Geographic telephone numbers

Safeguarding the future of geographic numbers

(✂ Redacted for publication)

Statement and Further Consultation

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Contents

Section 1

Summary

1.1 This document concerns geographic telephone numbers - fixed-line telephone numbers that begin with the digits '01' and '02'. They are widely recognised, valued and trusted by consumers. Ofcom administers this national resource and seeks to ensure that sufficient numbers are available to allocate to communications providers ('CPs') so that they can provide a choice of services to consumers.

1.2 Geographic numbers are an increasingly scarce resource. Although the combined quantity of geographic numbers that CPs already hold exceeds likely demand from end-users, individual CPs nevertheless need new allocations of geographic numbers from time to time. Our current forecast of CPs' demand shows that, unless we take action, we risk running out of geographic numbers to allocate to CPs in some areas. In November 2010, we proposed some changes to the way we manage the allocation of geographic numbers, and launched a public consultation. The fundamental aim of the proposed changes was to ensure that consumers' future choice of providers of phone services will not be constrained by the availability of geographic phone numbers.

1.3 In this document we conclude one part of that consultation, and set out our decision about how we will make available new geographic telephone numbers in some areas of the UK in the coming years. Fixed-line phone users in those areas will need to dial the area code when making local calls in order to enable us to release the new numbers for use. This will not require any changes to existing phone numbers or affect the cost of the call.

1.4 We are also consulting further on some measures to enhance the effective and efficient use of geographic telephone numbers that were proposed in November, which included a pilot charging scheme for geographic numbers and measures to strengthen our administrative processes.

1.5 The purpose of this document is to:

- set out and explain our decision on creating new supplies of geographic numbers in areas where more numbers are required;
- present for further consultation some revisions to our proposal to charge CPs for certain geographic numbers they hold; and
- set out how we intend to take forward changes we propose to some administrative processes which we use to allocate geographic numbers to CPs.

Background

1.6 On 25 November 2010 we published a document[1] ('the November Consultation') inviting views on our proposals to change the way we manage geographic numbers. The proposals were designed to ensure that consumers' future choice of providers of phone services will not be constrained by the availability of geographic phone

[1] See *Geographic Telephone Numbers: Safeguarding the future of geographic numbers* http://stakeholders.ofcom.org.uk/binaries/consultations/geographic-numbers/summary/geographic.pdf

numbers and to maintain our ability to meet CPs' future requirements for geographic numbers in all areas of the UK. They included:

- measures to make new geographic numbers available in area codes which are likely to exhaust their current supplies in the foreseeable future;
- a scheme for charging CPs, initially on a pilot basis, for geographic numbers allocated to them in area codes where numbers are particularly scarce; and
- steps to strengthen the administrative processes which we use to allocate geographic numbers to CPs.

1.7 We maintain forecasts of future availability of new geographic numbers for each of the UK's 610 geographic area codes. While the forecasts, by their nature, are subject to significant uncertainties, they nevertheless indicate that if we do not make changes, we risk exhausting stocks of geographic numbers to allocate to CPs from 2012 onwards, with potentially 14 area codes running out of numbers before 2016 and 36 area codes, covering about 12 per cent of the UK population, running out by 2021. In the November Consultation we proposed changes in order to prevent this from happening.

1.8 Our latest forecasts are informed in part by an audit we have carried out since publishing the November Consultation. In that audit we asked CPs to whom we have allocated geographic numbers to return blocks of numbers that they do not require. Many CPs have agreed to return unused number blocks, and we expect to reclaim more than 69 million geographic numbers as a result. This level of reclamation, whilst very successful, does not on its own address the fundamental problem of scarcity of geographic numbers. It will nevertheless be helpful in relieving the pressure of scarcity in a substantial number of area codes.

1.9 We estimate that the reclaimed numbers will extend the availability of numbers from our existing supplies in four-digit area codes[2] by eight years on average. However, the extension of existing supplies varies considerably between different area codes, and in several area codes we estimate that our current supplies will only be extended by one year or less.

1.10 We currently allocate geographic numbers by area code to CPs that meet certain eligibility requirements. Currently, we do not charge CPs to have numbers allocated to them or make an annual charge to hold number blocks. Competition in voice services has been developing strongly for many years, and there are now some 300 CPs to which we have allocated geographic numbers.

1.11 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 limited, we could exhaust 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.

1.12 Capacity limitations in older equipment used in some networks have so far required us to allocate all geographic numbers in blocks of at least 1,000 contiguous numbers.

[2] In this document we refer to an area code of the form 01XXX as a four-digit area code.

Such an allocation may be larger than some CPs require in some areas, leading to inefficiency. As soon as any of the numbers from an allocated block are in use, the CP to which the block has been allocated cannot return the unused numbers to us for allocation to any other CP.

1.13 Contrary to our expectations of a few years ago, the capacity limitations in some networks, which constrain the minimum size of a number block to 1,000 numbers, are not likely to be relieved substantially in the foreseeable future. This is because some CPs' investments in next-generation network ('NGN') technology (for example, BT's 21st century network or "21CN"), which would be capable of removing the limitations, have not progressed at the rate then expected.

1.14 Although new local numbers would continue to be available from CPs already allocated blocks of numbers, even in areas where we might run out of our supply of blocks of numbers, exhaustion would imply that competition might be affected, because it would be more difficult for new CPs to enter the market. We therefore proposed changes in the November Consultation 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.

Our objectives and approach

1.15 Our 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 could involve some disruption to consumers, which we seek to minimise.

1.16 One part of our approach, therefore, is to seek to reduce the need for new supplies by proposing appropriate changes to our policies and processes that could have the effect of creating incentives for CPs to use their allocated numbers more efficiently, reducing our rate of allocation of geographic numbers to CPs.

1.17 Despite such changes, however, we consider that new supplies of geographic numbers will be required in some areas in the future. Where this proves to be the case, our objective is to provide new supplies of geographic numbers in a manner which would cause the least disruption to consumers and CPs.

Making more geographic numbers available where they are needed

1.18 Our current forecasts indicate that new supplies of geographic number blocks are likely to be necessary in 25 four-digit area codes by the year 2021. Bournemouth (area code 01202) is likely to need new supplies during 2012, followed by Aberdeen (01224), Bradford (01274), Brighton (01273), Cambridge (01223) and Milton Keynes (01908) by 2016.

1.19 Supplies of new blocks of geographic numbers are also scarce in 11 rural areas which, for historical reasons, have five-digit area codes. The longer area code means that local phone numbers in these areas are five digits long, which, in turn, means that the maximum possible supply of number blocks in each of these area codes is only one tenth of that in four-digit area codes.

We will close local dialling in any four-digit area code that needs more number blocks and, if necessary, later introduce an overlay code

1.20 After detailed consideration of stakeholders' responses to the November Consultation, we have decided to make available, in four-digit area codes that need them, blocks of geographic numbers in which the first digit after the area code is either '0' or '1'. In order to allow us to do this, we will over the coming years need to close local dialling – this means that phone users in those areas will need to dial the area code when making any local call from a fixed-line phone.[3]

1.21 We have also decided to introduce a second area code within areas where we may again run out of our supplies of geographic numbers some years after we close local dialling (termed an 'overlay code'). In areas where this proves to be necessary, consumers would not need to change how they dial existing numbers (having already adapted to dialling the area code), but would need to be aware that some new numbers, local to their area, will have the new area code. We currently forecast that closing local dialling would defer the need for an overlay code in any area until at least 2020. In areas where both closing local dialling and the introduction of an overlay code prove to be necessary, our forecasts currently indicate that the interval between closing local dialling and the introduction of an overlay code will be more than ten years in most cases and at least six years in all four-digit area codes.

1.22 Our decision will not require changes to any existing phone numbers, either where local dialling is closed or where it may later prove necessary to introduce an overlay code.

1.23 Some consumers who provided views on the November Consultation questioned why we had ruled out alternative options that would involve changes to existing phone numbers. Before reaching our decision, we therefore reviewed the merits of increasing the supply of numbers in four-digit area codes by shortening the area code to three digits and increasing the length of each local number from six to seven digits. This option would mean that the area code would change and a single-digit prefix would be added to every existing fixed-line phone number in the local area. For example, Bournemouth 01202 XXX XXX might have changed to 0103 9XXX XXX.

1.24 In deciding not to pursue the number change option further, we took into account the risks that the introduction of an overlay code could give rise to some ongoing impacts, for example confusion as to whether the overlay code was local, and weighed them against the certainty that number change would entail significant costs and disruption to many local businesses in the short term. We also took into account the views consumers expressed in further qualitative research[4] which we commissioned, which showed that consumers preferred closing local dialling and the subsequent introduction of an overlay code if necessary to the alternative option of a

[3] Closing local dialling will ensure that phone networks do not confuse the new supply of local geographic numbers with other numbers or with codes for specific services. Otherwise, networks may not be able to determine whether a six-digit number dialled starting with '0' corresponds to a local fixed phone line or to the beginning of a number with a different code – for example 07XXXX could either be a local number or the beginning of a mobile phone number. Similarly, if the area code is not dialled, the network could interpret the first few digits of a local number starting with '1' as a call to an operator service such as 100 or 150, to a network service such as 1471 or 1571 or to a service number such as a 118XXX directory enquiry number.

[4] *Geographic Numbering: Summary report of findings,* Report compiled by Futuresight in June 2011 for Ofcom.

number change, provided that the introduction of any overlay code would occur at least ten to fifteen years after closure of local dialling.

1.25 We propose to avoid overall disruption to consumers by confining the impacts of any new supply measures as far as possible to the areas that require them and to delay implementation of new number supply measures as far as is practicable. We do not currently foresee any risk of number exhaustion in areas covering some 35 per cent of the population.[5]

1.26 In particular, we have considered the case for closing local dialling everywhere in the UK, but decided not to propose doing so now. While closing local dialling across the UK could allow more effective communication of the change to consumers and would maintain uniformity of dialling habits, we currently consider that closing local dialling on a selective local basis, where and when supplies of local geographic numbers approach exhaustion, would minimise overall disruption. If we propose in future to close local dialling throughout the UK we would consult on that proposal.

We are proposing to allocate a limited number of smaller number blocks to relieve scarcity in five-digit area codes

1.27 In the November Consultation we considered that five-digit area codes required a specialised response to relieving scarcity of geographic number blocks. Closing local dialling would generate a relatively small quantity of additional numbers in five-digit area codes and we thought that it would be disproportionate to introduce an overlay code in those areas, each of which has a population smaller than 25,000 people.

1.28 We proposed an alternative solution of merging five-digit area codes with their corresponding four-digit area codes. For example Langholm's 013873 area code would be merged with the 01387 area code which currently serves Dumfries.[6] We considered that this proposal would be preferable to closing local dialling and introducing overlay codes in five-digit area codes.

1.29 Responses to our proposal were mixed. People who attended a public meeting that we organised in Langholm, although few in number, favoured our proposal of merging the codes and strongly opposed the possibility of overlay codes. However, they urged us to explore solutions that would not involve direct impacts on local users. We also considered the suggestion of changing five-digit area codes to unrelated four-digit codes for the areas. BT preferred the introduction of overlay codes, while some other CPs supported our proposals for merging codes.

1.30 In light of responses to the November Consultation, and taking particular account of the views expressed by people who attended the public meeting in Langholm, we have investigated opportunities to address the shortage of number blocks available in the five-digit area codes in a way that would not affect consumers in those areas directly. We propose to make available a limited number of blocks of 100 numbers from our existing supplies to CPs which require new numbers in those area codes.

[5] 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.

[6] This would mean that all existing Langholm numbers, which are of the form 013873 XXXXX, would become 01387 3XXXXX. While the whole number would not change, users dialling locally (i.e. without the area code) from fixed-line phones would need to prefix existing 5-digit local numbers with '3'.

We note that number blocks of this size are not likely to be suitable for area codes covering substantially larger populations, such as places the size of Bournemouth or Brighton.

1.31 Following discussions with CPs, we think it likely that fixed networks could support routing calls to a limited number of such smaller blocks of geographic numbers in some parts of the UK. We consider that the smaller size of these blocks could allow us to meet more efficiently any new demand from CPs seeking to offer services in the 11 five-digit area codes. We are now consulting on rolling out up to 100 blocks of 100 numbers in each of these areas to establish the feasibility of this approach. If, following this consultation, we decide not to proceed with the proposed limited roll out of 100-number blocks, we will decide on the appropriate measures to increase the supply of numbers in five digit area codes. We will conclude, taking account of all responses and other relevant information, on the approach to be taken in our forthcoming statement proposed for early 2012.

We are consulting on revised proposals to charge CPs for certain geographic numbers

1.32 We proposed in the November Consultation to start charging CPs for geographic numbers, initially in a pilot scheme confined to area codes where 100 or fewer number blocks remain available for allocation. We proposed to introduce an annual charge of 10 pence per number per year applied to all numbers allocated in area codes selected for the pilot scheme.

1.33 Responses to this proposal were mixed. Some CPs, including BT, argued that we should not proceed with charging, even on a pilot basis. BT questioned whether we had presented a sufficient case to justify imposing regulation to implement charging, and provided a range of estimated costs of BT's implementation of [✂]. BT suggested that we should wait to see if our proposals to strengthen our own administrative processes prove to be effective before deciding whether to charge. Other CPs, including Cable & Wireless Worldwide, agreed with us, albeit reluctantly, that charging for geographic numbers would be appropriate for incentivising efficient use of geographic numbers.

1.34 Having considered responses to the November Consultation, we intend to go ahead with charging for geographic numbers, initially in a pilot scheme. Introducing a charge for numbers is likely to contribute towards the effective and efficient use of numbers by ensuring CPs have an incentive to take the scarcity of geographic numbers into account in their business decisions. We think that a pilot scheme is appropriate, particularly to enable us to monitor any unintended consequences of charging and limiting their potential impact.

1.35 We set out for further consultation in this document revised proposals for some aspects of the pilot scheme, both because the criteria proposed in the November Consultation for selection of area codes for the pilot scheme has been superseded following the audit and because we would like to consider opportunities to simplify the charging arrangements to reduce the implementation costs. We are also consulting on more detailed implementation assumptions to enable CPs to assess more fully the likely costs and impacts to their businesses. We discuss these points in more detail below (and in Section 6 and Annexes 5 and 6 of this document).

Revised pilot scheme

1.36 Based on number block availability as at 3 June 2011, and on the assumption that CPs will return to us the number blocks they pledged to return in the audit described at paragraph 1.8, only eight area codes would meet the criteria we proposed last November for selecting area codes for the pilot charging scheme. We consider that this would not be sufficient for a useful pilot scheme. Our revised proposal is to include in the pilot scheme around 30 four-digit area codes which have the fewest number blocks remaining available for us to allocate.

