred option for providing new supplies of numbers in four-digit areas that may need them? Please give reasons for your answers, and provide evidence where possible.*

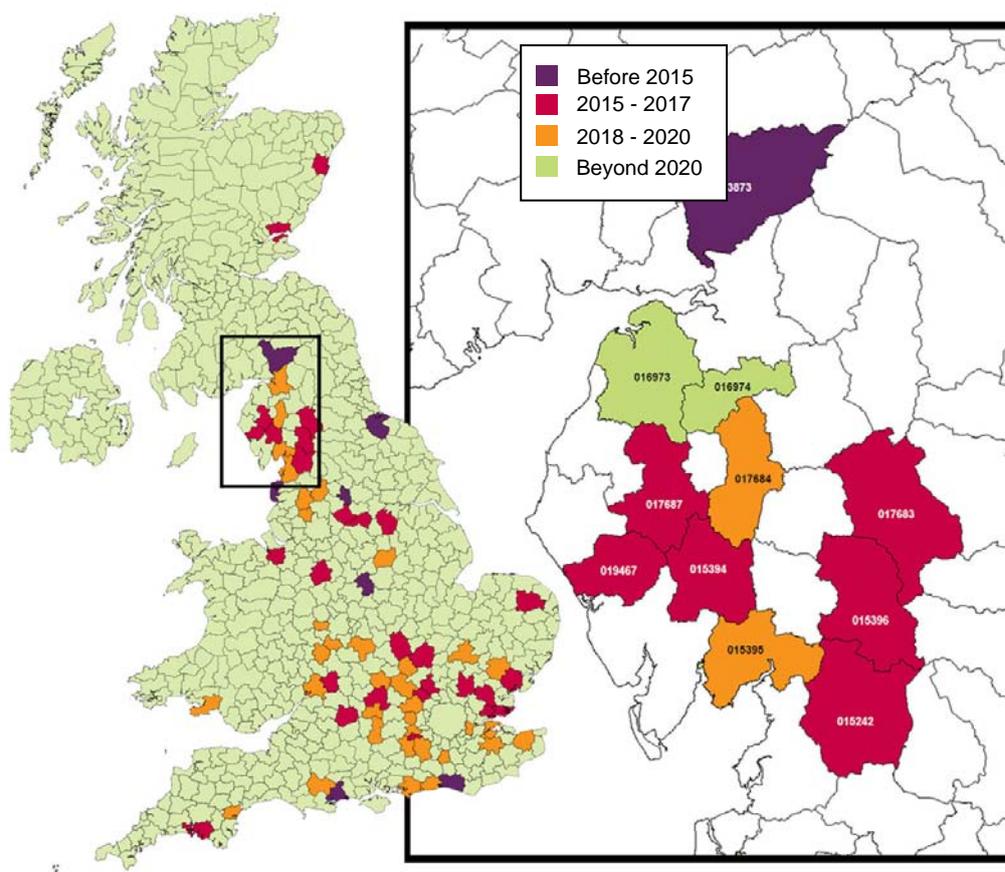
*Question 6 Are there any other number supply measures that we should consider for four-digit areas?*

## Options for providing new supplies in five-digit area codes

- 4.41 During the 1980s and 1990s, dialling plans throughout much of the UK were standardised to four-digit area codes and six digit local numbers. Further changes were introduced to area codes in a number of cities to address local demand.<sup>62</sup>
- 4.42 However, 11 areas of the UK still have five-digit area codes. The local numbers in these five-digit areas are restricted to five digits, which means that their current supplies of number blocks are particularly restricted, and that their need for new supplies is likely to be acute. Figure 4.2 shows the location of these five-digit areas, and illustrates when they are likely to require new supplies of numbers according to our current forecast.

<sup>62</sup> See Annex 1 for further information on the organisation of the UK numbering plan.

**Figure 4.2 Number exhaustion in the 11 five-digit areas**



Forecast number exhaustion	Areas	Number of areas
Before 2015	Langholm (013873)	1
2015 to 2017	Hawkshead (015394), Hornby (015242), Sedbergh (015396), Appleby (017683), Keswick (017687), Gosforth (019467)	6
2018 to 2020	Grange over Sands (015395), Pooley Bridge (017684)	2
Beyond 2020	Wigton (016973), Raughton Head (016974)	2

4.43 We have considered two options to address number supply issues in five-digit areas:

- i) option 1: Use the approach preferred in the case of four-digit areas, while maintaining the five-digit area code. This would involve closing local dialling followed by the introduction of an overlay code where necessary. The overlay code would have five digits, so that the new local numbers would also have five digits (the same length as existing local numbers).
- ii) option 2: Merge the five-digit codes with their corresponding four-digit codes (which would include more than one five-digit area in some cases). This would create numbers with four-digit codes and six-digit local numbers and local dialling would be provided at the six-digit local number level. Any subsequent shortage of local number supplies would be addressed with the preferred option for providing new supplies of numbers in four-digit codes – i.e. closing local dialling, followed later by the introduction of an overlay code if and when required.

4.44 We consider the potential implications and impact of these options below.

**Option 1: Maintain five-digit area codes, close local dialling, and introduce a five-digit overlay code later if necessary**

- 4.45 The total amount of numbers provided by a five-digit code is one tenth of the amount of numbers provided by a four-digit code. The need for new number supply in an area served by a five-digit code is therefore generally more acute. The efficacy of options for increasing number supplies while preserving the five-digit code is also reduced.
- 4.46 Closing local dialling in a five-digit area would add an average of 20,600 local five-digit numbers, and we estimate that it would extend number availability by approximately three to four years. This suggests that closing local dialling would not be a sufficient solution on its own for five-digit areas.
- 4.47 Furthermore, we currently estimate that introducing a five-digit overlay code in each of these eleven areas would only extend numbers for an average of thirteen years – and in one area (Langholm) our estimates indicate that a five-digit overlay code could extend number availability by only nine years.

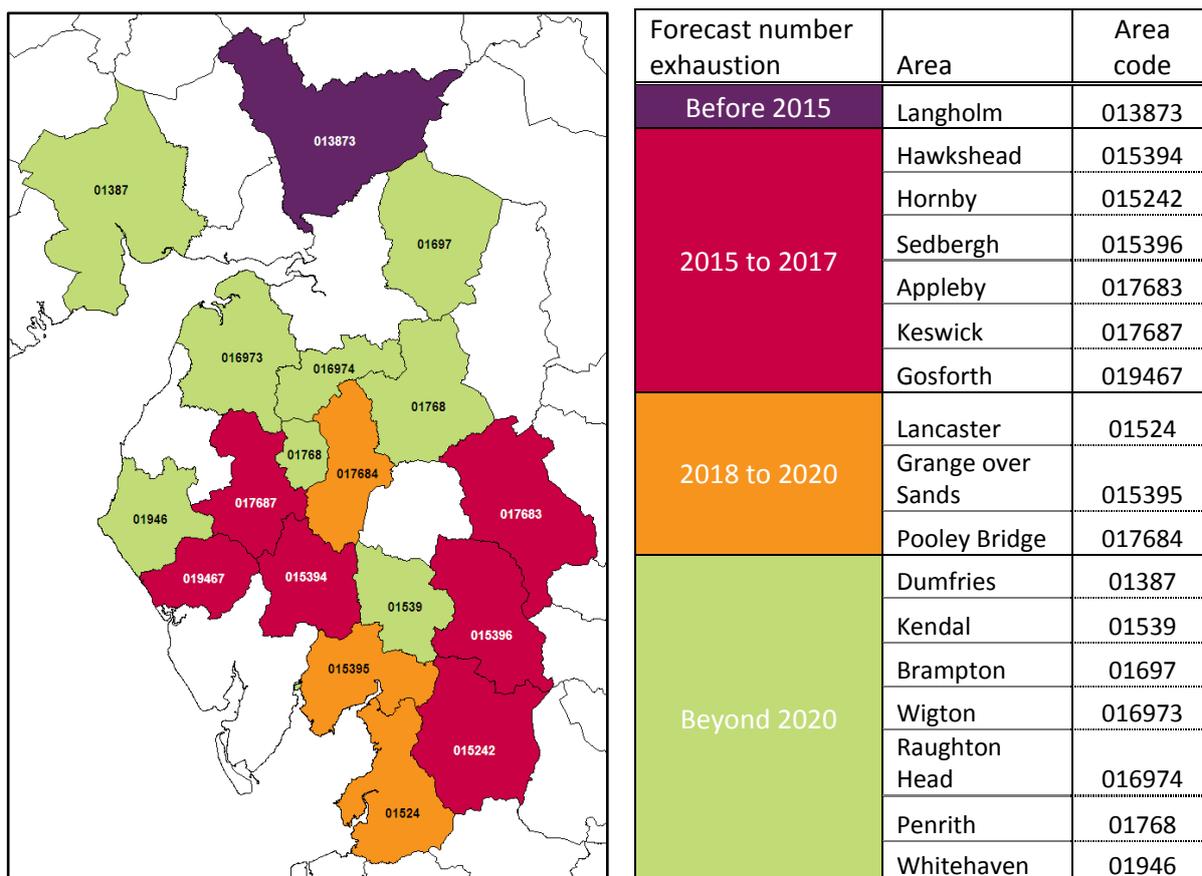
Impact on stakeholders

- 4.48 We consider that the impact on consumers (both residential and business), competition, and CPs under either i) overlay code or ii) closing local dialling with an overlay code where required, would be similar to that described for four-digit areas discussed above.
- 4.49 However, both of these stages are likely to address the supply issues for a much shorter time in five-digit areas than they would in four-digit areas, which means that any negative impacts, particularly of overlay codes, might occur much sooner. Furthermore, since it is likely that this option would prove sufficient for a relatively short period, further measures would be required within a relatively short time after its implementation, and this would entail further disruption to local consumers.
- 4.50 We would welcome detailed information on the costs likely to be incurred by CPs in implementing option 1.

**Option 2: Merge five-digit area codes with their corresponding four-digit codes**

- 4.51 This option would reduce the area codes in the affected areas to four digits, effectively merging those geographic areas whose area codes share the same first four digits. We note that the five-digit areas and their corresponding four-digit areas are generally adjacent to each other, as shown in Figure 4.3.

**Figure 4.3 Areas potentially affected by merging five-digit and four-digit codes**



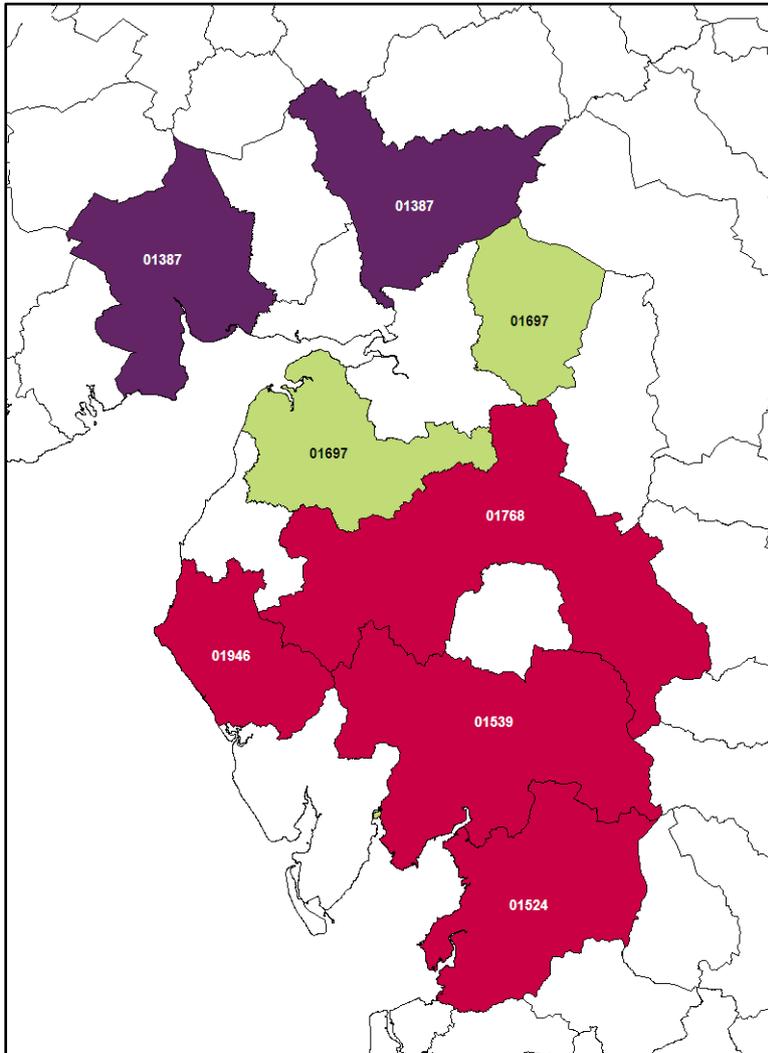
4.52 Using our forecast of number supplies in each area code, we have estimated the number of years that the supplies of new numbers created by option 2 would last. The estimates indicate that, in all but one of the five-digit areas, the new supplies of numbers would last for at least 19 years, and, in six areas, considerably longer. For the Hornby area, however, forecasts indicate that merging its five-digit code (015242) with the corresponding four-digit code (Lancaster 01524) may create new supplies that would last around seven years. This is because Lancaster’s area code is currently forecast to need a new supply of numbers in a similar timeframe. However, all these estimates need to be treated with caution.<sup>63</sup> We consider that, in areas where a merger of codes could be expected to provide number supplies for a relatively short period, it may be appropriate to close local dialling at the time the codes are merged, in order to avoid disrupting the dialling habits of local consumers twice in relatively rapid succession. On the other hand, we also consider that in areas where a merger of codes could be expected to provide number supplies for a relatively long period, it would be appropriate to defer closing of local dialling until nearer the time when the merged area was close to exhausting its supply of

<sup>63</sup> Caution is necessary in using our estimates for planning purposes partly because of the uncertainties in the forecast, and partly because of the assumptions we have used to project demand in the merged area code. We have assumed that CPs’ demand for numbers after the area codes are merged would be equal to the maximum historic demand for numbers in the four-digit area code before the merger, because we consider that CPs current demand for number blocks in these areas is driven by need for coverage rather than for capacity. Alternative assumptions may yield more pessimistic estimates of the length of time that new supplies created by merger of the codes could last.

numbers, in order to defer the impacts on consumers in the original four-digit area of closing local dialling for as long as possible.

4.53 Figure 4.4 shows how the four-digit area codes would be implemented under this option, and indicates when these changes might need to occur based on current forecasts.<sup>64</sup>

**Figure 4.4 Proposed new four-digit areas after five-digit areas have been merged**



Time estimate for merging	4-digit Area Code	Merged areas
Before 2015	01387	Dumfries, Langholm
2015 to 2017	01524	Lancaster, Hornby
	01539	Kendal, Hawkshead, Grange over Sands, Sedbergh
	01946	Whitehaven, Gosforth
	01768	Penrith, Appleby, Pooley Bridge, Keswick
Beyond 2020	01697	Brampton, Wigton, Raughton Head

<sup>64</sup> Alternatively, we could consider undertaking all the four and five-digit area code mergers as part of a single exercise (potentially before 2015) to maximise the effectiveness of the mergers in reducing demand for number blocks earlier and to concentrate the communications message to consumers in the affected areas.

- 4.54 An important impact of option 2 on consumers in areas currently served by a five-digit code would be the loss of the geographic significance of the fifth digit of the area code. Geographic meaning would now be broader and signalled only by the remaining four digits of the area code (representing the merged geographic area). This could result in confusion for some consumers, due to the loss of more localised geographic significance, as well as concern for those who value the local significance of the five-digit area code. Meanwhile, for business consumers, the loss of geographic significance might make it harder for some businesses to signal that they are 'local' to an area to the same extent as they have been able to do with the existing area codes.
- 4.55 Merging a five-digit code with its corresponding four-digit code would require consumers to adjust their dialling behaviour. All local numbers would be six digits long, and callers would need to add the last digit of the old five-digit area code to the local number. As such, this option is likely to have similar impacts on consumers in the previous five-digit areas as closing local dialling, to the extent that local consumers would need to change the way they dial local calls, dialling six-digit numbers where previously they would have dialled five-digit numbers. Our assessment of these impacts is set out in Annex 3.
- 4.56 We recognise that implementing this option would require a detailed communication plan to convey the change in dialling behaviour required.

#### Impact on competition between CPs

- 4.57 After merging five-digit area codes with their corresponding four-digit area code, it is possible that residential and business consumers could retain a preference for geographic numbers that commence with the five digits that used to form the local code. If some CPs were able to supply those numbers, and others were not, it is possible that the merger of the area codes could have an impact on competition between CPs for new customers, to the extent that this preference was strong enough to inform consumers' choice of CP. However, it seems likely that this effect would reduce over time as residents become used to the new number arrangement.
- 4.58 Effective communication of the area code change might support a more rapid adjustment and result in consumers being more willing to accept telephone numbers with a different fifth digit, limiting any distortion to competition between CPs. Therefore, it is possible that any impact on competition could be lessened through measures aimed at increasing consumer understanding and awareness of the change.

#### Impact on CPs

- 4.59 We welcome detailed information on the costs likely to be incurred by CPs in implementing option 2.

#### **Preliminary conclusions for five-digit areas: we prefer option 2**

- 4.60 From the discussion above, it appears that option 2 is preferable to option 1 in five-digit areas because it is likely to provide new supplies of numbers that last longer, and therefore cause less disruption over time.
- 4.61 Based on the analysis we set out above, our preferred approach is therefore to merge five-digit area codes with their corresponding four-digit codes when new supplies of local numbers are required. We consider that this approach would

provide an effective long-term solution to create new supplies of numbers in these areas.

- 4.62 Implementation of our preferred option would involve merging affected areas with any other five- and four-digit areas whose codes share the same first four digits, effectively creating merged four-digit areas.
- 4.63 Although we acknowledge that some impacts might be smaller if the areas stay as five digits, we consider that, in the long run, merging five-digit area codes with four-digit area codes is likely to lead to more stable and long term solutions to number supply in these areas, which will ultimately benefit consumers and businesses alike. This approach would also standardise these areas to be served by four-digit codes in line with much of the rest of the UK.
- 4.64 However, we recognise that the assessment of the impacts of the two options for providing new supplies of numbers in five-digit area codes might be finely balanced for some, and that further consultation is appropriate, including more detailed assessment of the views of people who live in areas that may be affected.
- 4.65 Finally, we note that any of the options would require careful attention to be paid to implementation details to minimise the potential for disruption and confusion to consumers and businesses.

*Question 7 Do you agree that we should merge five-digit codes with four-digit codes to create new supplies in five-digit code areas that need them? Do you have any comment on our assessment of the impacts of the options we have considered? If so, please provide relevant evidence where possible.*

*Question 8 Are there any other numbers supply measures that we should consider for five-digit areas?*

## Duties and legal tests

- 4.66 We consider that our proposals for increasing the supply of geographic numbers are consistent with our general duties in carrying out our functions as set out in section 3 of the Act.<sup>65</sup> In particular, we consider that the proposals further the interests of citizens in relation to communications matters and consumers in relevant markets by ensuring that sufficient geographic numbers remain available for allocation to CPs in all areas of the UK, thus facilitating CPs in their provision of communications services to consumers and citizens, and promoting competition and choice for consumers.
- 4.67 In reaching our proposals, we have also taken into account the Community obligations set out in section 4 of the Act, particularly the first requirement to promote competition in the provision of electronic communications networks, services and associated facilities through the ongoing availability of geographic numbers.
- 4.68 In the event that we decide to implement measures to increase the number supply, we would need to make certain modifications to the Numbering Plan. In order to close local dialling, we would need to remove the obligation on CPs to provide this facility in the applicable area codes.<sup>66</sup> To implement overlay codes, we would need to add the new geographic area code and its name to Appendix A of the Numbering Plan.

<sup>65</sup> See Annex 6 for further information on our duties and the legal tests.

<sup>66</sup> Paragraph B3.1.3 of the Numbering Plan on Local Dialling.

4.69 It is our duty, when proposing modifications to the Numbering Plan, to show how we consider that those proposals comply with the legal tests set out in section 60(2) of the Act. We have given preliminary consideration as to whether our preferred approach for increasing the supply of geographic numbers would meet these tests and are satisfied that they would for the following reasons:

- **objectively justifiable**, in that the European electronic communications framework states that “Member States shall ensure that adequate numbers and numbering ranges are provided for all publicly available electronic communications services” and Ofcom are specifically required to secure the availability throughout the UK of a wide range of electronic communications services under section 3(2)(b) of the Act.<sup>67</sup> Without the measures proposed, we are at risk of running out of numbers in some areas. This may have the effect of constraining competition and consumer choice in service provision. Our proposed approach to increasing the supply of geographic numbers provides a long-term plan for ensuring the ongoing availability of numbers in all areas in a manner that recognises local requirements and causes the least disruption for consumers. (This position is based on current information. Our opinion will be informed further by this consultation);
- **not unduly discriminatory**, in that our analysis of the options for increasing the supply of geographic numbers has recognised their different impacts on consumers, businesses and CPs and found that our preferred option would not be unduly discriminatory. The required change in dialling behaviour would be applicable to all who dial numbers locally and would not affect consumers, businesses and CPs in the same area differently. Although our proposed approach would result in changes being implemented in some areas of the UK only (and thereby affecting some consumers and businesses and not others), this is not considered to be unduly discriminatory as it is a response to the different positions regarding number availability that prevail in those areas and would minimise disruption to UK consumers as a whole;
- **proportionate**, in that, recognising that all options for increasing the supply of numbers have an impact on consumers, citizens and CPs, we are proposing the option that, according to our preliminary assessment, would have the least impact. This is because our proposed option provides for local implementation as and when areas require more numbers; and because it preserves the location significance valued by consumers for as long as possible; and
- **transparent**, in that our reasoning for proposing our preferred option for increasing the supply of geographic numbers is set out in this section, with further explanation provided in Annex 3. When read in conjunction with the rest of this document, it is explained that the proposal is intended to deliver on our objective to ensure that geographic numbers are available to support competition in fixed-line services across the UK for the foreseeable future.

4.70 In addition, we consider that we are fulfilling our general duty as to telephone number functions as set out in section 63 of the Act by:

- **securing the best use of appropriate numbers**, in that, the proposal to close local dialling makes approximately 200,000 numbers available for use in each four-digit area where the measure is implemented. These numbers are already in existence but are not available for general use while local dialling is permitted.

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<sup>67</sup>European electronic communications regulatory framework: Framework Directive Article 10(4).

The subsequent step of introducing overlay codes where more numbers are required would put into use numbers in spare area codes. Both measures would make best use of unused numbering resource by making it available to fulfil demand; and

- **encouraging efficiency and innovation**, in that the proposed option would make available more numbers in areas where required, ensuring that a lack of numbers does not constrain CP activity or provide a barrier to innovation. By restricting our proposed number supply measures to areas that require more numbers, we avoid releasing vast stocks of new numbers in areas where they are not required, which would not encourage efficiency in number use.

## Preliminary conclusions

- 4.71 Our proposed solution for increasing number supply where this is necessary in area codes with four-digits is to close local dialling, and introduce an overlay code later where and when this proves necessary. Local dialling would be closed if and when supply of local numbers falls below the (to be established) trigger level. If and when supplies of new numbers in that area code subsequently should fall below the trigger level again, we would introduce an overlay code to cover the same geographic area.
- 4.72 There are eleven areas of the UK that have five-digit area codes. When number supply measures are required in these areas, we propose that they are merged with the four-digit code which shares the same first four digits (as well as any other five-digit codes that also share the same first four digits). This would create uniform numbers in the form of a four-digit code and six-digit local number. Local dialling of the six-digit number would be provided. If additional numbers were required in these areas subsequently, we would propose to close local dialling, and, if further supplies of numbers are needed later, we would introduce an overlay code. If merging the codes would be likely to be followed by the need to close local dialling within a relatively short time, it may be appropriate, subject to detailed planning of local implementation, to close local dialling at the time that the codes are merged, in order to avoid two changes to dialling habits within a short period.
- 4.73 In proposing number supply measures to address number shortage we recognise that there are a number of issues for which arguments might be finely balanced. We welcome stakeholder views on our proposals.

*Question 9 Do you agree with our considerations and preliminary conclusions on how new supplies of numbers should be provided where they are required?*

*Question 10 Do you have any comments on how the implementation of number supply measures should be planned?*

*Question 11 How long do you consider that CPs would need to plan the implementation of the preferred options for four- and five-digit areas?*

*Question 12 If you are a CP, what costs do you consider that your company would incur if the preferred options for four- and five-digit areas were implemented?*

## Section 5

# Reducing the need for new supplies of geographic numbers

## Introduction

5.1 We discussed in Section 4 the options for creating new supplies of geographic numbers, and noted that any such option, including our proposal to close local dialling, would involve some disruption to consumers. In this section, we look at the challenges in managing geographic numbers effectively and examine whether there is any further scope to reduce barriers to efficient number use, and to incentivise and facilitate better utilisation of the existing supply of geographic numbers. Realising such opportunities would reduce the need to provide new supplies of numbers and would thus reduce the associated disruption.

## How could geographic numbers be used and managed more effectively and efficiently?

5.2 In Section 3, we identified that the challenges to efficient use and management of geographic numbers arises because such numbers need to:

- provide meaning in the form of location significance and tariff transparency;
- function within certain legacy network technical constraints; and
- promote competition by meeting CPs' increasing demands for numbers.

5.3 We now consider whether there are any opportunities for addressing those challenges through changes to how numbers are used at the retail and wholesale level.

5.4 First we look at number use from the retail side and examine whether any changes to the way consumers and citizens use numbers would be appropriate to promote effective number use. Specifically, we discuss whether any changes should be made to the meaning associated with geographic numbers.

5.5 We then approach the issue from the wholesale side and examine whether:

- smaller blocks of numbers could be allocated to CPs;
- the sharing of number blocks between CPs could be facilitated; and
- our administrative processes could be enhanced to drive CPs' increased utilisation of numbers.

## Could changes to the meaning provided by geographic numbers be an appropriate way to remove barriers to more efficient use?

### Location information

- 5.6 Geographic numbers provide information on location that is valued by consumers. As discussed in Section 3, the provision of location information divides the geographic number resource into area codes. Whereas numbers available in one area code might be relatively plentiful, they may be scarce in another.
- 5.7 One way of increasing utilisation could be to encourage or facilitate the use of numbers 'out of area'. Such use is already permitted under the definition of geographic numbers in the Numbering Plan,<sup>68</sup> but currently it is not widespread. A step further could be to eradicate the linkage of area code and location, instead modifying the geographic numbering plan to simply indicate that a number beginning with '01' or '02' is a number with UK (but not area) significance.
- 5.8 There are, however, clear arguments for retaining location significance. Our 2010 consumer research found that 64 per cent of consumers surveyed thought that geographic significance was important, with both businesses and residential consumers seeing this as important for a mixture of emotional and practical reasons. The possible removal of the ability to identify someone's location from the area code was of concern to almost all businesses and to some residential consumers.<sup>69</sup> We discuss the implications of these concerns in more detail in Section 4 and Annex 3, in which we weigh up the potential impacts of closing local dialling as opposed to overlay codes as the first step in increasing the supply of numbers. In addition, taking action to remove the meaning associated with geographic numbers would be inconsistent with our guiding principles as set out in Section 2 (in that doing so would hasten the erosion of location significance). In light of these considerations, we do not consider this measure further in this consultation.

### Service information

- 5.9 A further aspect of the geographic number definition could be the type of services for which geographic numbers may be used. There are currently no rules about appropriate service use and a vast range of services are provided on geographic numbers. If limitations were brought in, for instance that restricted geographic number use to services acting as the primary contact point for an end-user (rather than allowing multiple geographic numbers to be used to provide access in the way described in example services in paragraphs 3.27 to 3.30 for example), demand for geographic numbers may be reduced.
- 5.10 We make judgements on appropriate number use in some other number ranges. For example, mobile numbers may be used only for services that meet the definition of a 'Mobile Service' in the Numbering Plan. We could, potentially, seek to define a 'Geographic Service'. However, we consider that it would be extremely difficult to determine objectively the types of applications that should use geographic numbers. We also consider that this course of action would be difficult to implement successfully. Restricting the types of service that may use geographic numbers at this point in time may lead to confusion and could require the disruptive migration of certain services already using geographic numbers to other number types. In

<sup>68</sup> See paragraphs 3.7 and 3.8 of this document for further explanation.

<sup>69</sup> Page 3 of 2010 consumer research.

addition, it would be difficult for us to ensure that use of geographic numbers met pre-defined service criteria, especially as the numbers' circulation from Ofcom allocation to end-users can be multi-layered.

- 5.11 Having considered the challenges associated with deciding which services provide meaning for consumers and reflect the social value of geographic numbers, our current position is that this would more appropriately be decided by market-based mechanisms than by Ofcom's administration. We are not, therefore, currently proposing to adjust our administrative measures in this respect. Instead, we consider that action at the wholesale rather than at the retail level is more likely to address inefficient use of geographic numbers.
- 5.12 There may be scope to reduce end-users' demands for geographic numbers by improving incentives to use alternative types of numbers for some services, such as 03 UK-wide numbers which have the same call tariff structure as geographic numbers. In this respect, our review of non-geographic calls services may result in changes to the way some non-geographic numbers are regulated, encouraging increased consumer trust and use.

### **Allocating numbers in smaller blocks to improve utilisation of allocated numbers**

- 5.13 There are a number of aspects of wholesale use of geographic numbers that potentially could be developed to improve utilisation of the existing stock of numbers. The most obvious aspect is the size of number block allocated.
- 5.14 Reducing the size of number blocks that we allocate to CPs could enable better matching of number allocation to CPs' requirements. However, smaller blocks require more digits of the number to be decoded for routing purposes. As explained in Section 3, the digit decoding resource constraints in the legacy local exchange equipment in some networks limits the minimum block size for number allocation. The extent of the decode constraint depends on multiple factors including the type of deployed equipment, the network architecture and the number of different call services supported by the switches.
- 5.15 In order to understand if there could be any scope for allocation of numbers in smaller blocks, we sought information from nine large-scale fixed network providers on the potential for their network switches to support a finer level of digit decoding than currently required. The majority of those providers indicated they could support routing of calls to blocks of 100 numbers in all geographic areas and some stated that they already support decoding to the digit corresponding to blocks of 100 numbers. Most of these providers also indicated that they could route calls on a single number basis.
- 5.16 However, some providers with legacy network equipment (including BT) indicated that they might face switch capacity constraints that would prevent them from supporting the finer digit decoding necessary to route calls to blocks of 100 numbers. These providers were unable to identify in the time available whether they could support routing to blocks of 100 numbers across all their switches. Instead, we asked them to provide this information for the first nine areas forecast to run out of number blocks for allocation.<sup>70</sup> One of the providers facing decode constraints responded that

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<sup>70</sup> The nine areas were Aberdeen (01224); Blackpool (01253); Bournemouth (01202); Bradford (01274); Brighton (01273); Derby (01332); Langholm (013873); Oxford (1865) and Middlesbrough (01642).

potentially it could support blocks of 100 numbers in most of those areas for new allocations only. Another provider indicated that it would not be possible to quantify precisely the extent to which support for blocks of 100 numbers could be feasible, although the spare decode capacity identified by that provider suggested that it might be possible to support blocks of 100 numbers for new allocations in the nine areas. One other provider facing constraints with legacy network equipment could not quantify in the time available the extent to which it could support blocks of 100 numbers.

- 5.17 The apparently limited ability of a few large-scale networks to support the routing of calls to blocks of 100 numbers across the entire pool of geographic numbers presents a significant barrier to wide scale allocation of smaller number blocks. We consider that it may not be economically feasible to increase the decoding capacity of the switches concerned. We understand that the personnel and technical resources required to upgrade the legacy equipment's capacity to do so are unlikely to be available to the CPs concerned. We also understand that the CPs' relationship with the vendors of the relevant equipment is likely to be limited to ongoing maintenance. Further, using spare decode capacity to support smaller blocks might use resources that could otherwise support new number blocks created by supply measures such as overlay codes and may not, ultimately, be the most efficient use of the finite decode resource.
- 5.18 We have provisionally concluded, therefore, that it would not be justifiable to change the common number block allocation size and that we should continue to allocate numbers in blocks of 1,000 in conservation areas and 10,000 in standard areas on a general basis. Nevertheless, our preliminary assessment, based on the information we have received so far, is that a limited amount of blocks of 100 numbers could be supported by utilising the decode resources available in the trunk layer.

#### We are seeking views on allocating a limited amount of geographic numbers in blocks of 100 numbers

- 5.19 As explained above, we have established that some networks would face constraints in routing calls to blocks of 100 numbers across the entire pool of geographic numbers. Nevertheless, subject to further investigation by the CPs, there is a possibility that these networks could support a limited supply of blocks of 100 numbers programmed on their switches. We continue to engage with the providers concerned to understand the extent to which this could be achieved.
- 5.20 Our preliminary view is that there could be merit in making a limited amount of numbers available for allocation in blocks of 100 numbers. Doing so could help to defer the need for number supply measures if applied to areas with the fewest numbers available for allocation.<sup>71</sup> It could help improve the utilisation of numbers while still facilitating new entry and promoting competition.<sup>72</sup>

<sup>71</sup> For instance, we allocated 39 blocks of 1,000 numbers in Bournemouth during 2009 and 2010 to 30 CPs. If the requirements of those CPs who requested a single block could have been met with blocks of 100 numbers, the amount of remaining numbers might have increased by 50 per cent potentially delaying the need for new supply measures beyond 2015.

<sup>72</sup> In addition, if charging for numbers was introduced (see Section 6) and numbers were allocated in blocks of 100 in an area where charging was applied, then the smaller block allocation would help reduce the impact of charging on smaller providers. There may also be some opportunity for CPs to return unused 1,000-number blocks and take a 100-number block instead if that was considered sufficient to meet requirements.

- 5.21 If we did proceed with allocation of smaller number blocks, it may be necessary to restrict availability to certain area codes and to a limited amount of blocks within those codes, so as not to exceed the spare decode capacity in some networks. One approach may be to pilot the allocation of smaller blocks in the seven areas which are currently forecast to run out of numbers by 2015. This would help us to understand the effectiveness of such allocations and assist CPs who face network constraints to identify their decode resource limitations.
- 5.22 If a limited amount of numbers could be allocated in blocks of 100, it might also be necessary to set additional criteria for allocation of such blocks. The current number allocation system allocates numbers on a 'first-come first-served' basis to providers that are eligible to apply for new number blocks. However, if there is only a limited number of potential 100 number blocks, it might be necessary to specify additional allocation criteria, such as restricting the amount of 100 number blocks allocated to one provider.
- 5.23 Our preliminary position, taking the above into account, is that we are interested in the prospect of allocating a limited number of blocks of 100 numbers in certain areas, in effect creating a new level of conservation area. However, we have yet to ascertain the extent of this capability. We plan to continue discussions with CPs on this issue during the consultation period and we are keen to hear the views of stakeholders. Once we have taken into account all the information gathered, we will decide whether to consult on the administrative process for allocating blocks of 100 numbers.

*Question 13 Should we reserve a limited amount of numbers for allocation in blocks of 100 numbers in area codes where it is feasible to do so?*

*Question 14 What criteria, if any, in addition to a 'first-come first-served' basis should be used for allocating such blocks of 100 numbers to providers?*

*Question 15 Should the geographic extent of such allocations be limited to the seven areas currently forecast to run out of numbers for allocation before 2015? (i.e. Blackpool (01253); Bournemouth (01202); Bradford (01274); Brighton (01273); Derby (01332); Langholm (013873) and Middlesbrough (01642))*

### **We have looked at whether administrative measures to facilitate CPs sharing allocated number blocks could be introduced**

- 5.24 Sharing of number blocks among multiple providers happens in the market today through commercial sub-allocation arrangements. Some service providers and network providers source their numbers from other CPs with number block allocations rather than seeking a direct allocation of numbers from Ofcom. Often the numbers are part of a package of services provided to the sub-allocatee, including call conveyance, billing etc. The sharing of allocated blocks of 1,000 numbers among multiple CPs helps to improve utilisation while satisfying the digit decoding constraints faced by legacy networks. However, such arrangements are not widespread.
- 5.25 Our engagement with stakeholders, including information we informally requested from CPs, has not identified any specific technical barriers associated with sub-allocation arrangements. However, some CPs have encountered difficulties including minimum requirements and unattractive commercial arrangements when seeking sub-allocation from other CPs. Concerns have also been expressed regarding the lack of certainty on the continuing use of numbers under a commercial arrangement,

where the rights of use of numbers are assigned to the block holder (i.e. the CP allocated the block of numbers). One CP commented that there is a lack of clarity on the process for porting sub-allocated numbers, where the block holder does not have a contractual relationship with the end-user.

- 5.26 We consider that some of the proposals that form part of this consultation could help to incentivise commercial sub-allocation arrangements. In particular, in the next section, we look at how charging for geographic numbers might encourage block holders to share numbers with other providers and might encourage some providers to seek sub-allocation of numbers in preference to a direct allocation from Ofcom.
- 5.27 We recognise, however, that despite potential market and regulatory incentives for CPs to share number blocks, there are likely to remain certain administrative obstacles, such as those mentioned in paragraph 5.25. Our initial view is that these should not be insurmountable. For instance, in the example of porting sub-allocated numbers provided in paragraph 5.25, our position is that the CP holding the block should be able to facilitate the porting process by working with the sub-allocatee to, among other things, verify the end-user.
- 5.28 We would welcome stakeholders' thoughts on obstacles to effective number block sharing, and how we could usefully address them to facilitate its uptake.

*Question 16 Do you consider that there are any technical obstacles currently to the effective sharing of number blocks by CPs and to sub-allocation? How could we usefully address those obstacles?*

### **We have considered whether our number allocation and auditing processes could be modified to facilitate increased utilisation of numbers**

- 5.29 The problem of number scarcity is one that Ofcom and the communications industry need to address together by tackling practices that can lead to low utilisation of allocated number blocks. We have similar obligations to achieve this. It is our general duty in carrying out our telephone numbering functions to secure best use of telephone numbers.<sup>73</sup> CPs have an obligation to secure that numbers allocated to them are adopted or otherwise used effectively and efficiently.<sup>74</sup>
- 5.30 We currently manage geographic (and other) numbers entirely by administrative processes and we consider the effectiveness of these processes in the remainder of this section. In Section 6 we look at the issue of utilisation from the perspective of reflecting the value of the finite geographic number resource when we consider proposals to introduce charging for geographic numbers.
- 5.31 As set out in Section 3, scarcity of number blocks in certain geographic areas is due to the current supply of numbers not being utilised efficiently. We have identified three key areas that, if tackled successfully, could have an appreciable effect on number utilisation and block availability. These are:
- a) allocating fewer blocks that are either not utilised by CPs, or utilised to a very limited extent, within a reasonable timeframe;

<sup>73</sup> Section 63(1)(a) of the Act.

<sup>74</sup> Paragraph 17.6 of the Numbering Condition.

- b) encouraging CPs with unconfirmed business plans to consider obtaining numbers by sub-allocation from other CPs with unused numbers to meet demand if it materialises; and
- c) encouraging CPs to return blocks of numbers that are not in use.

5.32 With these considerations in mind, we have examined our administrative processes to see if any potential modifications could be appropriate within the regulatory framework and in line with our policy principles set out in Section 2.

We have considered whether the number allocation process sufficiently drives CPs' efficient use of numbers and identified that a time-limited reservation step might assist

5.33 A particular issue for us when considering applications for telephone numbers is that we cannot accurately prejudge the likelihood of a number allocation actually being put into service based on the information currently provided by CPs when applying for numbers. One way of establishing operational readiness to use the numbers might be through demonstration that an agreement has been reached with at least one other CP to route calls between the two networks.

5.34 The process of negotiating interconnection with other CPs can sometimes require the CP to have an allocation of numbers on which to focus discussions. If the interconnection negotiations are not subsequently concluded then the number allocation(s) remains unutilised. As there is no charge currently for holding number allocations, there is no incentive for CPs to return unused blocks (this situation would change for numbers in some area codes if we were to charge for geographic numbers – we discuss this possibility in Section 6).

5.35 We are therefore considering introducing a time-limited reservation step in the allocation process for geographic numbers. Reservation of numbers as well as allocation is provided for in paragraph 17.9 of the Numbering Condition. We consider that for certain applications, reservation of numbers ahead of allocation could help us address the inefficient practice of CPs not 'adopting' geographic numbers in a timely manner, and would require CPs to demonstrate a level of commitment to using the numbers before they are allocated. If the CP could not demonstrate its operational readiness to use the numbers within the reservation period (suggested as six months from the date of reservation)<sup>75</sup> then the reservation would fall away and the numbers automatically returned to our pool of available number blocks.

5.36 Our initial thoughts on how a reservation process might work are that numbers would be reserved rather than allocated to CPs where there is no evidence that interconnection with another CP has been agreed.

5.37 In line with our regulatory duties, we would aim to keep the additional administrative burden of a reservation process to a minimum. If implemented, we would expect to apply the reservation step only to CPs that fell into the category set out in paragraph 5.36 above. The CPs in question would be instructed upon application for allocation of numbers that they would need to provide us with evidence of an interconnection

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<sup>75</sup> We consider that six months should generally be sufficient to conclude the relevant negotiations on interconnection. This timescale also reflects the reference to six months in Paragraph 17.11(a) of the Numbering Condition, which relates to our ability to withdraw number allocations that have not been adopted within that time period, suggesting that this would be a reasonable timeframe. See paragraph 5.39 regarding potential action once the reservation period expires.

agreement with another CP; otherwise we would convert the application to a request to reserve the numbers. The CP may also submit any additional form of evidence for us to consider that could demonstrate the likelihood that the numbers requested would be adopted within a reasonable timeframe (for example, evidence that service is being provided using existing number allocations).

- 5.38 If such evidence was not submitted to us on request, the CP would only be able to proceed with an application to reserve geographic numbers. We would treat the reservation request with the same level of scrutiny as a request for an allocation of numbers. A notification of reservation, therefore, should provide a basis for CPs' interconnection negotiations to commence on the understanding that on their timely conclusion, the numbers would be allocated.
- 5.39 The CP would have a set period (our initial proposal is six months) to provide us with the required information. If the CP was unable to provide the required evidence by the end of the reservation period, one of two things could happen. Either the CP could justify the need for an extension, perhaps providing evidence that the interconnection negotiations had been protracted, or the reservation would expire and the numbers would be free for us to allocate to other providers.
- 5.40 We recognise that this is a new concept and that there will be process issues and potential consequences associated with the introduction of reservations. Issues that we would need to consider include whether such a reservation system has the potential to be anticompetitive. For instance, the system might discriminate against new entrants and slow entry to the market, particularly if established CPs refuse to enter into interconnection agreements with CPs that have only reserved numbers. Also, our considerations on charging for geographic numbers relate to allocations of numbers and not reservations. We need to consider whether it would be a proportionate measure to introduce (non-chargeable) reservations when we are also considering charging for allocated numbers, since charging is likely to create a disincentive for providers to apply for numbers which they have no immediate plans for using (i.e. the behaviour that reservations are intended to help address).
- 5.41 Our initial proposals for introducing a reservation process for geographic numbers require input from CPs on the practicalities of implementation and the likely behavioural changes that it might generate. We plan to engage with CPs during the consultation period and we welcome your views. We will consider responses before deciding whether to proceed further with reservations of geographic numbers. If we do decide to proceed, we would consult subsequently on firm proposals for the introduction of a number reservation system.

*Question 17 What are your views on the concept, practicalities and implications of introducing a reservation system for geographic numbers?*

We plan to consult on changes to the geographic number application form to elicit more information on the intended number use

- 5.42 We have produced a set of telephone number application forms specific to each number type for CPs to submit to us when they apply for the allocation of telephone numbers. These are available only to CPs registered for access to our 'closed user group' section on our website. Essentially, these forms seek to establish whether the applicant is a provider of an electronic communications network or service, record contact information and ask for some rudimentary information in support of the number allocation request and any relevant details on existing allocations.

- 5.43 We have considered the scope of additional information that we might want to require on the application form for geographic numbers. The basis for this additional information would be to inform our decision on number allocation and allow us to monitor number use through audits following-up on statements and forecasts made at the time of number allocation (see paragraphs 5.51 to 5.54 below). In line with the process for applying for number allocations set out in paragraph 17.9 of the Numbering Condition, information requested must be relevant to the application and not place an undue burden on the applicant. We consider that there is a range of relevant information that would be useful for us to gather that is not currently required in the application forms, and the supply of which we do not think would be burdensome.
- 5.44 In general, this additional information would focus the applicant CP on providing more statements and forecasts on how the numbers would be used if allocated and, if applicable, how numbers already allocated are being used. For instance, one area where we find that CPs provide insufficient information is how and when the numbers would be marketed to customers and the type of service for which the numbers are planned to be used. The provision of this information would help to demonstrate that the CP has carefully considered the business case for numbers and that this business case looks plausible.
- 5.45 At this point we are setting out our intention to consult on modifications to the geographic number application form. The Act sets out the process that we must follow to consult on any changes. We intend to proceed with this process separately from the other proposals discussed in this document because our decision to consult on modifications to the geographic number application form is not reliant on the outcome of other considerations in this consultation. We therefore expect to issue a consultation proposing modifications to the geographic number application form in early 2011. We may also include proposed modifications to other numbering application forms.

#### We intend to broaden the scope and frequency of our audits of allocated numbers' use and utilisation

- 5.46 Numbering audits are the means whereby we request or require<sup>76</sup> CPs to supply us with information on allocated numbers. We use audits most commonly on an annual basis to establish utilisation of allocated numbers in certain area codes and whether any unused number blocks can be returned to us. However, we consider that there would be benefits to the effective management of geographic numbers if we were to broaden the scope and frequency of audits, as explained below.
- 5.47 Our policy objective when undertaking audits is to do so in a manner that assists both CPs and Ofcom to manage numbers effectively. We consider that audits should be conducted in way that:
- ensures that the audit is of a manageable size for both CPs and Ofcom and keeps the administrative burden to a minimum;
  - encourages CP collaboration and secures a high level of response;

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<sup>76</sup> We conduct audits both on an informal basis, requesting CPs to provide us with certain information, and on a formal basis, where we require the provision of information under the information gathering provisions of sections 135 to 137 of the Act.

- results in audit returns in which we have a high level of trust and provides flexibility to follow-up on non-returns, incomplete returns and returns that we consider require further investigation; and
- is in keeping with the requirements of sections 135 to 137 of the Act (which deal with our formal information gathering powers) and Ofcom's 'information gathering policy statement'.<sup>77</sup>

#### Audits of number block utilisation

- 5.48 We propose to continue auditing CPs directly on utilisation of allocated number blocks in specific areas. Our audits have been targeted at understanding block utilisation rates in areas experiencing the most acute shortage of available numbers. The aim is to establish which 1,000-number block units are unused and to seek withdrawal of those numbers.
- 5.49 Withdrawal of unused blocks of allocated numbers plays an important part in deferring the need for number supply measures by increasing the pool of numbers available for allocation. In the past, we have generally undertaken audits of number utilisation on an annual basis and withdrawn significant stocks of numbers with CPs' consent.<sup>78</sup>

#### Audits of CPs' number use

- 5.50 We intend to conduct audits aimed primarily at gathering more detailed information on selected CPs' utilisation of allocated numbers. CPs may be selected for this audit according to a variety of objective factors that suggest the need for further investigation, for example, call traffic data which indicates zero or limited number use, or a lack of evidence that the numbers are being marketed actively. These factors may indicate that services are not being provided on the allocated numbers. The audit would request details on, for example, number utilisation, service provision and marketing and would give the audited CP an opportunity to comment on the factors that suggested the need for an audit and to supply further information if appropriate.

#### Audits following-up on statements made at the time of number allocation

- 5.51 A further additional approach to auditing is to follow-up on statements made by a CP that formed part of the basis for determining its application for numbers. For example, the audit might ask CPs to set out how they are performing against number use forecasts and provide us with information on progress in completing the DMA process that is required to make the numbers ready for use; evidence of active marketing of the numbers and service; and utilisation rates of allocated numbers.
- 5.52 The purpose of this proposed audit on number use would be to:
- actively monitor CPs' progress in making allocated numbers available for assignment to end-users, in marketing those numbers and block utilisation rates;

<sup>77</sup> Information gathering under section 145 of the Communications Act 2003 and section 13B of the Wireless Telegraphy Act 1949, Policy statement published 10 March 2005

[http://www.ofcom.org.uk/consult/condocs/info\\_gathering/policy/policy.pdf](http://www.ofcom.org.uk/consult/condocs/info_gathering/policy/policy.pdf)

<sup>78</sup> Paragraphs 3.53 and 3.54 provide more detail on this type of audit.

- gather information on number use that could potentially be used as a contributory factor in making more informed decisions on future requests for numbers from the same CP. The audit information could help inform our decision as to whether allocation of more numbers would likely be an effective and efficient use of the resource based on previous use of allocated numbers; and
- gather information so that we can better understand CP behaviour and issues that might affect efficient and effective use of numbers. This information would help us to make evidence-based policy proposals on the management of geographic numbers.

5.53 This type of audit could be conducted on the information already required by the geographic number application form, as well as any other information provided by the CP on our request as part of the process of determining the application. In addition, as mentioned in paragraphs 5.42 to 5.45, we propose to consult on modifications to the geographic number application form to gather more information on the proposed use of numbers at the point of allocation. Subject to the outcome of that consultation additional information elicited as part of any modified geographic number application form could also be subject to this audit process.

5.54 As set out above, we need to observe the requirements of sections 135 to 137 of the Act and our 'information gathering policy statement' when conducting audits and ensure that they do not place an undue burden on CPs. We do not need to consult to issue formal or informal information requests under our powers and in line with our existing policy statement to conduct the type of audits set out above. However, before issuing a formal information request to a CP, we would invite and take into account comments on a draft version.

5.55 At this time we are signalling to CPs that we intend to broaden the scope and frequency of audits and that CPs should bear this in mind when applying for the allocation of numbers and when setting their internal number management and data gathering systems.

*Question 18 Do you have any comments on our proposed scope of additional audits?*

**Are these administrative proposals for managing geographic numbers in the future, along with the measures already in force as described in Section 3, sufficient to incentivise efficient use of numbers and reduce the need for number supply measures by themselves?**

5.56 We anticipate that our proposals for strengthening the administrative processes for managing geographic numbers as discussed in this section would have an effect on efficient number use. However it is difficult to estimate to what extent.

5.57 For the administrative system to achieve the most efficient outcome each number application would need to state the exact use for the numbers and the expected utilisation rate. Then we would need to determine whether the value created by the stated number use exceeded the social costs of releasing the numbers. Clearly this would be a difficult judgement for us to make (with high administrative costs).

5.58 In light of this, we consider that other measures may also be required to promote efficient use of geographic numbers. Charging for numbers, particularly where there is scarcity, would potentially encourage more efficient utilisation of those numbers. In

the next section, we therefore examine the possibility of charging for geographic numbers in more detail.

## Section 6

# Charging for geographic numbers

## Introduction

- 6.1 Charging for number blocks is one of a number of policy instruments that may help to address the challenges that arise in ensuring that geographic numbers are available where they are needed. Through encouraging more efficient use of numbers charging may have the potential to postpone the need for supply measures such as overlay codes which could disrupt consumers and result in costs for CPs and Ofcom.
- 6.2 The objective of introducing a charge for numbers would be to signal to CPs the costs associated with making numbers available, and to provide a means for CPs to take these costs into account when deciding on their allocation requests. Because CPs currently get number blocks for free they do not bear all the costs generated by using these blocks. This is a type of market failure known as negative externality<sup>79</sup> and leads to CPs requesting and holding more number blocks than would be economically efficient. Charging for numbers would 'internalise' the externality. CPs would then face the wider costs they impose, and in so doing, would face greater incentives to use numbers efficiently.
- 6.3 Some form of charge is levied in the large majority of European Union (EU) member states – in some cases to cover the administrative costs of number allocation, but in others also as a means of addressing potential scarcity issues. The UK is therefore unusual in not charging for numbers. However, the circumstances in which number charging was introduced in other countries are arguably significantly different from the circumstances prevailing in the UK today. In particular, a number of other countries introduced charges before number scarcity was a significant issue, and in a different market environment (e.g. where the incumbent or a few large CPs accounted for most of the market, in contrast, the UK has 300+ CPs with a large number of small players).
- 6.4 We consider that introducing a charge for geographic numbers would help to achieve our policy objectives by increasing the incentives for CPs to use numbers efficiently and effectively, and hence limit the need to make more new numbers available. We are proposing to introduce a charge initially in a pilot scheme confined to areas where number scarcity is most pressing.
- 6.5 This section is set out as follows. First we discuss how charging might incentivise more efficient use of numbers. Then we set out the legal framework for a charging regime. Next we discuss the guiding principles and how our preferred charging regime would work, and we look at the possible impact on CPs (including the impact on competition), consumers and Ofcom. Finally we discuss a number of more detailed implementation issues.

## Incentive effects of charging

- 6.6 In principle, charging for numbers should reduce demand for new number blocks and encourage more efficient use of existing blocks in three main ways:

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<sup>79</sup> A negative externality occurs when a party making a decision fails to take into account the costs that their actions may have on other parties.

- encouraging CPs to return unused number blocks;
- improving the utilisation of allocated number blocks (e.g. through switching demand from new number blocks to obtaining numbers from the existing stock of numbers held by CPs); and
- reducing demand for new number blocks (e.g. by reducing applications for new allocations to cases where there is genuine value).

6.7 These are discussed below.

### **Encouraging CPs to return unused blocks**

- 6.8 We are aware of cases where CPs request number blocks prospectively, e.g. a new entrant might request a block in every area of the country while its marketing activity could be based in specific areas, or a CP might request blocks when tendering for a contract which it may or may not actually secure. In both cases we may allocate number blocks where, over time, it becomes apparent that these blocks are unlikely to be used.
- 6.9 We requested information from CPs to estimate the number of blocks they are currently allocated which are unused.<sup>80</sup> The 45 CPs who responded to the information requests held a total of around 14,300 unused 1,000-number blocks. We note, however, that this understates the total number of unused blocks since not all CPs responded to our informal request for information, and the largest CPs responded for a sample of 51 areas only. Currently CPs have no economic incentive to return unused blocks to us since they can hold them at zero cost. Applying even a small charge could provide an incentive that could result in the return of many unused blocks.
- 6.10 We recognise that in some cases there are valid reasons for holding unused number blocks. There may be a business case for having unused blocks which are ready to use where demand is anticipated (particularly as it takes some time to set up new number allocations). The purpose of charging would be to encourage CPs to examine the value of holding unused blocks and to incentivise CPs to return blocks where the value of holding them is less than the cost of a charge.

### **Improving utilisation of existing blocks**

- 6.11 For technical reasons numbers are currently allocated in blocks of 1,000 or 10,000 contiguous numbers. Even if a CP only has demand for a few numbers, its least costly option may well be to apply for the allocation of a whole block from Ofcom. This leads to some cases where number blocks have very low utilisation rates.
- 6.12 We asked small and medium sized CPs in an informal request to estimate their average utilisation rate for allocated number blocks. For the 35 CPs who answered this question, the average utilisation rate was 23 per cent. However, this varied

<sup>80</sup> We sent informal information requests to 285 generally small and medium sized CPs and asked each for the total number of unused number blocks. We received 38 responses. We excluded one respondent from the sample because it operates a significantly different business model and only uses geographic number allocations within its own company rather than to provide communication services to others. We sent formal information requests to larger CPs and asked each about unused number blocks in a sample of 51 conservation area codes. We received nine responses. One CP was only able to provide information for a limited number of area codes. This CP's information has been excluded.

widely across CPs with some average utilisation rates being lower than 1 per cent, and the highest at 86 per cent. We also asked large CPs in a formal request to provide information on utilisation for a sample of 51 area codes<sup>81</sup> - eight CPs were able to provide this information. Utilisation rates varied from 16 per cent to [X .]. Across all eight CPs the average utilisation rate was 53 per cent. However, if the largest CP is excluded, the average utilisation rate falls to 30-40 per cent [X .].

- 6.13 Efficiency could be markedly improved if unused numbers were 'sub-allocated' to CPs who required numbers, instead of those CPs requesting new blocks from Ofcom. Some sub-allocation of numbers does currently take place. However, at present there is little incentive to do this since CPs can obtain number blocks from us for free, but might be charged to obtain sub-allocated numbers from other CPs.
- 6.14 Charging for allocations would create incentives for CPs to use their allocated number blocks more efficiently by introducing a cost of holding number blocks. Charging should increase demand for sub-allocated numbers (particularly where only a few numbers are needed) since obtaining an allocation of a block of numbers from Ofcom would become particularly costly when utilisation is low. In addition, the current utilisation rates indicate that there are a large number of potential suppliers with an excess capacity of numbers who are more likely to seek to sub-allocate if unused numbers were to incur a cost. We discuss sub-allocation in more detail later in the section.

### **Reducing demand for new number blocks**

- 6.15 We expect that charging for numbers would reduce demand for new number blocks. In particular it would deter CPs from requesting blocks where i) they only actually need a few numbers; or ii) the request is prospective and there is a low probability that the numbers will be used. In these cases sub-allocation might become a more attractive means of obtaining numbers as demand arises.
- 6.16 In addition, charging could deter CPs from requesting numbers for use in 'low value' applications. We are aware of examples where ten numbers have been allocated to one line to provide different ring tones. We consider that it would be overly intrusive for us to determine whether this is a good use of numbers, and that our role is to seek to ensure that associated costs are taken into account. Even a relatively small charge may have a significant impact on 'low value' uses of numbers.

### **Impact of charging on demand for number blocks**

- 6.17 The effectiveness of number charging in postponing or mitigating the need for supply measures would depend on the responsiveness of CPs' demand for number blocks to price.<sup>82</sup> The more sensitive demand is to price, the more effective charging is likely to be. If demand is insensitive to price, then charging would be unlikely to reduce demand for number blocks significantly, but it would impose a cost on CPs, potentially affecting the prices paid by consumers. In this case it might be more efficient to keep the price of numbers at zero and simply expand supply when and where necessary.
- 6.18 There are two scenarios in which CPs may not be especially responsive to a charge for numbers. One could occur where it may be very costly for CPs who are already

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<sup>81</sup> The sample was chosen from conservation areas to reflect a selection of areas with different degrees of number availability.

<sup>82</sup> The price is effectively the charge we would set.

making use of a number block to return the number block even if it is used for low value applications. This may be the case, for example, where CPs may need to ask customers to change their telephone numbers – and potentially pay compensation to encourage them to do so.<sup>83</sup> The other scenario could occur if the charge is set too low and does not lead to a significant change in behaviour.

- 6.19 It is not currently possible for us to measure the sensitivity of demand for number blocks to price – not least because the price has always been zero to date, and there are no data relating to CPs’ response to a price change. While it will always be the case that some CPs will be insensitive to price changes, the success of a charging regime would depend upon the impact on those CPs who are in a position to change their behaviour without incurring significant costs. Introducing even a small charge could change the behaviour of many CPs if, for example, it would lead to their needing to justify a business case for demanding a number block which was previously given free of charge.

## Legal framework

- 6.20 In setting the principles of a charging regime we must have regard to our legal powers and duties. We discussed our regulatory duties in paragraphs 2.24 to 2.27. We have powers to raise charges in relation to telephone numbers under two sections of the Act. Section 38(1) gives specific powers to Ofcom to impose an “administrative charge” on providers, with the aim of raising a sum of money sufficient to meet the annual cost of fulfilling our functions. At present the cost of Ofcom administering telephone numbers is recovered along with our other costs under section 38 of the Act and is spread across designated providers based on their turnover.<sup>84</sup>
- 6.21 Under section 58(1)(g) of the Act, Ofcom has the power to require, by means of a general condition, the payment of sums to us for the allocation of telephone numbers. Section 58(2)(e) of the Act sets that general conditions may also “regulate the procedures to be followed, the system to be applied and the charges to be imposed for the purposes of, or in connection with, the adoption by a communications provider of telephone numbers allocated to that provider”.
- 6.22 Section 58(5) states that “Where Ofcom are proposing to allocate any telephone numbers they may – a) invite persons to indicate the payments each would be willing to make to Ofcom if allocated the numbers; and b) make the allocation according to the amounts indicated”. The explanatory notes clarify that this is an allocation of numbers by means of an auction. The language both in the Act and in the explanatory notes indicates that this is an optional, rather than prescribed, methodology.
- 6.23 Section 58(6) states that general conditions providing for payments to be made to Ofcom in respect of number allocation may provide for the amounts to be determined by reference to either (a) an indication on willingness to pay, or (b) any other factors, including the costs incurred by Ofcom in connection with the carrying out of their functions by virtue of section 56 and this section, as Ofcom think fit.

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<sup>83</sup> There is no statutory requirement under the Act for a CP to provide compensation to a customer when their number is withdrawn or changed. However, any CP withdrawing or changing customer numbers would have to consider the contractual rights of its customers. Any decision to offer compensation might be guided by a desire to maintain customer satisfaction and brand image.

<sup>84</sup> Ofcom’s tariff tables 2010/11 set out how the administrative fees are calculated. The document is available at [http://www.ofcom.org.uk/files/2010/06/Tariff\\_Tables\\_2001011.pdf](http://www.ofcom.org.uk/files/2010/06/Tariff_Tables_2001011.pdf)

- 6.24 This suggests that the Act recognises two different methodologies for setting number charges, (a) a willingness to pay / auction methodology; and (b) an “other factors” / administrative costs methodology.
- 6.25 Section 58(6) also states that payments may consist of a lump sum in respect of a particular allocation or of sums payable periodically while an allocation remains in force, or both.
- 6.26 Section 58 implements among others, articles 5(2), 6(1) and 13 of the EU Authorisation Directive that deal with usage fees. Recital 32 of the Authorisation Directive states that in addition to administrative charges, usage fees may be levied for the use of numbers as an instrument to ensure the optimal use of such resources.
- 6.27 On the basis of the above, Ofcom has powers under the Act to impose a General Condition in relation to charges for the allocation and use of numbers. Should we impose a General Condition under section 45 of the Act, we must satisfy the tests set out in section 47(2) of the Act. These are that each condition must be:
- objectively justifiable in relation to the networks, services or facilities to which it relates;
  - not such as to discriminate unduly against particular persons or a particular description of persons;
  - proportionate to what the condition is intended to achieve; and
  - in relation to what is intended to achieve, transparent.
- 6.28 We discuss below our initial considerations about how the above tests could apply in relation to a General Condition reflecting our preferred approach on charging. If we decide to proceed with our charging proposals then we will issue a further consultation on the detail of the charging regime and the legal instrument under which this will be imposed. This further consultation will include a full analysis of the legal tests mentioned above.

## Objectives of a charging regime

- 6.29 In considering the overarching policy principles and strategic statements set out in Section 2 we have identified three high level objectives which should guide our decisions in implementing a number charging regime. The regime should:
- promote efficient use of numbers;
  - minimise any competitive distortion between existing CPs, or existing CPs and new entrants; and
  - minimise any negative impact on consumers.
- 6.30 Inevitably there is a degree of trade-off between the objectives over the short term, e.g. it is not possible to improve the efficiency of number use significantly without having some impact on current competition and on consumers. However, over the longer term, promoting efficient use of numbers is consistent with minimising the negative impact on consumers, since efficient use of numbers reduces the need for number supply measures which are disliked by consumers (and would also be costly for CPs).

*Question 19 Do you agree with the high level objectives proposed for the charging regime?*

## Key features of the charging regime

### Charging unit

- 6.31 Our proposed approach is a charge that would apply per number allocated. As we allocate geographic numbers to CPs in blocks of 1,000 or 10,000 numbers, every number in a block would attract a charge (regardless of whether the number is used by a consumer or not).<sup>85</sup> Applying a charge to every number in a block would maximise the incentives to use numbers efficiently.

### Mechanism for charging

- 6.32 In accordance with our powers under the Act to raise charges in relation to telephone numbers, we are considering two main mechanisms for number charging which are: i) auction and ii) administered incentive pricing (AIP). In simple terms, in an auction a resource is allocated to the highest bidder, while under AIP a charge is determined by the regulator to reflect the opportunity cost<sup>86</sup> of using the resource. In both cases the primary goal is to promote efficient usage of a scarce resource. Trading in the secondary (sub-allocation) market can further improve efficiency, by enabling resources to be allocated to their highest value use through time.
- 6.33 In general, the choice between using an auction or AIP as a means for allocating a scarce resource depends on the specific circumstances of the resource.<sup>87</sup> A significant issue in relation to number allocation is that existing providers already have number blocks which were given out for free. This means if we decided to auction subsequent number blocks then incumbents (who have a stock of 'free' numbers) would be at an advantage relative to new entrants. Auctioning number blocks would therefore risk introducing a competitive distortion which would favour established providers, particularly those with a large stock of unused numbers, and discriminate against potential new entrants. This would not be consistent with the objectives set out in paragraph 6.29 above.
- 6.34 More generally, applying any form of lump sum (one off) charge for number blocks (either via auction or as a form of AIP) is likely to disadvantage new entrants and create a competitive distortion since it is difficult to see how it could be applied to existing allocations. A periodic (recurring) charge, applied to requests for new blocks and those previously allocated, would apply equally to existing CPs and new entrants. It would also provide greater incentives to use numbers efficiently (i.e. it would encourage CPs to return unused number blocks to Ofcom or to sub-allocate unused numbers). Conversely, a lump sum charge would encourage a CP to hang on to its existing allocations (even if unused) as these would attract no cost, but would potentially now have greater value.
- 6.35 In addition, there would be a time lag between setting out our intention to charge and making a final decision public due to the consultation period. If a lump sum fee for

<sup>85</sup> For example, if the charge per number was set at 10p per year, the cost of a 1,000-number block would be £100 and the cost of a 10,000-number block would be £1000.

<sup>86</sup> Opportunity cost is the cost related to the next-best choice available.

<sup>87</sup> Both AIP and auction are currently used to allocate spectrum. Our proposals for charging for numbers described below (which follow an AIP approach) are consistent with the principles of the AIP mechanism used to allocate spectrum.

new allocations was the only charge for numbers, there could be a rush to secure numbers before the charge was imposed. By contrast, annual fees would apply to both existing and new allocations and hence would not present the same incentives in this regard. Indeed, they would tend to dissuade CPs from requesting numbers until they really needed them.

- 6.36 Because charging aims to improve the utilisation of numbers, by design, any charge (lump sum or periodic) would disadvantage CPs with lower number utilisation versus those with higher utilisation. Responses to our information request on the utilisation of allocated blocks suggest that smaller CPs have lower overall number utilisation so charging may disadvantage them relative to larger CPs (smaller CPs can spread the number block charges over fewer customers). Based on the CPs that responded, the average utilisation rate for smaller CPs was 23 per cent of allocated numbers, whereas it was 53 per cent for larger fixed network CPs.
- 6.37 The impact of low utilisation is probably more pronounced with periodic than with lump sum charges since it applies both to new and existing block allocations. CPs might have taken different decisions about requesting number blocks in the past if they knew periodic charging was coming into force. These decisions may now be difficult to reverse (by returning number blocks to Ofcom) without incurring costs and disruption to customers. A lump sum charge would only apply to new allocations so a small CP would be in a better position to determine whether applying for allocations was economic (or whether, for example, purchasing sub-allocated numbers would be better). However, setting charges at a relatively low level, and the ability of CPs to sub-allocate numbers within underutilised blocks, should help to mitigate the impact of charging for existing allocations.
- 6.38 For reasons set out above, reflecting our guiding objectives and subject to the responses to this consultation, we currently favour: i) AIP over auction<sup>88</sup> and ii) a periodic annual charge over a lump sum charge. This reflects our objectives to incentivise the efficient use of numbers and to minimise competitive distortions between existing CPs and new entrants.
- 6.39 These preliminary conclusions are endorsed in part by the approaches in other countries to charging for telephone numbers. All of the countries that responded to our survey of CEPT administrations<sup>89</sup> and charge for numbers indicated that the national regulators set the charges for geographic numbers rather than determining prices by auction.<sup>90</sup> This may also reflect the fact that the transactions costs of auctioning a number block would be high in relation to the value of the block.
- 6.40 The more general benefit of periodic over lump sum charges is also reflected in the charging regimes in other European countries. Some countries have a mix of lump sum and periodic annual charges, but over half have periodic charges only. A summary of the charging regimes in other European countries is provided in Annex 5.