Simplifications to charging arrangements

1.37 We are also aware that the arrangements discussed in the November Consultation, by which a CP could recover the cost of some of its allocated numbers from another CP which uses them under a regulated arrangement (for example where numbers are ported), could give rise to unwarranted complexity and systems costs. BT has suggested some potentially helpful simplifications, including (i) that each CP recover the same cost for every such number or (ii) that we discount the amounts we charge each CP for numbers by an amount corresponding to the quantity of its allocated numbers which are used by other CPs under regulated arrangements. We are keen to agree a solution that minimises costs, which could potentially simplify the implementation of number charges considerably, and we are seeking views on a number of options in this consultation.

Billing arrangements

1.38 We propose the following billing assumptions for the pilot charging scheme:

- Ofcom will bill CPs annually;
- CPs will be billed in arrears; and
- Charges will accrue for each number block in chargeable area codes on a daily basis.

1.39 We currently plan to publish a final statement concluding this consultation in early 2012. In the event that we decide to go ahead with the pilot charging scheme, we further propose that charges would start to accrue six months after the final statement.

We propose to take forward our proposals to strengthen administrative procedures for the allocation and use of geographic numbers

1.40 In the November Consultation we proposed to strengthen the administrative processes we use to manage geographic numbers by:

- introducing a time-limited reservation stage prior to allocation of geographic numbers for some applications. Under this proposal, geographic numbers would be reserved rather than allocated to CPs for 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

we could withdraw reserved numbers quickly when the reservation period ends if there is no reasonable prospect of use; and

- gathering more extensive information on CPs' intended use of the numbers on the geographic number application form to inform the allocation decision and to follow up on statements made at the time of allocation.

1.41 CPs generally supported a reservation stage for geographic numbers provided that it did not affect CPs' ability and timescales for bringing their services to market. Some CPs provided additional information on how a reservation stage could function. There was also support for strengthening the allocation processes for geographic numbers.

1.42 We are undertaking a review of our administrative processes for geographic numbers, in an exercise separate from this consultation. This review will look at how we can strengthen our processes for allocation of geographic numbers. It will also include a consultation on the proposed introduction of a reservation stage and on changes to the information requested on the geographic number application form. The consultation is likely to include all telephone number application forms to ensure consistency in approach. We intend to consult on these proposals within the next six months.

1.43 We will also strengthen and broaden our audits, which are successful in withdrawing unused geographic number blocks and informing our knowledge of CPs' number use and utilisation rates.

Next steps

1.44 We will establish an industry forum to develop a detailed plan for the implementation of the measures to provide new supplies of geographic numbers where they are needed, including:

- an appropriate communications campaign;
- notice periods for changes and relevant timelines for implementation;
- guidelines for automatic responses to misdials; and
- any other relevant aspects of implementation that may be raised by stakeholders.

1.45 This consultation runs until 15 November 2011. We aim to publish a statement in early 2012 concluding on whether we will go ahead with our proposals for a pilot charging scheme for geographic numbers and a limited roll out of 100-number blocks in the 11 five-digit areas. If we proceed with these proposals, we will consult on the relevant instruments for implementation (that is, setting or modifying a General Condition and the National Telephone Numbering Plan ('the Numbering Plan')).

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.[7]

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 limited. 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 and limit consumers' choice of CP for new services.

2.5 There are sufficient numbers to provide services to consumers. The current challenges do not present a risk to availability of numbers for consumers' use or mean that consumers will need to change their existing telephone numbers. The problem lies in ensuring that there remains an adequate supply of number blocks to allocate to CPs in all geographic areas.

Challenges for managing geographic numbers

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

2.6 It may seem surprising that this 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.[8] Indeed, we have already allocated 420 million geographic numbers across the UK, representing almost seven numbers per person.

2.7 Generally speaking, shortages can occur because the theoretically-available two billion geographic numbers have to be fragmented so that they can:

[7] Further background information on geographic numbers (including their definition and characteristics; the area code and local number digit structure; how geographic numbers are distributed to end users and demand for geographic numbers) is provided in Annex 1.

[8] 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.

- provide the location significance that consumers continue to value highly;
- meet technical routing constraints in legacy networks, in which calls are routed according to a minimum block size of 1,000 numbers; and
- support competition. New entrants and the expansion of existing CPs' services lead to a corresponding demand for numbers. This demand grows year-on-year. The geographic numbering plan currently accommodates over 300 CPs with direct allocations of geographic numbers from Ofcom and we allocate roughly 7,000 geographic number blocks per year.

2.8 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.

2.9 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.[9] Competition in provision of communications services in Bournemouth is high, with 86 CPs allocated 01202 number blocks. This demand from CPs has left us with only 24 spare blocks of 1,000 numbers to allocate.[10] Based on current demand trends, we forecast that unless we take action to change this situation we risk running out of blocks of 01202 numbers to allocate to CPs during 2012.[11]

2.10 The 'Bournemouth illustration' above demonstrates that there are sufficient geographic numbers available to meet reasonable consumer demand. The division of numbers into areas and blocks for allocation, however, 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 areas in the UK. 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.

2.11 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

[9] Source: the 2001 Census and Ordnance Survey data. The number of business and residential premises was estimated by i) mapping BT exchanges onto UK postcodes and ii) by using the number of premises per postcode reported in the Ordinance Survey.
[10] Data correct as at 3 June 2011.
[11] This assessment is based on data as at 3 June 2011 and takes into account the results of the recent audit (see paragraphs 2.38-2.42 for information on the audit).

framework and in line with our policy principles.[12] We look at our strategy for doing this in Section 3.

What are we doing currently to meet those challenges?

Improving utilisation rates

2.12 As discussed above, what appears to be an ample supply of numbers to meet demand becomes fragmented to provide meaning, reflect technical routing capabilities and support competition. Within these constraints, CPs' utilisation rates are key to the effective management of geographic numbers and for offsetting the need for number supply measures.

2.13 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.[13] 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 number supply to meet demand.

2.14 We describe below the actions we have taken over the last five 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 calculating the rates were different in 2006 and 2010, our findings suggest that the average utilisation rate has improved.

Allocation of smaller number blocks: Conservation Areas and Standard Areas

2.15 Originally we allocated all geographic numbers in blocks of 10,000. In 2002, we reduced 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'.

2.16 Conservation areas work by reducing the size of blocks from 10,000 to 1,000 numbers. 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.

2.17 In 2006 we redefined 'Conservation Area' in the Numbering Plan 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. In 2010 we made all remaining '0' plus four-digit area codes (except for Jersey 01534 and Guernsey 01481) into

[12] In paragraph 2.21 of the November Consultation we set out the policy principles that guide our strategic decisions on how telephone numbers are managed. We also set these out in paragraph 3.18 of this document.

[13] 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 Direct Dial-In (DDI) numbers not included in the database. We then compared this with the total of numbers allocated in each area to provide average utilisation rates per area and across all geographic areas.

conservation areas with numbers allocated in blocks of 1,000. There are now a total of 590 conservation areas in the UK.[14]

2.18 These actions have been successful in prolonging number availability. On average, we have seen an 85 per cent decrease in the numbers that we allocate (i.e. in the 'allocation rate') in an area following reduction of block size.[15] 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.

2.19 The remaining 17 areas cover larger cities and have two- or three-digit area codes. These are still characterised as 'Standard Areas'[16] since we have sufficient numbers remaining without the need for conservation measures at this time. Numbers continue to be allocated in blocks of 10,000, with the condition that each 1,000 number block should be used sequentially to facilitate number withdrawal should conservation measures be imposed in the future.[17]

Audit and unused number block withdrawal

2.20 We undertake periodic audits of CPs' use of allocated numbers, generally 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 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 network capacity limitations which constrain the minimum size of blocks that we can allocate.

2.21 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. This has extended the availability of numbers in audited 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 of numbers being returned comes from historical allocations made at the 10,000-number block level.

Using a rule-based number allocation process

2.22 We use a rule-based system for allocation of numbers to CPs, requiring them to answer 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. The first time a CP applies for numbers from us, it is required to describe the nature of its network and its arrangements for interconnecting with other CPs so that calls can be carried across different networks.

[14] The Numbering Plan shows 591 area codes with conservation status. This figure includes the Isle of Man (area code 01624), which is not within the scope of this review.
[15] Between 2006 and 2008 the average reduction of allocation rate was 87.5 per cent. More recently, the average reduction has decreased to 84 per cent of the allocation rate prior to introducing conservation measures.
[16] 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".
[17] Paragraph B3.1.7 of the Numbering Plan.

2.23 To apply for number blocks (which are allocated on a 'first-come first-served' basis from those shown as available on our website),[18] 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.

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

2.24 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.

2.25 However, our forecasts demonstrate that despite the effect of the current set of administrative processes, we are likely to run out of numbers in around 36 areas within the next ten years.

2.26 In light of our forecasts, therefore, 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 further.

The November Consultation

2.27 On 25 November 2010 we issued a consultation to consider the challenges on geographic number availability and what we could do to manage that resource. In that consultation we explained that, if we did nothing and we continued to allocate geographic numbers to CPs at the rate prevailing in the recent past, we risked running out of numbers to allocate to CPs from 2013 onwards. Our forecasts at that time suggested 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.

2.28 In light of our forecasts of number scarcity, the November Consultation planned for the actions required to increase the supply of numbers in areas when needed. We recognised that all options for increasing the supply of numbers would necessarily cause some disruption to consumers and businesses and we looked for ways to minimise this.

2.29 Our approach was to work with CPs to reduce the need for new supplies by taking measures to drive efficiency in number use; and to identify which number supply measures are regarded by consumers as the least disruptive.

[18] 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/.

2.30 We put forward a variety of proposals for our ongoing management of geographic numbers to safeguard their availability in the future.

Summary of our main proposals in the November Consultation

Proposals to increase the supply of new numbers

2.31 We explained that given our forecasts for number availability, we needed to plan now for the most appropriate action to create additional numbers where and when required. We considered that this action should avoid changes to existing geographic numbers and that we should apply localised measures to address localised shortages.

2.32 We identified two basic approaches to increasing number supply that met those criteria - closing local dialling and overlay codes. Closing local dialling withdraws the facility to make a local call without dialling the area code, which makes local numbers beginning with the digits '0' and '1' available for use. Overlay codes supply more numbers by making a second area code available for the same area. We also established that certain areas (i.e. those with five-digit area codes) may need a specialised response to increase the number supply.

2.33 Having carried out our preliminary assessment of these options, we proposed to close local dialling in areas with four-digit area codes. In some of the areas concerned, our forecast suggested that additional number supplies might be necessary at some point after closing local dialling. We proposed to implement an overlay code where and when this may be necessary.

2.34 Our proposed approach for increasing the supply of numbers in areas with five-digit codes was to merge their codes with the corresponding four-digit area code (i.e. the area code that shares the same four digits after the leading '0') so that all the numbers would be in the four-digit area code format.

Proposals to charge for geographic numbers

2.35 We considered 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.

2.36 In summary, our proposals for charging for geographic numbers were as follows:

- 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);

- a periodic annual charge of 10p per number would apply to all numbers allocated in chargeable areas;

- the charge would be imposed on the CP to whom we allocated the block of numbers. For cases where, for regulatory reasons, the CP using the number was different from the block holder (i.e. where numbers are ported or where BT provides Wholesale Line Rental (WLR) to retail CPs) we proposed to set out principles for cost recovery; and

- we would review the pilot 18 months after launch and take a decision on the future of charging, including whether to continue charging, whether to roll out the charging scheme for geographic numbers more widely or whether to adjust the level of charges.

Proposals relating to our administration of geographic numbers

2.37 We considered whether any further opportunities existed to incentivise and facilitate CPs' better utilisation of the existing supply of geographic numbers. We identified some areas that we were interested in pursuing:

- introducing a time-limited reservation stage prior to allocation of geographic numbers for some applications. We considered that this stage would apply to CPs that had not demonstrated operational readiness to put the requested numbers into use;

- gathering more extensive information on the intended use of numbers during the application process to inform allocation decisions and provide a basis for auditing purposes;

- strengthening and broadening our audits of CPs' number use; and

- making a limited supply of geographic numbers available for allocation in blocks of 100 numbers.

Developments since publishing the November Consultation

Extensive audit of CPs' use of allocated geographic numbers

2.38 As explained in paragraphs 2.20 to 2.21 above, we conduct audits on CPs' use of allocated numbers with a view to identifying and requesting the return of unused 1,000-number blocks. Following the publication of the November Consultation, we conducted such an audit across virtually the entire list of four-digit area codes.[19]

2.39 In April 2011 we issued audit requests to all 122 CPs with historical allocations of blocks at the 10,000 number block level in 582 four-digit area codes (i.e. allocations made before each area code become a Conservation Area). We asked each CP to inform us of whether any 1,000 number units within those allocations were unused and, if so, whether they could be returned to Ofcom. The audit set out the context for the extensive request (i.e. being the scarcity of geographic numbers for allocation to CPs as set out in this document) and referenced the November Consultation and the proposals put forward for improving utilisation of allocated geographic numbers (including the proposal to launch a pilot charging scheme and the intention to strengthen and broaden the scope of our audits).

2.40 The audit was issued in two parts, with a final deadline of 30 June 2011 to respond. We have received responses from 80 CPs so far and are pursuing responses from the remaining CPs. The responses resulted in 53 CPs pledging to return over 69,000 blocks of unused numbers (i.e. 69 million numbers).

[19] We did not audit CPs on use of numbers allocated in nine four-digit area codes that were audited in 2009. We are following up on number use in those areas in advance of updating our forecasts in our forthcoming statement in early 2012.

2.41 We have taken the audit returns into account when revising our forecasts for number block availability presented in this document. We analyse the effect of the audit returns on the forecast in Annex 2.

Effective of audit on our proposed pilot charging scheme

2.42 We have also taken the block returns into account when considering our proposals for a pilot charging scheme for geographic numbers. In the November Consultation we proposed to charge in a limited number of 'pilot' area codes - initially suggested as areas that had 100 or fewer blocks of numbers remaining to be allocated. At the time of the November Consultation this captured 58 areas codes. Due to the large number of blocks provisionally returned through the audit, the number of areas captured by that threshold has fallen significantly and to a level unlikely to provide meaningful results or to warrant the administrative costs of implementing charging. In light of this, we propose to modify the charging pilot so that it includes around 30 areas with the fewest number blocks remaining to allocate. We discuss this proposal in Section 6.

Further consumer engagement

Local engagement

2.43 In February 2011, we held consumer engagement meetings in three areas – Bournemouth, Brighton and Langholm (near Dumfries) – to provide an opportunity to explain our number supply proposals for those areas and discuss these in detail with the local people that our plans would affect. We selected these areas as, at that time, they were the first areas forecast to run out of number blocks to allocate to CPs.