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<sup>88</sup> Auctions may have a role in the efficient allocation of other types of numbers where the specific digits in the number hold more value for the user, particularly business numbers and where numbers are assigned individually, e.g. Directory Enquiry codes.

<sup>89</sup> We surveyed NRAs in the 47 other countries that are members of CEPT (European Conference of Postal and Telecommunications Administrations). We have information on 32 charging regimes.

<sup>90</sup> In theory the possibility of an auction exists in Slovenia if several CPs request the same number block simultaneously.

## Sub-allocation

- 6.41 We noted above that where a charge is applied in the primary market (be it through auction or AIP) trading in the secondary market is important to enable resources to be allocated to their highest value use over time. Trading in the secondary market would provide CPs with a mechanism to ‘undo’ their previous number allocations where they are no longer economic. For example, where a CP has used some numbers in a number block but has very low utilisation, the introduction of number charging may mean that holding the whole block is no longer economic. In this case the CP could explore sub-allocating the unused numbers to other CPs in order to recover some of the cost of holding the block. We are aware of a few CPs that already sub-allocate numbers on a substantial scale and others that offer the facility on a more limited basis.
- 6.42 CPs have indicated that some of the benefits of using sub-allocated numbers rather than Ofcom allocations are:
- less administrative burden (no need to fill out Ofcom number application forms);
  - from the date of Ofcom’s allocation it can take several months before end users are able to use new numbers because routing plans need to be amended. Making use of numbers already built into the routing plan by another provider is significantly quicker;
  - reducing the need for additional points of interconnection;<sup>91</sup> and
  - reducing the operational burden in operating an extensive network.
- 6.43 A CP’s business model is also likely to be a relevant factor in the decision to use sub-allocated numbers. For example, companies that publish business directories may be less interested in running their own network/owning their own physical infrastructure. In these cases, the ability to purchase a range of services from another CP (including access to infrastructure and numbers) may be attractive.
- 6.44 While sub-allocation is currently possible, at present it plays a relatively minor role since there is little incentive to obtain numbers from another CP in a sub-allocation arrangement when they can be obtained from Ofcom for free. In addition, there may be particular reasons why CPs prefer to obtain numbers from Ofcom as opposed to using sub-allocation, i.e. allocations from Ofcom and sub-allocations may not be sufficiently close substitutes. For example:
- the CP to which the number is sub-allocated may have less control over the number leading to uncertainty and possibility of disruption, e.g. concerns about what would happen if the range holder went out of business, or demanded number return. This could cause significant disruption to customers. There may also be concerns about the reliability of the service;
  - there are transaction costs associated with sub-allocation, e.g. the need for contractual arrangements between CPs and having the necessary systems and processes in place. There may be additional administrative costs, e.g. billing charges for sub-allocated numbers;

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<sup>91</sup> For example, avoiding the need to interconnect at different levels of the tandem switches.

- extra call conveyance costs are incurred since the network setup means calls are first routed to the range holder, and then onto the network of the CP to which the number is sub-allocated. However, the information we have received through information requests and discussions with CPs suggests that these extra costs are small.<sup>92</sup> CPs generally did not foresee network issues relating to sub-allocation; and
  - certain numbers, so called 'golden numbers', are more valuable than others, e.g. because they are particularly memorable. At the moment we do not charge for any number allocations, so golden numbers can be obtained from us for free (as part of a block allocation). However, we understand that in the sub-allocation market such numbers trade at a premium.
- 6.45 The success of a number charging scheme would depend to an extent on providing the correct incentives for CPs so that they can switch from demanding new numbers to using previously allocated numbers, leading to improved utilisation. Significant barriers to sub-allocation could therefore limit the benefits of charging.
- 6.46 We have explored the feasibility of sub-allocation through information requests and discussions with CPs (some of the issues raised are discussed above). Some CPs raised other specific points:
- CP who do not currently actively offer sub-allocation on a significant scale noted that some billing development/other capital costs might be incurred in setting up the capability;
  - some CPs did not want to be accountable for the actions of other CPs. They were concerned that they would be responsible for ensuring that sub-allocated numbers were used in accordance with the Numbering Plan and were used effectively and efficiently as required by the Numbering Condition;
  - some CPs stated that they would impose minimum or maximum allocations of numbers, and minimum contract periods (e.g. 12 months);
  - one CP noted a possible issue with respect to number portability. The CP noted that sub-allocation of numbers could blur the porting responsibilities of the various parties and could prove to be difficult from an order validation process perspective as well as the initial identification of which party has rights of use of the number. They noted that this problem arises when the party with the sub-allocated numbers is not able to handle number portability; and
  - one CP noted that control of end user information (primarily provision of accurate and updated location details of end users – for 999/112 emergency services) could be an issue with sub-allocation.

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<sup>92</sup> Furthermore, in the consultation and statement on *Routing calls to ported numbers* we used BT's average porting conveyance costs (APCC) as a proxy for costs of donor conveyance in a fixed network. Donor conveyance costs are the additional costs within a fixed network for handling a call to a ported number. This is a good proxy for the additional conveyance costs when a number is sub-allocated, since the donor conveyance cost essentially represents the cost of an extra leg of conveyance between the range holder and the recipient of the number. We estimated that BT's weighted average APCC was 0.107ppm. *Routing calls to ported numbers consultation* (published 3 August 2009) and statement (published 10 April 2010) are available here [http://stakeholders.ofcom.org.uk/consultations/gc18\\_routing/](http://stakeholders.ofcom.org.uk/consultations/gc18_routing/) (note that the weighted average APCC was updated for the statement).

- 6.47 The information so far does not suggest any insurmountable barriers to sub-allocation (although the practice is not widespread). We welcome feedback from CPs on anticipated technical or contractual issues with sub-allocation.

*Question 20 Do you envisage that sub-allocation would increase if number charging is introduced? Do you have any comments on our analysis of barriers to successful use of sub-allocation?*

## How should the level of the charge be determined?

- 6.48 We have discussed above that currently our preferred approach is to set a recurring annual fee for numbers. The theoretically correct approach to the level of the charge is to base it on the social costs that are incurred when CPs demand number blocks. This would broadly mean that the negative externality associated with increasing number supply would be internalised when CPs make decisions about number allocations.
- 6.49 There are different types of costs associated with making telephone numbers available, which include costs incurred by consumers, CPs and Ofcom, as follows:
- we discussed in Section 4 that consumers bear costs when supply measures are introduced, e.g. the dilution of the geographic meaning of numbers, the loss of local dialling, and the risk of misdialling;
  - CPs bear costs in amending routing plans and data management systems to allow new numbers to be recognised (both when new blocks are allocated and when supply measures are introduced);
  - CPs may incur network and system upgrade costs when new supply measures are introduced. CPs also incur costs in communicating the changes arising due to number supply measures to consumers; and
  - Ofcom faces costs to administer and allocate new numbers.
- 6.50 While the theoretically correct approach would base a charge on social costs, we recognise that in practical terms this is likely to be difficult. First, social costs are likely to vary according to scarcity and hence by area. Second, it is particularly difficult for us to quantify accurately the costs that consumers would bear in relation to supply measures, since it requires consumers to estimate the value of particular aspects of dialling which they largely take for granted and do not tend to associate with a 'price'. This is likely to form a large part of the social costs.
- 6.51 An alternative approach used in some European countries is to set a charge which purely reflects administrative costs, e.g. the costs incurred by the NRA to manage number allocation. We have estimated that the ongoing administrative costs associated with geographic number allocation would be around £600-650K (including the estimate for costs associated with introducing geographic number charging). Because these ongoing costs are relatively small, a charge set at this sort of level may be insufficient to encourage significantly more efficient use of numbers. Such a charge would be less than 1p per allocated number, and would most likely be well below social cost in the areas of greatest number scarcity (the average annual charge in other EU countries is around 7p per number).
- 6.52 In light of the difficulties of identifying the optimal charge level, we propose to pilot charges in area codes of greatest number scarcity (discussed in more detail below)

and set charges at a relatively low level initially. This would recognise that capturing the social costs incurred by consumers and CPs represents the correct concept, but would accept that it is appropriate at this stage to set charges that are likely to be well below this level because of the difficulties of determining the level of social cost. We could use our experience from the pilot scheme to refine the level and scope of the charge.

- 6.53 In setting the value of a possible charge we need to consider the other aspects of the charging regime, e.g. how many area codes are covered and the number of charging bands. This is discussed below.

*Question 21 Do you agree with our view on how charges could be set? If not, please propose an alternative approach with supporting evidence.*

### **Should the charge vary according to number scarcity?**

- 6.54 As discussed above, in principle, we consider that an appropriate number charge should reflect the social costs associated with increasing number supply. These costs are higher in area codes where numbers are scarcer (closer to running out) since it is more likely that requesting a number block would give rise to the need for supply measures in the short term. This suggests that we should vary charges geographically since efficient use of numbers is more likely to be maximised if charges are higher for area codes where numbers are in short supply and the costs of expanding numbering capacity are significant.
- 6.55 Geographic variation in charges allows us to take a more targeted approach which should limit any potential negative impacts of charging. For example, charges may be avoided for area codes where there is no forecast shortage in numbers in the foreseeable future (since number scarcity is not an issue in these areas a nationally averaged charge may exceed the social costs of increasing number supply). In addition, we can minimise any potential detriment to small CPs with low utilisation rates. A further positive aspect would be that CPs returning number blocks could mean an area moved into a lower charging band – providing an added incentive to return numbers.
- 6.56 The disadvantage of geographic variation in charges is the possibility of greater complexity compared to a scheme where a uniform charge is set across the UK. A scheme incorporating geographic variation may be less transparent and harder and more costly to administer.
- 6.57 A further complication arises when measures to provide new supplies of geographic numbers may be introduced, because this could create a situation where numbers are initially very scarce and then relatively abundant (i.e. post supply measure). This means that an area code could oscillate between charging bands and this could create an incentive for CPs to snap up existing numbers so as to tip the area into requiring a supply measure thereby pushing their annual cost of holding numbers down (we could try to address this type of behaviour through the number application process). In order to alleviate this potential issue and provide CPs with certainty around charges we would expect only to move area codes between the ‘charging bands’ at review points. In addition, even after a supply measure is introduced it may continue to be appropriate to charge in an area because number scarcity may still be an issue.
- 6.58 In weighing up the options, our current preference is to have a targeted charging scheme (i.e. with geographic variation) but one which would be simple, transparent

and would not incur high administration costs. With this in mind we have considered three preliminary options below. We have included possible values of a charge to provide an indication of the total charges that would be levied across all CPs in each case.

- Option 1: Charge a flat rate in all relevant number conservation areas (590 area codes) only. There would be no charges outside those conservation areas. An annual charge of 10p per number would impose charges on industry of around £33m per year.
- Option 2 Pilot scheme: Charge a flat rate in area codes with 100 or fewer blocks of 1,000 numbers remaining – currently 58 areas<sup>93</sup> (no charge for other areas). An annual charge of 10p per number would impose charges on industry of around £3m per year. As a pilot scheme it would provide the basis for possible wider rollout based on success and explicitly recognise the difficulty of identifying the appropriate level of the charge.
- Option 3: Charge a higher annual rate (e.g. 10p) in area codes with 100 or fewer blocks of 1,000 numbers remaining (currently 58 areas) and a lower rate (e.g. 5p) in the remaining conservation area codes (no charge for other areas). This would impose charges on industry of around £18m per year.

6.59 The main differentiating factors between the options are i) how widely a charge would apply, ii) how targeted it would be at area codes facing number scarcity and iii) the overall impact on CP costs.

6.60 Option 1 is the simplest approach and, because conservation areas are well-defined and set out in the Numbering Plan, it is transparent to CPs. However, a flat rate charge in all conservation areas (which cover 79 per cent of allocated numbers and 65 per cent of the population) means that charges in some areas risk being above social cost, to the detriment of consumers.

6.61 Option 2 would initially be much more limited in scope and targeted at the area codes where numbers are most scarce. This option would allow us to assess the impact of charging before taking a decision about whether wider roll out is beneficial. In particular, a pilot would enable us to:

- gauge sensitivity of demand for number blocks to a charge;
- observe the reaction of the sub-allocation market and any limitations of sub-allocation; and
- assess issues relating to CPs clearing number blocks (which we discuss further below).

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<sup>93</sup> This is a preliminary estimate based on information on the number of blocks available to allocate as at 9 July 2010. Ahead of implementing any proposed pilot scheme we would update the number of blocks available to allocate in each area. It is possible that if we decide to merge five-digit codes with their corresponding four-digit codes, as we are currently proposing in Section 4, then up to 12 areas could be removed from the pilot. This is because all 11 five-digit areas would currently meet the scarcity criteria we propose for including area codes in the pilot, and the proposed code mergers would necessarily remove those areas from the pilot. In addition, in one case, the merger could increase the supply in the corresponding four-digit area to a level that it would no longer meet those scarcity criteria. This would result in a small reduction to the total charges under the pilot scheme.

- 6.62 The disadvantage of Option 2 is that the limited scope of the scheme (i.e. targeted at few areas) may not be sufficient to make a serious impact initially. It might not encourage efficient use of numbers outside the pilot areas.
- 6.63 Option 3 proposes the greatest granularity in charging, whereby charges are more tailored to scarcity. However, this would come at a cost of greater complexity.
- 6.64 Our preference is Option 2 for the following reasons:
- we do not have sufficient information to know the optimal value of a charge. Starting with a smaller pilot scheme would allow us and the industry generally to understand the practical impacts and to refine our view in light of experience, while minimising the risk of unintended consequences;
  - a pilot is likely to provide a platform for establishing an effective and stable full-scale scheme earlier than the other options; and
  - Option 2 is consistent with our objective of targeting charges where numbers are most scarce, and is relatively simple and transparent for CPs to understand.
- 6.65 As noted above, we do not have sufficient information to determine the social costs associated with making numbers available and we are not able to calculate the sensitivity of demand for number blocks to price as we do not have historic information. In considering the value of a charge under Option 2 we have looked at the experience in other European countries. Across Europe there is a wide range in the value of the periodic annual charge for numbers with levels varying from 0.06p to 27p per number, and an average charge of 7p per number. The wide range in the value of the charge is likely to reflect the specific objectives of the country in question (e.g. whether charging reflects the economic value of the number or just recovers administrative costs) and the circumstances prevailing in a given country (e.g. the level of number scarcity). We have considered the circumstances prevailing in the UK and consider that 10p per number per year charge is appropriate for the following reasons:
- we consider that the periodic charge in the UK should be slightly higher than the European average (of 7p per number) for two main reasons:
    - i) number scarcity is a particular problem in the UK, potentially greater than in other European countries (i.e. the likely need for number supply measures in the UK means social costs are higher); and
    - ii) the UK charge is targeted at area codes where numbers are most scarce, whereas the charges in other European countries tend to be nationally averaged.
  - as noted above, the overall impact of a charge of this magnitude is relatively small (total revenues raised in the order of £3m per year which compares to total fixed voice industry revenues of £2.2bn in Q1 2010<sup>94</sup>), thus the impact on CPs and consumers is likely to be limited. However, it should provide an incentive to use numbers more efficiently in the areas targeted; and

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<sup>94</sup> *Telecommunications market data tables Q1 2010, published October 2010*  
[http://stakeholders.ofcom.org.uk/binaries/research/cmr/q1\\_2010.pdf](http://stakeholders.ofcom.org.uk/binaries/research/cmr/q1_2010.pdf)

- the value is likely to be sufficient to enable us to gauge the reaction to charging and inform any subsequent decision on wider rollout of charging.

*Question 22 Do you agree with our preferred option for charging for geographic numbers? (i.e. Option 2 Pilot scheme: Charge a flat rate of 10p per number per annum in area codes with 100 or fewer blocks of 1,000 numbers (no charge for other areas). If not, please state your reasoned preference.*

*Question 23 Do you agree that the threshold for including an area code within the pilot scheme should be 100 or fewer 1,000-number blocks remaining to allocate? If not, please state your preferred threshold and reasons.*

*Question 24 Do you agree with the proposed level of the charge (i.e. 10p per number per annum)?*

## Time period before review

- 6.66 As outlined above, our preferred approach is to start with a pilot scheme to enable the industry, and Ofcom, to understand the effects in the UK of charging in practice with a view to expanding the scheme in light of experience. We therefore consider that it would be appropriate to conduct the first review 18 months after the launch of the pilot. This should provide sufficient time for us to gauge the impact of a charge on demand for new number blocks and observe any developments in the sub-allocation market. The second and subsequent reviews may occur after longer intervals – this would be considered as part of the first review. The charges would not vary between reviews, i.e. once set the charge would apply up until the next review was undertaken.

## Revenues from charging and recovery of administrative costs

- 6.67 Section 400(1)(b) of the Act specifies clearly that revenues from charging for numbers on the basis of willingness to pay (i.e. auction) go to the Consolidated Fund (i.e. passed to HM Treasury). The destination of revenues that are calculated on the basis of different factors (such as administrative or social costs) is not clear since these revenues are not included in the list of section 400(1).
- 6.68 While the Act is not entirely clear on the destination of revenues, passing the revenues from number charging to the Treasury seems, from a policy perspective, to have merit because those who ultimately bear the costs of charging (i.e. consumers) also ultimately receive the revenues (via the Treasury). (We discuss later that the increase in wholesale costs for CPs arising due to number charging is likely to be passed onto consumers in the form of higher retail prices.) In addition, it is consistent with the approach in spectrum allocation where revenues raised from AIP charges are passed to the Treasury. Therefore passing revenues from charging to the Treasury is our proposed approach.

## Recovery of administrative costs

- 6.69 We already incur some costs related to number allocation (dealing with applications, number audit etc.) which are recovered via the annual fees levied on certain CPs. Clearly we should not recover these costs twice, i.e. through annual fees and as part of number charging. The aggregate number charge would either: i) not include

administrative costs (including number allocation charges which we incur currently and the additional administrative costs for charging); or ii) part of the revenues would need to be used to reduce the charges currently levied on relevant CPs who are allocated geographic number blocks.

- 6.70 Option ii) would probably be favoured by larger CPs since they are the ones who pay Ofcom fees (only relevant CPs with a turnover of £5m or more contribute to Ofcom fees; 31 CPs currently contribute and have geographic number allocations<sup>95</sup>). Smaller CPs who do not pay fees would not get any tariff 'offset' and would be at a disadvantage relative to the current position (around 250+ CPs). In addition, we would have to decide whether eligible CPs got the same reduction in fees, or whether it varied to reflect the amount of number blocks allocated to them (or some other measure).
- 6.71 In light of the problems associated with option ii) we prefer option i) which essentially keeps the current regime of recovering administrative costs via the annual fees levied on certain CPs. Our very preliminary estimate is that the incremental administrative costs for Ofcom associated with introducing number charging are likely to be small (the estimated range for one off set up costs is around £50-100K and the estimated range for the ongoing cost is around £40-80K per year). Ofcom's administrative costs associated with existing geographic number management are around £570K per year. Introducing charging is likely to increase the ongoing administrative costs by between seven and 14 per cent, and the one-off costs represent nine to 18 per cent of the current administrative costs, thus this option will only have a relatively small impact on the CPs who pay Ofcom fees. This option is simpler to administer in practice and avoids any impact on the competitive position of small versus larger CPs. As such the per-number charge would only reflect social costs associated with number supply measures incurred by consumers and CPs.

### **Impact on CPs (including impact on competition)**

- 6.72 One of our guiding principles in implementing charging for number blocks is that it should not significantly increase competitive distortions between existing CPs, or between existing CPs and new entrants. We have discussed above how we have designed our proposed charging regime to achieve this principle. In particular, applying charges to existing and new number allocations, and using periodic as opposed to one off charges to minimise competitive distortion between incumbents and new entrants.
- 6.73 However, inevitably introducing any charging regime would have some impact on CPs and competition. We discuss the possible implications of our proposed regime below.

### **Cost 'pass through' and the impact of utilisation rates**

- 6.74 Introducing number charging means CPs who hold numbers allocated directly from Ofcom will face a new wholesale cost. Since this is a competitive market we would generally expect that an increase in wholesale costs would be 'passed through' to consumers in the form of higher retail prices. This means that, in aggregate, we would expect that the overall impact on CPs is likely to be minimal.

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<sup>95</sup> The list of network and service providers who were billed for Ofcom administrative charges in 2009/10 is available at [http://www.ofcom.org.uk/about/files/2010/08/list10\\_11.pdf](http://www.ofcom.org.uk/about/files/2010/08/list10_11.pdf)

6.75 However, the impact on individual CPs would not be uniform since the charge applies to all numbers in a block. This creates a disadvantage for CPs with low number utilisation (since the block charge is spread over a smaller number of customers). This means CPs with relatively low utilisation rates may not be able to pass on the costs in full without losing customers to CPs with higher utilisation rates.

### Possible impact on smaller CPs

6.76 Smaller CPs have fewer customers and are therefore more likely to have lower utilisation rates than their larger counterparts, meaning they could be disadvantaged by number charging relative to larger established players.

6.77 As part of the informal information request we asked CPs for their average utilisation rates and annual gross revenues. The average utilisation rate was 23 per cent (based on 35 CPs who provided information). Thirty-two CPs provided information on both utilisation and gross revenue. Figure 6.1 below shows the frequency of CPs falling into each utilisation rate and gross revenue band.

**Figure 6.1 Average utilisation rate and gross revenue**

Average utilisation rate for geog no. blocks	Gross revenue in 2009					Total
	<£100,000	£100,000-£500,000	£500,000-£1m	£1m-£5m	>£5m	
0-1%		1	1	5	2	9
1-5%		1	2		2	5
5-10%	1	1			3	5
10-25%	1				1	2
25-50%			1	1	1	3
50-100%		2		2	4	8
<b>Total</b>	<b>2</b>	<b>5</b>	<b>4</b>	<b>8</b>	<b>13</b>	<b>32</b>

6.78 Figure 6.1 shows that the larger CPs in the sample (i.e. those with >£5m gross revenue) have variable utilisation rates, with two of the 13 largest CPs having a utilisation rate of less than one per cent, and around a third have a utilisation rate of less than five per cent. While it is impossible to draw robust inferences based on such a small sample size, it appears that there may not be a strong correlation between CP size and utilisation for small and medium sized CPs.

6.79 The average utilisation rates for large CPs (obtained via formal request) were less wide ranging – the lowest was 16 per cent and the highest [X]. The average utilisation rate was 53 per cent, however when the largest CP is excluded this falls to 30 to 40 per cent. It is likely that, on average, the large CPs have higher utilisation rates than their small and medium sized counterparts but this is not always the case. Furthermore we cannot draw a direct comparison between the small/medium and large CPs since the latter only provided information for a sample of 51 areas.

6.80 For CPs responding to the informal information request we also calculated the impact of different levels of charges in relation to their annual gross revenue – in order to determine the potential significance of a charge for small and medium sized CPs. This was calculated based on Option 1 and Option 2 for setting a charge as set out in paragraph 6.58. We took the gross annual revenue of each CP and calculated the

percentage of this that charges of 1p, 5p and 10p per number per year would constitute, based on the block holdings of the CP under each option.<sup>96</sup>

6.81 Under Option 1 a flat rate charge would be applied to geographic number blocks held in conservation areas, with no charge in other areas. Figure 6.2 below shows the results under the three levels of charge.

**Figure 6.2 Significance of a charge in conservation areas in relation to CPs' revenues**

% of CP revenue accounted for by charge	Charge per number		
	1p	5p	10p
	<b>Number of CPs falling into each band</b>		
0-1%	28	27	25
1-2%	2	0	2
2-5%	1	1	0
5-10%	3	2	1
10-25%		1	2
25-50%		3	1
50-100%			3

6.82 Under each of the potential levels of the charge, for the majority of the sample the charge would amount to less than one per cent of gross annual revenues. However, the impact of a charge of 5p or 10p could have a substantial impact on some CPs. For four CPs, a charge of 10p would lead to costs equal to over a third of their gross annual revenues. However, in this analysis we have assumed that block holdings of CPs are constant, i.e. that no blocks are handed back to Ofcom.<sup>97</sup> These four CPs hold 6,523 unused blocks (of 1,000 numbers), so they may be able to hand significant numbers of blocks back to Ofcom, and markedly reduce their charges.

6.83 Under Option 2 a flat rate charge would be applied to geographic number blocks held in a pilot area, comprised of the 58 conservation areas where there are 100 or fewer blocks of 1,000 numbers remaining, with no charge in other areas. Figure 6.3 below shows the results under the three levels of charge.

**Figure 6.3 Significance of a charge in a pilot area in relation to CPs' revenues**

% of CP revenue accounted for by charge	Charge per number		
	1p	5p	10p
	<b>Number of CPs falling into each band</b>		
0-1%	34	31	31
1-2%			
2-5%		3	2
5-10%			1
10-25%			
25-50%			
50-100%			

<sup>96</sup> The value of gross annual revenue was used purely to illustrate the scale of the impact of charges; it does not reflect the amount of revenue earned by CPs directly through their use of geographic numbers.

<sup>97</sup> We cannot work out the impact of handing blocks back since we do not know if the unused blocks are in standard or conservation areas.

- 6.84 For 31 of the 34 CPs that responded to our information request, the potential sets of charges would make up less than one per cent of gross annual revenues if they were applied in the pilot area. Under a charge of 5p or 10p per number the estimated impact would amount to between two and ten per cent of gross annual revenues for the remaining three CPs. Based on this sample, our preferred option of charging in a pilot area would appear likely to have a small overall impact on CPs.

### **Mitigating the impact of charging where utilisation is low**

- 6.85 CPs with low utilisation rates may be able to reduce the impact of charging in several ways. First, CPs with unused blocks would be able to return them to Ofcom and avoid the charge. Second, CPs with low utilisation of 'opened' blocks may be able to reduce the impact of charging by sub-allocating numbers to other CPs and earning revenues to offset the charges. We anticipate that charging will increase demand for sub-allocated numbers particularly where CPs only require a few numbers in an area. However, given the currently low average utilisation rates, it is possible that initially there would be an excess supply of numbers in the secondary market (so the price of a sub-allocated number might be low). Over the longer term, assuming general demand for geographic numbers continues to rise, demand for sub-allocated numbers is also likely to increase.
- 6.86 We are also investigating the possibility of offering CPs a limited amount of smaller blocks of numbers (discussed further in Section 5). If this is feasible, it might provide some limited scope for smaller CPs to return a block of 1,000 numbers with low utilisation and instead adopt a block of 100 numbers which would have a lower total charge (the per number charge would be the same regardless of the block size). In some cases this might enable small CPs to reduce the impact of number charges. However, it may not be helpful in all situations, e.g. customers who are using numbers on blocks that are returned would have to change their number - given that this would cause consumer disruption CPs might find this option unattractive.

### **CPs exit the market**

- 6.87 We have noted above that there would be some opportunity for CPs with low utilisation to reduce the impact of number charging. However, we recognise that charging may disadvantage CPs with low utilisation, and it is possible that in extreme cases a CP's response might be to exit the market. In this unlikely event, the customers of the exiting CP are likely to suffer some disruption because they would have to find a new supplier. The number of consumers affected is likely to be small since, by definition, these CPs have very low utilisation. Competition in the market is not likely to be affected since there are a large number of players in the market (300+) and the marginal impact of a few smaller players exiting is not likely to be material. Overall we consider that there is a relatively low probability that CPs would exit the market in response to the introduction of charging for geographic numbers, and in any case the overall impact is likely to be small.

### **Impact on small CPs with innovative services**

- 6.88 A number of small providers have requested geographic number allocations in order to provide new and innovative services. For example, a number of VoIP providers have entered the market to provide consumers with low cost calling options using broadband connections. We would be concerned if introducing number charging deterred small innovative players or new entrants.

- 6.89 We consider that sub-allocation could provide a solution for these CPs. Indeed, even if the sub-allocation market is not fully efficient, it may well be cheaper for these CPs to obtain numbers by sub-allocation because they can be purchased in significantly smaller quantities as required, avoiding the problem of low utilisation. As noted above we are investigating whether there are any opportunities for us to allocate smaller blocks (i.e. blocks of 100 numbers). If realised, this could also limit the impact for number charging on small CPs while they establish their service.
- 6.90 In addition, it may be appropriate for these providers to use other number ranges e.g. 03, for which we are not currently proposing to charge. Consumers may have a preference for dialling geographic numbers because they understand the call charges – this in turn leads to businesses requesting geographic numbers, for example. We are currently reviewing non geographic call charges – if this review results in greater transparency for call costs then these non-geographic number ranges may become more attractive, and this could alleviate demand for geographic numbers (e.g. where businesses do not have a strong preference for a number associated with a geographic location).

### **Administrative costs for CPs**

- 6.91 It is possible that CPs would incur additional administrative costs associated with charging, e.g. dealing with invoices for number charges. There may also be some one-off administrative costs associated with returning unused number blocks to Ofcom (both for the CP returning the blocks and for other CPs that remove the number blocks from their routing tables). We anticipate that these incremental costs will be very small as they will not require new processes or absorb substantial amounts of time, e.g. CPs already handle invoices and make DMA changes. As noted above, we would expect that costs associated with charging will be passed through to consumers in the form of higher prices, so the overall impact on CPs is likely to be small.

*Question 25 Are there any other incremental administrative costs likely to be incurred by CPs in relation to number charging? Can you estimate the magnitude of any such costs?*

### **Loss of customers**

- 6.92 We noted above that the increase in wholesale costs arising due to number charging is likely to be passed onto consumers in the form of higher retail prices. Assuming CPs choose to recover this cost from consumers they could do so through retail line rental or call charges (or both). In theory, consumers may react to these higher prices by reducing demand, either by cancelling their fixed phone lines (and perhaps substituting to mobile only access) or economising to recover the additional cost by reducing the number of calls made. This would potentially result in reduced revenues for fixed network CPs.
- 6.93 Given the low level of charges we are proposing to introduce we would not anticipate that any subsequent retail price rise is significant enough to cause consumers to abandon their landlines or significantly cut back on calls (i.e. demand for fixed line services would be unlikely to change). Research conducted for the *Fixed Narrowband Retail Services Market Review*<sup>98</sup> found that in response to a hypothetical ten per cent increase in the price of line rental only four per cent of

<sup>98</sup>[http://stakeholders.ofcom.org.uk/binaries/consultations/retail\\_markets/summary/fnrsm\\_condoc.pdf](http://stakeholders.ofcom.org.uk/binaries/consultations/retail_markets/summary/fnrsm_condoc.pdf), page 48.

residential consumers would consider cancelling the line and ten per cent would use the phone less. BT's cheapest residential line rental package is £9.49<sup>99</sup> a month, so a ten per cent price increase would raise this package to around £11 per year. Number charging would have a much smaller impact on consumer bills - if a number charge raised £3.4m in revenue (the preliminary estimate for our preferred option) which was recovered across all exchange lines<sup>100</sup> (approximately 32.5m lines<sup>101</sup>) the average increase in the bill would be around 10p per year.<sup>102</sup> Thus we anticipate the reaction of consumers to charging would be considerably less than even the relatively muted response described above.

### **CPs using, under a regulated arrangement, numbers allocated to a different CP**

6.94 There are cases where, for regulatory reasons, the telephone number that a CP uses to provide a service to a customer is allocated by Ofcom to a different CP (this explicitly excludes sub-allocated numbers which involve a commercial agreement between CPs). We have identified two specific examples where this is the case:

- number portability - This is the facility that allows subscribers to keep the same telephone number when they change provider. General Condition 18 sets out CPs' obligations in relation to number portability.<sup>103</sup> For technical reasons a ported number remains allocated to the CP (the 'range holder') who was first assigned the number by Ofcom, even though the customer using the number is now taking a service from a different CP (the 'recipient'); and
- wholesale line rental (WLR) – WLR is a regulated service which BT supplies to retail CPs allowing them to rent access lines on wholesale terms, and resell the lines to customers. WLR lines are usually attached to a number allocated to BT (the range holder). However, it is the retail CP that provides a service using the number.

6.95 In both cases we would expect the range holder to pay the full block allocation charge to Ofcom, even where some or all numbers in the block are used by other CPs. Administratively this is a much simpler solution (with lower administrative costs for Ofcom and CPs) than attempting to track the CP using each individual number and recover a number allocation charge from them.<sup>104</sup>

6.96 However, where the range holder is not able to benefit from using some numbers in its allocation it may be appropriate for the range holder to recover reasonable number allocation costs from the CP providing a service with the number. This reflects the fact that the range holder is effectively paying for a resource from which another CP is benefitting (and depriving the range holder from using the resource).

<sup>99</sup> Standard package as at 10/11/10, based on a 12 month contract.

<http://www.productsandservices.bt.com/consumerProducts/displayCategory.do?categoryId=CON-HOME-PHN-R1>

<sup>100</sup> We discuss below why we consider that the charge is likely to be recovered across all exchange line, not just lines in areas where the charge is levied.

<sup>101</sup> Source: [http://stakeholders.ofcom.org.uk/binaries/research/cmr/q1\\_2010.pdf](http://stakeholders.ofcom.org.uk/binaries/research/cmr/q1_2010.pdf).

<sup>102</sup> This increase to the consumer bill is likely to be subject to Value Added Tax (VAT) at 20 per cent (rate from 4 January 2011).