2.44 The meetings attracted a small attendance. Nevertheless, they provided a useful opportunity to discuss our proposals and hear directly consumers' opinions and concerns. These have helped inform our decisions and further proposals for addressing number scarcity. We consider the points raised at these meetings in Section 4.

Qualitative consumer research

2.45 In May 2011 we commissioned consumer research ('the 2011 consumer research') to assess residential and business consumer attitudes to overlay codes (with closed local dialling) when compared to a number change option. This incorporated qualitative research with 12 focus groups (eight with residential fixed line users and four with businesses) in four locations across the UK (Bradford, Brighton and Hove, Milton Keynes and Stoke-on-Trent). A report prepared by Futuresight on this consumer research ('the 2011 consumer research report') has been published alongside this document. We consider the findings of this research in Section 4 and Annex 3.[20]

Further analysis on a limited roll out of blocks of 100 numbers

[20] Earlier reports prepared by Futuresight on geographic numbers are *Geographic numbering and local dialling*, published November 2010 ('the 2010 consumer research') http://stakeholders.ofcom.org.uk/binaries/consultations/geographic-numbers/annexes/numbering-futuresight.pdf and *Numbering Review: Report of findings*, published February 2006 ('the 2006 consumer research') http://stakeholders.ofcom.org.uk/binaries/consultations/numberingreview/annexes/marketresearch.pdf

2.46 Following the publication of our proposals for a limited roll out of 100-number blocks in the November Consultation, we have engaged in bi-lateral discussions with CPs most likely to be impacted by such proposals to ascertain the likelihood of us developing an approach that could be implemented in a proportionate manner. These discussions have contributed to our revised proposals for 100-number block allocation as set out in Section 5.

Our revised forecasts for number availability

2.47 We provided a forecast of geographic number availability in the November Consultation. We have updated this analysis taking into account changes in allocated blocks since that forecast was conducted. The forecast is based on data we held on number block status and allocation records as at 3 June 2011. We have adjusted this data to take account of number blocks that CPs have pledged to return to us as part of the audit described above in paragraphs 2.38 to 2.41.

2.48 Based on current number demand trends and the availability of numbers, we forecast that 36 area codes may need measures to increase the supply of new number blocks by the end of 2021. Figure 2.1 below shows a map and list of these area codes along with an estimate of when they are at risk of running out of number blocks to allocate to CPs.

2.49 The forecast displayed in Figure 2.1 is a 'snapshot' of relevant data as at 3 June 2011 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). We have also based the forecast on the expected withdrawal of number blocks following the 2011 audit, and some of these blocks may not eventually be returned to Ofcom.

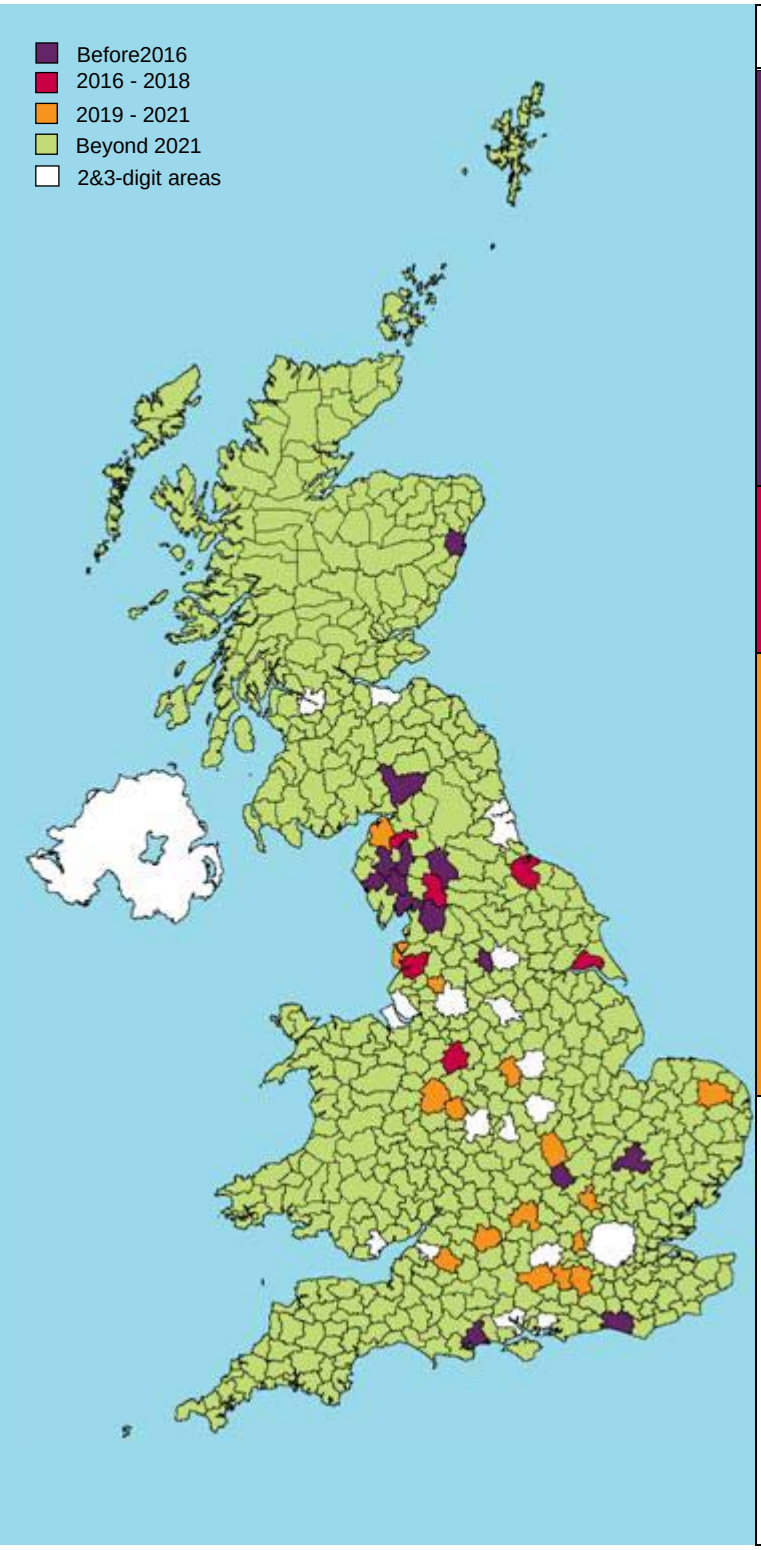
2.50 The forecast is necessarily subject to uncertainties. It is based on historical allocation trends, adjusted where required to take account of changes in demand resulting from current administrative processes.[21] However, the forecast does not attempt to quantify the potential effect of the further measures proposed in Sections 5 to strengthen our administrative processes and in Section 6 to introduce charging for numbers in some areas, which are designed to improve utilisation and reduce demand for number blocks.

2.51 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.

2.52 The specific area codes where number supply measures prove to be necessary over the next ten years and the corresponding dates may therefore differ significantly from our current forecast displayed in Figure 2.1.

[21] The methodology used for our forecast model is explained in Annex 2 of this document and in more detail in Annex 2 of the November Consultation.

Figure 2.1:[22] Forecast of areas that may require more blocks of numbers before end 2021



Time estimate	Areas forecast to need more blocks of numbers
Before 2016	Aberdeen(01224), Appleby(017683), Bournemouth(01202), Bradford(01274), Brighton(01273), Cambridge(01223), Gosforth(019467), Grange over Sands(015395), Hawkshead(015394), Hornby(015242), Keswick(017687), Langholm(013873), Milton Keynes(01908), Pooley Bridge(017684)
2016 to 2018	Hull(01482), Middlesbrough(01642), Preston(01772), Raughton Head(016974), Sedbergh(015396), Stoke-on-Trent(01782)
2019 to 2021	Aldershot(01252), Basingstoke(01256), Bath(01225), Blackpool(01253), Bolton(01204), Derby(01332), Guildford(01483), Luton(01582), Northampton(01604), Norwich(01603), Oxford(01865), Slough(01753), Swindon(01793), Telford(01952), Wigton(016973), Wolverhampton(01902)
Areas not affected (two- &three-digit area codes)	Birmingham (0121), Bristol (0117), Cardiff (029), Coventry (024), Durham, Sunderland & Tyneside (0191), Edinburgh (0131), Glasgow (0141), Leeds (0113), Leicester (0116), Liverpool (0151), London (020), Manchester (0161), Northern Ireland (028), Nottingham (0115), Portsmouth & Southampton (023), Reading (0118), Sheffield (0114)

[22] The map provided in Figure 2.1 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 shown.

Guide to the remainder of this document

2.53 In this document we consider our approach to managing geographic numbers and safeguarding their ongoing availability. We consider stakeholders' responses to the November Consultation and, having taken those into account, we reach some conclusions and further develop some proposals for the management of geographic numbers.

2.54 In the next section, we look in more detail at the strategic context for this review of geographic numbers. The remainder of the document presents the following:

- Section 4 evaluates options for increasing supplies of geographic numbers and presents our decisions on the most appropriate way to create more numbers to meet demand in areas where we predict a shortage of number blocks to allocate to CPs;
- Section 5 discusses how encouraging CPs to use numbers as efficiently as possible could reduce the need to increase the supply of numbers. We explain our proposals for a limited roll out of smaller number blocks. We also confirm that we are reviewing our administrative processes for geographic numbers, in a separate exercise, and plan to consult on the proposed introduction of a reservation stage in geographic number allocation and on changes to the telephone number application forms;
- Section 6 follows on from the previous section's conclusions that increasing CPs' efficient use of geographic numbers would help reduce the need for number supply measures and sets out specific proposals to do so through the incentives of charging for numbers in a pilot scheme; and
- Section 7 summarises our decisions, proposals and next steps for managing geographic numbers. We include a timeline for potential implementation.

2.55 We have included a number of annexes to provide supplementary information, giving additional background and context to aid understanding of our decisions and consideration of our proposals:

- Annex 1 summarises the background on geographic numbers provided in the November Consultation;
- Annex 2 provides and analyses updated forecasts on number block availability across the UK and what this means for number supply;
- Annexes 3 and 4 set out our detailed assessment of number supply options;
- Annexes 5 and 6 provide further information on how our proposed pilot charging scheme for geographic numbers might operate; and
- the remaining annexes set out the legal framework for this review, respondents to the November Consultation and details on how to respond to this consultation.

Section 3

Strategic context

3.1 In this section we set out the strategic context for this review of geographic numbers. We explain how our objectives, policy principles and regulatory duties have shaped our approach. We then consider stakeholders' views on our objectives and approach to managing geographic numbers and explain how these views have been taken into account going forward.

Context

3.2 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 areas. The number of CPs has increased significantly over the last ten years, leading to more competition and choice for consumers, as well as an increasing demand for geographic numbers. Although the combined quantity of geographic numbers that CPs already hold exceeds likely demand from end-users, individual CPs nevertheless need new allocations of geographic numbers from time to time. One context for this review is that the overall utilisation of numbers already allocated is low and this has led to scarcity in some geographic areas.

3.3 The number block size is determined by routing constraints in some long-established networks. 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 CP must be sufficiently large to accommodate these restrictions, because the older networks would not be able to analyse sufficient digits in dialled numbers to route calls if numbers were allocated 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.

3.4 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 wholesale changes to improve efficient use of numbers is unlikely to be economically justifiable given that it would require extensive reconfiguration of how legacy networks operate and would be reliant on the network vendors still being in operation and being able to carry out this work. There may be scope, however, for allocating a limited number of smaller blocks, however to do so needs to be considered within the context of current network technical restrictions.

3.5 A transition from traditional time-division multiplex technology to NGNs would remove 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. CPs would be able to utilise the numbers we allocate more efficiently,

and our current supplies of geographic numbers could support industry's needs indefinitely.

3.6 Until 2009 it appeared likely that the operators of traditional networks were planning to replace their core voice switching infrastructure with NGN technology. However, BT stepped back from its plan to replace its voice services infrastructure with its NGN design (known as '21st Century Network' or '21CN') and operators of some other major UK fixed networks do not currently appear to be planning major investments in NGN technology.

3.7 Our review therefore considers 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 2012 onwards.

General objective of this review

3.8 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 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.[23]

3.9 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.

Scope of this review

3.10 Our review relates to geographic telephone numbers only. We are focusing on geographic numbers due to the high level of scarcity in some areas, which is not being experienced in other number ranges.

3.11 The geographic scope of the review is the UK and does not include the British Isles of Jersey, Guernsey and the Isle of Man.[24]

3.12 Our focus on geographic numbers does not mean that this review is being treated in isolation from the rest of the UK's telephone numbering plan and our work in administering telephone numbers generally. Some of the proposals discussed in this document are intended to influence demand for geographic numbers and, as a consequence, could affect 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.

3.13 As well as conducting this review of geographic numbers, we are also undertaking a separate review of non-geographic call services. Our proposals in each review are

[23] This relates to CPs' ability to compete for consumers who want or need a new geographic phone 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.

[24] 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.

independent although there is potential for decisions made in one review to affect demand for numbers covered by the other. We published a consultation on non-geographic call services in December 2010.[25] We plan to publish a further consultation at the end of this year.

Our approach

Reflecting citizen and consumer interests

3.14 Measures to increase the supply of geographic numbers are necessary in area codes forecast to run out of numbers in the next few years. Absent such measures, exhaustion could deny local consumers the full 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"[26] and we are required to secure the availability throughout the UK of a wide range of electronic communications services.[27] For both these reasons we must prepare to introduce measures to increase the supply of geographic numbers in areas that are close to running out.

3.15 In deciding how to address the need to create more numbers, 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.

3.16 A key principle in our approach to furthering consumer interests is the promotion of effective competition.[28] 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 have therefore considered 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.

3.17 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. Geographic numbers are scarce. The value of this resource should be reflected in the way that numbers 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.[29]

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[25] *Simplifying Non-Geographic Numbers: Improving consumer confidence in 03, 08, 09, 118 and other non-geographic numbers*, consultation published 16 December 2010. http://stakeholders.ofcom.org.uk/consultations/simplifying-non-geo-numbers/.

[26] Article 10(1) of the Framework Directive (Directive 2009/140/EC of the European Parliament and of the Council of 25 November 2009 amending Directives 2002/21/EC on a common regulatory framework for electronic communications networks and services) http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:337:0037:01:EN:HTML.

[27] Under section 3(2)(b) of the Act.

[28] 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".

[29] Our 2010 consumer research found that 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 2006 consumer research (64 per cent compared with 52 per cent respectively).

Policy principles

3.18 In 2006 we reviewed how we manage telephone numbers ('the 2006 Numbering Review') and set out our strategic decisions on we would do this over the subsequent five to ten years.[30] In the November Consultation we reiterated the policy principles that we set to guide our numbering decisions as part of the 2006 Numbering Review:

- 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.

3.19 These principles were translated into the following strategic statements on the management of geographic numbers:

- 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;
- 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.

3.20 The November Consultation considered that these principles and strategic statements remained appropriate and relevant to this review of geographic numbers. We used these principles to evaluate the appropriateness of options for the management of geographic numbers.

Regulatory duties

3.21 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.[31] 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) of the Act, we consider that securing the availability throughout the UK of a wide range of electronic communications services as particularly relevant to this review of geographic numbers.

[30] The 2006 Numbering Review - see consultation document (published 23 February 2006) and statement (published 27 July 2006) at http://stakeholders.ofcom.org.uk/consultations/numberingreview/?a=0.
[31] Section 3 of the Act.

3.22 Section 4 of the Act requires us to act in accordance with the six European Community requirements for regulation. Of particular relevance to this review 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.

3.23 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."

3.24 Further information on the legal framework for our administration of telephone numbers is provided in Annex 7.

Impact assessment

3.25 Impact Assessments form a key part of the policy-making process and provide a transparent way of considering different options for regulation, including not regulating. We expect to carry out Impact Assessments for the great majority of our policy decisions. This document evaluates a number of options for managing geographic numbers – reaching conclusions on options in relation to increasing the supply of numbers and evaluating proposals for administrative processes and charging for geographic numbers.

3.26 The analysis presented throughout the document represents an impact assessment as defined in section 7 of the Act.[32]

Equality impact assessment

3.27 We must also assess the effect of functions, policies, projects and practices on race, disability and gender equality. Equality impact assessments also assist us in making sure that we are meeting our principal duty of furthering the interests of citizens and consumers.

3.28 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 between different consumer groups. Where this is so, we have highlighted our consideration of equality issues.

[32] See our guidelines at http://stakeholders.intra.ofcom.local/binaries/consultations/better-policy-making/Better_Policy_Making.pdf.

General regulatory principles

3.29 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.[33]

Stakeholders' views on our policy principles, objectives and approach

3.30 In the November Consultation we asked:

> *"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?"*

3.31 A number of stakeholders welcomed our review of geographic numbers and the opportunity to comment on our proposals.[34]

3.32 Some CPs stressed the importance of geographic numbers to their business and their customers. BT commented that:

> *"Geographic numbers are our history and our lifeblood. We know that they feel local and familiar. People recognise, understand and trust them and find them easy to remember. We want them to be there for whoever wants them and plays by the rules. We agree that in some areas they appear to be running out and that Ofcom needs to plan now how to make the existing supplies last longer and create more of them".*

3.33 TSL and ITSPA also acknowledged the value of geographic numbers and the need to balance supply and demand to ensure that adequate numbers were available to provide services to consumers and ensure a competitive communications market.

Policy principles and objectives

3.34 A number of stakeholders agreed with our policy principles in general.[35] Some stakeholders commented on specific policy principles.

Stakeholders' comments

3.35 Some respondents commented on the principle that the meaning which numbers provide to consumers is protected.

3.36 BT agreed that our approach should not hasten the erosion of location significance as this continues to be of significant importance to consumers.

[33] Section 3(5) of the Act.
[34] Those stakeholders were BT, Cable&Wireless Worldwide (C&WW), Colt, Federation of Communication Services (FCS), Internet Telephony Service Providers' Association (ITSPA), Magrathea, TalkTalk, Virgin Media, Voice of the Net Coalition Europe (VON), Telephony Services Limited/Gradwell dot com (TSL) and [✂].
[35] Those stakeholders were BT, C&WW, Net Solutions Europe (NSE), Virgin Media, [✂] and two consumers ('Name Withheld 5' and '6').

3.37 In contrast, VON considered that the importance of location significance is decreasing and that consumers' concern lay in the cost of the call. A consumer[36] also considered that the UK did not need location significance defined to the extent of 610 area codes and that callers only needed to know if a call was local or national.

3.38 Mr Stevens (a software specialist) considered that our move from location-based allocations to CP-based allocation in the 1990s (i.e. as a result of the liberalisation of the telecommunications market), followed by our allocation of geographic numbers to VoIP providers with artificial presence in an area, had already undermined confidence in location significance.

3.39 VON also argued that there had been an erosion of location significance (though the provision of IP-based services) and that we should consider modernising the numbering plan on a nationwide scale by, for example, eradicating the link between area code and location through the use of UK-wide (as opposed to area-wide) numbers.

3.40 A number of respondents commented on the principle that number allocation processes support competition and innovation.

3.41 [✂] stressed the importance of our policy in supporting innovation and competition and the need to give due weight to this principle in assessing the final strategy.

3.42 Sky also argued that "continuity in the supply of telephone numbers is essential to foster competition, consumer choice and innovation. As such and in accordance with its duties, Ofcom is required to manage this scarce resource effectively and efficiently".

3.43 C&WW provided the following additional detail as to how they considered that number allocation processes should support competition and innovation:

- numbering decisions should not favour one CP over another in the retail market;
- there should be no unintended consequences in the operation of wholesale calls markets that provide the foundation for retail competition (e.g. transit markets); and
- consumer discrimination must be avoided in the use of numbers (e.g. if some end-users have familiar numbers while others are given numbers that are less instantly recognisable or less user-friendly).

3.44 FCS also supported the principle of ensuring that competition between CPs with number ranges is fair. In particular, FCS argued that number allocation processes should ensure against giving CPs with large supplies of unused numbers preferential treatment.

3.45 C&WW suggested two additional objectives to be pursued through applying this principle:

- numbering policy should not provide incentives for CPs to discourage customers from using number portability (and inadvertently increase number demand); and

[36] 'Name Withheld 3'.

- numbering policy should acknowledge the link between numbering and routing (and the consequent potential impact that changes can have on the various markets for routing).

Ofcom's response

3.46 On the principle that the meaning which numbers provide to consumers is protected, we maintain that preserving the location significance provided by geographic numbers remains important for our review of geographic numbers.

3.47 Our consumer research[37] has consistently found the location information provided by geographic numbers to be of value to consumers and businesses. Our 2011 consumer research found that geographic numbering is still highly valued. The report stated that "maintaining the geographic significance of an area code was considered important by some businesses and residential consumers – for a mixture of emotional and practical reasons".[38] Consumers and businesses that took part in the 2011 consumer research expressed concern at measures that could dilute and potentially erode the geographic significance associated with a single area code.[39] We do not, therefore, agree with the argument from VON and a consumer that the importance of location significance in geographic numbers is diminishing for consumers.

3.48 We agree with Mr Stevens and VON that location significance may be eroded by the use of geographic numbers for IP-based services, given their nomadic and 'out of area' use. We considered whether it was appropriate for geographic numbers to be used for VoIP services in 2004[40] and concluded that to do so would promote innovation and bring benefits of technological advances and hence would be in the long-term interest of consumers and would promote competition. Our principle to protect the meaning that geographic numbers provide to consumers, when applied specifically to geographic numbering policy, is that "we will not hasten the erosion of location significance but will recognise (and not stifle) the effect of network and service evolution on that significance".[41] We maintain that this approach is appropriate. While location significance may be diluted to some extent by VoIP services, overall we consider that consumers generally still trust and value the link between the area code and location.

3.49 On the principle that number allocation processes support competition and innovation, we agree with the comments of [✂] and Sky that ensuring the ongoing availability of geographic numbers in all areas to meet CP demand is vital to support competition and innovation. A lack of available and appropriate numbers could create a barrier to entry and innovation for CPs. As stated,[42] the general objective of this review is to ensure that geographic numbers are available to support competition in fixed-line services across the UK for the foreseeable future.

3.50 C&WW and FCS provided additional detail on how this principle should be applied to number allocation processes. We agree that ensuring our management of numbers

[37] See paragraph 2.45 and footnote 20 of this document.
[38] 2011 consumer research report page 6.
[39] This opinion was expressed in relation to consideration of introducing a second code in an area. However, the desire not to dilute location significance in geographic numbers was expressed.
[40] *Numbering arrangements for new voice services*, statement published by Ofcom on 6 September 2004: http://stakeholders.ofcom.org.uk/consultations/vob/
[41] See paragraph 3.19.
[42] See paragraphs 3.8 and 3.9 on the general objective of this review.

is neutral in the treatment of CPs, and that CPs do not unduly discriminate against each other in relation to telephone numbers, are important points to be observed.

3.51 C&WW also make the point that discrimination must be avoided in consumers' use of numbers. Our general objective for this review is to ensure that numbers remain available in all areas so that consumers' choice of CP with the numbers that they want is not restricted. We are proposing measures to improve efficiency of use of the existing stock of numbers in order to delay the need to increase the supply of geographic numbers through overlay codes, which will be less recognisable to consumers (at least initially) and dilute location significance.

3.52 C&WW emphasised the need to consider the potentially widespread impact on competition and innovation through changes to numbering policy and highlighted the need to avoid unintended consequences for number portability and routing.

3.53 Number portability (the facility by which end-users can retain their telephone number when changing provider) facilitates switching and consumer choice. The ability for end-users to request to port their telephone number is provided for in General Condition 18. We agree that it would be counter to our regulatory aims to implement policy that may have an adverse effect on number porting. The consequences of any decisions and proposals need to be considered within the context of any potential impact on number portability.

3.54 C&WW also stressed the link between numbering and routing in their response. We acknowledge this link and the need to consider how potential changes in number policy may impact the various markets for routing.

3.55 The points raised by C&WW in regarding the potential impact of numbering policy on number portability and routing are to be incorporated in our policy on the management of geographic numbers.[43] The preceding points are already covered in our policy principles.

Other policy principles

3.56 We note that stakeholders made no direct comment on our policy principles that i) the numbers consumers want are available when they are needed; ii) that the numbers consumers currently use are not changed if this is avoidable; and iii) consumers are not avoidably exposed to abuse. We will retain these principles, along with the two principles discussed in the preceding paragraphs.

Regulatory principles

3.57 BT stressed that any decision must be consistent with our general regulatory principles, including proportionality. Virgin Media commented that our policy should be informed by our regulatory principles of taking an approach that is light touch, evidence based and objectively justifiable. We should have a bias against intervention, and when we do intervene, it must be in a proportionate manner.

[43] See paragraph 3.97.

3.58 Our regulatory principles guide our work in ensuring that people in the UK get the best from their communications services. [44] We employ these regulatory principles to our review of geographic numbers as we do when carrying out all our duties.

Our approach to the review of geographic numbers

Stakeholders' comments

3.59 C&WW, TalkTalk, [✂] and two consumers[45] were supportive of our general approach for managing geographic numbers as proposed in the November Consultation.

3.60 Virgin Media stressed the importance of our work in this area and that our proposals would "have a significant impact on both businesses and consumers alike over a period of many years. In light of the significance and longevity of Ofcom's proposals, Ofcom needs to be sure that its proposals are not only necessary to remedy the issue but are also proportionate in their impact".

3.61 A number of stakeholders disagreed with our proposed approach for the future management of geographic numbers, suggesting alternative sequences of actions or more radical considerations.

3.62 Some respondents[46] argued that to proceed with charging for geographic numbers at this point without giving supply side and administrative measures full opportunity to take effect would not be in line with our policy principles.

3.63 Virgin Media and BT considered that charging for numbers represented a disproportionate approach to resolving the shortage of geographic numbers. Although NSE accepted the principle of taking steps to ensure the availability of geographic numbers in a way that minimised disruption to end users, they considered that the charging proposals were not in line with our policy principles. ITSPA, NumberGroup.com and TSL made similar points. ITSPA considered that a number charge had "the potential to create barriers for entry and is not necessarily neutral in its treatment of CPs".

3.64 In contrast, a consumer[47] urged us to deal with the root of the scarcity issue (i.e. the under-utilisation of allocated numbers) before releasing more numbers. The response considered that charging for numbers should be the first step otherwise numerous small CPs would take the new numbers created and under-utilisation would continue.

3.65 Colt suggested that our approach should be to i) close local dialling where required to release further number ranges; then ii) strengthen our administrative processes and reclaim unused number blocks; and finally iii) introduce overlay codes as a last resort where more numbers were required. The allocation of smaller blocks and charging for numbers were not supported.

3.66 Mr Stevens argued that the shortage in geographic numbers was created by wasteful policies adopted by Ofcom in recent years. Mr Stevens highlighted allocation of

[44] Our regulatory principles can be found on our website: http://www.ofcom.org.uk/about/what-is-ofcom/statutory-duties-and-regulatory-principles/.
[45] 'Name Withheld 5' and '6'.
[46] Those respondents were BT, Colt, ITSPA, NSE, NumberGroup.com, Sky, TSL, Virgin Media and [✂].
[47] Mr J Pitts.

numbers in large blocks; the facilitating of CPs' UK-wide roll out (particularly by VoIP providers with artificial presence) and the allocation of geographic numbers for mobile telephones as causing pressure on geographic number availability. In light of this, Mr Stevens considered that many of our proposals would prove to be short-term and inadequate for managing geographic numbers.

3.67 Some respondents suggested approaching our review of geographic numbers from a broader perspective when considering the issue of geographic number scarcity.

3.68 BT commented that there was not an inherent shortage of geographic numbers, pointing out that there were nearly two billion numbers available in the 01 and 02 ranges, much of which was lightly used or yet to be used. Additional ranges (e.g. 04 and 06) could be designated to meet the need for more geographic numbers if required. VON also contended that numbers were not intrinsically scarce, considering that "it is rather the way in which they are structured and managed that can cause scarcity".

3.69 VON encouraged us to take a more fundamental review of the UK's geographic numbering plan, doubting whether it was currently adequate to cope with rapid technological trends and evolution or to meet our requirement to make numbers available for all electronic communications services. VON stressed the need for a forward-looking approach to numbering in light of changing consumer demands and the inevitable switch to an all-IP world for fixed and mobile networks. VON stressed this point despite CPs' investment rates in NGN infrastructure for voice services being lower than anticipated by Ofcom. VON advocated an approach to geographic numbers that provided flexibility and nomadicity for consumers. In its view, focus needed to be on 'Next Generation Numbers'. Such an approach could be achieved with the eradication of the link between area code and location through the introduction of 'UK-wide' geographic numbers (while recognising that 03' UK-wide numbers already exist) as location significance will become increasingly obsolete.