<sup>103</sup> <http://stakeholders.ofcom.org.uk/binaries/telecoms/ga/cvogc300710.pdf>, See page 62.

<sup>104</sup> Although General Condition 18 obliges CPs to provide us with information on ported numbers and the recipient provider if requested to do so.

- 6.97 In Annex 4 we set out in detail the proposed options for cost recovery for number charges in these circumstances and the principles we have considered in arriving at our preferred option. We also set out our preferred mechanism for cost recovery.
- 6.98 Based on the analysis in Annex 4, we are proposing that in the above cases where a CP is providing a service using a number allocated to a different range holder CP:
- the range holder would be able to recover a cost per number used from the CP providing the service;
  - on balance, and pending further consideration of practicality, we currently prefer that the recovered cost be based on average utilisation of the range holder's blocks which are subject to a number charge. The cost recovered would be subject to a cap, which we propose would be set at five times Ofcom's charge per number. The range holder would only be able to recover costs where a number has an area code which is subject to number charges; and
  - we propose to set out the principles for cost recovery in a General Condition and accompanying guidelines.

## Impact on consumers

- 6.99 One of the main benefits of levying a charge on number blocks is to delay or avoid the need for measures to increase number supply, e.g. overlay codes which impose costs on consumers.
- 6.100 However, there may also be costs to consumers of introducing a number charge. We have identified three possible costs:
- prices to consumers may be higher to the extent that CPs pass-on the costs associated with of number block charges;
  - there is a risk that some customers may lose their numbers should a CP seek to clear number blocks by taking numbers back from consumers, in order to return a whole number block to Ofcom; and
  - CPs may have an incentive to offer consumers a number from a geographic area where there is a lower or zero charge for numbers.

6.101 We discuss each in turn.

## Higher retail prices

- 6.102 We noted above that we would expect the costs imposed on CPs as a result of number charging to be passed through to consumers in the form of higher prices, e.g. a higher price for phone line rental and/or calls.
- 6.103 If our preferred option for charges was implemented, charges (at least initially) would be focused on areas with the greatest number scarcity, but the impact on retail prices would likely be spread across all consumers rather than just confined to the areas where number charges were introduced. The Universal Service Obligation (USO) means that BT Retail must provide all residential households<sup>105</sup> with access to a fixed

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<sup>105</sup> The USO applies to BT in the UK excluding Hull. In Hull the USO applies to KCOM who is the incumbent operator for this area.

line at a standard charge. This effectively means that BT would have to spread the cost associated with number charging across all residential customers.

- 6.104 Most other large CPs also have uniform national pricing policies and national marketing campaigns,<sup>106</sup> although in reality the cost of supply does vary across the country, e.g. the cost of installation varies from house to house. It is possible that some CPs could choose to price higher in areas affected by charge and maintain their current prices in other areas. This would provide them with a competitive advantage in areas with no charging since their prices would be lower than CPs who spread number charge costs across all customers.
- 6.105 However, in areas where charging is applied they would have higher prices and risk losing customers to CPs who spread the number charges across all customers. Overall we consider that it is unlikely that CPs would differentiate their tariffs according to whether a customer is in a number charge area or not, i.e. CPs would continue to offer nationally averaged prices.<sup>107</sup>
- 6.106 Overall, we anticipate that any price increases to consumers are likely to be modest since our proposal is that charges would be both low and targeted on areas with greatest number scarcity. We estimate that the pilot charging scheme would raise revenues of around £3m. Assuming CPs spread this cost across all customers the average increase in line rental would be approximately 10p per year.<sup>108</sup> Furthermore, prices are more likely to be set by larger CPs who have higher utilisation rates which may serve to limit price increases. As noted above, we would not expect consumer demand for fixed telephone services to be significantly affected by number charging.
- 6.107 In addition, we note that the revenues raised from charging should be passed to HM Treasury. This essentially means that the revenues from number charging will be returned to UK citizens. Clearly it is up to Government to decide what to do with the revenues (they could benefit a particular group of society more than others). However, the overall impact on society should be broadly balanced because the loss in consumer welfare due to higher prices is transferred as revenue to HM Treasury, and thus recycled back to UK citizens.<sup>109</sup> The purpose of charging for numbers is to encourage CPs to take into account the costs associated with making numbers available, thus improving the allocation of resources and overall economic efficiency. Even if the charge does not exactly reflect the social costs that are incurred when CPs demand number blocks, to the extent that economic efficiency is improved, i.e. we move in the right direction, we would expect society as a whole to be better off.

### **Risk of customers losing their numbers**

- 6.108 For CPs with very low block utilisation, the introduction of number charging may lead them to consider clearing number blocks by taking numbers back from customers in

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<sup>106</sup> In some cases CPs offer a lower tariff for areas where they can offer a service over an unbundled local loop (LLU).

<sup>107</sup> However, we recognise there may be particular cases where a small CP only offers a service in a local area. If this area is affected by number charging they would not be able to recover the costs over a wider customer base. Such CPs may be at a competitive disadvantage relative to CPs who operate across the UK. Conversely a CP could target services at areas with no charge with the aim of undercutting CPs who offer nationally averaged pricing. However, given the low level of the charge and consequent small impact on retail prices we do not think this is likely to have a material impact on the market.

<sup>108</sup> Based on 32.5 million exchange lines in the UK at Q1 2010. This increase to the consumers' bill is likely to be subject to VAT at 20% (rate from 4 January 2011).

<sup>109</sup> Assuming demand for fixed number services remains unchanged (as discussed above).

order that they can return a block to Ofcom and avoid charges. For example, we noted above that some smaller CPs have utilisation rates as low as one per cent for particular number blocks. If we were to levy a charge of (say) £100 for a 1,000 block (10p per number) a one per cent utilisation rate would imply a cost to the CP of £10 per customer.

- 6.109 Faced with this scale of charges, a CP may have an incentive to persuade customers to return their number in order that the CP could then return the whole number block to Ofcom. Or in more extreme circumstances, if the customer will not agree to give up the number voluntarily, a CP may resort to disconnecting the customer. There is no statutory requirement under the Act for the CP who holds a block of numbers to give notice to a consumer who has been using a number from that block that it is to be withdrawn, and consumers have no express rights to retain their number under the Act. This applies even if a number has been ported away from the CP who holds the number block that is to be returned. However, any CP returning numbers to Ofcom in this way would have to consider the contractual rights of its customers.
- 6.110 We consider that the risk of CPs reclaiming numbers is small given the proposed low level of the charge. However, we recognise this is a serious issue with potential for significant consumer disruption to those few consumers possibly affected, because they would most likely have to change telephone number. The scale of possible consumer harm is likely to depend on CPs' approach to the problem, for example, whether they were willing to pay compensation if numbers are reclaimed (which is more likely if they are keen to retain customers). Any potential disruption is also likely to be concentrated in particular areas of the country, i.e. corresponding to the area codes where charging is introduced.
- 6.111 The issue as to whether individual CPs decide to pay compensation is a commercial decision and not an area where we would intervene. We may provide guidance as to the steps which should be taken in the event that numbers are reclaimed in order to return blocks to Ofcom, for example, the minimum notice period which as a matter of good practice should be given to consumers. We may also consider whether it is appropriate to amend the Numbering Condition to include some requirements that CPs must comply with before they are able to return numbers to Ofcom.
- 6.112 To mitigate the possibility of clearing number blocks, at a CP's request we could consider facilitating the transfer of an underutilised block to a different provider who had a need for the number allocation. This might facilitate the consumers retaining their numbers if they agreed to switch provider.

### **CPs may offer consumers a number outside their geographic area**

- 6.113 Given that a number allocation charge is likely to vary geographically, CPs might seek to reduce demand for number blocks in areas subject to a charge by 'moving' numbers from areas where there is no charge. Out-of-area use of geographic numbers already happens and is permitted under the Numbering Plan provided that end users consent and that call tariffs remain as expected for a number from that area code. Some end users prefer out-of-area codes to give an appearance of localness when their actual location is elsewhere (e.g. a taxi company might imply 'localness' by advertising a local number in particular areas even when its 'base' is in a different area).
- 6.114 Transferring numbers from areas where they are abundant to areas where they are scarce would help to improve utilisation and efficiency in number use. However, it could adversely affect the individual concerned (who may prefer a local number but

wants a service offered by a provider who only has out-of-area numbers) and also consumers more generally as, if such a strategy became widespread, it could undermine the geographic significance of numbers. We noted in Section 4 that consumers continue to value the geographic significance of numbers.

- 6.115 This issue may not lead to significant consumer detriment as competition between CPs is likely to be sufficient to ensure that consumers would have to be compensated for taking a number from outside their local area. Indeed, if customers have a choice between a local number at a relatively high price, and a non-local number at a lower price, they may choose the non-local number. However, no such compensation would be payable to consumers more generally, who may place a value on retaining the geographic significance of local numbers.

## Impact on Ofcom

- 6.116 A charging regime would involve some changes to the way the supply of numbers is currently regulated and it would impose some additional costs of regulation on Ofcom.
- 6.117 We estimate that the cost to in administering and allocating geographic numbers under the current system is approximately £570K. These administration costs are recovered via the annual levy on eligible CPs. We currently do not propose to change how these costs are recovered.
- 6.118 If charging is introduced, we would need to undertake some additional tasks. These include calculating the charges that each geographic number holder is due to pay, setting up a billing system, collecting fees and enforcement if fees are not paid. We would also incur costs in reviewing the charging regime and setting new charges, however, not all of these costs would be incremental as we already spend time reviewing how geographic numbers should be managed.
- 6.119 Our very preliminary estimates of the incremental costs associated with the additional activities outlined above are in the range of £50-100K one-off to set up and £40-80K ongoing per year. We intend to develop these estimates further during the course of the consultation. We currently propose to recover these costs through the general levy on eligible CPs.

## Other issues

### **Should other (non-geographic) number ranges also be subject to a charge?**

- 6.120 Charging for geographic numbers could lead to an increase in demand for other numbers such as 03 or 08 numbers. This could be efficient if, for example, it was cheaper to accommodate demands for new numbers by making greater use of non-geographic numbers, than by (say) introducing overlay codes.
- 6.121 However, it is possible that there are also social costs associated with scarcity of non-geographic numbers. Any such costs are likely to be different in nature to those associated with geographic numbers, where one of the main costs relates to the potential loss of geographic meaning of numbers. However, unless these costs are close to zero, if we only charge for geographic numbers we risk distorting competition and simply transferring the scarcity problem from geographic to non-geographic numbers.

- 6.122 Currently we are only proposing to introduce a charge on a pilot scheme for geographic numbers on the basis of their acknowledged scarcity and the costs of creating new numbers. Most non-geographic ranges have plenty of numbers remaining to allocate. Although there are some specific pockets where numbers are relatively scarce, there are currently spare non-geographic sub-ranges that could be opened to meet future demand.
- 6.123 Although scarcity of numbers in other ranges is not apparent at the moment, significant changes in demand could occur, for instance the requirement for large allocations of mobile numbers for machine-to-machine applications. In such an event, we could consider accommodating demand for these numbers by moving into different number ranges (e.g. 04 or 06). The main issue here is consumers understanding the call costs and/or services associated with a number, rather than the geographic significance of the code. We are not recommending charges for non-geographic numbers at this time but we will need to keep this under review.

### Golden numbers

- 6.124 Any number block may contain 'golden numbers' which are of relatively high value to particular end users, because they are particularly memorable or spell a company name. The CPs allocated these numbers (for free) may be able to extract this value from end users - some golden numbers are offered for sale for hundreds of pounds. In principle we could try and capture this value through our charging regime. Each telephone number is effectively a scarce national resource and it is desirable that the value from using the resource accrues to society, rather than individual CPs.
- 6.125 We could capture the value of golden numbers in one of two ways. First, we could auction number blocks which would elicit CPs' valuations. However, we have noted above that this is not our preferred approach since it introduces a competitive distortion between existing CPs and new entrants.
- 6.126 Alternatively we could apply a fixed lump sum fee where a CP requests a specific number block. This fee would apply to a specific request for any number block (an additional standard periodic charge would apply for number blocks in particular areas). This means if a CP wanted to request a particular number block they would pay a lump sum fee of (say) £100 (refunded if the block was not available). Otherwise they would simply receive the next available block.<sup>110</sup>
- 6.127 Charging for golden number 'equivalents' is successful in other applications, (e.g. the DVLA<sup>111</sup> sells personalised car licence plates). However, there are some differences between car plates and telephone numbers which mean the former may be more valuable, e.g. use of letters in car plates allows for greater personalisation, and a car plate is more likely to be seen as a 'status symbol' than a telephone number (although a telephone number might have a greater business value).
- 6.128 A significant difference between telephone numbers and other 'golden equivalents' is that numbers are allocated to CPs in blocks, and CPs then distribute them to end users. The value of a number is based on what end users are willing to pay, which is frequently not known at the time of allocation because (with a few obvious exceptions) golden numbers are difficult to pick out in advance. This means it is less

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<sup>110</sup> This would be a departure from the current mechanism where CPs are allowed to specify a first and second choice for available number blocks on application (for free).

<sup>111</sup> The Driver and Vehicle Licensing Agency (the DVLA).

likely that CPs would be willing to pay a premium for particular numbers at the time of allocation (because they would be unsure of end users' valuations).

- 6.129 A further consideration is the distribution of golden numbers through the blocks. If each block has a few golden numbers then CPs would have little incentive to pay a fixed fee for a specific block, since the block they receive randomly is likely to be just as valuable. If golden numbers are concentrated in a few blocks then a charging policy might be more successful, but it is likely that there are relatively few cases where golden numbers are concentrated in this way.
- 6.130 Given the difficulty in determining the value of specific numbers at the point of allocation, and the fact that a specific policy around golden numbers will not address our primary concern of dealing with number scarcity, we do not think it is appropriate to pursue such a policy at this time. However, we welcome stakeholder feedback on this issue, and this is an area we will keep under review. We recognise that charging for golden numbers may be appropriate for different number ranges where the value of particular numbers is easier to assess (for example non-geographic numbers).

*Question 26 Do you agree that we should not pursue a policy of charging for golden geographic numbers? If you do not agree, please provide your reasoning.*

## Duties and legal tests

- 6.131 We consider that our proposals for charging for geographic numbers are consistent with our general duties in carrying out our functions as set out in section 3 of the Act. In particular, we consider that the proposals further the interests of citizens in relation to communications matters and consumers in relevant markets by ensuring that geographic numbers are being utilised efficiently and thus remain available for allocation to CPs in all areas of the UK, thus facilitating CPs in their provision of communications services to consumers and citizens, and promoting competition and choice for consumers in the long term.
- 6.132 In reaching our proposals, we have also taken into account the Community obligations set out in section 4 of the Act, particularly the first requirement to promote competition in the provision of electronic communications networks, services and associated facilities through the ongoing availability of geographic numbers.
- 6.133 In the event that we decide to implement geographic number charging through a General Condition we need to satisfy the tests set out in section 47(2) of the Act. These are that each condition must be:
- objectively justifiable in relation to the networks, services or facilities to which it relates;
  - not such as to discriminate unduly against particular persons or a particular description of persons;
  - proportionate to what the condition is intended to achieve; and
  - in relation to what is intended to achieve, transparent.
- 6.134 We have given preliminary consideration as to whether the proposals set out above meet these tests:

- **objectively justifiable** – we consider that charging for geographic numbers is objectively justifiable because geographic numbers are scarce in some areas and charging is a means to signal to CPs the costs associated with making numbers available (discussed in paragraphs 6.1 and 6.2). Charging for geographic numbers provides an incentive for CPs to use numbers efficiently and should help to address the problem of geographic number availability (discussed in paragraphs 6.6 to 6.16). Charging for geographic numbers should help to reduce the need for supply measures which cause disruption to consumers and are costly for CPs (discussed in paragraph 6.49);
- **non discriminatory** – we consider that our proposals to charge for numbers are non discriminatory because they would apply equally to all CPs who have number allocations in stipulated area codes. We discussed in paragraphs 6.74 to 6.84 that number charging might create a disadvantage for CPs with low block utilisation relative to those with high block utilisation. However, we consider that this is justified since a principle objective of introducing number charging is to provide incentives to improve number block utilisation. We set out in paragraphs 6.85 to 6.86 means by which CPs with low utilisation could reduce the impact of number charging;
- **proportionate** – we are proposing to introduce charging in a limited number of areas initially and set the charge at a low level in order to limit the impact on CPs and consumers. As noted in paragraph 6.65, the overall impact of the charging under the pilot scheme would be small (total revenues raised would be in the order of £3m per year which compares with total fixed voice industry revenues of £2.2bn in Q1 2010). We consider that this is a proportionate approach in relation to the aim of improving the efficiency of number use; and
- **transparent** – we consider that the aims of introducing geographic number charging (as set out in paragraphs 6.2 and 6.6 to 6.16) are clear. Our intention is to increase the incentives on CPs to use numbers efficiently.

6.135 In addition, we consider that we are fulfilling our general duty as to telephone number functions as set out in section 63 of the Act by:

- **securing the best use of appropriate numbers**, in that charging for geographic numbers encourages CPs to use numbers efficiently and take the costs associated with using numbers into account when deciding on their allocation requests; and
- **encouraging efficiency and innovation**, in that charging increasing the incentives for CPs to use numbers efficiently and effectively, and hence may limit the need to make more new numbers available. This can help to ensure that a lack of numbers does not constrain CP activity or provide a barrier to innovation.

6.136 We therefore consider that our proposals to charge for geographic numbers meet the tests above.

## Preliminary conclusions

6.137 We have set out above how charging for geographic number blocks could help to reduce the need for new number supply measures which impose costs on consumers, CPs and Ofcom. We have noted that number charging is the norm in many other countries.

- 6.138 We have proposed how a charging regime might work, and discussed the possible effects on consumers, CPs, competition and Ofcom. In recognition of the somewhat uncertain impact of introducing a charging regime we have proposed a cautious approach, where the charge is set at a low level and targeted at a limited number of pilot areas initially. This means the impact of charging can be assessed and evidence gathered before a decision is taken to roll out the scheme more widely or adjust the charges.
- 6.139 In proposing that number charging should be introduced in the UK we recognise that there are a number of issues which need to be given further consideration, particularly in relation to ported numbers and the possibility that CPs reclaim numbers from consumers in order to return blocks to Ofcom. We welcome stakeholder views on these issues.

## Section 7

# Summary of proposals and next steps

## Introduction

- 7.1 We have explained, in the preceding sections of this document, the challenges we face in ensuring the ongoing availability of geographic numbers to meet CPs' requirements across the UK. If we do nothing, we risk running out of new numbers to allocate to CPs in some areas.
- 7.2 We have looked at a number of ways to meet this challenge. In this section we summarise our proposals for managing geographic numbers, set out the consultation process, next steps and the potential timeline for implementation should we proceed with our proposals.

## Summary of our main proposals

### Proposals to increase the supply of new numbers

- 7.3 In Section 4 and Annex 3, we set out our analysis of potential options for increasing the supply of numbers. Our initial conclusions are that:
- we need to plan now for the most appropriate action to create additional numbers where and when needed. This action should avoid changes to existing geographic numbers;
  - current forecasts indicate that localised measures that address localised shortages are likely to be an appropriate response to number shortage;
  - there are two basic approaches to increasing number supply that meet these criteria - closing local dialling and overlay codes; and
  - certain areas (i.e. those with five-digit area codes) may need a specialised response to increasing number supply.
- 7.4 Based on these conclusions, we developed a set of options for increasing the supply of geographic numbers in areas where and when needed. Having carried out our preliminary assessment of these options, the solution we currently prefer in areas with four-digit codes would be to close local dialling. In some of the areas concerned, additional number supplies might be necessary at some point after local dialling is closed. We propose to implement an overlay code where and when this may occur.
- 7.5 Our proposed approach for creating new supplies of numbers in areas with five-digit codes is to merge their codes with the corresponding four-digit code (i.e. the area code that shares the same four digits after the leading '0') and make them all four-digit area code numbers.

### Proposals to charge for geographic numbers

- 7.6 In Section 6, we concluded preliminarily that, in principle, charging could reduce demand for new number blocks and encourage efficient use of existing allocations. The incentive effect of charging, therefore, could help to reduce the need for the new

number supply measures described above. We set out how a charging regime might work, and discussed the possible effects on consumers, CPs, competition and Ofcom.

7.7 In summary, our proposals for charging for geographic numbers are as follows:

- a periodic annual charge would apply to all numbers allocated;
- charges for geographic numbers would be introduced through a pilot scheme. The pilot would cover area codes experiencing the greatest number scarcity (suggested as areas with 100 or fewer blocks of 1,000 numbers remaining available for allocation to CPs). Charges would be set at a relatively low level, proposed initially as 10p per number per annum;
- the charge would be imposed on the CP allocated the block of numbers by Ofcom. For cases where the CP using the number was different from the block holder (i.e. where numbers are ported or where BT provides WLR to retail CPs) we propose to set out principles for cost recovery in a General Condition; and
- we would review the pilot 18 months after launch and take a decision on whether to roll out the charging scheme for geographic numbers more widely or adjust the level of charges.

### **Proposals relating to our administration of geographic numbers**

7.8 In Section 5, we considered whether any further opportunities exist to incentivise and facilitate CPs' better utilisation of the existing supply of geographic numbers. We identified some areas that we are interested in pursuing:

- introducing a time-limited reservation step prior to allocation of geographic numbers for some applications. This step would apply to CPs that have not demonstrated operational readiness to put the requested numbers into use;
- gathering more extensive information on the intended use of numbers on the geographic number application form to inform allocation decisions and provide a basis for auditing purposes; and
- strengthening and broadening our audits of CPs' number use.

7.9 We will also continue discussions with relevant CPs on legacy network decode constraints to investigate further the potential for allocating a limited amount of geographic numbers in blocks of 100 numbers.

### **Next steps**

7.10 This consultation covers a number of important matters relating to geographic numbers that will be of interest to many stakeholders. We encourage all interested parties to respond so that we can take your views into consideration when deciding on our next steps.

## During the consultation period

- 7.11 The consultation lasts for 12 weeks<sup>112</sup> and closes on 18 February 2011. Details on how to respond are provided in Annexes 8 to 10.
- 7.12 During the consultation period we plan to engage with a range of stakeholders to discuss our proposals and seek views. Our plans include:
- organising open forums in some parts of the UK likely to be affected by the need to create more numbers in the short term to discuss the proposed options;
  - engaging with groups representing consumer interests on the potential impacts of number supply measures; and
  - pursuing discussions with CPs on a number of issues relating to the potential implementation of our proposals.

## Statement concluding this consultation

- 7.13 Once this consultation has closed, we will take account all submissions received and reach our conclusions. We will publish a statement setting out our decisions, giving an account of how the views of those concerned helped shape those decisions. We plan to publish the statement in early summer 2011.
- 7.14 We expect to be in a position to conclude on the following matters in the statement (although this is dependent on the nature or responses received):
- our approach to increasing the supply of geographic numbers in areas that are forecast to run out;
  - whether we will proceed with charging for geographic numbers and, if so, what our overall approach to the charging regime will look like; and
  - whether we will pursue further our initial proposals for reservation of geographic numbers and allocation of smaller number blocks.

## Further consultation and statement to implement our decisions

- 7.15 We would need to consult further to implement our proposals if we decide to go ahead with any of them following this consultation (apart from the audit related proposals – see paragraph 5.54. Also, see paragraphs 7.21 and 7.22 regarding the consultation on proposed modifications to the geographic number application form). The further consultation would cover the detailed elements of the proposals, the steps required for implementation and the legal instrument under which they would be imposed.
- 7.16 Our proposals, if implemented, require the setting or modification of General Conditions, modifications to the Numbering Plan and to the geographic number application form. To set or modify these documents, we must show how we consider that our proposals comply with the legal tests set out in section 47(2) of the Act in

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<sup>112</sup> We have extended the consultation period beyond the standard ten weeks for a Category 1 consultation (a consultation which contains major policy initiatives and/or is of interest to a wide range of stakeholders, especially those who may need a longer time to respond). This is to allow stakeholders additional time to respond over the holiday period.

relation to setting or modifying General Conditions; in section 60(2) of the Act in relation to modifications to the Numbering Plan; and section 49(2) of the Act in relation to modifications to the geographic number application form.<sup>113</sup> We must explain how our proposals are:

- objectively justifiable in relation to the matters to which they relate;
- not such as to discriminate unduly against particular persons or a particular description of persons;
- proportionate to what they are intended to achieve; and
- transparent in relation to what they are intended to achieve.

7.17 We must also consider how our proposals fulfil our general duty as to telephone numbering functions as set out in section 63 of the Act, our general duties in carrying out our functions as set out in section 3 of the Act and how we have considered our Community obligations as set out in section 4 of the Act.

7.18 We have conducted an initial assessment of how our proposals in relation to number supply measures (see paragraphs 4.66 to 4.69) and charging for geographic numbers (see paragraphs 6.131 to 6.136) would meet with the legal tests and duties set out above. Our further consultation(s) would include a full analysis.

7.19 We expect to publish the further consultation on implementation measures at the same time as the statement concluding this consultation (i.e. early summer 2011). Depending on the extent of new proposals required post the initial consultation, the further consultation may last for either (i) the statutory one month for proposals to set or modify General Conditions, modify the Numbering Plan and/or numbering application forms, or (ii) longer if new proposals need to be considered by stakeholders. This would be followed by a (expected final) statement.

### **Post consultation**

7.20 Following the conclusion of the consultation process, we intend to establish an industry forum to develop the implementation plan for new numbers, including:

- an appropriate communications campaign;
- notice periods for changes and relevant timelines for implementation;
- the guidelines for automatic network responses to misdials;
- direct consultation with consumers in the affected areas; and
- any other relevant aspects of implementation that may be raised by stakeholders during consultation.

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<sup>113</sup> See Annex 6 for further information on the legal framework and legal tests.

## Consultation on proposed modifications to the geographic number application form

- 7.21 As set out in Section 5,<sup>114</sup> we intend to consult on modifications to the geographic number application form to elicit more information on the intended number use. The additional information would be used to inform our decision on number allocation and would allow us to monitor number use through audits following-up on statements and forecasts made at the time of number allocation. Our decision to proceed with this proposal does not depend on the outcome of other considerations in this consultation and we therefore intend to move forward with this separately and in advance of the conclusion of this consultation process.
- 7.22 We expect to issue a consultation proposing modifications to the geographic number application form in early 2011. We may also include proposed modifications to other numbering application forms in the same consultation.

### Audits

- 7.23 As mentioned in paragraph 5.54, we are not required to consult before conducting the types of audits discussed in Section 5. We intend to proceed with these audits over the next few months and as an ongoing process.

### Further information

- 7.24 We have launched a 'geographic number' section on our website in the 'Guidance on telephone numbering' section.<sup>115</sup> We will use this part of our website to keep consumers informed on various aspects related to the ongoing management of geographic numbers. This information will include, among other things, periodic updates on the availability of numbers and our forecasts on where and when new number supplies are likely to be required, as well as implementation plans for introducing number supply measures.
- 7.25 The geographic number section on our website will also contain details of our proposed open forum meetings on number supply measures and any other plans for local engagement.

### Potential implementation of proposals: indicative timelines

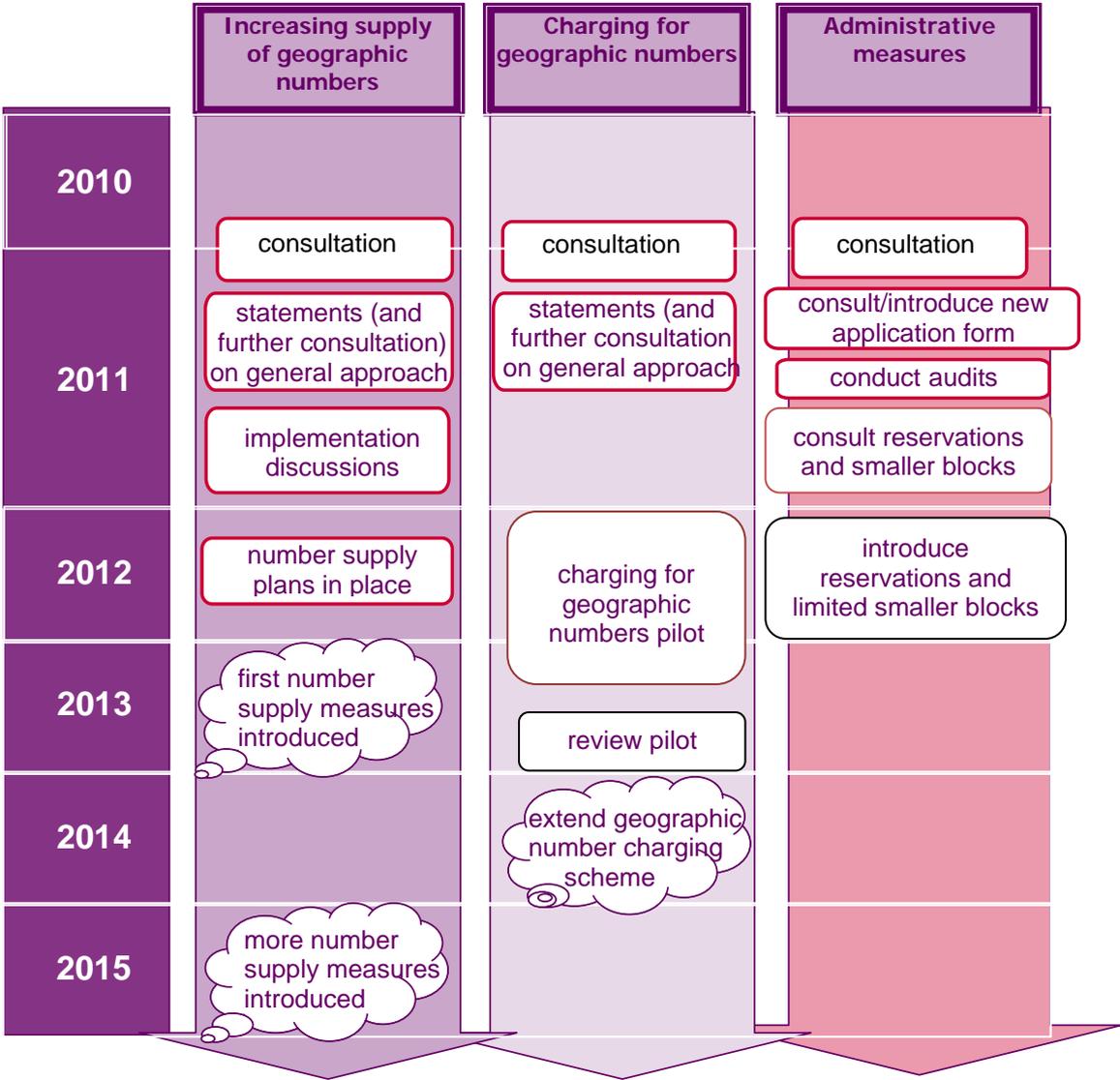
- 7.26 Figure 7.1 below provides an indicative timeline for implementation of our proposals should they be adopted as put forward in this consultation. This is for illustrative purposes only; implementation is dependent on the outcome of the consultation process. If we do proceed, timelines are subject to change.

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<sup>114</sup> See paragraphs 5.42 to 5.45.

<sup>115</sup> <http://stakeholders.ofcom.org.uk/telecoms/numbering/guidance-tele-no/>

Figure 7.1 Indicative timeline for implementation of our proposals if adopted



## Annex 1

# The UK numbering plan and geographic numbers

## The UK numbering plan

A1.1 The UK numbering plan provides general service and/or tariff indications through the first few digits of the number following the leading '0'. The current numbering plan is set out in Figure A1.1 below.

Figure A1.1 The UK numbering plan

	Service definition	Geographic Numbers
01		
02		
03	Service and pricing definitions	UK wide numbers, calls charged at no more than a geographic rate
055/056	Service definition	Corporate Numbers / Location independent ECS Numbers
070	Service definition	Personal Numbers
071-5 / 077-9	Service definition	Mobile Services
076	Service definition	Radiopaging Services
080	Service and pricing definitions	Special services, free to customer except where there is an announcement
0843/4	Service and pricing definitions	Special services, up to 5ppm/5ppc for BT customers
0845	Service and pricing definitions	Special services, charged at BT's local call price for BT customers
0870	Service and pricing definitions	Non-geographic number, charged at no more than a geographic rate
0871/2/3	Service and pricing definitions	Special services, up to 10 ppm/ppc for BT customers
090/1	Service and pricing definitions	Special services, Premium rate between 10ppm/ppc to £1.50 ppm/ppc for BT customers
098	Service and pricing definitions	Sexual Entertainment Services . Premium rate up to £1.50 ppm/ppc for BT customers

## Geographic code and number changes

A1.2 The UK's geographic telephone numbers have been through a number of changes over the years to ensure that meaning and availability is preserved. The pressures on number availability that we face today are not new and are an ongoing consequence of a vibrant and competitive communications market.

A1.3 Area codes were introduced into the UK numbering scheme in the late 1950s and allowed for subscriber trunk dialling (STD), that is, a caller could make a call to a telephone number directly rather than go through a telephone exchange operator. As the population grew, area codes needed a larger supply of numbers to meet consumer demand. In order to meet the requirement for more numbers, BT<sup>116</sup> undertook a series of number reorganisations across the UK that, over time,

<sup>116</sup> Administration of the UK's telephone numbers was handed over from BT to the regulator (then Oftel) in 1994.

reduced the digit length of area codes and increased the digit length of local numbers.

- A1.4 Following on from those localised number reorganisations, a number of code and number changes have also taken place. These are explained below, and illustrated by using Ofcom's switchboard number (020 7981 3000) where relevant:

#### 1990 London code change

The area code for London pre-1990 was '01'. The London code change doubled the numbers available for London by moving to two codes (071 for inner London and 081 for outer London). This change also released the digit '1' after the leading zero making it free for insertion at the beginning of every geographic number (see 1995 phONEday national code change below).

01 became 071 (inner London) and 081 (outer London)

e.g. 01 981 3000 → 071 981 3000

- 1994 The regulator assumed responsibility for the administration of the UK's numbering plan.

Telephone numbers were '0' plus nine digits and geographic, mobile and non-geographic numbers were spread throughout the numbering plan and began with random digits, making it difficult for consumers to understand any tariff or service information from the number.

#### 1995 PhONEday national code change

The digit '1' (which had been released from the London code change in 1990) was added after the initial '0' to prefix all geographic area codes and provide consumers with a clear indicator for geographic numbers.

e.g. 071 981 3000 → 0171 981 3000

#### 1995 Five cities experienced code changes to create more numbers

**Figure A1.2 Code changes in 1995**

AREA	OLD CODE + 6-digit numbers	NEW CODE + 7-digit numbers (from 16 April 1995)
Leeds	0532	0113
Sheffield	0742	0114
Nottingham	0602	0115
Leicester	0533	0116
Bristol	0272	0117

**1996 Reading code change**

**Figure A1.3 Reading code change in 1996**

AREA	OLD CODE + 6-digit numbers	NEW CODE + 7-digit numbers (from 8 April 1996)
Reading	01734	0118

**2000 The Big Number: national code and number change**

The numbering plan was increased to '0' plus ten digits throughout and rationalised by inserted a new digit after the '0' to indicate the type of service and/or tariff provided on the number.

**2000 Five wide area codes were created in the 02X + 8-digit format to provide additional numbers in areas of high demand**

**Figure A1.4 National code and number change in 2000**

AREA	OLD CODE + 7-digit numbers	NEW CODE + 8-digit numbers (from 22 April 2000)
Inner London	0171	020
Outer London	0181	020
	OLD CODE + 6-digit numbers	
Portsmouth	01705	023
Southampton	01703	023
Coventry	01203	024
Belfast & Northern Ireland	01232 etc	028
Cardiff	01222	029

e.g. 0171 981 3000 → 020 7981 3000

**2008 New code for Ebbsfleet**

To provide numbers for new build in Ebbsfleet, a new area code 01987 was created for Ebbsfleet. Numbers were available from April 2008.

## Annex 2

# Data analysis and forecasting

## Introduction

- A2.1 In the preceding sections of this document, we have referred to our analysis of number block availability and use, and our forecasts on the likelihood of us running out of number blocks to allocate to CPs in some areas. This analysis forms the foundation of our review of geographic numbers and has provided the context for the proposals set out in this document.
- A2.2 In particular, our data analysis and forecasting:
- allows us to understand the current trends for number allocations and the parameters that may affect them;
  - provides an estimate of the severity of the number block availability situation in each geographic area and the timescales for implementing our number supply measures before numbers are forecast to run out; and
  - provides a tool for monitoring the effectiveness of our measures in managing demand on a regular basis.
- A2.3 In this annex, we set out the basis for our analysis, including the information we considered, the evidence we identified about the number demand trends in the UK, the forecasting model we used, and the results of our current forecasts for four- and five-digit areas.

## Summary of forecasting results

- A2.4 In this annex, we highlight 70 of the four and five-digit areas where we expect to run out of numbers in the next ten years. These are 61 four-digit areas and nine five-digit areas, covering approximately 21 per cent of the UK population. Due to their different constraints on number availability, we consider issues relating to four and five-digit areas separately.

### Four-digit areas

- A2.5 Our forecasts indicate that different policy options would extend number availability in different ways. In particular, we forecast that:
- conservation measures reduce the allocation rate by 87.5 per cent, on average;
  - closing local dialling extends number availability on average by 17 years, but by less than ten years in a few areas; and
  - implementing an overlay code extends the availability of numbers by 70 years on average, rising to over 100 years if we close local dialling in the affected areas.

## Five-digit areas

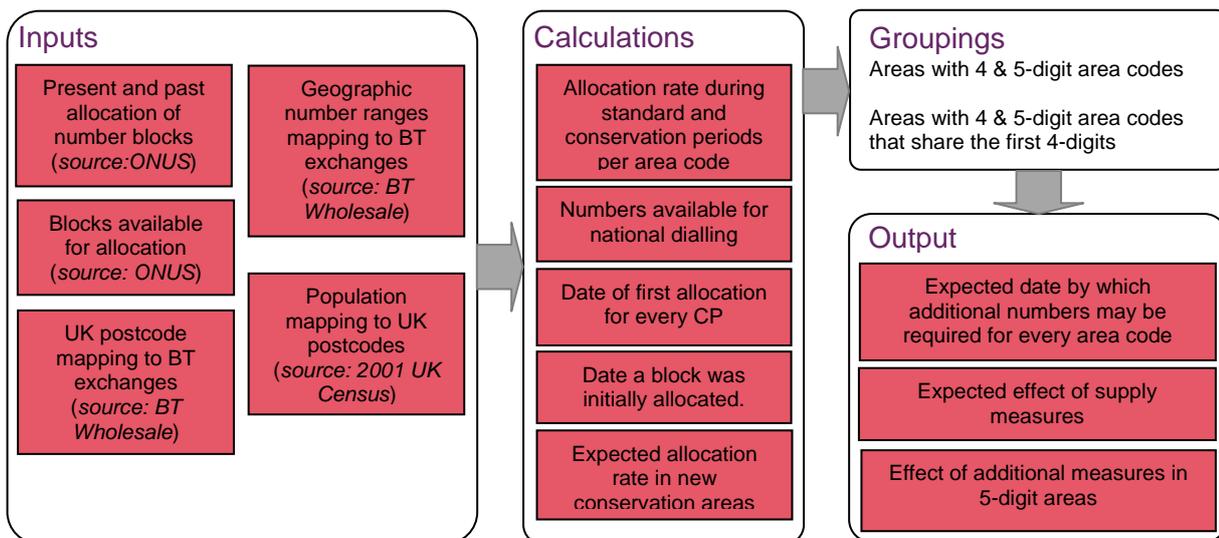
- A2.6 Number availability is more constrained in five-digit areas than four-digit areas due to the shorter local number. For this reason, we are proposing additional supply measures in these areas. Our preliminary preferred option is to merge areas that currently have five-digit area codes to create new wider areas with four-digit area codes (see Section 4). Where that measure does not lead to a sufficient supply of numbers to meet future demand, we propose to additionally close local dialling. If further numbers are required beyond that measure, we propose to implement overlay codes.
- A2.7 For five-digit areas we take into account the additional numbering constraints and our proposed supply measures and forecast that:
- closing local dialling and implementing overlay codes while maintaining a five-digit area code would not provide a viable solution to meet number demand. This is because the former measure only extends number availability by three years on average, while a five-digit overlay code would create a further supply of numbers for only a further 13 years on average;
  - merging five-digit areas to create wider four-digit areas may extend number availability for several years. This greatly depends on the demand for numbers in the merged area. We investigate two different scenarios, showing that the additional numbers are likely to meet demand for between nine and 31 years, on average. In the area of Hornby, however, even our more optimistic prediction suggests that number availability would not be extended for more than seven years;
  - closing local dialling in the merged four-digit areas can further extend number availability by 15 to 23 years, depending on how this measure affects the allocation rate in the merged area codes; and
  - implementing overlays in the merged four-digit areas would further extend number availability by more than 70 years, based on current trends.

## Annex structure

- A2.8 This annex provides an overview of our approach to data analysis and forecasting (i.e. the model used), including a description of the information used in our analysis and the evidence we have about trends in the demand for geographic numbers. We describe the forecast model, including any assumptions that were made in the forecast and parameters that can affect its accuracy. We conclude with our analysis of the effects of different number supply measures in four and five-digit areas.

## Model overview

- A2.9 Figure A2.1 presents an overview of the inputs we used in our analysis, the calculations we performed and the output results. In producing our results we considered the differences between four and five-digit areas, the different preferred solutions for these areas, and grouped our calculations accordingly.

**Figure A2.1 Overview of our analysis model**

## Inputs used in the analysis

- A2.18 Our analysis for the purpose of this consultation is based on number allocation data collected on 9 July 2010. This data includes historic information on number block allocations in all areas of the UK and the number of blocks available for allocation.
- A2.19 Additionally, we used population information from the 2001 Census to both investigate the possible link between population densities and number demand, and to estimate the number of citizens affected by our proposals.

## Historic number allocation information

- A2.20 The Ofcom Numbering System (ONUS) database stores information about the allocation status of every number block in the UK numbering plan, including its allocation status, any protection<sup>117</sup> reason, the date of the most recent change in the number block status, the name of the CP to whom the block is allocated, the corresponding geographic area name, and the area code and local number digit lengths.
- A2.21 We grouped the number blocks according to the area code they belong to, using the 610 area codes defined in the Numbering Plan. For each area code we calculated the amount of numbers that are free for allocation, protected, or assigned for national dialling<sup>118</sup> only. For each individual allocated block we identified the initial allocation date and the CP to whom the block is allocated.<sup>119</sup>
- A2.22 Identifying the initial allocation date of a block is not always straight forward. This is because any change in the number block (such as a change in the CP's name) is

<sup>117</sup> A protected number block is not available for allocation.

<sup>118</sup> National dialling only numbers are geographic numbers where the local number starts with '0' or '1'. Local dialling is not possible for these numbers, meaning that the caller has to dial the area code even if located within the same area. National dialling only numbers are only used for services where consumers would not be in a position to call the number locally and are mostly used by number translation services as terminating numbers.

registered as a new allocation. The different allocations of the same block are registered in a separate data table, which we used to identify when the block was initially allocated to the current block owner, or a subsidiary company. However, there are cases where this historical information is deleted. This happens for example when a 10k block is split into 1k blocks. Our procedure made use of the latest snapshot of the previous version of the ONUS database to capture such cases and identify the initial allocation date of a particular block.

### **Population covered by area codes**

- A2.23 To consider demographic characteristics in our analysis and evaluate the impact of our proposals we estimated the population covered by the different area codes in the U.K
- A2.24 We use the population covered by a BT Main Distribution Frame (MDF) site as the unit of our analysis. We then used the postcodes served by an MDF to map the population reported in the 2001 Census. The area code serving this population was identified through analysing the number ranges served by the same MDF.
- A2.25 Most of the 5595 MDF sites serve a single area code, with only 15 MDFs serving two area codes. When an overlap occurs we assume that the population served by the MDF is within the area code with the larger amount of numbers served by the MDF. In some cases the overlapping areas are geographically neighbouring, while some MDFs serve areas codes that belong to non-adjacent areas. We understand that the latter happens to enable 'out-of-area' use of numbers, which justifies our decision to neglect the area code with the fewer numbers served. In both cases the majority of the numbers served correspond to one area code, with only a few tens or hundreds of numbers belonging to a different area.
- A2.26 Due to inconsistencies between the Census 2001 and BT databases, and particularly the big gap between the dates the data refers to, 84.5 per cent of the BT delivery postcodes where matched in the Census database, corresponding to 96.8 per cent of the UK population of 59 million citizens (as measured in 2001). The small amount of data loss resulting from this process was compensated for by uplifting the population figures by the unmatched 3.2 per cent.
- A2.27 Our methodology does not account for some consumers who may be making 'out-of-area' use of numbers. These are consumers who use numbers with different areas codes from those where they are physically present. While we acknowledge that these consumers are also affected by any policy change we introduce, we consider that they represent a small proportion of the population and they are not affected at the same level as citizens residing within the geographic area served by the area code. This is because out-of-area numbers are mostly used either by businesses to appear to have local presence in multiple areas, or individuals who have moved out of an area but chose to retain their number. Consumers falling in either of these categories are most probably dialling using the area code anyway so they are unlikely to be affected by changes such as closing local dialling.

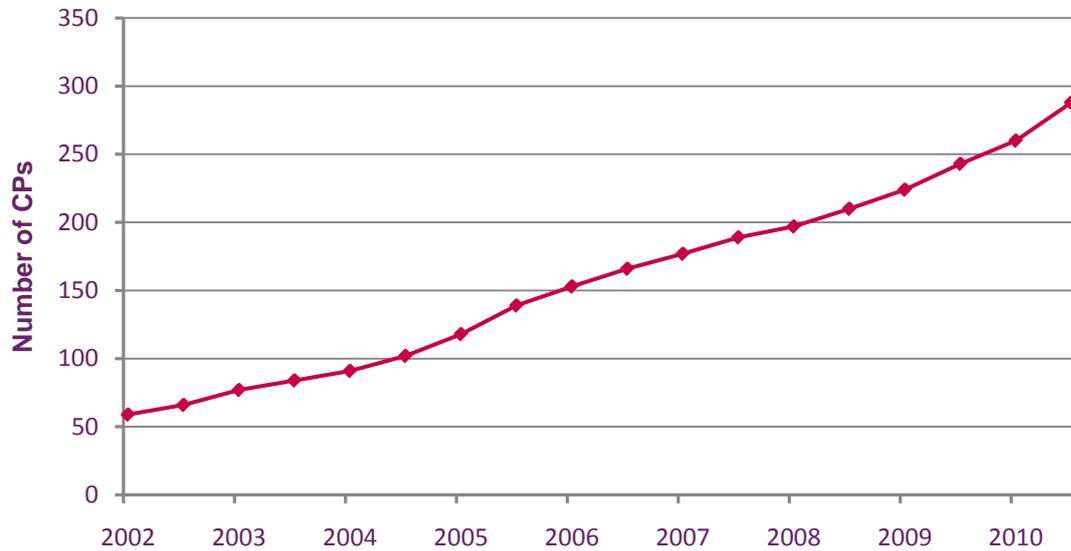
## **Trends in the demand for geographic numbers**

### **The geographic numbers market is not saturated**

- A2.28 Our data shows that new entrants continue to enter the telecommunications market and seek allocations of numbers directly from Ofcom at a steady rate.

A2.29 Figure A2.2 shows the number of CPs with geographic number allocations from Ofcom since the beginning of 2002. In less than nine years, the number of CPs has increased from just over 50 to about 300 providers. Furthermore, there are no signs of saturation, nor any change in the rate due to economic factors.

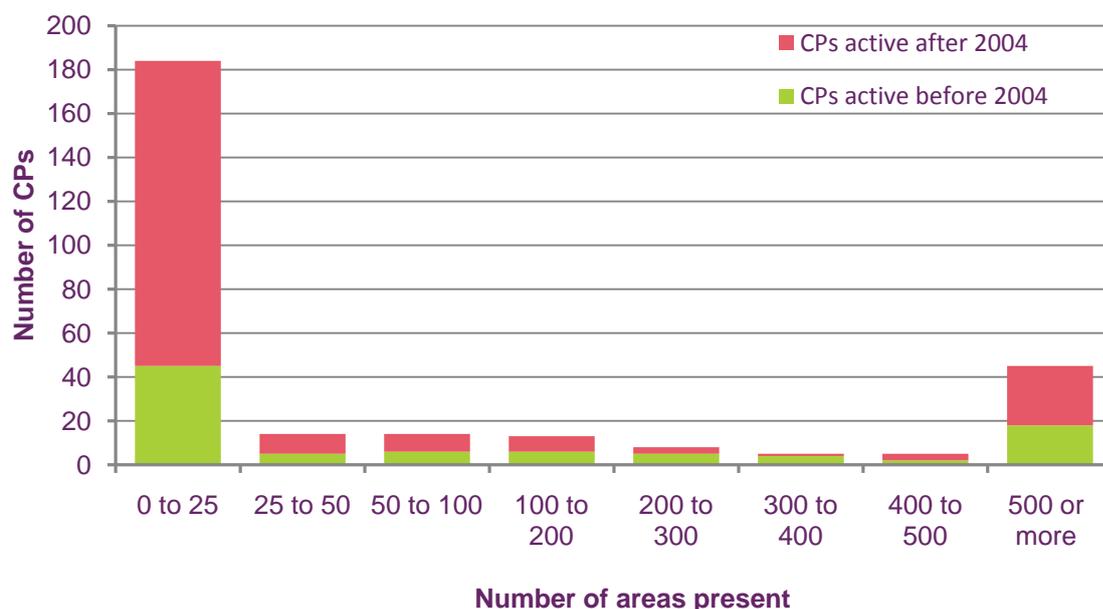
**Figure A2.2 Number of CPs with geographic number allocations from Ofcom**



### Many CPs seek allocation in several geographic areas

A2.30 Our analysis of number block allocations shows that CPs mostly seek blocks in a limited number of areas. Figure A2.3 shows that 184 CPs have been allocated number blocks in less than 25 areas. These mostly include two and three-digit areas, with London numbers being the most popular (137 of these CPs have London number ranges).

**Figure A2.3 Most CPs seek allocations in few areas but some seek national coverage**

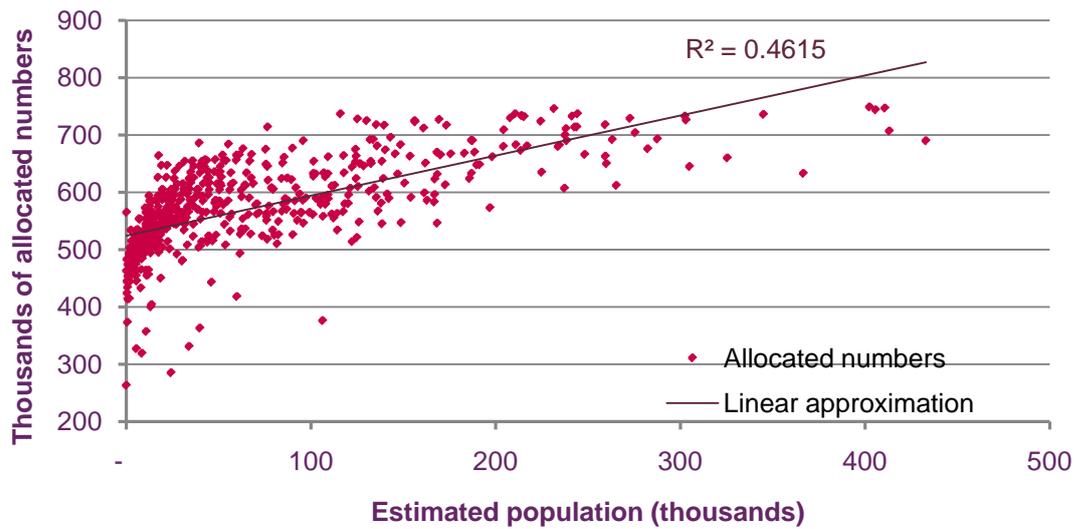


A2.31 However, there is a large number of CPs (76) who have obtained number blocks in over 100 areas. Most of them (41) received their first allocation after 2004. Additionally, 45 CPs (27 after 2004) have almost nationwide coverage with number blocks in more than 500 geographic area codes.

**Population characteristics of an area have little effect on the demand for numbers**

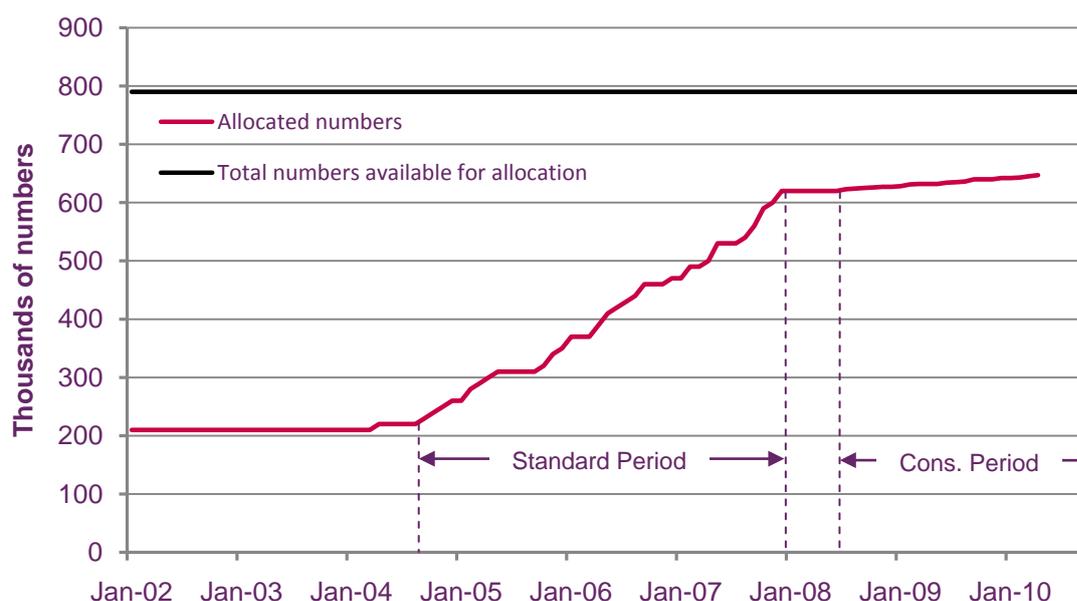
A2.32 Figure A2.4 shows the correlation between the amount of numbers allocated (vertical axis) and the population residing within geographic areas with a four-digit area code. Although there is a level of correlation between the two variables, this is very loose (as demonstrated by the value of 'R<sup>2</sup>')<sup>120</sup>, suggesting that population and demographic characteristics are not a primary factor affecting the demand for geographic numbers in an area.

<sup>120</sup> The value of R<sup>2</sup> provides a metric of correlation between two variables. If R<sup>2</sup>=1, the variables are identically correlated, while they are completely independent when R<sup>2</sup>=0.

**Figure A2.4 Correlation between number allocations and population in 4-digit areas****Allocation trends in individual areas**

A2.33 Our analysis further shows that the rate at which numbers are allocated in each area is stable over a long period of time. Changes in the allocation rate arise as a result of policy decisions. As an example, Figure A2.5 shows the allocations of numbers in Chippenham (01249) since January 2002. From this date until September 2004 there is almost no demand for geographic numbers. Our decision to open geographic number ranges for VoIP service providers intensified competition leading to an immediate increase in the number allocation rate which remains stable until the beginning of 2008. This is the time when we consulted on changing Chippenham into a 'Conservation' area. During the consultation period number applications were put on hold and allocations were resumed after the statement was published in June 2008. The allocation rate since then has been stable, albeit at a significantly lower rate due to the reduction of the allocated block size.

**Figure A2.5 Number allocations in Chippenham (01249)**



A2.34 Similar behaviour is observed in all the 610 UK area codes. We therefore suggest that a linear approximation can be used as the basis of our forecast to extrapolate number allocation trends.

A2.35 We further investigate the allocation rate in two periods, the 'Standard period' and the 'Conservation period', as shown in Figure A2.5. The 'Standard period' is between September 2004 and the date when conservation measures are applied in an area, while the 'Conservation period' is from then onwards.

## Forecast model

### Basic model description

A2.36 The evidence we have extracted from our number allocation data suggests that both the rate of entry of new CPs and the demand for numbers are stable over long periods of time and are primarily affected by changes in our number allocation policies.

A2.37 While we recognise that external parameters such as innovative services or new developments may affect the demand for geographic numbers, we do not have evidence of any of these services changing the number allocation rate in the past. Trying to incorporate such parameters in our forecast could further increase its volatility as we would not be able to estimate the exact effect and we would not know whether the current demand for numbers was already affected by these external parameters.

A2.38 We also appreciate that market saturation may eventually occur, leading to reduction of the number of new CPs seeking allocations. However, we have no evidence suggesting when this is likely to happen and what effect this would have on the number allocation rate.

- A2.39 In the absence of concrete evidence on how external parameters affect the demand for numbers and when we could expect market saturation, we propose to rely only on the measured number allocation trends and the expected effect of our allocation policy decisions. These are the 'conservation' and 'critical' measures, number audits, as well as the options proposed for increasing the supply of numbers (see below for further explanation).
- A2.40 We will continue to monitor the allocation trend and update our model accordingly when new evidence becomes available.

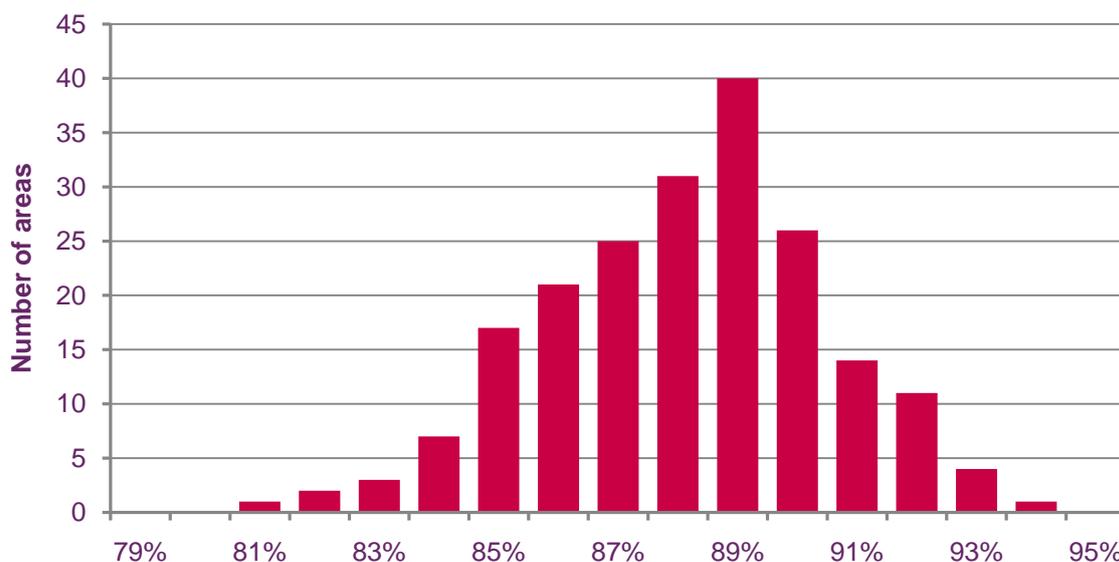
#### **Effect of conservation measures on the allocation rate**

- A2.41 Telephone numbers are allocated to CPs in blocks. Depending on the availability of numbers, the block size in some areas (also referred to as 'standard areas') is 10,000 numbers, while it reduces to 1,000 numbers in 'conservation' areas. Smaller number blocks lead to more efficient block utilisation as the average amount of unused numbers in a block is reduced.
- A2.42 In most cases, and particularly in four and five-digit areas, 1,000 numbers are enough to fulfil the requirements of most CPs, with only a few requiring multiple 1,000 number block allocations.
- A2.43 On the 8 April 2010, we published the statement *Conserving geographic numbers*<sup>121</sup> by which conservation measures were applied to the last 336 standard four-digit areas. Since then numbers are allocated in blocks of 1,000 numbers in all four- and five-digit area in the UK (this does not include the Jersey and Guernsey area codes).
- A2.44 To forecast the effect that conservation measures may have in these 336 areas, we analysed 204 areas where conservation measures have been applied between 2006 and 2008. We chose these areas in order to have enough evidence for both the standard allocation rate, and the allocation rate after the conservation measures were introduced. Figure A2.6 shows the distribution of the allocation rate reduction due to the conservation measures in these areas. On average, the allocation rate was reduced by 87.5 per cent in these areas following the introduction of conservation measures. The standard deviation of the distribution is 2.3 per cent.

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<sup>121</sup> <http://stakeholders.ofcom.org.uk/binaries/consultations/conservation/statement/statement.pdf>

**Figure A2.6 Reduction of the number allocation rate in areas where conservation measures were applied between 2006 and 2008**



A2.45 We assume that the introduction of conservation measures in the 336 four-digit areas will have the same effect, i.e. the allocation rate reduces by 87.5 per cent.

**Effect of critical measures on the allocation rate**

A2.46 When number block availability becomes critically low, further measures are sometimes applied by Ofcom. These are temporary measures aimed at extending existing supply until a solution is developed. For example, our numbering team may offer blocks in alternative, nearby areas rather than the critical ones, while in some cases numbers may be allocated only following a confirmed customer order.

A2.47 The effectiveness of these measures is currently unclear. Our experience, however, suggests that it is possible to halve the allocation rate using critical measures.

A2.48 To incorporate the critical measures in our forecast model we assume that they are effective when there are 20 or fewer blocks available and that they result in the conservation allocation rate being halved. We estimate that critical measures may extend the number availability by three to four years, which provides a time window for the implementation of any required number supply measures.

**Number audits and measures that increase the supply of numbers**

A2.49 We periodically run number audits, in areas where number block availability is low, requesting that CPs return any unused number blocks they hold (see Section 5 for more on audits). This can be a time consuming procedure as the CPs need to notify other providers about the change and have the blocks removed from BT's (and other CPs) switches.

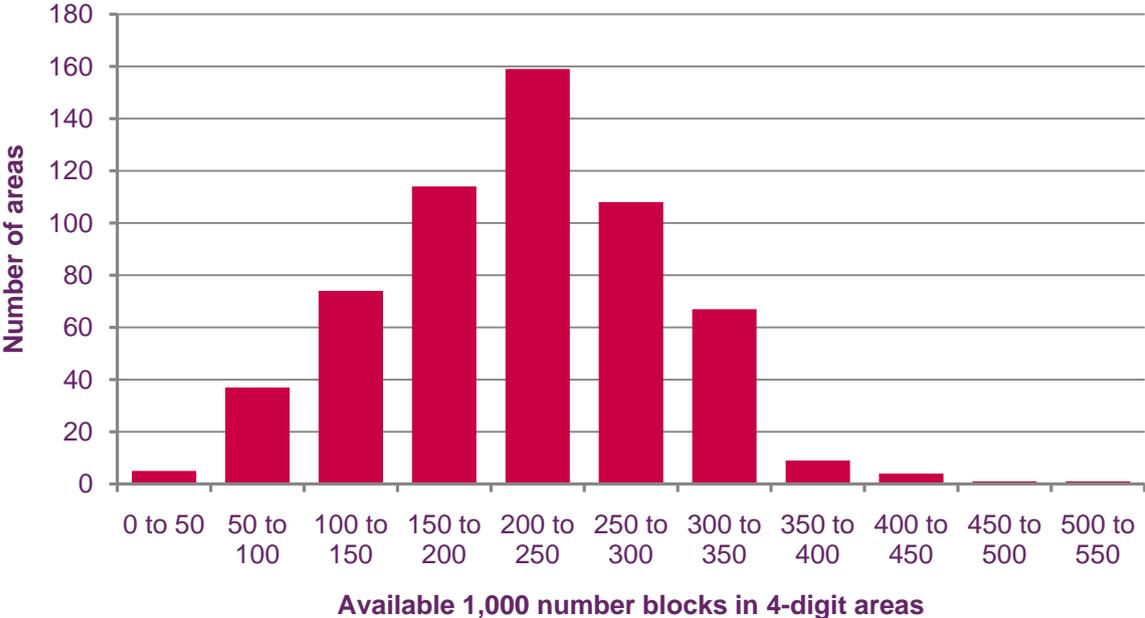
A2.50 An audit was ongoing during the period we generated our forecast, resulting in some uncertainty about the number of blocks available in some of the audited area codes. We have decided to consider as available for allocation all the blocks indicated to be returned by CPs, but not alter the measured allocation rate.

- A2.51 A similar approach was taken in evaluating the effect of the suggested measures to increase the supply of numbers. In particular, to estimate the effect of closing the dialling plan in a geographic area we identified the blocks that are available for national dialling only and considered them as available for allocation.
- A2.52 The amount of numbers added in an area if an overlay code is introduced varies depending on whether the local dialling functionality is retained or not. For example, introducing an overlay code while maintaining local dialling in a four-digit area provides 790,000 numbers for allocation. If, however, the ability for local dialling is removed, the amount of numbers available for allocation increases by one million numbers.

**Number availability and allocation rates in four-digit areas**

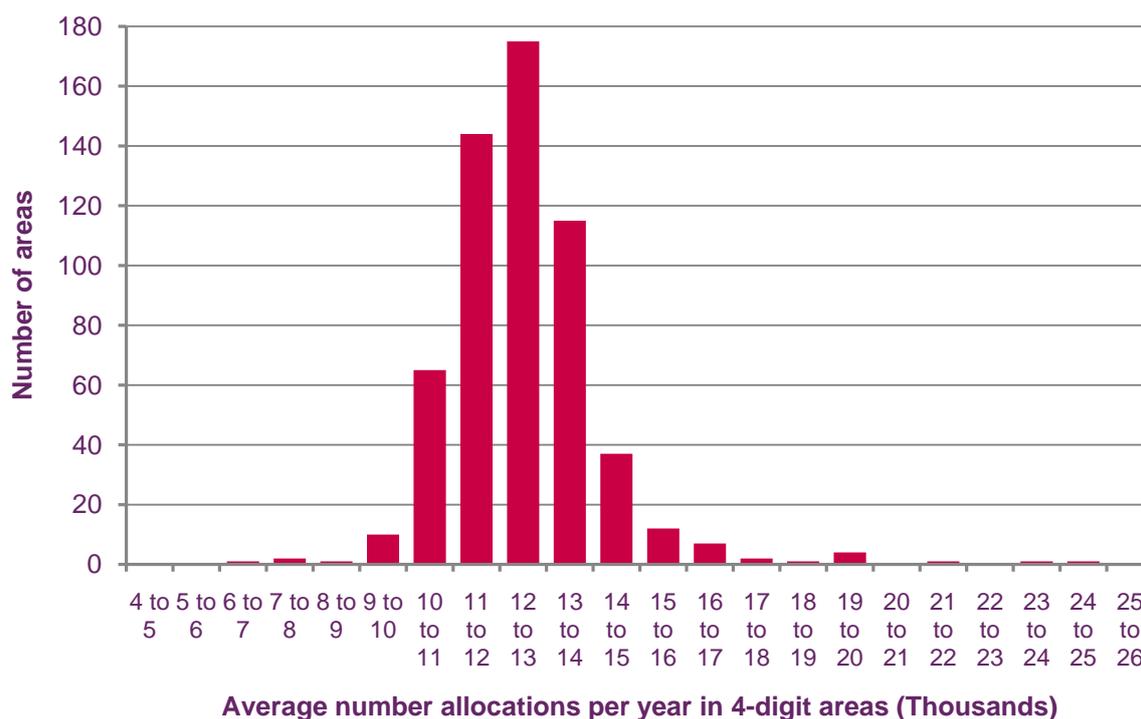
- A2.53 Figure A2.7 shows the current availability of 1,000 number blocks in four-digit areas. This varies from 43 to 538 blocks, while the average number of blocks available is 218.