3.70 SSE considered that the management of geographic numbers was an area that could benefit from a co-regulatory arrangement going forward. SSE suggested that the day-to-day control of numbering issues could be given to a representative market body that was monitored by Ofcom. SSE suggested that this may help to reduce our costs and empower industry to sort out issues. It referred to Ofcom's duty under the Act on "the desirability of promoting and facilitating the development and use of effective forms of self-regulation".[48]

Ofcom's response

3.71 We agree with Virgin Media that this review considers important issues that will have an impact on consumers, businesses and CPs over a long period of time. We recognise the importance of getting our approach right and maintain that the sooner we can act on appropriate measures to address scarcity of numbers in some geographic areas, the greater the opportunity we will have to ensure the ongoing availability of numbers and to minimise the impact of those measures on consumers and CPs.

3.72 We received a mixed response from stakeholders to our proposed approach of progressing simultaneously our proposals to:

[48] Section 3(4)(c) of the Act.

- plan for new geographic numbers in areas which are likely to exhaust their current supplies in the foreseeable future;

- implement a charging scheme for CPs, on a pilot basis, for geographic numbers allocated to them in areas where numbers are particularly scarce; and

- take steps to strengthen the administrative processes which we use to manage and allocate geographic numbers to CPs.

3.73 The main source of concern was the proposed implementation of a pilot charging scheme for geographic numbers at this point. A number of stakeholders questioned whether this proposal met our stated policy and regulatory principles. In particular, they questioned whether it would be a proportionate intervention at any time and, more specifically, whether it would be an appropriate response to number scarcity now, given the other measures proposed.

3.74 In the November Consultation our preliminary conclusion was that introducing charging for geographic numbers was proportionate given the need to address number scarcity and improve efficiency in number use. We proposed to limit the impact by introducing charges initially in the areas with greatest level of scarcity and by setting the charge at a low level. In light of stakeholder responses, we further consider whether our proposals for charging for geographic numbers would be proportionate (as well as satisfying our other legal tests and duties) in Section 6.

3.75 Our approach to managing geographic numbers is that we should consider all reasonable measures to improve efficiency in number use now so that we can postpone the need for number supply measures.

3.76 Our current forecasts for geographic number availability indicate that new supplies of geographic number blocks are likely to be necessary in 36 areas by 2021. The first such need is likely to arise in Bournemouth next year followed by 14 other areas by 2016. We consider, therefore, that we have a compelling case to take action to ensure that we can meet our policy principle that "the numbers consumers want are available when they are needed".[49] We maintain that the most appropriate response to the level of scarcity of geographic numbers we currently face is to consider addressing the situation from all identified and reasonable approaches at this time.

3.77 The approach we put forward in the November Consultation proposed addressing scarcity of geographic numbers from both demand (including charging for geographic numbers) and supply perspectives. Although our proposals on how to do this are divided into three separate sections in the November Consultation and this document to aid analysis, in practice they are mutually supportive and interdependent elements in the management of geographic numbers. We think of these measures as necessarily working together to deliver our policy statement that "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".[50] We set out why we consider that this is the most appropriate approach briefly below and in our further considerations of the proposals in Sections 4 to 6.

We need to consider demand side measures alongside number supply measures

[49] Paragraph 3.18.
[50] Paragraph 3.18.

3.78 BT and VON argued that geographic numbers are not intrinsically scarce – there are sufficient numbers already allocated to meet consumers' needs and we have sufficient spare resource in the UK's numbering plan to designate more geographic numbers if required. However we consider that the geographic numbers that consumers want (i.e. the numbers that they are already familiar with and trust) are scarce. It is numbers in their existing form in recognisable area codes that consumers value and our policy principle is to ensure that the numbers consumers want are available when they are needed for as long as possible and to take reasonable measures to delay exhaustion.

3.79 We also want to avoid the inconvenience and cost to consumers and CPs associated with increasing the supply of geographic numbers. Closing local dialling would be an inconvenience for consumers as they would need to change dialling behaviour and may need to make adjustments to pre-programmed numbers. The following step of introducing an overlay code in any area that requires further numbers has costs associated with it and is strongly disliked by consumers as it dilutes the location significance of geographic numbers.[51]

3.80 We reference to Mr Stevens' comment that inefficiencies in the way that geographic numbers are used have created scarcity, we have set out some of the challenges we face in managing geographic numbers effectively in the preceding section.[52] We also maintain that it is appropriate for geographic numbers to be used for many types of service provided that the use is in line with the Numbering Plan as this promotes competition and innovation for the benefit of consumers.

3.81 Our approach is designed to improve utilisation of existing numbers within the current technological environment and without stifling innovation and competition. We have identified that strengthening administrative measures and incentivising more efficient use of numbers are the two approaches we need to take for this to be achieved. It is therefore not appropriate to plan only for increasing the supply of geographic numbers while there is action that can be taken to help maintain availability of the current stock of numbers.

We consider that strengthening our administrative processes without incentivising more efficient use of numbers through charging would not be sufficient

3.82 In the November Consultation and in Section 5 of this document we consider ways to strengthen our administration of geographic numbers to improve utilisation. We have put forward a number of proposals that we consider would have an effect on efficient use of numbers, however, it is difficult to estimate the extent.

3.83 We are undertaking a review of our geographic number allocation processes and plan to consult on modifications to the geographic number application form to elicit more information on which to base our allocation (and potentially reservation) of geographic numbers. This may help to strengthen our administrative processes. However, for the number allocation system to achieve the most efficient outcome, we consider that each number application would ideally 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).

[51] See 2011 consumer research report page 6.
[52] Paragraphs 2.6 to 2.11.

3.84 We intend to broaden the scope of our audits of allocated numbers. Audits are a useful tool in reviewing (and acting on) how CPs use the numbers allocated to them. However, the effectiveness of audits is limited and they are resource intensive exercises:

- audits provide CPs with little incentive to use existing blocks more efficiently or substantially reduce demand for number blocks going forward;
- audits rely on CPs voluntarily returning number blocks to Ofcom and we have limited legal powers to require CPs to surrender blocks that they have been allocated;
- we have already audited the areas subject to the most significant number scarcity and requested the return of unused number blocks. It is unlikely that further audits of these areas would yield a significant further return of number blocks in the short to medium term;
- audits are time-consuming and result in costs for CPs and Ofcom.

3.85 In light of these considerations, there may be more effective methods to promote efficient use of geographic numbers alongside our administrative measures. Such methods (e.g. charging for geographic numbers) could potentially reduce over time the administrative processes that we apply to geographic numbers (e.g. reduce or replace the need for number audits).

We consider that incentivising efficient use of geographic numbers through charging is required to support our administrative processes for managing geographic numbers

3.86 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 allocations. Because CPs are currently allocated number blocks for free they do not bear all the costs generated by using these numbers and this can lead to CPs requesting and holding more number blocks than would be economically efficient.

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

- 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).

3.88 These anticipated outcomes could not be achieved through administrative processes alone as these are rule-based approaches and do not provide incentives for CPs to manage numbers more efficiently.

3.89 However, should we proceed with our proposal to charge for geographic numbers, we intend to do so in a pilot scheme in a limited number of areas. This is to assess whether there are any unintended consequences that arise from charging. We would

therefore need to maintain, and we propose strengthen in the interim, our administrative processes to ensure that we impose rules on number management across all geographic numbers.

3.90 Our approach to this review, therefore, remains that scarcity of geographic numbers requires us to tackle the problem using a number of approaches simultaneously.

Other considerations

3.91 Mr Stevens considered that our approach would provide a short-lived response to CPs' geographic number demands unless we radically changed the way that we administer numbers. As explained at the beginning of this section, a transition from traditional TDM networks to NGNs would remove the technical 'digit decoding' constraints inherent in some long-established UK fixed networks and would allow us to allocate numbers in smaller blocks or, potentially and if appropriate, even individually. CPs may be able to utilise the numbers we allocate more efficiently, and our current supplies of geographic numbers could potentially support industry's needs indefinitely. In other words, the measures considered in this review may then no longer be needed to ensure an ongoing supply of geographic numbers. However, while we will monitor any progress in CPs' plans to replace their voice services infrastructure with an NGN design, we need to work within the current technological environment.

3.92 Also discussed earlier in this section, is our retention of the policy principles set as part of the 2006 Numbering Review that guide our approach to number management. In line with our principle for number allocation processes to support competition and innovation, we do not intend to reverse our decision to allocate geographic numbers to VoIP providers or that geographic numbers may be used for a variety of services provided use is in line with the Numbering Plan.

3.93 As mentioned by VON, we need to ensure that the review is forward-looking and provides for technological changes. We consider, however, that the current geographic numbering plan provides for innovation, including the use of geographic numbers for 'out of area', nomadic and mobile services. In line with our policy statement that we "will not hasten the erosion of location significance but will recognise (and not stifle) the effect of network and service evolution on that significance"[53] we do not plan to modify the link between the area code and the geographic location to provide a broader 'UK-wide' significance. The consumer research supports consumers' continued attachment to this link and we do not consider that location significance has diminished sufficiently for this link to be removed.

3.94 We do not consider that either the current scarcity of geographic numbers in some areas or that technical or service evolution warrants further number ranges being designated as geographic numbers. The '01' and '02' ranges provide sufficient numbers to meet consumers' demand – the aim is to utilise those numbers more efficiently. In addition, the free '04' and '06' ranges may be needed to provide numbers for new service types in the future.

3.95 We note SSE's suggestion that day-to-day management of geographic numbers could be referred to an industry body. We have no plans to transfer the administration and allocation processes outside of Ofcom and do not consider it appropriate, at least currently, to do so.

[53] Paragraph 3.18.

Conclusions on our strategic approach to the management of geographic numbers

3.96 The general objective for this review of geographic number management remains to ensure that geographic numbers are available to support competition in fixed-line voice services across the UK for the foreseeable future. The context for this review also remains as the need to consider how Ofcom and CPs can manage geographic numbers more efficiently within the current technological environment to both reduce the need for measures to create more numbers and to plan for additional supplies of numbers where necessary.

3.97 Having considered stakeholders' responses, the policy principles that guide our strategic decisions on how telephone numbers are managed remain unchanged as:

- 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.

3.98 Our policy principles provide us with the following statements on how we will manage geographic numbers. They have been strengthened in light of stakeholder responses (see addition of the third bullet point below):

- 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; it will take account of the link between numbering and routing and the consequential impact that numbering policy has on the markets for routing and number portability;
- 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.

3.99 Our approach for this review of geographic numbers is to tackle the scarcity of geographic numbers by using all reasonable and proportionate measures. We do not consider that the geographic numbering plan needs to be redesigned to meet demand or to provide for service and technological evolution.

3.100 We consider (subject to consultation) that the following approaches combined are the most appropriate way of achieving best use of geographic numbers:

- to plan for new geographic numbers in areas which are likely to exhaust their current supplies in the foreseeable future;

- to implement (subject to consultation) a charging scheme for CPs, on a pilot basis, for geographic numbers allocated to them in areas where numbers are particularly scarce; and

- to take steps to strengthen the administrative processes which we use to manage and allocate geographic numbers to CPs (some of which are subject to consultation).

3.101 In the next three sections we set out how we intend to take these measures forward.

Section 4

Providing new supplies of geographic numbers

Introduction

4.1 In the November Consultation we presented options for creating more geographic numbers and, following an analysis of their impacts, indicated what our preferred options would be.[54]

4.2 In this section we discuss how we will provide new geographic numbers for area codes which will exhaust our current supplies in the foreseeable future. After summarising the proposals in the November Consultation, we review the responses we received and describe our considerations in relation to them. We then set out our conclusions for areas with four-digit codes and explain how we consider that they meet the relevant legal tests. We also explain our ongoing proposals for areas with five-digit codes.

4.3 Annex 3 provides our assessment of the impact and potential costs of implementing number supply options involving closed local dialling and/or overlay codes. In Annex 4 we provide an assessment of number supply options involving number change in comparison to overlay codes with closed local dialling.

Potential solutions discussed in the November Consultation

4.4 In the November Consultation, and in line with conclusions reached in our 2006 Numbering Review and with our policy principles,[55] we said that we prefer supply measures which would not involve changes to existing phone numbers. Our preference was informed by the costs and inconvenience associated with changes to numbers and the existence of alternative measures for increasing supplies of numbers which we consider would have less impact on consumers.

4.5 In the absence of evidence that the UK is likely to need a significantly widespread increase of numbers, we favoured solutions whose application could be confined to area codes experiencing number shortage, rather than to all UK area codes. This approach avoids unnecessary or premature disruption to consumers in areas at little risk of running out of their current supplies of numbers. Nevertheless, we recognised that there could be a benefit in a consistent approach across the UK, particularly in enabling the more effective communication of any change to consumers' dialling behaviour.

4.6 We also took into account the impact of implementing number supply measures as and when required as opposed to taking more than one measure at a time to create a larger quantity of numbers. We considered that two or more changes in an area code within a relatively short time of each other could be particularly disruptive and we weighed this against taking measures to increase the supply of numbers before needed. Our preliminary view was that we should implement number supply

[54] See paragraphs 4.37 to 4.40 for our preliminary conclusions for four-digit area codes and paragraphs 4.60 to 4.65 for our preliminary conclusion for areas for five-digit area codes in the November Consultation.
[55] See paragraph 3.18.

measures as and when more numbers are needed in order to only take action when required. However we recognised that a reasonable interval between measures would be at least ten years.

4.7 These general considerations helped us to focus on solutions which could generate new local supplies of numbers while minimising overall disruption to residential consumers, businesses and CPs. We narrowed the options for four-digit area codes that require additional supplies of numbers to those solutions involving either or both of the following changes:

- closure of local dialling – meaning that local fixed-line users would need to dial the area code when making local calls. Closing local dialling would allow us to allocate new local numbers in which the first digit after the area code is either '0' or '1'; and
- introduction of an overlay codes – which would mean that two area codes would serve the same geographic area.

4.8 We developed additional potential solutions to address the special circumstances in the 11 area codes which still have five digits. While these area codes serve relatively small local populations, their current supplies of numbers are particularly restricted because their local numbers only have five digits.

Consideration of responses to the November Consultation

Should we consider options involving changes to existing phone numbers?

4.9 In the November Consultation we proposed not to take further any options that would involve changing existing phone numbers, on the basis of the considerations summarised at paragraph 4.4 above. We asked:

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

Stakeholders' comments

4.10 Most consumers and CPs that responded to this question agreed that we should not consider further at this stage measures that involve changing existing geographic numbers.[56]

4.11 BT commented "history tells us that..(options involving changing customers' numbers).. are difficult and costly to implement and customers react badly to them". BT added that it had not reviewed options involving changes to geographic numbers in any depth as Ofcom had not recommended any such solutions in the November Consultation. If we were to change our mind and consider such solutions, opportunity would need to be given for stakeholders to consider such options fully.

4.12 C&WW welcomed our "acknowledgement that changes to existing numbers are far from desirable" and referred to the costs involved in previous number change activity.[57] Magrathea agreed that number change options would be more disruptive

[56] Those respondents were BT, C&WW, Colt, FCS, ITSPA, Loho, Magrathea, NumberGroup.com, Virgin Media, [✂] and six consumers ('Name Withheld 1, 3, 5 and 6', Mr J Pitts and Mr J Youles).
[57] C&WW made an exception to number change in relation to numbers in a few four-digit area codes that have five-digit (rather than six-digit) local numbers – see paragraph 4.133.

than the options put forward in the November Consultation. NumberGroup.com commented that "another change would not be welcome by anyone".

4.13 [✂] broadly agreed that options involving number change should be a last resort once all other efforts to conserve number supply have been tried and exhausted. This was due to the disruption of any change to existing numbers, which had the potential to cause widespread consumer confusion and would require time and effort to implement. Virgin Media also considered that number change options would "be unpopular with consumers and would entail unnecessary technical amendments to CPs' existing network and customer databases".

4.14 NSE and IPV6 commented that they did not oppose options that would involve changes to existing geographic numbers but did not elaborate on this position.

4.15 VON urged us "to pursue a more radical and holistic approach towards numbering, an approach that fosters future technological and service innovations, instead of opting for a short-term 'quick fix' solution".[58]

4.16 Some respondents did not agree that we should eliminate options that involve changes to existing geographic numbers. Mr Stevens pointed out that there had been a trend towards shorter area codes and longer local numbers during the 1980s and 1990s, as well as the more recent change to 02X numbers in 2000. Mr Stevens argued that this trend should continue as it would provide a long-term and organised solution to number demand. He suggested several unused 01 and 02 number ranges that could be utilised for numbering in a '3+7' digit format (i.e. three digits for the area code and seven digits for the local number). Alternatively, the 04 range is also currently unused.

4.17 A consumer ('Name Withheld 2') argued that "it would be wrong to rule out renumbering where it offers a more stable, permanent solution than overlays and demand suppression". This respondent further argued that "short-term benefits to today's users should not take precedence over long-term usability and the availability of suitable numbers for future generations. Renumbering at least has the benefit of being only a temporary irritation, when compared with the permanent inconvenience of limited capacity, overlays and loss of local dialling".

4.18 The response from 'Name Withheld 2' further argued that the areas forecast to run out of numbers had largely avoided renumbering for the twenty-plus years before number supply measures were forecast to be required and number change "seems a reasonable trade-off for a lasting increase in capacity and the avoidance of unpopular overlays or local dialling changes". Reference was also made to our 2010 consumer research, which suggested that ten years should be the minimum length of time between changes.[59] As such, this respondent believed that longer-term solutions to number scarcity, including those requiring changes to numbers, should be considered. Furthermore, it was argued that the costs involved in number changes would have reduced over the last decade given the move from printed to web-based documentation. Parallel-running between old and new numbers and changed number announcements for misdialled calls would also reduce the impact of number changes.

[58] We summarise and respond to VON's comments in Section 3 – see paragraphs 3.69, 3.78 and 3.93.
[59] 2010 consumer research report page 16.

4.19 A second consumer ('Name Withheld 4') considered that number changes should not be ruled out completely and argued that large ranges of direct dial-in (DDI) numbers used by businesses should be moved to the 03 'UK-wide Number' range. We consider this point later in paragraph 4.144.

4.20 Some attendees at our public engagement meeting[60] in Bournemouth questioned why we were not pursuing options that involved number change as an alternative to the proposals involving closing local dialling and/or overlay codes. Those attendees favoured the implementation of one supply measure in the form of a number change to a three-digit area code and seven-digit local number. This would provide a long-term solution to numbering requirements in Bournemouth, avoid the confusion of two codes for one area and would be less disruptive in the long-term. While some respondents did not support options involving number change for four-digit area codes, they considered that they might be appropriate for five-digit area codes (see paragraphs 4.147 to 4.177).

Ofcom's response

4.21 We recognise that CPs are generally supportive of dismissing options that involve number change from further consideration at this time for a number of reasons, including the resulting disruption, consumer confusion, costs for CPs and consumers, and the time and effort required for implementation.

4.22 However, in light of comments raised by some consumers during the consultation, we have considered in some detail whether it might be better to provide new supplies of numbers in some or all area codes by changing existing phone numbers rather than by closing local dialling and introducing overlay codes if necessary. In particular, we considered whether number change options might be an appropriate solution for areas where we forecast that the interval between closing local dialling and introducing an overlay code might be shorter than ten years.[61]

4.23 To inform our considerations, we commissioned further qualitative research ('the 2011 consumer research') to help us gain insight into consumers' likely attitudes to a change to their area code and local phone number and to closure of local dialling and the introduction of an overlay code.[62]

4.24 We draw the following observations from the 2011 consumer research:

- Both residential and business consumers are likely to react much more favourably to closing local dialling and the introduction of an overlay code than to changes to existing phone numbers and area codes, provided that there would be a long interval between the two measures (i.e. at least ten to fifteen years);

- Many (but not all) businesses are likely to be very concerned about the costs to them if we were to implement solutions that would require changes to their existing phone numbers; and

[60] See paragraphs 2.43 and 2.44 for further information on the local engagement meetings.
[61] We note from our 2010 and 2011 consumer research that an interval of ten to fifteen years between number supply measures was considered reasonable. Our forecasts suggest that up to four of the 25 four-digit area codes that we predict will need more numbers within the next ten years would need a further measure less than ten years later if that first measure was to close local dialling.
[62] See paragraph 2.45.

- Many (but not all) residential and business consumers are likely to be concerned that overlay codes - two area codes serving the same area - could be confusing, reduce the geographic significance of the area code and lead to discrimination between businesses and consumers with new and old numbers.

4.25 We have considered our forecasts for the likely intervals between closing local dialling and the need to introduce overlay codes. If we were to close local dialling in the 25 four-digit area codes that we forecast will need new number supplies by 2021, our current forecasts show that the interval between closure of local dialling and the introduction of an overlay code would be between six and nine years in four of those area codes (i.e. the area codes that serve Aberdeen (01224), Bournemouth (01202), Brighton (01273) and Milton Keynes (01908)). However, we forecast that there would be at least ten years interval between the two measures in the other 21 four-digit area codes. Given this predicted interval, we consider that the 2011 consumer research supports the view that consumers and businesses are likely, on balance, to prefer closing local dialling and, if later necessary, the introduction of an overlay code in four-digit area codes, rather than a solution which would require changes to existing area codes and phone numbers.

4.26 In 2005 we commissioned research on the likely costs to businesses of changes to numbers, which reported:

> *"Businesses that experienced a number code change in the year 2000 estimated that the cost to their business was an average of around £5,000. Updating stationery and loss of business were the highest estimated costs"* (Futuresight).[63]

4.27 Since that research was conducted, a range of developments in the communications market, including particularly the increased use of the internet, are likely to have reduced the costs of number changes for businesses. Nevertheless, we consider that such costs are still likely to be significant.

4.28 At the same time, we also recognise the concerns about the potential longer-term impacts of the introduction of overlay codes raised by some stakeholders. In addition, we are aware that closing local dialling on a local basis could cause separate concerns about reduced uniformity and clarity of the geographic numbering plan.

4.29 Overall, however, we consider that the impacts associated with the longer-term risks relating to closure of local dialling and overlay codes, though uncertain, are likely to be limited, and that any potential confusion can be managed, while we can be certain that number changes will entail significant costs and disruption to many local businesses in the short-term. In addition, while we recognise that the arguments for and against number changes are finely balanced, we consider that the evidence that consumers may favour number changes over two supply measures within an interval of less than ten years in a few areas is not strong enough to justify the potential cost of number changes to all consumers and businesses in the area.

4.30 We therefore conclude that we should not take forward any options which would require changes to numbers in locations served by four-digit area codes. If our position on number change were to change in the future for whatever reason, we would consult on any new proposals.

[63] *Numbering Review: Report of Market Research Findings*, 23 February 2006, paragraph 1.10 http://stakeholders.ofcom.org.uk/binaries/consultations/numberingreview/annexes/marketresearch.pdf

4.31 Annex 4 provides more detail on our analysis of the impacts of closing local dialling and overlay codes compared to an option involving number changes.

Are local solutions appropriate?

4.32 In the November Consultation we asked:

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

Stakeholders' comments

4.33 A number of respondents supported the implementation of local rather than UK-wide solutions to meet the localised need for more geographic numbers, including closing local dialling on a local basis.[64]

4.34 BT commented that local solutions would be most appropriate and thought that "national measures would be disruptive and unpopular".

4.35 C&WW agreed that local-based solutions were the most appropriate approach, provided they were applied within a common framework. C&WW considered that our proposed approach would provide this framework through the stages of closing local dialling followed by overlay codes if required. C&WW also considered that a common framework for communications and project management was needed, allowing for a batched approach to local implementation. This would recognise that it is more cost efficient to orchestrate a finite number of common communication campaigns with local messaging than independent campaigns for each area code. It would also allow any updates to switches to be undertaken in a coherent manner.

4.36 Three consumers favoured a localised approach to number supply measures. One consumer ('Name Withheld 2') argued that areas which are not experiencing number shortage should continue to benefit from the useful local dialling facility. Rather than be concerned about confusion if local dialling rules differ between areas, it was argued that local dialling already depends on local knowledge and residents will quickly learn any 'unusual' rules for their area. Meanwhile, people visiting an unfamiliar area are likely to dial a local number with the area code or make any calls from their mobile, thus never encountering the issue. However, batching several nearby areas likely to require number supply solutions within a few years of each other was considered a more efficient approach than tackling areas in isolation.

4.37 Attendees at the local engagement meetings were generally unconcerned that they might need to adopt different dialling behaviour from people in other areas and understood that the level of scarcity of numbers in certain area codes justified the need for different approaches in different areas.

4.38 A number of respondents, however, considered that a UK-wide approach had certain merits. Sky considered that closing local dialling only in areas experiencing number scarcity could exacerbate consumer confusion as dialling behaviour would vary from one area to the next. A single UK-wide awareness campaign could reduce confusion and would be simpler to undertake than multiple, staggered local campaigns. However, Sky acknowledged that the benefits of a national approach needed to be

[64] Those respondents were BT, C&WW, Colt, FCS, ITSPA, NSE, NumberGroup.com, TalkTalk, TSL, [✂] and four individual respondents ('Name Withheld 2', Mr N Stevens, Mr J Pitts and Mr J Youles).

weighed against the disruption caused in those areas where number scarcity is not an issue. Virgin Media also thought that a single national message regarding closing of local dialling would be less likely to cause consumer confusion as to whether the area code needed to be dialled in different areas.

4.39 IPV6 argued that local dialling should be closed on a nationwide basis in a single action as the simplest approach to increasing the supply of numbers. This would also ensure continuity of numbers as it would make approximately 200,000 additional numbers available in each four-digit area code. IPV6 considered that a nationwide closure of local dialling would lead to only minimal impact as areas with eight-digit local numbers would only need to dial an extra three digits (and those with seven-digit local numbers an extra four digits) and because of the familiarity with dialling the full number as a result of calling from mobile phones (where dialling of the full number is required).

4.40 VON argued that we should be 'modernising' geographic numbers on a national basis, moving towards the removal of local geographic significance and the use of a single national geographic code.

4.41 Four consumers were opposed to purely local measures.[65] One consumer (Mr D Earl) argued that we should take an "all or nothing" approach to retain consistency in dialling requirements across the UK. Mr Earl considered that uncertainty over the ability to dial locally would lead to consumers defaulting to dial the full subscriber number in every case. Mr Earl did not consider that having to dial more digits would be a problem for consumers. Another consumer ('Name Withheld 5') argued that end-users should have consistency in dialling requirements across the country, that is, all areas should dial area codes for local calls or none should have to dial the area code, otherwise consumers are likely to be confused and may think that their phone is malfunctioning if unable to dial a number locally without the area code.

4.42 Some respondents were more neutral in their considerations. Virgin Media commented that, from a technical perspective, there is no tangible difference to using local solutions or rolling out measures on a national basis. However, if local dialling was less valued by consumers over time, we may want to consider closing local dialling in all areas to ease the burden on CPs in making the local dialling facility available.

4.43 Magrathea stated that it would have no objection to measures being implemented on a nationwide basis, specifically referring to closing local dialling in all area codes given consumers' familiarity of the need to dial the full number when calling from a mobile phone. Magrathea considered that as the vast majority of area codes are already conservation areas (i.e. experiencing number scarcity to some degree) that a consistent approach across the country would increase consumer awareness of any changes.

Ofcom's response

4.44 We received a mixed response to the question of whether local solutions were appropriate to the anticipated requirement for more numbers to be made available. Those that favoured localised measures agreed with our preliminary conclusions that such an approach would limit disruption for consumers to the areas that required more numbers and would preserve the useful local dialling facility in other areas for

[65] Those consumers were Mr D Earl, 'Name Withheld 3 and 5' and an attendee at the Bournemouth local engagement meeting.

as long as possible. Those that opposed localised measures considered that UK-wide implementation of changes would be easier to convey and would create less confusion for consumers, and would make more numbers available generally.

4.45 Having taken into account our revised forecasts of number exhaustion, we are still of the view that it is premature to introduce a UK-wide measure to address number shortage. We predict that around 12 per cent of the UK population live in areas forecast to need number supply measures by 2021. We also expect that 35 per cent of the UK population live in areas that are not forecast to run out of numbers in the foreseeable future (i.e. areas with two- and three-digit codes). Given this forecast, we do not consider it appropriate to implement measures that unnecessarily affect the entire UK population.

4.46 We note that varying views were expressed as to whether different rules on local dialling in different areas were appropriate for consumers. Some respondents did not consider this to be a problem, whereas others thought this would lead to confusion and may result in consumers defaulting to dial the whole number in all areas due to uncertainty or suspecting their phones of malfunctioning when calls dialled locally cannot be connected.

4.47 We agree that closing local dialling across the UK would reduce the scope for confusion when people move between areas in which local dialling is enabled and those in which it is closed. We considered closing local dialling on a UK-wide basis at the time of our 2006 Numbering Review. In that consultation we found that it would not be proportionate to introduce a UK-wide measure to address issues of local number exhaustion because it would impact on people living in areas that would otherwise not require measures to increase the supply of geographic numbers for the foreseeable future. When weighed against the potential for consumer confusion if different rules applied to local dialling, we still consider that requiring 88 per cent of the population to dial the full number before the end of 2021, when the need to do so is not related to the requirement for more numbers, would not be a proportionate response. Also we consider it prudent to close local dialling in a few areas initially rather than across the entire UK to facilitate a smooth operation.

4.48 Nevertheless, we agree that if the trend for number shortage were to result in many areas in the UK requiring local dialling to be closed, it might make sense to consider a UK-wide approach to closing local dialling at some point in the future.