**Figure A2.7 Distribution of block availability in four-digit area codes**



- A2.54 The allocation rate in four-digit areas varies significantly less, as shown in Figure A2.8. While only about 7,000 numbers are allocated every year in Brampton, Penrith and Strathaven, and over 24,000 numbers are allocated in Aberdeen, on average 12,500 numbers are allocated each year in four-digit areas. In most areas (536 out of 579) the annual allocation rate varies between ten and 15 1,000 number blocks.

**Figure A2.8 Distribution of allocation rates in four-digit areas**



## Number availability and allocation in five-digit areas

A2.55 There are 11 areas in the UK with only five-digit local numbers. This means that these areas have in total 79,000 numbers available for allocation, one tenth of the total numbers available in a four-digit area. At the same time however, demand for numbers in these areas is comparatively high with between 2,800 and 8,200 numbers being allocated per year.

A2.56 As a result of the limited number availability and the relatively high demand for numbers, number scarcity problems are more acute in five-digit areas, with as few as six 1,000 number blocks still available in Langholm. On average there are 22 1,000 number blocks still available for allocation in five-digit areas, just over our 'critical' threshold.

## Summary of assumptions

A2.57 In preparing our forecast model we made the following assumptions:

- a) there are no signs of saturation in the market of geographic numbers. We therefore have no reason to assume that the demand for numbers is likely to decline in the future;
- b) the demand for numbers in every area is stable. Even if there are external parameters affecting the demand rate, their aggregated effect is negligible. Hence, we extrapolate the number allocation trends based on a linear approximation model;
- c) conservation measures reduce the allocation rate by 87.5 per cent. We used this assumption to estimate the allocation rate in 336 areas where conservation measures were introduced in 2010;

- d) when fewer than 20 1,000 number blocks are available for allocation we apply critical measures that result in a further 50 per cent reduction in the allocation rate; and
- e) we do not estimate the effect of any other policy measure that may be implemented in the future, such as further reduction of the allocated number block size, or the introduction of charging mechanisms.

### **Summary of parameters that could affect the forecast**

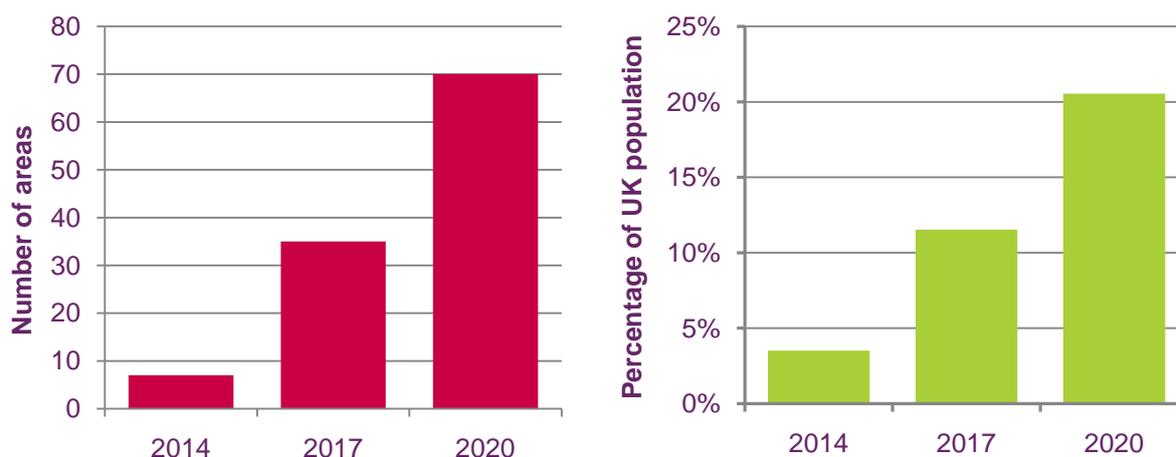
- A2.58 Forecasting the availability of numbers in the future is a significant task. While we maintain that our model provides a good estimate, we acknowledge that it is sensitive to a number of parameters:
- a) market and industry changes may alter the allocation rate significantly. For example, the introduction of new services demanding large number allocations may reduce number availability sooner than expected;
  - b) occasionally number blocks are returned to Ofcom and made available for re-allocation. Such returns affect both the amount of numbers available and the calculated allocation rate, which may lead to changes to the actual allocation trends;
  - c) our model cannot estimate the possible effect from policy changes, such as the effect of reducing the allocated number block size or the introduction of charging. We would need to adapt our model if and when such changes were introduced; and
  - d) potential database errors may affect the estimated allocation trends. Such errors may result in incorrect estimates of the date when particular number blocks were first allocated (see paragraph A2.22).

## **Forecast results**

### **Current number availability**

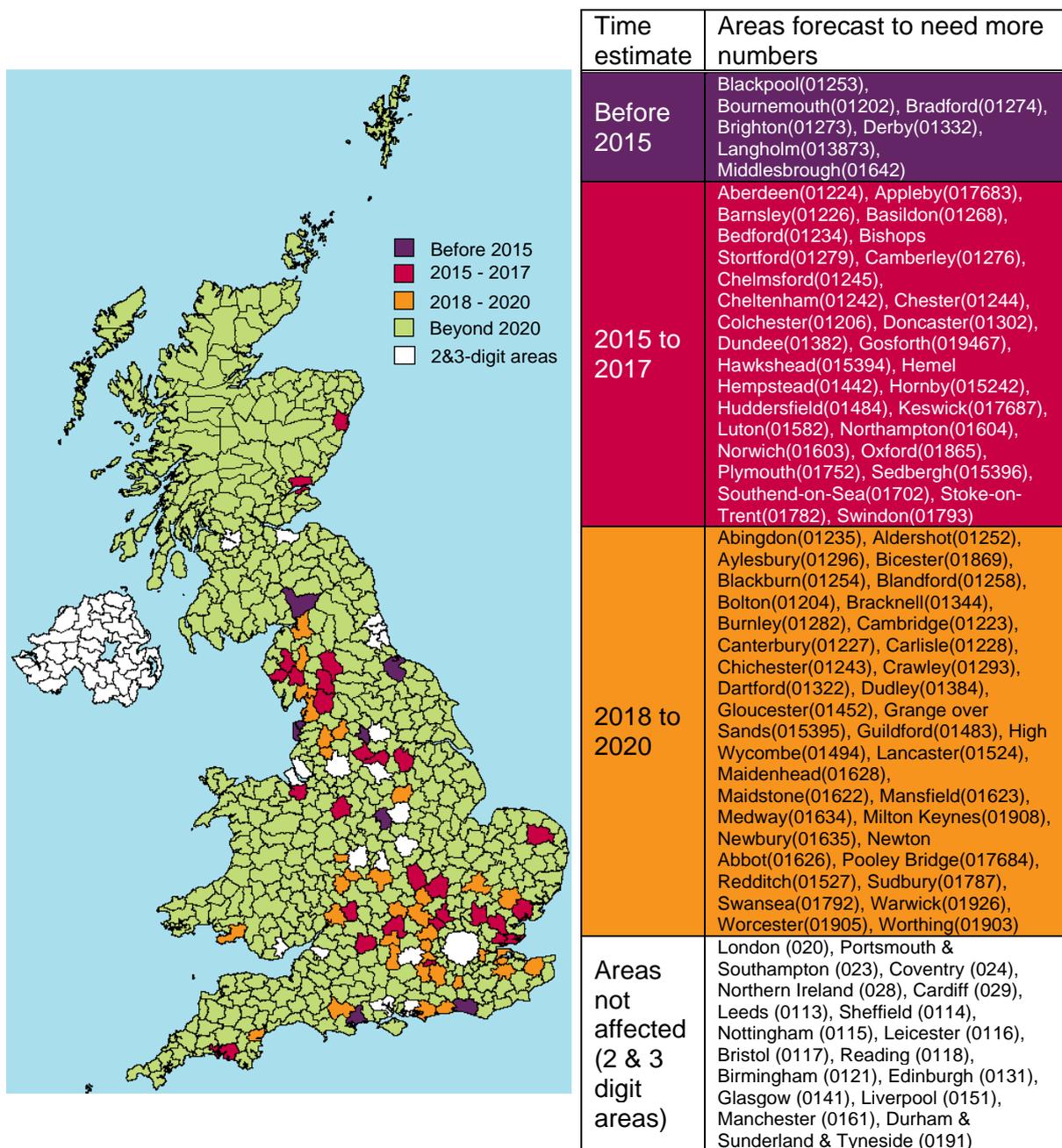
- A2.59 By extrapolating the number allocation trends we forecast (Figure A2.9) that our current reserves of numbers in 70 areas may exhaust by the end of 2020, if no action is taken to ensure number availability. We estimate approximately 21 per cent of the UK population would be affected by the measures we may need to take to extend number availability in those areas
- A2.60 We further expect that seven of these areas may run out of numbers before 2015, affecting four per cent of the UK population.

**Figure A2.9 Areas and population percentage affected by 2020**



- A2.61 In calculating our forecast we have considered the numbers available for allocation in every area and the effect of conservation measures in the 336 areas where they were applied earlier this year. We have further assumed that critical measures result in 50 per cent reduction of the allocation rate when less than 20 blocks are available for allocation.
- A2.62 Figure A2.10 illustrates on a map and lists alphabetically the 61 four-digit and nine five-digit areas that are expected to require additional geographic numbers. We have divided the areas into three groups, based on our estimate of the exhaustion date. We expect that seven out of the 70 areas will need additional numbers before the end of 2014, followed by 28 by the end of 2017. The remaining 35 areas are expected to require additional measures between 2018 and 2020.
- A2.63 In the same figure we include the 17 areas with two or three-digit area codes in the UK numbering plan. These areas have a significantly larger supply of numbers meaning that it is unlikely they will face number shortages. For this reason, we have excluded these areas from our forecast analysis.

**Figure A2.10 Map and list of areas forecast to run out of numbers by 2020**



**Effect of proposed supply measures in four-digit areas**

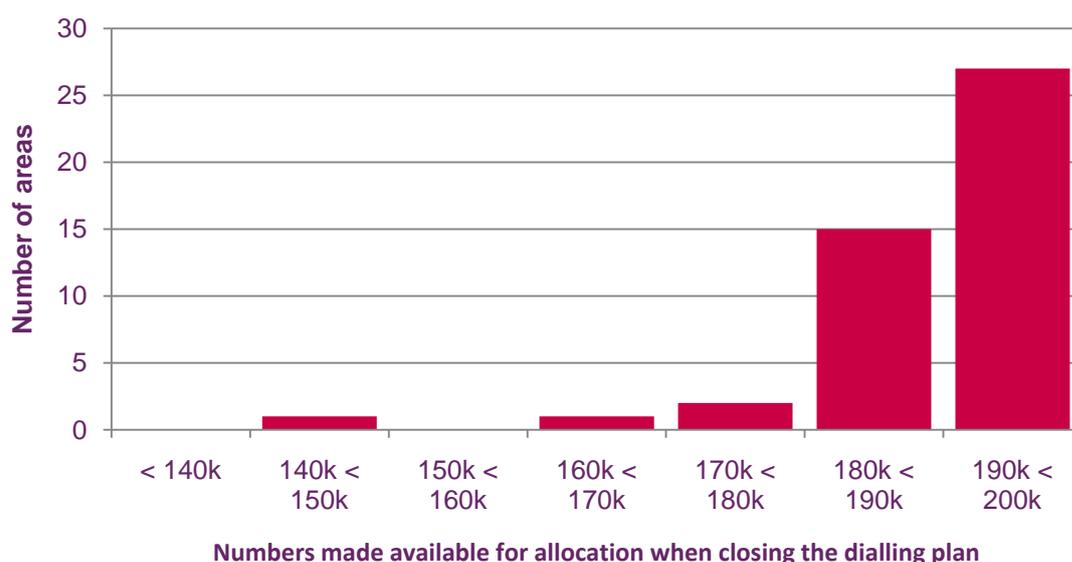
A2.65 In Section 4 we describe the considered options to increase the supply of numbers:

- a) closing the dialling plan;
- b) introducing overlays maintaining the ability to dial locally numbers with the same area code; and
- c) closing the dialling plan and then introducing overlays when needed.

A2.66 To arrive at our preferred option, we investigated how each of these options would be likely to extend the availability of numbers in four and five-digit areas across the UK.

A2.67 **Closing local dialling** allows the allocation of numbers that are currently reserved for national dialling purposes only. On average, 207,000 numbers would become available in four-digit areas. In 455 of these areas, 210,000 numbers would be made available. There are, however, 46 areas where additional numbers would be fewer than 200,000 numbers as some of the local numbers starting with '0', '1', or '99' have already been allocated. Figure A2.11 provides the distribution of available numbers in these areas.

**Figure A2.11 Number availability in four-digit areas where numbers for national dial only have been allocated**



A2.68 Closing local dialling in Milton Keynes would only add another 144,000 numbers to those currently available for allocation. When combined with the estimated allocation rate, we forecast that closing local dialling alone would extend the availability of numbers for another six to seven years, after the current number reserves are depleted.

A2.69 On average, however, we estimate that closing local dialling would extend number availability by 17 years in four-digit areas, while the 61 areas identified to need numbers by 2020 would extend their number availability by an average of 14 years.

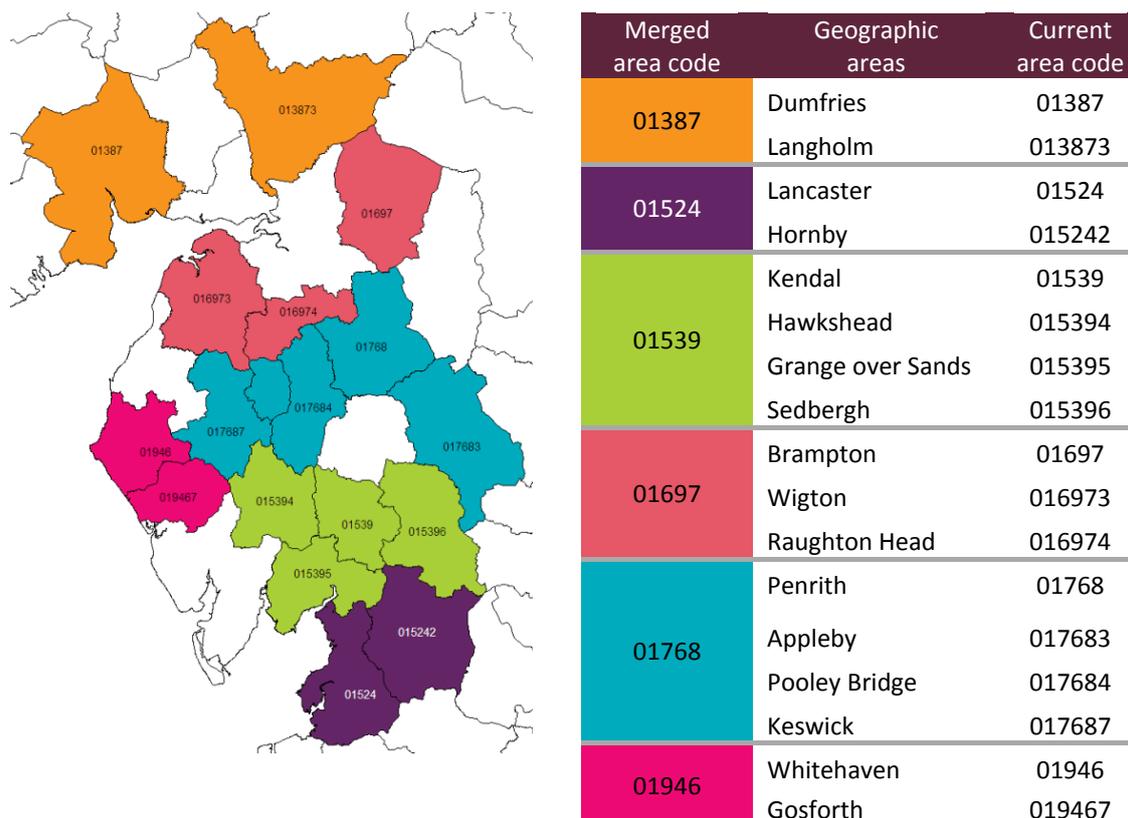
A2.70 **Introducing an overlay code while maintaining local dialling ability** doubles the supply of numbers. Our estimations suggest that overlay codes would create enough numbers for at least 30 years in areas with high demand. On average we expect an overlay code to extend number availability by more than 70 years.

A2.71 **Combining overlay codes with closed dialling plan** achieves the maximum extension of number availability, increasing the current supply of numbers by 150 per cent. We estimate that four-digit areas would have enough numbers for more than 100 years, on average, while the areas that currently face the larger demand would have numbers for at least another 40 years.

## Effect of proposed supply measures in five-digit areas

- A2.72 **Closing local dialling while maintaining five-digit area code** would only extend number availability in these areas by approximately three years. We forecast that nine of these five-digit areas would need further measures by 2020, even if local dialling was closed. This suggests that more localised options need to be considered.
- A2.73 **Introducing a five-digit overlay code** in each of these 11 areas would only extend numbers for an average of 13 years, while in Langholm the number availability would be extended for only another nine years.
- A2.74 **Our preferred option** for the few remaining five-digit areas is to merge the ones sharing the same first four area code digits under the same area code. This option is described in more detail in Section 4. Implementing this option suggests that the fine geographic significance of the fifth area code digit would be diluted, with numbers being allocated randomly across all the merged localities. As a result, 17 four and five-digit areas would be reduced to six four-digit areas.
- A2.75 Figure A2.12 shows on a map and lists how the area codes would be merged to become four-digit area codes.

**Figure A2.12 Proposed merged five-digit areas\***



\* In this map different colours have been used to show how each area would be grouped to form a new four-digit area code under the preferred supply measure described in Section 4. These proposed groupings are also shown in the adjacent table, along with the proposed four-digit code for the merged area. The current four and five-digit area codes are shown on the map to show where these areas are located.

- A2.76 It is unclear exactly how our proposal for five-digit numbers may affect the demand for numbers in the future. We are uncertain whether the current demand for number blocks is capacity driven (i.e. CPs require multiple blocks as they have a large number of customers in these areas) or coverage driven (i.e. CPs require blocks in each of the localities to increase their national coverage). In the absence of any other effects, capacity driven demand would result in the allocation rate of the new four-digit area being the sum of the allocation rates in the merged areas, while a coverage driven demand would result in the allocation rate of the new area being equal or close to the larger allocation rate among the merged areas.
- A2.77 We estimate that approximately 115,000 people reside in the 11 five-digit areas and another 320,000 live in the related four-digit areas. As over 3.1 million numbers have already been allocated across these 17 four and five-digit areas, we consider that the current demand for numbers is coverage driven.
- A2.78 Following the merging of the five-digit areas we would reject allocation of multiple blocks in the absence of firm customer orders or evidence of high demand. We would therefore expect the allocation rate following the merging to be equal or close to the larger allocation rate currently measured across the merged areas.
- A2.79 For the completeness of our analysis we investigated the effect of each of the number supply measures under both demand scenarios. First we assume that the demand for numbers is capacity driven and then that it is coverage driven.

- A2.80 **Merging the area codes** alone increases number availability. This is because the five-digit local numbers starting with '0', '1', and '99' are made available for allocation, while blocks from the current four-digit area can be allocated to customers in the (currently) five-digit areas.
- A2.81 Our most pessimistic estimate suggests that this measure alone could extend number availability by nine years on average, although Hornby and Grange-over-Sands would only gain another two years. The same estimate suggests that two of the merged four-digit areas (Lancaster and Kendal) would need further measures by 2020.
- A2.82 If, however, the allocation rate in the enlarged four-digit area was similar to the larger allocation rate across the merged areas, we expect this measure alone to extend number availability by 31 years on average. In Lancaster and Hornby however our preferred measure would only extend the current number availability by seven years. Nevertheless, none of the six four-digit areas would need further measures before the end of 2020.
- A2.83 **Closing local dialling in the merged four-digit areas** would further extend number availability as local numbers beginning with '0', '1', and '99' would be available for allocation.
- A2.84 If the allocation rate in the new area is equal to the sum of the allocation rates across the merged areas, we expect closing local dialling to extend number availability for another eight years on top of the gain achieved by merging the area codes. Our forecast suggests that none of these areas would need further measures before 2020.
- A2.85 Our more optimistic scenario on the other hand suggests that closing local dialling would extend number availability for 23 years on average. The areas with the highest demand for numbers (Lancaster and Hornby) would still have numbers for 17 years.
- A2.86 **Introducing an overlay code in the four-digit merged area** would have a similar effect to the introduction of overlay codes in current four-digit areas. We expect therefore that the additional supply of numbers generated would last for more than 70 years on average, or more than 100 years if we also closed local dialling.

## Annex 3

# Detailed assessment of geographic number supply options

## Introduction

- A3.1 We explain in Section 4<sup>122</sup>, that we currently prefer to limit the extent of disruption that could be caused by creating new supplies of geographic numbers. We therefore propose to confine our detailed evaluation to the two approaches described in paragraph 4.21 that would not require changes to existing phone numbers and which would suit localised, rather than UK-wide, implementation. These are:
- a) **Closing local dialling:** consumers making local calls from fixed-line phones in the area concerned would need to dial the area code; and
  - b) **Overlay codes:** a new area code would be introduced to 'overlay' the area concerned so that two area codes would serve the same geographic area at the same time.
- A3.2 Various approaches to implementation could be considered which use these options, for example applying them together (either simultaneously or sequentially) or individually. For the reasons set out in Section 4, paragraphs 4.32-4.35, we consider that we should assess the following options to increase the supply of geographic numbers in four-digit areas:
- a) **Option 1:** Close local dialling, and introduce an overlay code later if necessary. Local dialling would be closed if and when supply of local numbers in an area falls below a trigger level.<sup>123</sup> If and when supplies of new numbers in that area code subsequently should fall below the trigger level again, we would introduce an overlay code to cover the same geographic area.
  - b) **Option 2:** Overlay with local dialling open (symmetric local dialling): an overlay would be introduced if and when supply of local numbers falls below the trigger level. Local dialling of calls between numbers with the same area code would remain available.
- A3.3 In this annex we set out the framework against which we propose to assess these options, and present our detailed assessment of their impacts on consumers, competition and CPs.

## The regulatory framework for considering number supply options

- A3.4 We set out our relevant duties and the policy principles we consider relevant to this consultation in Section 2. We consider that the following principles are particularly relevant in relation to the discussion in this annex of the impacts of options to provide new supplies of geographic numbers:

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<sup>122</sup> Paragraphs 4.17 to 4.22.

<sup>123</sup> A trigger level would be determined as part of a detailed implementation plan. For example, we used 20 blocks of 1,000 numbers in our forecast, which would sustain existing supplies of numbers for approximately three to four years in most four-digit areas.

- the numbers consumers want are available when they are needed;
- the numbers consumers currently use are not changed if this is avoidable;
- the meaning which numbers provide to consumers is protected; and
- number allocation processes support competition and innovation.

## Assessing the impact on number supplies

- A3.5 We first consider the impact that the proposed options would have on the supply of geographic numbers in any area in which they would be introduced.
- A3.6 Closing local dialling would extend current number supply by approximately 25 per cent (depending on local circumstances).<sup>124</sup> Overlay codes, on the other hand, would effectively double the amount of numbers that are available by introducing a completely new set of numbers that start with the new (overlaid) code. If local dialling is closed in conjunction with the introduction of an overlay code, the combination would increase the supply of local numbers by up to 150 per cent relative to existing supplies.<sup>125</sup>
- A3.7 We have used our forecasts of the demand for numbers to estimate how many years' supply of numbers each approach could provide. Our current forecast predicts that, for the 61 areas<sup>126</sup> with four-digit codes that may experience number exhaustion in the next ten years, closing local dialling would provide a new supply of local numbers sufficient for an average of approximately 14 years. We similarly estimate that the average extension of number availability across all 590 four-digit area codes is 17 years. As discussed in Annex 2, the forecast is based on historical allocation trends adjusted where required to take account of administrative measures. The forecast, and hence the estimates, are subject to significant uncertainties because future events are likely to be influenced by many variables.
- A3.8 In some four-digit areas we estimate that the new supplies created by closing local dialling might meet demand for a much shorter time. For example, we estimate that in Milton Keynes, Bournemouth, Blackpool, Brighton, Aberdeen and Bellingham, the new supplies that would be created by closing local dialling would meet local demand for between six and ten years. Most people who took part in our consumer research thought that if a change was to be made then it should last a minimum of ten years.<sup>127</sup> The costs that CPs would incur in one local change, even if a relatively complex one, may also be lower than those of two successive simpler changes. We therefore currently prefer options, where possible, that would provide new supplies

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<sup>124</sup> The exact number of blocks that could be made available after closing local dialling would depend on the number of blocks that are currently already allocated for 'National Dialling only' purposes. We estimate from our data (as at 9 July 2010) that on average 207 blocks could become available in the 579 four-digit areas. In 49 of these areas, closing local dialling would release less than 200 new blocks, while in one area (Milton Keynes) the benefit from closing the dialling plan would be limited to 141 new number blocks.

<sup>125</sup> Using closing local dialling and overlay codes together increases the total supply by 150 per cent, because closing local dialling makes up to 25 per cent extra numbers available in the new overlay code as well as the original area code.

<sup>126</sup> We predict that 70 area codes could need new supplies of numbers in the next ten years. Nine of those areas have five-digit area codes and the remaining 61 have four-digit area codes.

<sup>127</sup> Page 4 of the 2010 consumer research.

of geographic numbers sufficient for at least ten years. Closing local dialling alone may therefore not be a sufficient solution in all areas.

A3.9 Figure A3.1 below summarises our current estimates of the impact of the options on the supply of numbers. We have included closing local dialling on its own to show how this first stage of Option 1 would contribute to the increase in geographic number supplies in its own right.

**Figure A3.1 Estimated effects of closing local dialling and overlay codes on number supply**

	Close local dialling (Option 1 – first stage)	Overlay with open dialling (Option 2)	Overlay with closed local dialling (Option 1 – first and second stage)
Volume of numbers added (% of existing supplies)	Up to 25% <sup>128</sup>	100%	Up to 150% <sup>129</sup>
Average period (years) that new supplies could meet demand in four-digit area codes at historic allocation rate	17	70+	100+

### Option 1: Close local dialling and introduce an overlay code later if necessary

A3.10 Our current forecast predicts that, for the 61 areas with four-digit codes that may experience number exhaustion in the next ten years, closing local dialling alone could extend number availability for an average of approximately 14 years. This compares with the estimated average extension of number availability across all the four-digit areas of 17 years, presented in Figure A3.1 above.

A3.11 Figure A3.1 also illustrates that, if and when an overlay code proves ultimately necessary, its introduction subsequent to closing local dialling in a four-digit area could increase local geographic number supplies for a considerable time.

A3.12 Therefore Option 1 has the potential to increase the supply of geographic numbers well beyond the foreseeable future.

<sup>128</sup> The amount of blocks that are made available after closing the dialling plan depends on the length of the area code and the number of blocks that are already allocated for “National Dialling only” purposes. We estimate from our data (as at 9 July 2010) that, on average, 207 blocks would become available in the 579 four-digit areas. In 49 of these areas the benefit would be limited to less than 200 blocks, while in one area (Milton Keynes) the benefit from closing the dialling plan would be limited to 141 1,000-number blocks.

<sup>129</sup> Using closing local dialling and overlay codes together increases the total supply by 150 per cent, because closing local dialling makes 25 per cent extra numbers available in the new overlay code as well as the original area code.

## Option 2: Overlay with local dialling (symmetric local dialling)

- A3.13 Introducing an overlay code without closing local dialling would double the total number availability in an area. We estimate that, at an allocation rate consistent with historic trends of CPs' demand for number blocks, introducing overlay codes without closing local dialling in four-digit areas would provide new supplies of numbers that could last for at least 30 years, and, on average, over 70 years.
- A3.14 Therefore Option 2 also has the potential to increase the supply of geographic numbers well beyond the foreseeable future, but not to the same extent Option 1 because it would create fewer numbers.

### Initial conclusion on the impact on number supplies

- A3.15 Although we forecast that the new supplies of geographic numbers created by Option 1 would last longer than those created by Option 2, both options have the potential to increase the supply of geographic numbers well beyond the foreseeable future, and hence to make sure that the numbers that consumers want are available when they are needed. In light of this, we now turn to consider other impacts that both of these options would have on consumers, competition, and CPs to help determine our preferred approach.

## Assessing the impact on residential consumers

### Option 1: Close local dialling and introduce an overlay code later if necessary

- A3.16 Closing local dialling would retain the current geographic significance of all numbers, and, before any overlay code may be introduced, would preserve the current association between an area and a single code. It could also make any future introduction of overlay codes, where this proves necessary, more straightforward because dialling the full area code for local calls would have become normal practice.
- A3.17 However, closing local dialling would require an immediate change in dialling behaviour from all consumers that dial numbers locally within the geographic area concerned. In contrast, the impact on dialling behaviour of Option 2, where overlay codes would be introduced while keeping local dialling open, could be relatively limited in the short term. Our 2010 consumer research indicated that the average proportion of calls made using the local dialling facility was 57 per cent in 2010, so the behaviour change in the case of Option 1 could be quite significant.<sup>130</sup> That said, we note that this figure was 76 per cent in the 2005 consumer research, suggesting that dialling behaviour is already changing over time even while the facility of local dialling remains available for use. In addition, the 2010 consumer research showed that the removal of local dialling was considered a small leap behaviourally, was easily understood and could therefore be relatively straightforward to communicate.<sup>131</sup>
- A3.18 We also note that some consumers may store numbers in their fixed-line phone. For those that store the whole number, there would be no change required as a result of closing local dialling. However, those who store numbers without the area code would need to change the stored number to include the area code. Our qualitative research showed that those who used a memory facility tended to store

<sup>130</sup> See page 8 *Geographic Numbering and Local Dialling*,

<sup>131</sup> 2010 consumer research. See page 4 *Geographic Numbering and Local Dialling*

a six-digit number without the area code.<sup>132</sup> Although having to change stored numbers may cause some inconvenience to consumers, we consider that this may be relatively limited, particularly since the proportion of calls from a fixed-line using the memory facility or speed dialling has decreased from 36 per cent in 2005 to 25 per cent in 2010.<sup>133</sup>

- A3.19 It is also possible that closing local dialling could result in some misdials, although this could be the case under both Option 1 and Option 2. We also consider that misdials could be captured more easily when local dialling is closed, as a misdialled call would be more likely to fail to connect (the caller having dialled insufficient digits potentially resulting in a message to redial inserting the area code<sup>134</sup>) rather than connect to a wrong active number.
- A3.20 Closing local dialling would also defer the need for an overlay code, which is potentially more disruptive because it could affect the geographic significance of numbers for consumers within and outside the affected areas (see the discussion of Option 2 below). It also appears from our 2010 consumer research (see discussion below) that consumers consider that closing local dialling would have a lower negative impact on them than an overlay code, and so Option 1, which would defer the need for an overlay code, may benefit consumers.

## **Option 2: Overlay with local dialling (symmetric local dialling)**

- A3.21 Option 2 would introduce an overlay code in an area triggered by that area's first requirement for a new supply of numbers, and local dialling would remain open. While we currently forecast that, under Option 1, overlay codes are unlikely to be necessary anywhere before 2022, Option 2 would be likely to result in the introduction of overlay codes in many areas in the next ten years.
- A3.22 The impact of overlay codes with open local dialling on consumers has the potential to be small initially for the majority of people in the area, although it is likely that, for those that it does affect, the impact might be more significant.
- A3.23 Option 2 would not require any changes to existing dialling behaviour. Consumers who have a number with the original area code could continue to use local dialling when calling numbers that also have the original area code. It is only when they dial a number that starts with a new overlay code that they would need to include the area code. The introduction of numbers that start with the overlay code is likely to be gradual and it could therefore take a long time for these numbers to become common, so impacts of the change on consumers who have a number with the original area code are likely to be small initially.
- A3.24 To some extent, consumers might also be able to choose a CP that has stocks of available numbers that start with the original area code.<sup>135</sup> Many existing CPs have relatively low utilisation rates (see Section 6), and large volumes of unused numbers with the original area code may be available to consumers in many geographic areas for some time.

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<sup>132</sup> 2010 consumer research. See page 8 *Geographic Numbering and Local Dialling*

<sup>133</sup> See page 4 *Geographic Numbering and Local Dialling*

<sup>134</sup> This would depend on the implementation approach, which will be determined in consultation with the industry.

<sup>135</sup> This may have implications for competition between existing and new entrant CPs, see discussion in paragraph A3.59-A3.66 below.

A3.25 However, in our qualitative research, overlay codes were seen as potentially confusing by almost everyone, and generally people did not like the idea of dialling a different code to call someone who might live very close to them – this seemed to be counter-intuitive to some participants in the research.<sup>136</sup> For example, lack of consistency was a concern identified in our research, where one participant stated:

“It just seems a bit silly that if a new housing estate is built round the corner from where I live, then people next door to me will have a different area code to me”. (Residential consumer, Oxford)

A3.26 In addition, while the quantity of active numbers with the new code remains small, many local consumers may remain unaware of its geographic significance. This could affect particularly the relatively small number of people that would be using or calling a number with that new code. It could also result in a heightened perception of distinction between the original code and the overlay code, not only in terms of the code, but also in terms of the dialling pattern required to make calls. This could be particularly important for consumers in light of our research which showed, among other things, that the proportion of consumers who thought that geographic significance was important had increased since 2005 from 52 per cent to 64 per cent in 2010.<sup>137</sup> Several people felt the overlay code option could only work if the new code was very similar to the old one, but there was also widespread acceptance that if a new code was brought in then people would get used to it.<sup>138</sup>

A3.27 Additionally, in order to use local dialling correctly, consumers would need to know the area code of both the number they are calling from and the number they are dialling. This could ultimately create additional confusion and uncertainty, as well as increase the potential for misdialling. For example, consumers calling from a number with the original area code may not realise that the number they are dialling has the new code, and that by using local dialling the call would be routed to the wrong subscriber. This could be particularly confusing for consumers who are uncertain of the area code of the telephone they are calling from (e.g. if they are not using their usual telephone).

A3.28 Finally, we note that an overlay code could potentially have a wider effect on consumers because although it would only be introduced on a local basis when necessary, awareness and understanding of the overlay and its geographic significance may be more limited outside the immediate area.<sup>139</sup>

## Residential consumer research results

A3.29 Our 2010 consumer research found that residential consumers almost unanimously preferred closed local dialling to overlay codes as a number supply measure. Maintaining geographical identity was valued much more highly than the facility for

<sup>136</sup> 2010 consumer research. See page 4 *Geographic Numbering and Local Dialling*

<sup>137</sup> See page 4 *Geographic Numbering and Local Dialling*.

<sup>138</sup> See page 16 *Geographic Numbering and Local Dialling*

<sup>139</sup> When introducing the 020 3 sub-range in London, our research included businesses from Manchester since understanding it and what it means (for price and geographical significance) affects those outside of the area where a sub-range (or an overlay) is introduced. *Telephone Numbering Program, the London Project*, 16 November 2004

<http://stakeholders.ofcom.org.uk/binaries/research/telecoms-research/tnplondon.pdf> .

local dialling<sup>140</sup> and so all businesses and almost all residential users preferred to lose local dialling rather than introduce a new code into their area.<sup>141</sup>

A3.30 Our research also showed that, although local dialling remains widespread, it is largely taken for granted and is seen as a “nice to have”, not a necessity.<sup>142</sup> Few people appeared to have concerns if it were to disappear. Consumers appeared to be more concerned with maintaining the geographic meaning of numbers.<sup>143</sup>

A3.31 The views about overlay codes were largely negative when compared to the ‘close local dialling’ option:<sup>144</sup>

“I don’t like this one, it seems really complicated” (Residential consumer, Bradford);

“Not nearly as straightforward as the other” (Residential consumer, Whitehaven); and

“This will be confusing for everyone – you wouldn’t know whether they are local or not” (Residential consumer, Brighton).

A3.32 One reason for this preference for closing local dialling could be the increasing use of mobile phones, for which the full area code has to be dialled for all numbers:

“I just do it [dial the area code as well as the local number] out of habit now, because I use my mobile so much during the day, that it’s habit to dial 01274 anyway” (Residential, Bradford); and

“Nothing really changes, we’re already doing this on mobiles” (Residential, Brighton)

A3.33 The research also showed that where overlay codes could prove necessary, it may be less confusing if they were introduced in conjunction with closed local dialling. Some felt that even if an overlay code is ultimately required, closing local dialling was still a sensible first step as it conditioned people to dial the code and so when a new code was introduced, the transition would be simpler.<sup>145</sup> A few thought that closing the local dialling feature was the best option because we could not predict what would happen to technology in the next ten years and this was the easiest first step.<sup>146</sup>

A3.34 These results are consistent our 2005 consumer research.<sup>147</sup> While at that time participants were presented with slightly different options to increase the supply of numbers, there was a preference for closing local dialling rather than overlay codes.

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<sup>140</sup> For example, 40 per cent of respondents thought local dialling was “important” in our research, compared to 64 per cent who stated that being able to tell the location from the telephone number was “important” – see page 11 *Geographic Numbering and Local Dialling*

<sup>141</sup> See page 4 *Geographic Numbering and Local Dialling*

<sup>142</sup> See page 4 *Geographic Numbering and Local Dialling*

<sup>143</sup> See page 5 *Geographic Numbering and Local Dialling*

<sup>144</sup> See page 14 *Geographic Numbering and Local Dialling*

<sup>145</sup> See page 5 *Geographic Numbering and Local Dialling*

<sup>146</sup> See page 15 *Geographic Numbering and Local Dialling*

<sup>147</sup> See page 22, Numbering Review, Report on Market Research Findings, 23 February 2006, at <http://stakeholders.ofcom.org.uk/binaries/consultations/numberingreview/annexes/marketresearch.pdf>

A3.35 As noted above, on average people thought that the supply of numbers created through changes like these should last for a minimum of ten years. If closing local dialling would only alleviate the problem for less than ten years and then overlay codes were to be brought in, then opinions became more divided on the preferred option. Some viewed closing local dialling as a sensible precursor to an overlay code while others felt that the early introduction of an overlay code would build awareness of that new code as early as possible and was the longer term solution.<sup>148</sup> However, as noted in the research, overall attitudes to change would appear to be more accepting than in 2005 and this, combined with relatively mild reactions to all the options, suggests that either of the two options could be supported. Many of the consumers taking part in the research also seemed to recognise the changes in technology over the past few years and accepted that things could look very different in ten years' time anyway.<sup>149</sup>

### Initial conclusion on impact on residential consumers

A3.36 Residential consumers' apparent preference for closing local dialling over the introduction of overlay codes, and the evidence of the impacts of these measures, lead us to conclude provisionally that Option 1 is likely to be preferred by residential consumers over Option 2 because we forecast that this would defer substantially any need for overlay codes. We also consider that the apparently small impact on the behaviour of all consumers in an affected geographic area by closing local dialling is likely to be preferable to the likely greater negative impact on a smaller set of consumers from an overlay code. However, we recognise the importance of care in thinking through how any change is communicated to support consumers' understanding.<sup>150</sup>

## Assessing the impact on business consumers

### Option 1: Close local dialling and introduce an overlay code later if necessary

A3.37 Closing local dialling would require a change in dialling behaviour from all businesses that use local dialling. It would also require businesses to update any numbers they have stored in telephone memory facilities that do not include the area code. Some locally-based businesses may also incur costs if they choose to update promotional material to include the full area code where they do not already do so. However we do not expect the majority of locally-based businesses to be in this position as many may have a wider presence than the geographic area of a particular area code, and so are likely to advertise the full number rather than rely on local knowledge of the area code.

A3.38 However, any changes that may be needed to promotional material may not be required immediately. It is likely that most consumers in the area would correctly interpret this as a number with the local area code and dialling accordingly. Therefore some businesses might wait to update such material as part of their general renewal rather than incurring the additional expense of updating early when local dialling is closed, particularly as notice will be given in advance of implementation. In addition, with the increasing use of mobile phones for which the full telephone number is always required, it seems likely that many businesses already print their full number in promotional material to allow mobile-originated

<sup>148</sup> See page 15 *Geographic Numbering and Local Dialling*

<sup>149</sup> See page 5 *Geographic Numbering and Local Dialling*

<sup>150</sup> Although widespread use of mobile telephones, where the full telephone number including area code is required for all calls, may improve consumer understanding of this change.

calls. As a result, we do not consider that significant changes to promotional materials are likely to be required immediately because there are likely to be a number of ways for businesses to plan around this.

- A3.39 Option 1 would defer the introduction of overlay codes and hence potentially reduce the impact of their introduction, where they may be necessary, which should be welcomed by businesses for which overlay codes could have a range of impacts, as described in the discussion of Option 2.

### **Option 2: Overlay with local dialling (symmetric dialling)**

- A3.40 Our 2010 consumer research shows that the geographic significance of telephone numbers continues to be important for businesses as well as consumers for both emotional and practical reasons, and that the removal of the ability to identify someone's location from an area code was a concern to almost all businesses.<sup>151</sup> In particular, we are aware that many businesses value and rely upon the way that the area code of their number can signal their location to potential customers. For example, all those businesses in our research that relied heavily on local trade thought it was important for their customers to be able to identify where they were:

“We’re a garage so it’s vital our customers know vaguely where we are”. (Business, Brighton)

“I like the geographic reference, being based in Brighton is important for me and all my clients are local”. (Business, Brighton)

- A3.41 However, as noted above, an overlay code may create confusion for consumers about the geographic significance of numbers which have the overlay code. Therefore the introduction of overlay codes could create significant costs and inconvenience for businesses that are unable to obtain a number with the original area code when they request a new number. This is supported by our research which showed that businesses felt there would be a disadvantage to taking on the new code as it would not have the same value as the old one, particularly in the Oxford and Brighton areas.<sup>152</sup>

- A3.42 This could affect businesses that are new to the area, as well as existing businesses that require a new geographic number either due to a change in location or because they require additional numbers. This was reflected in our research, in which one respondent stated:

“I’ve got 7 offices in the 01273 area. If I want to open a new office, I wouldn’t want to take on a new number that wasn’t consistent with what I’ve already got” (Business, Brighton)

- A3.43 Interestingly, some businesses used the area code of calls received to screen calls, to prioritise their calls back or to redirect people to another office, meaning that any weakening of the geographic significance could also affect the operation of their business:

*“As an estate agent, we would always put those people we could identify as local to the top of the list or we would send them to*

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<sup>151</sup> See page 4 *Geographic Numbering and Local Dialling*

<sup>152</sup> See page 4 *Geographic Numbering and Local Dialling*

*another one of our offices based on their area code". (Business, Brighton)*

- A3.44 The foregoing suggests that business consumers are likely to prefer having phone numbers with the original area code. In some circumstances where an overlay is introduced this could have implications on competition between local businesses. If a business can only get a phone number with an overlay code then it might be at a disadvantage relative to its competitors. If only certain CPs have stocks of numbers with the local code then business consumers' choice might be effectively restricted, so that they would not be able to benefit fully from competition between CPs.

### **Business consumer research results**

- A3.45 Our 2010 consumer research showed that, although businesses valued the convenience of local dialling, in practice the amount that they used it depended on the task:

*"We provide facilities for getting people back to work so they are often calling locally and just use the six digit numbers. I'm calling all over the country so I'm using areas codes more often". (Business, Brighton)*

- A3.46 Businesses almost unanimously preferred closed local dialling to overlay codes, although the experience of one business suggested that it could take time for users to adjust to the change. The business had moved to a VoIP system that required callers to always dial the full number, however the individual questioned still found that the habit of using local dialling remained some time after the new system had been introduced:

*"It's not a big deal but with this new system we have to dial the full code with every number and I'm still getting caught out even five months later". (Business, Brighton)*

### **Initial conclusion on the impact on business consumers**

- A3.47 Business consumers' apparent preference for closing local dialling compared to overlay codes, and the evidence of the impacts of these measures, lead us to conclude provisionally that Option 1 is likely to be preferred by business consumers over Option 2 because we forecast that this would defer substantially any need for overlay codes.

## **Assessing the impact on vulnerable consumers**

### **Option 1: Close local dialling and introduce an overlay code later if necessary**

- A3.48 Closing local dialling could have a significant impact on vulnerable consumers. Implementing this option would require a change in dialling behaviour that some could find difficult to learn or adopt. It would also require that any telephone numbers that have been stored without the full area code, for example, in the memory of a fixed-line telephone, be re-programmed. Where vulnerable consumers rely on stored numbers and are unable to change them, they would need assistance to make this change. In the event that an overlay code is also required, this would have further implications for vulnerable consumers, as discussed below.

- A3.49 Minimising negative impacts of this option on vulnerable consumers would therefore require targeted communication through relevant consumer interest groups and care organisations.

### **Option 2: Overlay with local dialling (symmetric dialling)**

- A3.50 If overlay codes were introduced with open dialling vulnerable consumers would not have to change their dialling behaviour. Some vulnerable consumers might have the benefit of not having to deal with numbers with a new area code at all for as long as their own number and the numbers of all those they call do not to start with the new area code.
- A3.51 However, it is likely that vulnerable consumers could find this change difficult to understand if they needed to dial a number which they knew to be local (and therefore expected to see the familiar old code) but had to dial the new code. The same confusion may occur if the consumer was provided with a phone line with such a number. Since Option 2 would introduce overlay codes sooner than Option 1, a proportion of vulnerable consumers could face this difficulty sooner. Furthermore, under Option 2, the consequences of the difficulty could be more significant than under Option 1: under Option 2 misdialled calls could get through to an active wrong number, while, under Option 1, misdialled calls would be more likely to get through to a recorded message.

### **Consumer research results**

- A3.52 The 2010 consumer research showed that about half of the consumers sampled used the memory facility to store phone numbers in their fixed-line telephone and some of these stored the local number without the area code. Although the reliance of vulnerable consumers on such memory facilities might be different to this figure, it nevertheless suggests that a change to local dialling could require a large number of vulnerable consumers to re-program stored numbers, in the instances where their home phones store only the local number without the full area code.

### **Initial conclusion on impact on vulnerable consumers**

- A3.53 This analysis supports the view that closing local dialling, and hence the implementation of Option 1, could have a significant impact on vulnerable citizens. The impact could be particularly significant on those who may rely on numbers stored in their fixed-line phones yet could find it difficult to re-program the stored numbers. We consider that the impacts on vulnerable consumers associated with this change could be mitigated by effective communications plans and careful implementation.
- A3.54 In contrast, Option 2, which would implement overlay codes with open dialling, is likely to have little impact on vulnerable consumers in the short term. However, for those it does impact, Option 2 could cause greater difficulty because it could take vulnerable consumers longer to learn to deal with an overlay code if local dialling remains open.
- A3.55 Our preliminary conclusion is that neither option offers a clear advantage to vulnerable groups.

## Assessing the impact on competition between CPs

A3.56 Changes to the number supply have the potential to affect the way that CPs are able to compete with each other. This is because their customers, both residential and business, may have a preference for certain types of numbers, e.g. numbers with the original area code as opposed to an overlay code. If the distribution of the preferred numbers is not even between CPs, then those with fewer of the preferred numbers might find it harder to compete for new business. Both residential and business customers benefit from effective competition between CPs through lower prices and the introduction of new services, and it is therefore important to consider how the proposed strategies might affect competition.

### Option 1: Close local dialling and introduce an overlay code later if necessary

A3.57 Closing local dialling should have little impact on competition between CPs, because the effect on the services offered by all CPs would be the same. We therefore do not foresee any impacts on competition between CPs from closing local dialling.

A3.58 Overlay codes could still prove necessary in some areas under Option 1, and some of the potential impacts on competition that may result from the introduction of overlay codes (discussed below in Option 2) may still occur where they are ultimately introduced. However, because Option 1 would defer the introduction of overlay codes, and potentially reduce the difference in dialling behaviour between overlay codes and the existing codes (which may, to some extent, mitigate negative consumers' perceptions of a new code), some CPs may prefer it to Option 2, particularly those which are unable to rely upon existing number allocations to meet their customers' requirements.

### Option 2: Overlay with local dialling (symmetric dialling)

A3.59 Where overlay codes are introduced, business and residential consumers may prefer, at least initially, to purchase services from CPs that can give them a phone number with the original area code. This potential preference was identified in our research where business users in particular appeared to dislike the prospect of an overlay code, and some even suggested they would pay more to have a number with the original area code:

“Yes, I'd definitely want the old Oxford code so if I had to pay more for it, then I would”. (Business, Oxford)

A3.60 Following the introduction of overlay codes, numbers with the original and new area codes respectively are likely to be distributed unevenly among CPs, and consumers' preferences could put those CPs without stocks of numbers with the original code at a competitive disadvantage. Leaving local dialling open could lead to the preference for numbers with the original code to persist for longer because most users' dialling behaviour would not have to change if both their own number and numbers they dial have the original area code. This could exacerbate the impact on competition.

A3.61 Figure A3.2 below shows that most numbers allocated in six sample geographic areas between 31 December 2004 and 1 September 2010 were to CPs that did not have prior number allocations in those areas. Therefore, numbers with overlay codes would more likely be allocated to CPs making new applications, so CPs which rely on new number allocations could be at a potential competitive

disadvantage. Additionally, new CPs may be at a greater disadvantage because most applications for new numbers are likely to come from new CPs.

**Figure A3.2 Proportion of new numbers allocated to existing CPs and new entrants between December 2004 and September 2010**

	Bradford	Brighton	Bournemouth	Blackpool	Cambridge	Oxford
Existing CP*	20%	29%	11%	4%	9%	17%
New CP	80%	71%	89%	96%	91%	83%

\* Existing CPs are defined as those that had a geographic number block in the geographic area prior to 31 December 2004

A3.62 Additionally, the competitive distortion may also be between CPs with stocks of the existing area codes, because established CPs with a larger stock of existing numbers may be at an advantage relative to established CPs with a smaller stock of existing numbers.

A3.63 However, in the near term, there are many CPs with number blocks in the specific areas close to exhaustion, which should support robust competition. Figure A3.3 below shows the number of CPs with number blocks allocated from current supplies in those geographic areas.

**Figure A3.3 Number of CPs with geographic number blocks in six areas close to exhaustion**

	Bradford	Brighton	Bournemouth	Blackpool	Cambridge	Oxford
Total CPs with number blocks	95	95	82	76	81	93

A3.64 Sometimes CPs obtain numbers from other CPs through sub-allocation. If the practice and facilities for sub-allocation were to increase, it is possible that the negative effects on competition could be mitigated to some extent, because CPs could sub-allocate numbers with the original code, although there is likely to be a cost associated with this.

A3.65 Additionally, effective communication of the overlay code might support consumers' understanding and, potentially, promote their acceptance of an overlay code. Therefore, it is possible that any potential distortion to competition between CPs may be lessened through measures aimed at increasing consumer understanding and awareness of the new area code.

### Initial conclusion on impact on competition between CPs

A3.66 We consider that Option 1 – closing local dialling and introducing an overlay code later if necessary – is likely to be more appropriate than Option 2 in supporting competition between CPs. This is because Option 1 would defer the need for overlay codes, whose introduction could put those CPs who would not have stocks of numbers with the original code at a competitive disadvantage. We do not expect that closing local dialling would have any direct effect on competition. Furthermore, we consider that closing local dialling may mitigate the competitive disadvantage that some CPs may face if and when an overlay is introduced.<sup>153</sup>

<sup>153</sup> We also note that, when overlay codes were first implemented in the United States, the FCC area code relief rules mandated that overlay codes were implemented with closed local dialling (ten-digit dialling) to prevent anticompetitive impacts on new entrants that may have few or no numbers with the

## Assessing the impact on CPs

- A3.67 The introduction of any measure to increase the supply of geographic numbers is likely to involve direct costs to CPs. In the 2006 Numbering Review consultation we discussed, among other things, the options of closing local dialling nationally and of implementing overlay codes. In submissions to that consultation, we did not find evidence of a significant difference in the cost of implementing these two solutions, nor an indication that the cost of implementing either approach was prohibitive.
- A3.68 As part of an informal information request conducted between August and October 2010, we asked CPs to comment on the potential costs of implementing solutions involving closing local dialling and overlay codes. Although the individual CPs foresaw varying challenges in implementing different solutions, again we did not see any reason to distinguish between the options described above on the basis of implementation costs.<sup>154</sup>
- A3.69 We do, however, recognise that the details of any eventual implementation plan could have cost implications for the CPs involved. We intend therefore to work closely with CPs when considering implementation plans, particularly regarding the timeline for implementation.

## Initial conclusions for four-digit areas: Option 1 is the preferred solution

- A3.70 Having considered the impacts of the two different options we conclude provisionally that Option 1 (closing local dialling in the affected areas followed by overlay codes only when and where necessary) is likely to be the best option for consumers, businesses and for competition between CPs.
- A3.71 Option 1 would increase the supply of local numbers in a way that would maintain the existing association between a geographic area and only one area code unchanged for as long as possible. The change in behaviour that closing local dialling would require appears to be largely acceptable to most consumers. This option would also defer the need for any overlay codes, whose introduction may reduce the geographic significance of numbers, could lead to some confusion and misdials, and could put some CPs at a competitive disadvantage.
- A3.72 Although we note the potential for a significant impact on vulnerable consumers as a result of our preferred option, we consider that these impacts could be mitigated by effective communication and careful implementation. During the consultation process we plan to undertake targeted engagement with representative groups of vulnerable consumers to understand these concerns in greater detail.

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original area code. Paragraph 122, FCC Notice of Proposed Rule Making FCC 99-122, 2 June 1999. See

[http://web.archive.org/web/20060517093308/www.fcc.gov/Bureaus/Common\\_Carrier/Notices/1999/fc99122.pdf](http://web.archive.org/web/20060517093308/www.fcc.gov/Bureaus/Common_Carrier/Notices/1999/fc99122.pdf)

<sup>154</sup> Although Option 1 potentially involves two sequential changes (dependent on area-specific need for an overlay code following the closure of local dialling) compared to the single change of Option 2, we consider that based on the information we have seen, the cost differential for those areas where an overlay code is ultimately required on top of closing local dialling is unlikely to outweigh the wider benefits of Option 1 relative to Option 2. However, we would welcome views from stakeholders on this point.

A3.73 We consider that any proposed option should establish a longer term strategy (overlays in the case of Option 1, which we currently prefer) in the event that this proves necessary, particularly since consumers who took part in our research thought that any measure creating new supplies should last for at least ten years. We stress that we are proposing a two-staged approach (closing local dialling first and then introducing an overlay when necessary), because although the first step may create sufficient new numbers for many areas for a long time (with limited impacts on consumers and on competition), a few areas may require a subsequent increase in supply of numbers in less than ten years.

**Figure A3.4 Summary of the key impacts of Options 1 and 2**

Option	Advantages	Disadvantages
<p><b>Option 1:</b> Close local dialling, introduce an overlay code later if necessary</p>	<p>Would maintain existing association between a geographic area and only one area code for as long as possible</p> <p>Defer the need for overlay codes, whose introduction could be more disruptive to consumers and to competition</p> <p>Changes dialling behaviour prior to introduction of overlay codes, which could make their subsequent introduction easier</p>	<p>Would affect everyone in the area who uses local dialling</p> <p>Two-stage process, so potential to have greater impact on consumers and CPs in those areas where an overlay code is ultimately required</p>
<p><b>Option 2:</b> Overlay with local dialling (symmetric dialling)</p>	<p>Reduces the number of people that are affected by the number supply change in the short term.</p> <p>Would not require a change to existing dialling behaviour.</p>	<p>Would hasten the introduction of overlay codes, which, according to our research, consumers do not favour</p> <p>Could distort competition between CPs because CPs with a larger stock of numbers with the original code could have an advantage.</p> <p>More likely to confuse people affected by the change</p> <p>Could erode geographic significance of numbers more quickly.</p>

## Annex 4

# Cost recovery for number charges when the CP using the number is different from the range holder

- A4.1 We discussed in Section 6 that there are cases where, for regulatory reasons, a CP provides a service to a customer using a number which has been allocated by Ofcom to a different CP.<sup>155</sup> We have identified two specific cases where this situation arises:
- where numbers are ported; and
  - where BT provides wholesale line rental (WLR) to retail CPs.
- A4.2 In both cases we would expect the range holder to pay the full block allocation charge to Ofcom, even where some or all numbers in the block are used by other CPs. Administratively this is a much simpler solution (with lower administrative costs for Ofcom and CPs) than attempting to track the CP using each individual number and recover a number allocation charge from them.<sup>156</sup>
- A4.3 However, where the range holder is not able to benefit from using some numbers in its allocation it may be appropriate for the range holder to recover reasonable number allocation costs from the CP providing a service with the number. This reflects the fact that the range holder is effectively paying for a resource from which another CP is benefitting (and depriving the range holder from using the resource).
- A4.4 In this annex we first provide some background information on number portability and WLR to provide context. Then we set out the options for cost recovery guidelines. We assess the principles for cost recovery for number portability and WLR before arriving at a preferred option. Finally we note our preferred mechanism for cost recovery.

## Background

### Number portability

- A4.5 Number portability is the facility that allows subscribers to keep the same telephone number when they change provider. General Condition 18 sets out CPs' obligations in relation to number portability.<sup>157</sup> Number portability is considered an important part of promoting competition in the market because it enables consumers to switch providers without the cost and 'hassle' of having to change their number.
- A4.6 Currently, a call to a ported number is routed to the CP who was first allocated the called number (known as the 'range holder'). When a range holder receives a call and recognises that the dialled number has been ported to another provider (the

<sup>155</sup> This explicitly excludes sub-allocated numbers which involve a commercial agreement between CPs.

<sup>156</sup> Although General Condition 18 obliges CPs to provide us with information on ported numbers and the recipient provider if requested to do so.

<sup>157</sup> <http://stakeholders.ofcom.org.uk/binaries/telecoms/ga/cvogc300710.pdf> p62

'recipient') it forwards the call to the recipient's network. Effectively this means that a ported number remains part of the range holder's allocation when a customer switches provider, even though that number now serves a different CP's customer.<sup>158</sup>

## Wholesale line rental

- A4.7 Wholesale line rental (WLR) is a regulated service which BT supplies to retail CPs allowing them to rent access lines on wholesale terms and resell the lines to customers. The obligation to provide WLR is a remedy pursuant to a significant market power (SMP) finding. This remedy was imposed in 2002 and updated in 2009, when the *Review of the fixed narrowband wholesale services markets*<sup>159</sup> restated the requirement on BT to offer analogue WLR services. This regulated service is subject to a cost orientation obligation, and for some services (such as the core rental), subject to a charge control set by Ofcom which essentially determines the price which BT can charge retail CPs for the services. This charge is calculated based on the underlying costs that BT incurs in providing the service. The current charge controls were set in 2006<sup>160</sup> and are due to expire on 31 March 2011. Ofcom is currently working on the next charge control with a view to publishing a consultation in Q1 2011.
- A4.8 WLR lines are usually attached to a number allocated to BT. Therefore, it is possible that BT (as the range holder) will incur number charges for numbers allocated to it but used by a retail CP as part of the WLR product. Under the current arrangements the costs associated with number charges would not be reflected in the regulated WLR line rental charge. So under the current arrangement BT would not be able to recover the number charging costs from the CPs who are using WLR through the line rental charge, but it could pass through reasonably incurred costs to relevant CPs.
- A4.9 We would expect BT to recover number charge costs from CPs that use WLR in the same way as it would recover number charge costs from other parts of its operations. Specifically we would be concerned if BT recovered number charge costs on a basis that favoured its own retail arm.

## Options for cost recovery

- A4.10 Below we set out three options for cost recovery guidelines which would apply for both ported numbers and WLR. The underlying principle is that any recovery of number charges should be based on the cost incurred by the range holder. The range holder would only be able to recover costs where a number has an area code which is subject to number charges.
- **option 1:** The range holder recovers a cost per number from the CP serving the consumer equal to the charge per number set by Ofcom.
  - **option 2:** The range holder recovers a cost per number from the CP serving the consumer based on average utilisation of the range holder across all blocks which are subject to a number charge. For example, if Ofcom sets the number

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<sup>158</sup> There may be exceptions to this rule where all or the majority of the numbers in a block are ported out. In this case the whole block may be transferred from the original CP to the recipient, with the recipient taking the role of the range holder.

<sup>159</sup> [http://stakeholders.ofcom.org.uk/binaries/consultations/wnmr\\_statement\\_consultation/summary/main.pdf](http://stakeholders.ofcom.org.uk/binaries/consultations/wnmr_statement_consultation/summary/main.pdf)

<sup>160</sup> <http://stakeholders.ofcom.org.uk/binaries/consultations/wlrcharge/statement/statement.pdf>

charge at 10p per number for a 1,000-number block, and the range holder has an average utilisation of 50 per cent across blocks subject to a charge, then the charge per number would be 10p/50 per cent = 20p.

- **option 3:** The range holder recovers a cost per number from the CP serving the consumer based on the range holder's utilisation of the blocks it has been allocated in the number area code (where the area code is subject to number charges). This is the same as option 2, but a charge per number would be calculated for each area code, rather than one average charge applied per range holder.

A4.11 The level of cost recovered would be equivalent under the three options if a range holder had 100 per cent block utilisation for all area codes in which charges applied. Under options 2 and 3 the fixed costs of number blocks would be spread evenly across all the numbers used. Because utilisation is commonly less than 100 per cent, costs recovered would be higher under options 2 and 3 relative to option 1.

### Framework for assessing the options: principles for cost recovery

A4.12 Six principles for cost recovery were developed by Oftel<sup>161</sup> in the context of number portability, endorsed by the Monopolies and Mergers Commission,<sup>162</sup> and have subsequently been used by Ofcom in analysing various cost recovery issues. The principles are:

- *distribution of benefits:* the costs should be recovered from the beneficiaries;
- *cost-causation:* the cost should be recovered from those whose actions cause the costs to be incurred at the margin;
- *cost-minimisation:* the total costs associated with number allocation should be minimised;
- *effective competition:* the cost recovery should not undermine the pressure for effective competition (it should not act as a barrier to entry) and should be set on a non-discriminatory basis;
- *practicality:* the mechanism for cost recovery needs to be practicable and relatively easy to implement; and
- *reciprocity:* where services are provided reciprocally, charges should also be reciprocal.

### Distribution of benefits

#### Number portability

A4.13 The distribution of benefits principle points to costs being recovered from the beneficiaries. The main beneficiaries from number portability are the recipient's customer (who can switch provider without the hassle of a number change) and the

<sup>161</sup> Oftel (the Office of Telecommunications) was Ofcom's predecessor for telecommunications regulation.

<sup>162</sup> *Telephone Number Portability: A Report on a reference under s13 of the Telecommunications Act 1984* (MMC, 1995).

recipient CP. Thus it appears appropriate that reasonable costs relating to number charges for ported numbers are recovered from the recipient (this principle is consistent with all three options set out above).

## **WLR**

- A4.14 It is clear that the retail CP benefits from using the number to provide a service to its retail customers. BT, as wholesaler of WLR, is not able to derive retail revenues from its number allocation. It is appropriate that reasonable number charge costs for WLR lines are recovered from the retail CP (this principle is consistent with all three options set out above).

## Cost causation

### **Number portability**

- A4.15 The principle of cost causation suggests that costs should be recovered from those whose actions cause the costs to be incurred at the margin. This can be interpreted in different ways. One view could be that the range holder faces a fixed cost because it has to pay for the entire number block, regardless of whether numbers are ported from the block. This might suggest that the recipient is not causing any additional marginal costs to be incurred, i.e. the range holder pays the same block charge whether numbers have been ported or not.
- A4.16 However, this ignores the opportunity cost associated with the recipient using a ported number, since alternatively the range holder could assign the number to a new customer. Assuming the range holder continues to win new customers, eventually it would have to apply for a new block (at additional cost). By contrast, if it were able to reuse numbers from customers who switched away (rather than porting them to customers of other providers) then fewer blocks would be required overall. Thus at the margin the recipient is causing a cost to be incurred.
- A4.17 Options 2 and 3 are most consistent with the principle of cost causation since they more accurately reflect the range holder's per customer cost for a used number (which depends on utilisation). However, it is worth noting that the recipient does not determine cost per customer. This depends on the utilisation of the range holder's number block, which the range holder controls.

## **WLR**

- A4.18 If BT was not bound by regulation to provide numbers as part of the WLR service then it could simply return the relevant number blocks to Ofcom (avoiding charges) and force retail CPs to obtain their own numbers from Ofcom or through sub-allocation. Thus the party causing the number charge costs to be incurred at the margin is the retail CP.
- A4.19 Options 2 and 3 are most consistent with the principle of cost causation since they more accurately reflect the cost to BT of providing each number (which varies according to utilisation). Under option 1, BT is only allowed to recover the charge per number set by Ofcom. Unless BT is able to achieve 100 per cent block utilisation it would fail to recover the actual costs associated with providing numbers. While we want to encourage BT to achieve high utilisation, expecting it to achieve 100 per cent utilisation is not reasonable. Option 1 seems unduly punitive on BT since it would incur additional costs in relation to number charging which it would not be allowed to recover.

## Cost minimisation

### **Number portability**

- A4.20 The principle of cost minimisation suggests that the mechanism for cost recovery should ensure that there are incentives to minimise costs where it is efficient to do so. As noted above, the 'per customer' costs of using each number are inversely related to utilisation. We expect costs to be minimised overall when range holders have an incentive to achieve high block utilisation. Higher utilisation leads to demand for fewer new number blocks and hence lower aggregate charges.
- A4.21 Options 2 and 3, which allow the range holder to pass costs through to the recipient, might tend to dampen the range holder's incentive to minimise costs relative to option 1. However, this effect is unlikely to be large because the range holder serves its own customers from each block and so faces a strong incentive to achieve high utilisation in order to minimise its own per-customer costs (the amount of ported out numbers is likely to be small relative to the amount of numbers used to serve its own customers). Therefore it is unlikely that the approach to cost recovery for ported numbers would significantly influence the range holder's incentive to achieve high utilisation. In these circumstances it is likely that incentives to minimise costs would arise independently of the mechanism for cost recovery.<sup>163</sup>

### **WLR**

- A4.22 WLR is a wholesale product provided to CPs rather than direct to retail customers. This means there may not naturally be an incentive to achieve high utilisation (unlike the situation with number portability). Options 2 and 3 allow BT to 'pass through' number costs and do not encourage high utilisation. Under these options low utilisation by BT raises the costs for retail CPs. However, it is worth noting that BT Retail is a large user of numbers. Because BT Group is motivated to maximise its overall profits it would face an incentive to achieve high utilisation because this would minimise aggregate number charges and the number costs faced by BT Retail.
- A4.23 Option 1 provides BT with an incentive to achieve high utilisation because it is only able to recover the per-number charge set by Ofcom. However, as noted above, under this option BT would fail to recover the total number charge costs unless it achieves 100 per cent utilisation.

## Effective competition

### **Number portability**

- A4.24 We have considered two aspects of competition; 1) whether any of the options makes a particular type of CP better off compared to others; and 2) whether any of the options reduces incentives to port numbers which might undermine competition in the fixed voice services market.
- A4.25 The range holder effectively has a monopoly over a given number in its block. If the range holder is in a position where more customers are ported out than ported in, then it may face a commercial incentive to make number portability expensive for

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<sup>163</sup> Under options 2 and 3 where the range holder has a large proportion of ported out numbers the incentive to improve utilisation by adding its own customers may be dampened because the cost recovered per ported number would fall.

recipients (if the range holder could deter its competitors from offering number portability then it would be likely to retain more customers, all other things being equal).