4.49 We also agree with C&WW that although measures may be introduced on a localised basis, we need a common framework to ensure a coherent and cost effective approach to implementation. We will discuss and agree the approach, including proposals to batch implementation and communications campaigns in a number of areas, with industry in our forthcoming forum.[66] We will also discuss how the communications campaign that accompanies the closing of local dialling in an area could make it clear that this is a localised and not a UK-wide change and we will work with industry on ways to reduce consumer confusion.

4.50 We consider VON's comments in Section 3.[67]

4.51 Having taken the above into consideration, we conclude that implementing number supply measures on a local basis where required represents a proportionate approach to the level of forecast number shortages, while still being consistent with

[66] See paragraphs 4.178 to 4.207 for consideration of the implementation process.
[67] See paragraphs 3.69, 3.78 and 3.93.

the possibility of UK-wide implementation (i.e. closing local dialling in all area codes) in the future if that becomes appropriate.

Assessment of the options for providing new supplies in four-digit area codes

4.52 In the November Consultation we discussed the effects on local number supplies of closing local dialling and of introducing an overlay code. We explained that closing local dialling in an area code could allow us to allocate local numbers that start with the digits '0' and '1', and thus increase the local supply of numbers by about 25 per cent. We also explained that the introduction of an overlay code would double the local supply of numbers.

4.53 Our 2010 consumer research found that business and residential consumers almost unanimously preferred closing local dialling to overlay codes.[68]

4.54 We considered that it would be technically possible to introduce an overlay code either with or without closing local dialling.

4.55 We noted that closing local dialling first could defer the need for the introduction of an overlay code, and that the change in dialling behaviour that closing local dialling would require could reduce the scope for confusion and for misdialling if an overlay code were introduced at a later date.

4.56 In contrast, if an overlay code were introduced without closing local dialling, current dialling behaviour would not need to change, and fewer people might be affected in the short term because most local numbers would (at least initially) have the existing area code and most calls could continue to be made to such numbers without dialling the area code. On the other hand, without the new supply of numbers produced by closing local dialling, an overlay code would have to be introduced sooner. In addition, if an overlay code is introduced while local dialling is available, networks would not be able to detect some dialling errors and might therefore connect and charge consumers for some misdialled calls.

4.57 We also discussed effects on competition. Introducing an overlay code without closing local dialling could mean that, at least initially, most local people would dial fewer digits to call a number with the existing area code than one with the new overlay code. This, in turn, could increase preference for numbers with the existing area code and would increase the scope for distortions in competition, both between new and more established CPs and between new and more established local businesses.

4.58 We suggested that local dialling could potentially work in two different ways if it was to remain available when an overlay code was introduced:

- symmetric, in which local calls between numbers with the same area code could be dialled without the area code; and
- asymmetric, in which local calls to numbers with the existing area code could be dialled without the area code (from a phone whose number had either the existing area code or the new overlay code), while the area code would need to be dialled for all local calls to numbers with the new overlay code.

[68] 2010 consumer research report page 14.

4.59 We considered that the scope for distortion in competition would endure indefinitely if local dialling were asymmetric, and for this reason did not assess in further detail an option involving asymmetric local dialling.

4.60 Based on these considerations, we narrowed detailed consideration of the potential solutions to create new supplies of numbers in any four-digit area code that would need them to the following two options:

(i) Option 1 - to close local dialling and, if and when further new supplies of numbers are needed, to introduce an overlay code; and

(ii) Option 2 - to introduce an overlay code without closing local dialling. In this option, local dialling would continue to work if both the dialled number and the number from which the call was made shared the same area code. Otherwise, the full number, including the area code, would need to be dialled.

4.61 We assessed the impacts[69] of the options and concluded preliminarily that we preferred Option 1 because:

- the change in dialling behaviour that closing local dialling would require appeared to be largely acceptable to most consumers; and
- it would defer the need for any overlay codes, whose introduction may reduce the geographic significance of numbers provided by having only one area code for an area, could lead to some confusion and misdials, and could put some CPs at a competitive disadvantage.

4.62 In the November Consultation we asked:

> *"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 (of the November Consultation)?"; and*
>
> *"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."*

Assessment of options

Stakeholders' comments

4.63 A number of respondents agreed with our assessment of the number supply options in the November Consultation.[70]

4.64 BT shared our conclusion "that the two most attractive supply options are i) closing local dialling and introducing an overlay code where necessary; and ii) introducing an overlay code without closing local dialling". BT agreed that the two approaches have different advantages and disadvantages. However, it considered that more information was urgently needed from CPs and other stakeholders in order to choose

[69] See Section 4 and Annex 3 of the November Consultation.
[70] Those respondents were BT, C&WW, IPV6, ITSPA, NSE, NumberGroup.com, Sky, TSL, Virgin Media and [✂].

between the options. In particular, we needed to audit all CPs on allocated geographic numbers in conservation areas and use the results of this audit to inform our decision on the most appropriate number supply measures. We could also consider further consumer research on some elements of our assessment including acceptability of overlay codes if similar to existing area codes, the need for recorded announcements for misdialled calls and views on a potential post-dial delay to limit mis-dials.

4.65 However, some respondents disagreed with some elements of our assessment. BT considered that our analysis of the options in the November Consultation overstated the benefits of closing local dialling and understated the benefits of overlay codes. Also, BT considered that we had not taken sufficient account of mitigating factors for the identified disadvantages of overlay codes. For instance, if we were concerned about the competitive advantage of some CPs still being able to allocate numbers from the existing area code, BT argued, we could require all CPs to allocate numbers from the overlay code only for a set period.

4.66 Similarly, one consumer ('Name Withheld 1') believed that we had exaggerated the disadvantages of Option 2 - introducing an overlay code without closing local dialling - and that all the disadvantages of overlay codes identified would eventually apply to areas under Option 1 once an overlay code was introduced.

4.67 Loho did not agree with our assessment that Option 2 may not be preferable for vulnerable consumers. In Loho's opinion, vulnerable consumers would be less likely affected by Option 2 than by Option 1, given that people in general would make fewer calls to local numbers with an overlay code, and thus would not be affected by such a change. In contrast, Loho stated that Option 1 requires the closing of local dialling which is likely to confuse vulnerable consumers; they may be less likely to see any communications campaigns about the change and be less able to adapt to the change in dialling behaviour. BT also considered that we had underestimated the impact of closing local dialling on vulnerable consumers and asked us to pro-actively engage with organisations representing vulnerable consumers to ensure we understand the challenges that they might experience with each measure.

4.68 VON argued for a more radical assessment of options for increasing the supply of geographic numbers. This is further discussed in Section 3.[71] Mr Stevens in part agreed with our assessment but also encouraged our assessment to "be more bold and go for more longer term options". A consumer ('Name Withheld 2') did not agree with our assessment of the options as we had not considered options involving number change.

Ofcom's response

4.69 We note the general agreement with our assessment of the options that we had identified as those for further consideration in the November Consultation.

4.70 BT commented that further information from stakeholders was required in order to make a full assessment of the options. As mentioned in Section 2, we have undertaken an extensive audit of allocated geographic numbers and taken the results into account in our updated forecasts of number availability set out in Annex 2. We estimate that the reclaimed numbers will extend the availability of numbers in four-digit area codes by eight years on average, and will reduce the number of four-digit

[71] See paragraphs 3.69, 3.78 and 3.93.

area codes that require number supply measures in the next ten years from 61 to 25 areas.

4.71 We also forecast that the average interval between closing local dialling and the need to introduce an overlay code would be 14 years, and an average of 11 years for those areas forecast to require the first number supply measure before 2021. Only four of those 25 areas would require an overlay code fewer than ten years after closing local dialling. We consider that the revised forecast still presents a situation where our proposed measures of closing local dialling followed by an overlay code if and when more numbers are required is appropriate. The average interval between measures is over ten years in the vast majority of areas and we predict that no overlay codes will be required until at least 2020 and fewer than 20 overlay codes will be required within the next 20 years.

4.72 BT also suggested that we might consider further consumer research on some of the elements of our assessment of the options. As mentioned in Section 2, we undertook further research to understand consumer attitudes to overlay codes with closed local dialling and options involving number change. This research provided us with additional insights into residential and business consumers' views on overlay codes. For instance, the research found that confusion and misdials were likely to occur if the same local number was allocated in both the existing area code and the overlay code.[72] This suggests that overlays with closed local dialling may be preferable to overlays with open local dialling, given that the research found that local dialling was not seen as a necessity.[73] Also, our 2010 consumer research found that there might be greater acceptance of an overlay code if its digits bore similarities to the existing area code.[74]

4.73 Most of the points suggested by BT for further consumer research concern implementation rather than selection of the number supply measure. As discussed later in this section, we are organising an industry forum to discuss implementation of number supply measures. During these discussions we will consider the questions on best approach to implementation raised by BT and other stakeholders in their responses to the November Consultation. At that point we can consider whether additional understanding of consumers' preferences on how we implement number supply measures is required.

4.74 We note that some respondents disagreed with certain points in our assessment of the options for number supply measures and considered that we had not taken sufficient account of mitigating factors to the concerns that we raised.

4.75 BT and a consumer respondent considered that we had overstated the benefits of closing local dialling in Option 1 and understated the benefits of overlay codes with symmetric local dialling in Option 2. Our assessment of the options is subject to interpretation of how the options are likely to affect consumers, given that neither option is implemented in the UK currently. We recognise that potentially negative aspects of the options can be mitigated, which is why we selected Options 1 and 2 for further analysis and discounted some alternative options, such as overlay codes with asymmetric local dialling. We also recognise that Options 1 and 2 share certain positive and negative characteristics, for instance both avoid the need to change existing phone numbers and both would potentially result in an overlay code in an

[72] 2011 consumer research report page 9.
[73] 2011 consumer research report page 5.
[74] 2010 consumer research report page 16.

area. We have taken the points raised on our assessment into account when updating our detailed analysis of Options 1 and 2 as presented in Annex 3.

4.76 We recognise that closing local dialling could have significant negative impacts on some vulnerable consumers, and that these impacts would need to be mitigated by careful implementation, including the use of network announcements to advise callers of misdialled calls. We think that the alternative, of introducing an overlay code without closing local dialling, could also present some vulnerable consumers with significant difficulties. For example, a caller dialling a local number erroneously without the area code may be connected to the wrong person and incur a charge for the call if local dialling remains available once an overlay code is introduced, whereas he/she is more likely to hear a free recorded announcement in such a situation if local dialling is closed. While initially some vulnerable consumers are likely to misdial numbers less frequently if an overlay code is introduced while local dialling was to remain open, the frequency of such misdials is, in our view, likely to grow over time as use of numbers with the overlay code spreads. In addition, all local consumers are more likely to receive misdialled calls if an overlay code is introduced and local dialling remains open, and receiving such calls could cause particular concern to vulnerable people.

4.77 We discussed number supply options and their potential impact on vulnerable consumers with the Advisory Committee on Older and Disabled people (ACOD) at its meeting in April 2011. ACOD members agreed that both options could have a significant impact on vulnerable people and did not express an opinion on which option would be preferable. The main consideration was that a co-ordinated and targeted communications campaign was undertaken effectively and that all possible measures to educate vulnerable consumers on the changes were pursued. We therefore remain of the view that leaving local dialling open when introducing an overlay code may not necessarily be preferable to closing local dialling from the point of view of vulnerable consumers.

4.78 We have taken into account comments from VON, Mr Stevens and a consumer ('Name Withheld 2') that we had not assessed options involving number change and more radical evolution of the geographic numbering plan, and we have assessed these alternative options in this document.[75]

Agreement with our preferred option for four-digit area codes

4.79 A number of stakeholders[76] agreed with our preliminary conclusion that Option 1 - to close local dialling and, if and when further new supplies of numbers are needed, to introduce an overlay code – should be the preferred option for increasing the supply of numbers in areas with four-digit codes.

4.80 C&WW considered that only Option 1 – closing local dialling and introducing an overlay code later if necessary – would offer a pro-competitive approach and hence fulfil our objectives, providing a solution that would avoid undesirable differentiation between customers using numbers with the existing and new area codes. ITSPA believed that the combined measures proposed in Option 1 "are the most efficient and least costly way of resolving the ability to provide local numbers".

[75] See paragraphs 4.9 to 4.31 and Annex 4 for consideration of options involving number change and paragraphs 3.69, 3.78 and 3.93 for consideration on broader changes to geographic numbers.
[76] Those respondents were C&WW, FCS, ITSPA, NSE, NumberGroup.com, TSL, Virgin Media and [✂].

4.81 Some respondents agreed with Option 1 provided that overlay code introduction was taken as a measure of last resort.[77] Others supported closing local dialling but not necessarily the introduction of overlay codes if more numbers are needed subsequently.[78]

4.82 Some other stakeholders disagreed and preferred Option 2.[79] Other respondents suggested alternative solutions.[80]

4.83 We set out the various views on closing local dialling and on the introduction of overlays in the following paragraphs. We look at suggestions for alternative measures to increase the supply of geographic numbers in paragraphs 4.124 to 4.146.

Closing local dialling

Stakeholders' comments

4.84 A number of respondents agreed that closing local dialling was an appropriate first measure for increasing the supply of numbers in areas experiencing scarcity.[81] Most CPs and organisations[82] agreed that closing local dialling would have a relatively low impact on consumers and that it made sense to close local dialling before introducing an overlay code.

4.85 Colt agreed with closing local dialling in the first instance, since it believed that this would provide the greatest alleviation of the shortage of numbers in relation to the effort required in its implementation. In Colt's view, local dialling no longer holds the importance it once did for a number of reasons. Dialling a local number with or without the area code does not affect the cost of the call; local dialling is not always compatible with PABXs, VoIP servers and other systems which operate the customer's own internal dialling plan; and the increase in mobile phone use (where the full number must be dialled) and the storing and dialling of numbers from address books means that consumers are already predisposed to dialling the full number. IPV6, NSE, Sky, TalkTalk and TSL also agreed that as consumers increasingly dial numbers in full when using mobile phones and VoIP services, closing local dialling should have a limited impact.

4.86 Sky considered closing local dialling to be the least intrusive option and C&WW considered the proposal to be proportionate and effectively targeted. FCS noted that our 2010 consumer research supported closing local dialling in contrast to introducing overlay codes.