- A4.26 The ability for consumers to keep their number when they switch is generally valued, and the gaining CP would be at a significant disadvantage if it was not able to promote number portability. This suggests that some regulatory intervention may be required to ensure cost recovery for number charges relating to ported numbers is fair and reasonable.
- A4.27 Option 1 is likely to confer a competitive benefit to the recipient, meaning the recipient is likely to be incentivised to offer porting. This is because the charge it faces for using a ported number reflects the per-customer cost that it would incur with 100 per cent block utilisation. It is highly likely that the recipient's (and range holder's) actual utilisation is below 100 per cent. For example, with a 10p per number charge for a 1,000-number block, a CP with a 50 per cent utilisation rate would face a cost per customer of 20p for using a number from its own allocation. Under option 1, this CP would only be able to recover 10p when a number is ported from its number range. Thus the cost recovered per ported number could be lower than the actual per number cost that the range holder faces in serving its own customers.
- A4.28 Under options 2 and 3 the charge for a ported number would reflect the range holder's utilisation. If the recipient had higher utilisation than the range holder, it could face a higher cost in using a ported number relative to using its own number allocation. As noted above, a CP with a 50 per cent utilisation rate would face a cost per customer of 20p for using a number from its own allocation. Alternatively, the same CP could consider offering number porting to its prospective customer. If, for example, the range holder of the number to be ported has 20 per cent utilisation of its number blocks then the recipient CP would face a 50p cost recovery charge. In an extreme example, if the range holder has very low utilisation, of say 0.1 per cent, the recipient CP would face a £100 cost recovery charge for that number.
- A4.29 The extent to which the difference in the cost to the CP between using a ported number and one from its own allocation could dissuade it from offering number portability is likely to depend on the magnitude of that difference. Specifically, we consider that the CP is likely to compare that difference to the revenue it would earn from providing the service. We note for reference, that the average annual revenue per fixed exchange line was £273 in 2009.<sup>164</sup> So while in the first above example of porting, the difference of 30p in annual cost to the CP between using a ported number and one from its own allocation is unlikely to dissuade it from offering number portability, the difference of £100 in the extreme example is very likely to do so.
- A4.30 To conclude, option 1 is likely to confer a competitive benefit to recipients of ported numbers versus range holders. Under options 2 and 3 the impact of porting on the range holder's number costs would be neutral because the ported number charge would reflect the per-number cost it incurs in serving its own customers. The recipient's incentive to offer porting under options 2 and 3 would be likely to depend on the difference between its utilisation and that of the range holder. We anticipate that the impact on the recipient's incentive to offer number porting would be

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<sup>164</sup> Based on fixed voice revenues of £8,885m and fixed exchange lines of 32.6m in 2009. Data taken from [http://stakeholders.ofcom.org.uk/binaries/research/cmr/q1\\_2010.pdf](http://stakeholders.ofcom.org.uk/binaries/research/cmr/q1_2010.pdf)

significant only if the range holder's utilisation is particularly low, in which case the recipient could face a strong disincentive to offer porting.

- A4.31 This suggests that the charge per ported number should be subject to a maximum (or "cap"). A suitable cap might be five times Ofcom's allocation charge per number (corresponding to a cap of 50p per ported number if Ofcom's allocation charge was to be set at 10p). A cap of 50p would mean that a prospective recipient whose own utilisation was 50 per cent would face a difference in the per-number charge of 30p between using its own number and offering porting, and this would correspond to approximately 0.1 per cent of average annual revenue per fixed exchange line.

## **WLR**

- A4.32 BT is the monopoly supplier of wholesale WLR to retail CPs so competition at the wholesale level would not be affected by the approach to cost recovery for number charges.
- A4.33 There would be no competitive distortion between different retail CPs using WLR under options 1 and 2 because the per-number cost recovered by BT would be the same across all WLR retail CPs (and the same cost recovery principles should apply to BT Retail).
- A4.34 For option 3 the cost recovered would vary by area code depending on the utilisation of the blocks in the area. This means there is a possibility of a competitive distortion because retail CPs providing services using numbers in areas with low utilisation would face higher costs relative to CPs providing services in areas with high utilisation. In reality it is unlikely that particular CPs would be focused in high or low utilisation areas. However, this is a theoretical disadvantage of option 3, and such arbitrary distortion is undesirable as block utilisation is not something which the retail CP can control.

## Practicability

### **Number portability**

- A4.35 The practicability of a pricing proposal relates to whether the proposal can be easily implemented. Option 1 is the most simple and transparent approach to cost recovery since the cost recovered per ported number is identical across all range holders, and is equal to the per number charge set by Ofcom. However, we accept that there may be some development required to billing systems for this option (and options 2 and 3) because the porting charge would only apply to ported numbers with area codes where we have implemented a number charge.
- A4.36 Option 2 would introduce some additional complexity because the porting charge would vary from range holder to range holder, depending on that range holder's utilisation. This means each range holder with ported out numbers would have to calculate its average utilisation for the areas where we charge and to communicate this to recipients. We note that the average porting conveyance charge (APCC),<sup>165</sup> which recovers the cost of additional call conveyance for ported numbers, is calculated on a CP by CP basis. Option 2 (and option 3) may also raise issues of transparency, because CPs may not be willing to share their calculations of utilisation with their competitors.

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<sup>165</sup> The APCC is a proxy for costs of donor conveyance in a fixed network. Donor conveyance costs are the additional costs within a mobile or fixed network for handling a call to a ported number.

- A4.37 One way to simplify the operation of option 2 might be for range holders who have ported out relatively few numbers to charge a standard industry rate for a ported number. A threshold of, say, 100,000 ported out numbers might be set for this purpose. Those range holders who have ported out more numbers than this threshold would calculate an individual charge based on their respective utilisations, while those which have ported out fewer numbers than the threshold would charge the cap (discussed above). A disadvantage of this simplified approach could be that some CPs which charge the cap over-recover their number costs (relative to costs recovered based on actual utilisation). However, we consider that, in this case, the difference between costs recovered using the cap and actual utilisation are likely to be relatively small. We would welcome CPs' views on the practicability of option 2.
- A4.38 Option 3 is the most complex option because the cost recovered would vary by range holder and by area code, depending on the utilisation of the range holder in a particular area code. The range holder would have to calculate utilisation per area code and apply a separate ported number charge in each area. While this is feasible, it is likely to further complicate the billing arrangements for both range holders and recipients.

## **WLR**

- A4.39 All options are likely to require some development to billing capability because number charge costs would only be recovered from numbers with area codes where Ofcom introduced charging. Options 1 and 2 are both relatively simple and transparent because the cost recovered would be the same for all numbers in areas subject to number charging. Option 3 is more complex because the cost recovered would vary by area code, depending on BT's utilisation of blocks in a particular area. While this is feasible, it is likely to complicate the billing arrangements for BT and retail CPs.

## Reciprocity

### **Number portability**

- A4.40 In principle, all of the options are consistent with the principle of reciprocity since the method for calculating the cost recovery would be the same for all CPs. However, some of the adjustments we are proposing to make the options more practical, e.g. setting a threshold of 100,000 ported numbers for applying a cap (discussed above), mean that the calculations for cost recovery would vary depending on the particular circumstances.

## **WLR**

- A4.41 This principle is not relevant since only BT would be recovering costs for WLR lines.

## **Provisional conclusion**

### **Number portability and WLR**

- A4.42 The assessment above shows that, for most principles, the cost recovery option most consistent with the principle is the same for both number portability and WLR. For both number portability and WLR:
- options 2 and 3 are most consistent with the principle of cost causation;

- option 1 is most consistent with the principle of cost minimisation, however, we have noted that regardless of the option chosen the range holder should face an incentive to minimise costs because, in the case of number portability, it services its own customers from each block and, in the case of WLR, BT faces an incentive to minimise costs because its own retail arm uses numbers; and
- option 1 is probably the most practicable option (although option 2 is also relatively simple in the case of WLR).

A4.43 The analysis of effective competition differs for number portability versus WLR because the cost recovery option chosen may affect the incentives of the recipient to offer number portability. This is because the cost recovery option chosen may affect the incentive for the recipient to use a number from their own allocation versus a ported in number. This issue does not arise under WLR where retail CPs have to use BT's numbers. For number portability options 2 and 3 are most consistent with the principle of effective competition, whereas for WLR options 1 and 2 are most consistent with the principle.

A4.44 Having taken all the principles into account we consider that option 2 is the most consistent with the principles overall. We recognise that there are some drawbacks of option 2. In particular, if the range holder achieves low utilisation then higher costs may be passed through to the CP providing a service with the number. Therefore we are proposing to apply a cap to the charge per number as described in paragraph A4.31. The cap would apply to both number portability and WLR, however, we recognise that for WLR it is less likely to be a binding constraint because we expect BT's utilisation to be higher than the level that would lead to a 50p charge per number (based on the current proposal that Ofcom's allocation charge is set at 10p per number). We note that BT has an incentive to achieve high utilisation in order to minimise aggregate number charges and the number costs faced by BT Retail to maximise BT Group profits overall. Therefore, on balance, and subject to further consideration of practicality, we currently prefer option 2, including the application of a cap to the charge per number.<sup>166</sup>

## Mechanism for cost recovery

A4.45 We propose that the cost recovery principles would be set out in an existing or a new General Condition. The General Condition could be accompanied by guidelines setting out our preferred approach to cost recovery. We consider that this approach would provide CPs with clarity about their obligations. However, CPs would be able to agree the costs recovered through mutually acceptable commercial agreement if they choose to.<sup>167</sup>

*Question 27 Do you have any views on the principles for cost recovery? Do you have any views on the cost recovery mechanism? Do you agree with the preferred approach?*

<sup>166</sup> Note that where a WLR line uses a number ported in from a range holder other than BT the range holder would recover costs from BT (as the network provider) using the number portability arrangements discussed above. We propose that BT would be able to pass this cost through to the retail CP.

<sup>167</sup> In relation to the WLR product this would be subject to BT's SMP obligations.

## Annex 5

# Charging for geographic numbers: European comparisons

## Introduction

- A5.1 Most European countries have introduced charging for geographic telephone numbers. Of the 27 EU Member States, 21 include some form of payment for geographic numbers. So do all of the EU candidate countries (Turkey, Former Yugoslav Republic of Macedonia, Croatia and Iceland), as well as Norway and Switzerland. Charging started to be introduced in the late 1990s.
- A5.2 In April 2010, we surveyed NRAs in CEPT member countries on their approach to charging for geographic numbers. We also sought supplementary information from some countries. The results of the survey and our analysis are set out in this annex.
- A5.3 We have summarised the information provided in response to our survey in Figure A5.1 at the end of this annex. This information includes the year charging was introduced, the size of number block allocated and the form and level of charges applied.

## Charging regimes

- A5.4 Our survey found that the charging regimes across Europe are applied in quite different ways in terms of:
- the features of the charging regime, e.g. lump sum versus periodic charges;
  - the value of the charge (from 0.06p up to 27p per number per annum); and
  - the size of the number block (from single numbers to blocks of one million).
- A5.5 Price per number is not always constant across the whole geographic numbering space. In Belgium, numbers in conservation areas (i.e. areas with a shortage of numbers) are charged significantly more (4.8p per number per annum) than numbers outside these areas (0.9p per number per annum).
- A5.6 Two of the surveyed countries set a minimum charge per CP: in Norway, the minimum annual charge per CP is £1,116; in the Netherlands, there is a minimum lump sum charge of £158 per application and a minimum annual charge of £44 per CP. One country, Malta, charges not only per number held, but also per number used.
- A5.7 The disparity between regimes can be related to the variety of objectives pursued. For countries that provided information on the basis for calculating number charges, a minority of countries (four) explicitly emphasised the recovery of administrative costs. Eight countries focused on incentivising efficient use of the number resource, and for 12 countries the official motive for charging combined these two objectives.
- A5.8 Where charging aims to promote efficient use of the number resource, the charging mechanism has often been introduced in the absence of number scarcity. In some

cases the value of the charge has been reduced after a time (e.g. in Luxembourg and Switzerland). However, the amounts charged per number remain extremely varied: the annual fee per number is about 8.8p in Luxembourg against 1.2p in Switzerland.

- A5.9 Technical aspects can also play a role in charging policy. Countries where numbers are allocated via a centralised database are able to charge for blocks of any size, including individual numbers. This is the standard policy in Lithuania and Estonia. In the former, the existence of a lump-sum charge for each application may be an incentive for requesting more than the minimum quantity of numbers required (which could suggest there is a trade off between efficient number use (i.e. requesting the required amount of numbers only) and the administrative effort involved in processing requests). There is no minimum charge in Lithuania, theoretically allowing CPs to request exactly the right quantity of numbers they need. In Luxembourg, the allocation of individual numbers or small quantities of numbers is also possible, although at a higher price per number than when a 10,000-number block is allocated.

## Level of charge

- A5.10 Among the countries surveyed, the value of the charge spans a wide range - between 0.06p (Slovakia) and 27p (Croatia and Estonia). Based on the information provided, there does not appear to be a strong correlation between the level of the charge and the objective for charging (e.g. to recoup administration costs, to reflect scarcity etc).
- A5.11 The simple average price per number is around 7p for the countries that charge an annual fee. In calculating this average, where a country charges a single annual price per allocated number we have used this value; where this is not the case we have assumed the following:
- where areas are segmented by scarcity of numbers (Belgium), we have used the value corresponding to 'conservation areas', i.e. the areas with most number scarcity;
  - for Malta, which charges per number utilised as well as per number held, we have not included the utilised-number charge (as we do not know the amount of utilised numbers required to calculate the magnitude of this charge) and, in any case, the utilised number charge is small in relation to the allocated number charge; and
  - For Luxembourg, which offers small CPs the option to request numbers in smaller quantities at a higher price, we have noted that this possibility is not widely used and we have used the standard price for numbers held as part of a full number block.

**Figure A5.1 Summary of information provided by CEPT country NRAs on charging for geographic numbers**

Country	When was a charge introduced	Block size	Lump sum fee in GBP (1)	Annual fee, cost/number in GBP (1)
Austria	N/A			
Belgium	1998	1K in areas with shortage, 10K otherwise	per block £23.7	0.9p or 4.8p (4)
Bulgaria	1998	100, 1K, 10K		10.6p
Croatia	2003	1K	per application £7	27.3p
Cyprus	2003	1K, 10K	per thousand numbers £15	1.2p
Czech Republic	2000	1K	per block (any size) £176	3.5p
Denmark (2)	2002	10K		20.8p
Estonia (3)	2004	Any size, including single numbers		27.3p
Finland	N/A			
France	1998	10K		1.8p
Germany	N/A (5)		(6)	
Greece	2001	1K, 10K	per number 2.6p	2.2p
Hungary	2001	1K		21.6p
Iceland (3)	2003	1K		5.7p
Ireland	N/A			
Italy	1998	10K		1.0p
Latvia	N/A			
Lithuania	2003	Any size, including single numbers	per allocation (any size) £37	6.2p
Luxembourg (3)	1999	1K, 10K	8.8p per number (7)(8)	8.8p
F.Y.R. of Macedonia	not provided	1K, 10K, 100K		9.2p
Malta	not provided	10K		2.2p (9)
the Netherlands	1997	1K	per block, £15.8, minimum £158	0.4p (10)
Norway	introduced 1996-1998	1K		0.5p (11)
Poland	2005	1K		7.1p
Portugal	2009	10K	per application £176	1.8p
Romania	2007	10K		0.8p
Slovak Republic	2004	10K, 100K, 1M	per allocation (any size) £43.6	0.06p
Slovenia	2004	1K, 10K, 100K, 1M		2.6p
Spain	1998	1K, usually 10K		2.6p
Sweden	2004	100, 1K, 10K		1.3p
Switzerland	1996	10K	per 10K block £276 (12)	1.3p
Turkey	2004	1K, 10K, 1M		6.8p

## Comments

- (1) Sources: NRA websites or data sent to Ofcom by the NRA in April 2010. Approximated values are converted from Euros at the exchange rate as at 14 October 2010 being 1 GBP = 1.1367 EUR (except for Croatia, Iceland, Switzerland, Turkey: converted from local currency, at the 14 October 2010 rate: 1 GBP = 8.3213 HRK = 1.5238 CHF = 176.0552 ISK = 2.2510 TRY).
- (2) Denmark has a non-geographic numbering plan. Any number can be used in any part of the country and numbers do not contain information indicating where in the country they are located.
- (3) Information collected from the NRA's website.
- (4) Belgium charges about £94 per 10K block, but £48 per 1K block.
- (5) Germany introduced a charging mechanism in 1998, which was cancelled in 2006.
- (6) Germany: the introduction of a lump-sum charge is under consideration.
- (7) Luxembourg allows CPs to book individual numbers or particular contiguous numbers for £44 plus 22p per number. This is to allow small CPs to enter the market without requesting a full block.
- (8) Luxembourg: In 1999 the lump sum and annual charge were both set at 10.1p per number. This was reduced to 8.8p in 2006.
- (9) Malta charges around 0.3p per number used, in addition to the 2.2p per number allocated to the CP.
- (10) Netherlands charges a minimum lump sum of £158 per allocation and a minimum annual fee of £44 per CP.
- (11) Norway charges a minimum annual fee of £1,116 per year.
- (12) Switzerland: the current values result from a series of revisions to the charges set in 1996 (reductions of 72 per cent of the assignment charge and 20 per cent of the annual fees), due to improved administration systems and economies of scale. The latest revision took place in 2009.

## Annex 6

# Legal Framework

## The legal framework

A6.1 Ofcom regulates the communications sector under the framework established by the Communication Act 2003 (the “Act”). The Act provides, among other things in relation to numbering, for the publication of the National Telephone Numbering Plan (the ‘Numbering Plan’) and the setting of General Conditions of Entitlement relating to Telephone Numbers (‘Numbering Condition’). It also sets out statutory procedures governing the modification of the Numbering Plan and any General Conditions, as well as the giving of directions under conditions such as the Numbering Condition, for instance in relation to application forms for telephone numbers.

## The Numbering Plan

A6.2 Section 56(1) of the Act states that:

“It shall be the duty of OFCOM to publish a document (to be known as “the National Telephone Numbering Plan”) setting out-

- a) the numbers that they have determined to be available for allocation by them as telephone numbers;
- b) such restrictions as they consider appropriate on the adoption of numbers available for allocation in accordance with the plan; and
- c) such restrictions as they consider appropriate on the other uses to which numbers available for allocation in accordance with the plan may be put.”

A6.3 The Act provides for Ofcom to review and revise the Numbering Plan. Section 56(2) states that:

“It shall be OFCOM’s duty -

- a) from time to time to review the National Telephone Numbering Plan; and
- b) to make any modification to that plan that they think fit in consequence of such a review; but this duty must be performed in compliance with the requirements, so far as applicable, of section 60.”

A6.4 Section 60 of the Act provides for the modification of documents referred to in the Numbering Conditions (which includes the Numbering Plan) and explains the procedures to be followed in order to conduct this review. Section 60(2) of the Act provides that:

“OFCOM must not revise or otherwise modify the relevant provisions unless they are satisfied that the revisions is -

- a) objectively justifiable in relation to the matter to which it relates;

- b) not such as to discriminate unduly against particular persons or against a particular description of persons;
- c) proportionate to what the modification is intended to achieve; and
- d) in relation to what is intended to achieve, transparent.”

A6.5 Section 60(3) further provides that:

“Before revising or otherwise modifying the relevant provisions, OFCOM must publish a notification -

- a) stating that they are proposing to do so;
- b) specifying the Plan or other document that they are proposing to revise or modify;
- c) setting out the effect of their proposed revisions or modifications;
- d) giving their reasons for making the proposal; and
- e) specifying the period within which representations may be made to OFCOM about their proposals.”

## The Numbering Condition

A6.6 Section 45 of the Act gives Ofcom the power to set conditions:

“(1) Ofcom shall have the power to set conditions under this section binding the persons to whom they are applied in accordance with section 46;

(2) A condition set by Ofcom under this section must be either -

- (a) a general condition....”

A6.7 Section 58 of the Act states that general conditions may include conditions about the allocation and adoption of numbers, including conditions which impose restrictions on and requirements in connection with the adoption of telephone numbers by a communications provider.

A6.8 Section 47 of the Act sets out the test for setting and modifying conditions, while section 48 sets out the procedures for setting, modifying and revoking conditions which includes the publication of a notification setting out the modifications.

A6.9 The test set out in section 47(2) is that the condition or modification is:

- “(a) objectively justifiable in relation to the matters which it relates;
- (b) not such to discriminate unduly against particular persons or against a particular description of persons;
- (c) proportionate to what the modification is intended to achieve; and
- (d) in relation to what is intended to achieve, transparent.”

## The Numbering Application Forms

A6.10 The General Conditions Notification that took effect on 25 July 2003 includes General Condition 17, which contains provisions relating to the allocation, adoption and use of telephone numbers.

A6.11 Clause 17.9 states that:

“When applying for an Allocation or Reservation of Telephone Numbers, the Communications Provider shall:

(a) use an appropriate application form as directed by the Director from time to time as he thinks fit;

(b) provide such information as is required by such application form (...)

A6.12 By virtue of the Transitional Provisions, references to the Director in the Numbering Condition should read as references to Ofcom.

A6.13 Section 49(4) further provides that:

“Before the direction, approval or consent is given, modified or withdrawn, a notification must be published -

a) stating that there is a proposal to give, modify or withdraw it;

b) identifying the person whose proposal it is;

c) setting out the direction, approval or consent to which the proposal relates;

d) setting out the effect of the direction, approval or consent or of its proposed modification or withdrawal;

e) giving reasons for the making of the proposal; and

f) specifying the period within which representations may be made about the proposals to the person whose proposal it is.”

## Ofcom’s general duty as to telephone numbering functions

A6.14 Ofcom has a general duty under section 63(1) of the Act in carrying out its numbering functions:

“a) to secure that what appears to them to be the best use is made of the numbers that are appropriate to use as telephone numbers; and

b) to encourage efficiency and innovation for that purpose.”

## General duties of Ofcom

A6.15 The principal duty of Ofcom to be observed in the carrying out of its functions is set out in section 3(1) of the Act as the duty:

“a) to further the interests of citizens in relation to communications matters; and

b) to further the interests of consumers in relevant markets, where appropriate by promoting competition.”

### **Duties for the purpose of fulfilling Community obligations**

A6.16 In addition to our general duties and our duty regarding telephone numbers, Ofcom must also take into account the six Community requirements in carrying out its functions as set out in section 4 of the Act. These include the requirement to promote competition in the provision of electronic communications networks and services, as well as the requirement to promote the interests of European citizens.

## Annex 7

# Consultation questions

A7.1 We have included a number of specific consultation questions throughout this document and we would like you to consider these when responding. We have reproduced these questions below for ease of reference. We also welcome general comments on our consultation proposals.

## Section 2: Introduction

*Question 1 Do you have any comments on the objectives and approach to this review of geographic number management? Do you agree with the policy principles that we consider should inform the review?*

## Section 4: Providing new supplies of geographic numbers

*Question 2 Do you agree that we should not consider further at this stage options that would change existing numbers?*

*Question 3 Do you agree that local solutions are appropriate based on our current forecasts of anticipated requirement of more numbers?*

*Question 4 Do you agree with our assessment of the options for providing new supplies of numbers in four-digit code areas, as presented in Section 4 and in Annex 3?*

*Question 5 Do you agree that closing local dialling followed, if necessary, by the introduction of an overlay code should be the preferred option for providing new supplies of numbers in four-digit areas that may need them? Please give reasons for your answers, and provide evidence where possible.*

*Question 6 Are there any other number supply measures that we should consider for four-digit areas?*

*Question 7 Do you agree that we should merge five-digit codes with four-digit codes to create new supplies in five-digit code areas that need them? Do you have any comment on our assessment of the impacts of the options we have considered? If so, please provide relevant evidence where possible.*

*Question 8 Are there any other numbers supply measures that we should consider for five-digit areas?*

*Question 9 Do you agree with our considerations and preliminary conclusions on how new supplies of numbers should be provided where they are required?*

*Question 10 Do you have any comments on how the implementation of number supply measures should be planned?*

*Question 11 How long do you consider that CPs would need to plan the implementation of the preferred options for four- and five-digit areas?*

*Question 12 If you are a CP, what costs do you consider that your company would incur if the preferred options for four- and five-digit areas were implemented?*

## **Section 5: Reducing the need for new supplies of geographic numbers**

*Question 13 Do you think that we should reserve a limited amount of numbers for allocation in blocks of 100 numbers in area codes where it is feasible to do so?*

*Question 14 What criteria, if any, in addition to a 'first-come first-served' basis should be used for allocating such blocks of 100 numbers to providers?*

*Question 15 Should the geographic extent of such allocations be limited to the seven areas likely to run out of numbers for allocation before 2015? (i.e. Blackpool (01253); Bournemouth (01202); Bradford (01274); Brighton (01273); Derby (01332); Langholm (013873) and Middlesbrough (01642))*

*Question 16 Do you consider that there are any technical obstacles currently to the effective sharing of number blocks by CPs and to sub-allocation? How could we usefully address those obstacles?*

*Question 17 What are your views on the concept, practicalities and implications of introducing a reservation system for geographic numbers?*

*Question 18 Do you have any comments on our proposed scope of additional audits?*

## **Section 6: Charging for geographic numbers**

*Question 19 Do you agree with the high level objectives proposed for the charging regime?*

*Question 20 Do you envisage that sub-allocation would increase if number charging is introduced? Do you have any comments on our analysis of barriers to successful use of sub-allocation?*

*Question 21 Do you agree with our view on how charges could be set? If not, please propose an alternative approach with supporting evidence.*

*Question 22 Do you agree with our preferred option for charging for geographic numbers? (i.e. Option 2 Pilot scheme: Charge a flat rate of 10p per number per annum in area codes with 100 or fewer blocks of 1,000 numbers (no charge for other areas). If not, please state your reasoned preference.*

*Question 23 Do you agree that the threshold for including an area code within the pilot scheme should be 100 or fewer 1,000-number blocks remaining to allocate? If not, please state your preferred threshold and reasons.*

*Question 24 Do you agree with the proposed level of the charge (i.e. 10p per number per annum)?*

*Question 25 Are there any other incremental administrative costs likely to be incurred by CPs in relation to number charging? Can you estimate the magnitude of any such costs?*

*Question 26 Do you agree that we should not pursue a policy of charging for golden geographic numbers? If you do not agree, please provide your reasoning.*

#### **Annex 4: Cost recovery for number charges when the CP using the number is different from the range holder**

*Question 27 Do you have any views on the principles for cost recovery? Do you have any views on the cost recovery mechanism? Do you agree with the preferred approach?*

## Annex 8

# Responding to this consultation

## How to respond

- A8.1 Ofcom invites written views and comments on the issues raised in this document, to be made **by 5pm on 18 February 2011**.
- A8.2 We strongly prefer to receive responses using the online web form at <http://stakeholders.ofcom.org.uk/consultations/geographic-numbers/howtorespond/form>, as this helps us to process the responses quickly and efficiently. We would also be grateful if you could assist us by completing a response cover sheet (see Annex 10), to indicate whether or not there are confidentiality issues. This response coversheet is incorporated into the online web form questionnaire.
- A8.3 For larger consultation responses - particularly those with supporting charts, tables or other data - please email [elizabeth.greenberg@ofcom.org.uk](mailto:elizabeth.greenberg@ofcom.org.uk) attaching your response in Microsoft Word format, together with a consultation response coversheet.
- A8.4 Responses may alternatively be posted or faxed to the address below, marked with the title of the consultation.
- Elizabeth Greenberg  
Ofcom  
Competition Group  
Riverside House  
2A Southwark Bridge Road  
London SE1 9HA
- Fax: 020 7783 4163
- A8.5 Note that we do not need a hard copy in addition to an electronic version. We will acknowledge receipt of responses if they are submitted using the online web form but not otherwise.
- A8.6 It would be helpful if your response could include direct answers to the questions asked in this document, which are listed together at Annex 7. It would also help if you can explain why you hold your views and how our proposals would impact on you.

## Further information

- A8.7 If you want to discuss the issues and questions raised in this consultation, or need advice on the appropriate form of response, please contact Elizabeth Greenberg on 020 7783 4163.

## Confidentiality

- A8.8 We believe it is important for everyone interested in an issue to see the views expressed by consultation respondents. We will therefore usually publish all

responses on our website, [www.ofcom.org.uk](http://www.ofcom.org.uk), ideally on receipt. If you think your response should be kept confidential, can you please specify what part or whether all of your response should be kept confidential, and specify why. Please also place such parts in a separate annex.

- A8.9 If someone asks us to keep part or all of a response confidential, we will treat this request seriously and will try to respect this. But sometimes we will need to publish all responses, including those that are marked as confidential, in order to meet legal obligations.
- A8.10 Please also note that copyright and all other intellectual property in responses will be assumed to be licensed to Ofcom to use. Our approach on intellectual property rights is explained further on its website at <http://www.ofcom.org.uk/about/accoun/disclaimer/>

## Next steps

- A8.11 Following the end of the consultation period, we intend to publish a statement in summer 2010.
- A8.12 Please note that you can register to receive free mail Updates alerting you to the publications of relevant Ofcom documents. For more details please see: [http://www.ofcom.org.uk/static/subscribe/select\\_list.htm](http://www.ofcom.org.uk/static/subscribe/select_list.htm)

## Ofcom's consultation processes

- A8.13 We seek to ensure that responding to a consultation is easy as possible. For more information please see our consultation principles in Annex 9.
- A8.14 If you have any comments or suggestions on how we conduct our consultations, please call our consultation helpdesk on 020 7981 3003 or e-mail us at [consult@ofcom.org.uk](mailto:consult@ofcom.org.uk) . We would particularly welcome thoughts on how we could more effectively seek the views of those groups or individuals, such as small businesses or particular types of residential consumers, who are less likely to give their opinions through a formal consultation.
- A8.15 If you would like to discuss these issues or our consultation processes more generally you can alternatively contact Vicki Nash, Director Scotland, who is Ofcom's consultation champion:

A8.16 Vicki Nash  
Ofcom  
Sutherland House  
149 St. Vincent Street  
Glasgow G2 5NW

Tel: 0141 229 7401  
Fax: 0141 229 7433

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

## Annex 9

# Ofcom's consultation principles

A9.1 We have published the following seven principles that we will follow for each public written consultation:

### Before the consultation

A9.2 Where possible, we will hold informal talks with people and organisations before announcing a big consultation to find out whether we are thinking in the right direction. If we do not have enough time to do this, we will hold an open meeting to explain our proposals shortly after announcing the consultation.

### During the consultation

A9.3 We will be clear about who we are consulting, why, on what questions and for how long.

A9.4 We will make the consultation document as short and simple as possible with a summary of no more than two pages. We will try to make it as easy as possible to give us a written response. If the consultation is complicated, we may provide a shortened Plain English Guide for smaller organisations or individuals who would otherwise not be able to spare the time to share their views.

A9.5 We will consult for up to ten weeks depending on the potential impact of our proposals.<sup>168</sup>

A9.6 A person within Ofcom will be in charge of making sure we follow our own guidelines and reach out to the largest number of people and organisations interested in the outcome of our decisions. Ofcom's 'Consultation Champion' will also be the main person to contact with views on the way we run our consultations.<sup>169</sup>

A9.7 If we are not able to follow one of these principles, we will explain why.

### After the consultation

A9.8 We think it is important for everyone interested in an issue to see the views of others during a consultation. We would usually publish all the responses we have received on our website. In our statement, we will give reasons for our decisions and will give an account of how the views of those concerned helped shape those decisions

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<sup>168</sup> This consultation lasts for twelve weeks to take account of the holiday period.

<sup>169</sup> See paragraph A8.15 for details of our 'Consultation Champion'.

## Annex 10

# Consultation response cover sheet

- A10.1 In the interests of transparency and good regulatory practice, we will publish all consultation responses in full on our website, [www.ofcom.org.uk](http://www.ofcom.org.uk).
- A10.2 We have produced a coversheet for responses (see below) and would be very grateful if you could send one with your response (this is incorporated into the online web form if you respond in this way). This will speed up our processing of responses, and help to maintain confidentiality where appropriate.
- A10.3 The quality of consultation can be enhanced by publishing responses before the consultation period closes. In particular, this can help those individuals and organisations with limited resources or familiarity with the issues to respond in a more informed way. Therefore we would encourage respondents to complete their coversheet in a way that allows us to publish their responses upon receipt, rather than waiting until the consultation period has ended.
- A10.4 We strongly prefer to receive responses via the online web form which incorporates the coversheet. If you are responding via email, post or fax you can download an electronic copy of this coversheet in Word or RTF format from the 'Consultations' section of our website at [www.ofcom.org.uk/consult/](http://www.ofcom.org.uk/consult/).
- A10.5 Please put any parts of your response you consider should be kept confidential in a separate annex to your response and include your reasons why this part of your response should not be published. This can include information such as your personal background and experience. If you want your name, address, other contact details, or job title to remain confidential, please provide them in your cover sheet only, so that we don't have to edit your response.

**Cover sheet for response to an Ofcom consultation**

**BASIC DETAILS**

Consultation title: Geographic telephone numbers: Safeguarding the future of geographic numbers

To (Ofcom contact): Elizabeth Greenberg

Name of respondent:

Representing (self or organisation/s):

Address (if not received by email):

**CONFIDENTIALITY**

Please tick below what part of your response you consider is confidential, giving your reasons why

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

If you want part of your response, your name or your organisation not to be published, can Ofcom still publish a reference to the contents of your response (including, for any confidential parts, a general summary that does not disclose the specific information or enable you to be identified)?

**DECLARATION**

I confirm that the correspondence supplied with this cover sheet is a formal consultation response that Ofcom can publish. However, in supplying this response, I understand that Ofcom may need to publish all responses, including those which are marked as confidential, in order to meet legal obligations. If I have sent my response by email, Ofcom can disregard any standard e-mail text about not disclosing email contents and attachments.

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

Name

Signed (if hard copy)