4.87 However, a number of respondents did not favour closing local dialling as a means of creating more numbers.

[77] Those respondents were Colt and Sky.
[78] Those respondents were TalkTalk and IPV6.
[79] Those respondents were BT, Loho and five consumers ('Name Withheld 1, 4, 6', Mr D Earl and Mr J Youles).
[80] Those respondents were Virgin Media, VON, Mr Stevens, four consumers who submitted written responses ('Name Withheld 2, 3, 4 and 5') and respondents at the Bournemouth local engagement meetings.
[81] Those respondents were C&WW, Colt, NumberGroup.com, Sky and [✂].
[82] Those respondents were C&WW, Colt, IPV6, ITSPA, NSE, NumberGroup.com, Sky, TSL, Virgin Media and [✂].

4.88 BT stated that, based on the information currently available, it had "a slight preference for overlay codes". BT's reasoning was that local dialling was unlikely to create sufficient additional numbers to meet demand on its own and that a second change would be needed. It would therefore be less disruptive for consumers if we applied one change and moved straight to overlay codes in areas that needed more numbers. Local dialling between numbers with the same area codes (i.e. symmetric local dialling) could be retained and the decision to do so could potentially be taken at the local community level. However, BT explained that its difficulties and costs in implementing overlay codes would increase significantly if the existing and overlay codes did not share the same first two digits after the leading '0' (i.e. 01X where 'X' is the same digit). If this was not possible due to the number of overlay codes required, BT would support closing local dialling in order to defer or avoid the need for overlay codes.

4.89 Loho thought that closing local dialling would be confusing for vulnerable consumers (see paragraph 4.67 above) and did not, therefore, support this measure.

4.90 Four consumer respondents[83] did not support closing local dialling. Some valued the local dialling feature, while others preferred solutions that would provide a larger increase in the supply of numbers. It was argued that closing local dialling would inconvenience and confuse large numbers of people and that Ofcom should go for more long-term solutions, particularly using shorter area codes with longer local numbers. Mr Stevens did not support the closure of local dialling, arguing that there were other available options that would make more local numbers available (see paragraph 4.126).

4.91 A few respondents raised particular issues with our estimates of the quantity of additional numbers supplied when closing local dialling and the knock-on effect of using local numbers beginning with '0' and '1'. BT thought that we had over-estimated the number of useable numbers that closing local dialling would create. In BT's opinion, closing local dialling would produce fewer than 200,000 new numbers in four-digit area codes because, firstly, as we had stated in the November Consultation, some national-dial-only numbers[84] had already been allocated in some area codes and secondly, in its view, many numbers starting with the digit '1' should not be allocated because they could clash with some short codes (such as 100 for operator assistance and 112 for emergency services etc) and service numbers (such as 118XXX for directory enquiry services and 116XXX harmonised European numbers for services of social value) when dialled by customers who forget to include the area code.

4.92 Virgin Media explained that national-dial-only number blocks are typically used for engineering purposes, and that closure of local dialling could reduce their availability. It also explained that virtually all non-geographic-numbers use an underlying geographic number for delivery (in other words, networks typically translate a dialled non-geographic number into a geographic one to terminate the call). [✂]. It suggested that we could avoid unnecessary use of numbers in conservation areas for this purpose by setting aside geographic numbers in unused area codes for sole use within CPs' networks.

[83] Those consumers were 'Name Withheld 2, 4 and 6' and Mr J Youles,

[84] We have allocated some blocks of numbers where the local number starts with the digit '0' or '1' for use in applications where the number cannot be dialled locally without the code. These blocks are known as 'national-dial-only' numbers.

4.93 Mr N Stevens was concerned that the closure of local dialling and the use of local numbers that start with the digits '0' or '1' could cause "far reaching consequences in software systems".

Ofcom's response

4.94 Our proposal to close local dialling as a first step to increasing the supply of geographic numbers in areas forecast to run out of existing numbers was generally well received by CPs. The 2010 and 2011 consumer research also consistently supported the use of closing local dialling where sufficient to meet demand for numbers for at least ten years in preference to other number supply measures.

4.95 We agree with the points raised by Colt as explanations as to why local dialling may now be regarded by consumers as a useful but not essential facility. For the avoidance of doubt, we confirm Colt's statement that the cost of a local call is not affected by whether the caller dials the area code or not and that closing local dialling would have no effect on call charges. We also note that some Customer Premises Equipment does not provide for the local dialling facility, which when considered alongside the increase in calls from mobiles (where local dialling is also not permitted) that consumers are already becoming accustomed to dialling the area code. Nevertheless, we still consider the local dialling facility to be useful and welcomed by consumers and do not want (at least currently) to remove this facility in areas unless action is required to increase the supply of numbers.

4.96 We recognise that in some areas of high demand for numbers, closing local dialling will not be sufficient to meet CPs' ongoing requirements for new numbers, and a second measure of an overlay code would need to be introduced. Nevertheless, the average interval between the two measures being required is 14 years, and the time span varies to between six and 26 years across all four-digit area codes. We consider, therefore, that closing local dialling would generally provide sufficient additional numbers to meet demand beyond the short-term requirements of CPs.

4.97 We note BT's concern that closing local dialling as a first step may be unnecessarily disruptive if it results in consumers experiencing two different measures to ensure a long-term supply of numbers. However, our 2010 and 2011 consumer research showed strong support (i.e. 51 out of 63 consumers)[85] for closing local dialling (as opposed to the immediate introduction of an overlay code with or without open local dialling or number change) if this measure would meet demand for at least ten to fifteen years.

4.98 In response to Loho's concerns over closing local dialling and the impact on vulnerable consumers, we consider that all options have the potential to present some vulnerable consumers with significant difficulties and these impacts would need to be mitigated by careful implementation. Any communications campaign that accompanies the closing of local dialling in an area would need to give particular attention to ensuring that the message addresses the needs of vulnerable consumers. This reflects the views of ACOD, that any supply measure would have the potential to impact vulnerable consumers and main consideration is that a coordinated and targeted communications campaign is undertaken effectively.

4.99 We have discussed with BT its concerns that we may have overestimated the quantity of new numbers that closing local dialling would create. We have worked with BT and other CPs to identify number blocks that could potentially result in

[85] 2011 consumer research report page 13.

misdialled calls to short codes and service numbers, particularly those where misdials might result in connection and generate a charge. We consider that we could delay allocation of number blocks where the local numbers start with the digit '1' and which could clash with existing short codes and service numbers until consumers became more familiar with the change in dialling behaviour required. We could monitor the frequency of callers forgetting to dial the area code and wait until this subsides to a low level before allocating those number blocks. Our current estimates of the time that supplies of numbers created by closing local dialling are expected to last take this consideration into account. We describe our current assessment of the quantity of new numbers that closing local dialling would create in Annex 2.

4.100 We have considered Virgin Media's point regarding use of 'national-dial-only' numbers for engineering purposes and the effect on geographic number availability. Although we have allocated few number blocks for national-dial-only use in recent years, Virgin Media's suggestion that we dedicate some unused area codes for such purpose may help increase the supply of numbers created by closure of local dialling in some four-digit area codes. We would welcome further discussion with CPs about this possibility before deciding whether to progress this proposal.[86]

4.101 We note Mr Stevens' concern that closing local dialling, and the use of local numbers that start with '0' and '1', could have implications for software systems. We recognise in general that any changes to phone numbers could have consequences for software systems and that industry has faced implications for software systems in the past when changes have been made. We believe that such potential impacts are best managed by providing sufficient advance warning of the changes, and by endeavouring to ensure that the relevant communications campaigns reach affected businesses and consumers. We would expect to work with CPs to ensure that appropriate messages and advice would be provided to assist with managing implications for software systems. Given this, we consider that the implications for software systems are likely to be manageable and would not impact the feasibility of closing local dialling as an option for increasing the supply of geographic numbers.

Overlay codes

Stakeholders' comments

4.102 Some CPs[87] accepted that overlay codes, although unpopular, would be an effective number supply option if needed.

4.103 BT argued that overlay codes retaining symmetric local dialling would produce four times as many additional numbers as closing local dialling. As such overlay codes were preferable unless we were confident that fewer than around 150,000 extra numbers would be sufficient to meet foreseeable demand – in BT's opinion, this was not the case and it noted that Oftel/Ofcom had underestimated demand in the past.

4.104 BT believed that most of the issues with overlay codes that we had raised in the November Consultation could be addressed. For instance, BT did not agree that overlay codes would hasten the erosion of geographic significance; rather the situation would be that two codes would have the same geographic significance. BT considered that geographic significance could be strengthened if the two codes had some similarity (e.g. 01X, where 'X' was the same digit) and if allocation of numbers

[86] CPs are invited to submit views to geographic.telephonenumbers@ofcom.org.uk.
[87] Those respondents were BT, C&WW, Loho, NSE and Virgin Media.

with the overlay and not existing code was required for a period of time to raise consumer awareness and acceptance.

4.105 Loho favoured introducing an overlay code rather than closing local dialling. Loho considered that people would adapt to changes in the way that area codes work, including two codes relating to one area. To illustrate how understanding grows with time, Loho referred to the reduced confusion over 020 being the code for London with different digits fronting the local number (i.e. digits 3, 7 and 8). It considered that overlays would be less confusing for vulnerable consumers than closing local dialling.

4.106 C&WW were supportive of the use of overlay codes but with a number of conditions – that overly codes are introduced a substantial period after local dialling has been closed; that there is no other efficient mechanism of controlling allocations to meet demand; and where the only remaining option would be the disproportionately high costs of number change. However, C&WW reiterated concerns it had previously expressed that overlay codes would distort competition, both between CPs and between consumers of telecoms, and could potentially cause consumers serious confusion.

4.107 C&WW did not support the introduction of an overlay code without closing local dialling and considered it should be closed ahead of introducing overlay codes. If this was not done, the additional numbers yielded from closing local dialling in the existing area code may not be used as allocations would most likely come from the overlay code.

4.108 In addition, C&WW considered that to permit symmetric local dialling would discriminate against customers with new numbers as they would only be able to call relatively few other numbers using the local dialling facility. It added that, since these new numbers would typically be given to CPs without large stocks of existing numbers, the overlay code would prove to be anticompetitive by favouring incumbent CPs over any new entrants. C&WW further considered that asymmetric local dialling would be fundamentally unworkable, being too confusing for consumers. Calls to the wrong end-user would end up being connected and it would not be possible to provide meaningful misdial announcements.

4.109 Some consumers thought that introducing overlay codes with local dialling permitted was a reasonable approach to increasing the supplies of geographic numbers. Mr D Earl considered that people would be able to adapt to recognising numbers with the same code and dialling them locally. Another consumer ('Name Withheld 1') strongly preferred Option 2 in order to retain the useful feature of symmetric local dialling. Asymmetric local dialling was not supported, being counter-intuitive and creating a bias against numbers with the overlay code. Another consumer ('Name Withheld 4') thought that consumers would be able to understand that different two codes applied to one area but that giving the overlay code a complimentary name might help avoid confusion, for instance, an overlay code for the Oxford area could be known as the code for 'Cherwell'.

4.110 Some CPs only supported the introduction of overlay codes if Ofcom had first exhausted administrative action to manage demand.[88] TalkTalk argued that overlay codes would not address the underlying cause of number shortage unless we strengthened our administrative processes, including allocation of smaller number blocks. UKCTA and C&WW also considered that overlay codes should only be

[88] Those respondents were BT, C&WW, Colt, Sky and [✂].

introduced as a last resort, where the only remaining option would be the disproportionately high costs of number change.

4.111 Virgin Media agreed that if administrative measures failed to deliver the required results, then closure of local dialling followed by an overlay code would be a reasonable solution. However, Virgin Media suggested that we should consider using a wide-area code as an overlay code – we discuss this in paragraph 4.130 below.

4.112 A number of respondents argued against the introduction of overlay codes. Sky argued that overlay codes were likely to be even more unpopular with consumers than closing local dialling (and referred to the situation with the London area code, where 020 7 and 020 8 numbers were preferred to the more recently allocated 020 3 numbers). Unfamiliarity with overlay codes, leading to misdialled calls and consumer confusion, were likely consequences. Colt considered that overlay codes would be unfamiliar to consumers and would hold no geographic significance, which residential and business consumers value.[89] [✂] held a similar view and raised the potential competitive disadvantage for CPs without numbers in the existing area code.

4.113 Mr Stevens did not support overlay codes, arguing that there were other available options (i.e. number change) that would make more local numbers available (see paragraphs 4.9 to 4.31). VON disagreed with overlay codes and suggested that Ofcom should consider more radical approaches to number management including a move towards a single national geographic signifier indicating a geographic number rather than a specific location.

Ofcom's response

4.114 We recognise that respondents have mixed views on overlay codes and that generally there is little support for their introduction. However some respondents consider that their introduction should be our primary response to the need to increase the supply of numbers in areas where required. Other respondents acknowledge that overlay codes are a viable means of increasing the supply of geographic numbers where required after other measures (e.g. closing local dialling, strengthening our administrative processes etc.) have been exhausted. Others do not agree with the introduction of overlay codes at any time.

4.115 We have considered BT's preference to introduce an overlay code without closing local dialling in area codes that need new supplies of numbers. We acknowledge that closing local dialling is unlikely to be a sufficient measure to meet long-term demand in a number of areas. Therefore, introducing an overlay code as the first step to increasing the supply of numbers in an area code may only disrupt consumers once rather than twice as it creates a larger supply of numbers than generated by closing local dialling. We also agree that determining an accurate forecast of demand is very difficult and actual events have deviated from our forecasts in the past. We have made our forecast of demand for numbers as robust as possible and must rely on this to help select the most appropriate number supply measure.

4.116 As discussed above, we predict that if we were to close local dialling and introduce an overlay code in any four-digit area code that will need new supplies by 2021, then the interval between closure of local dialling and the introduction of an overlay code

[89] Although not supportive of overlay codes, if they were a chosen number supply measure, Colt favoured their introduction in advance of when the need for more numbers is forecast to allow CPs a choice of an allocation from either code, with the overlay code able to supply blocks of 10,000 numbers, rather than be limited to 1,000 numbers from the existing area code.

would be 11 years on average. We consider that this interval would be consistent with our objective to minimise disruption to consumers, particularly since the prior closure of local dialling is likely to facilitate the introduction of an overlay code for the reasons set out in paragraph 4.121 below.

4.117 A few respondents[90] argued that consumers would adapt to the new concept of two codes for one area. We agree that this should be the case, aided by an effective communication campaign. We note, however, that contrary to Loho's comment, a common misapprehension (and one that was evident in comments made during the conducting of the 2011 consumer research) is that London has three area codes (i.e. 0203, 0207 and 0208) when the actual situation is that 020 is the area code and local numbers begin with the digits 3, 7 or 8. We do not agree that giving the overlay code a name different from the existing code name would help consumers understand that the two codes applied to the same area in the long-run and would increase the potential for confusion.

4.118 While we share similar concerns to those raised by C&WW, Colt, Sky and UKCTA about the unpopularity of overlay codes, the potential for confusion and the potential effects on the geographic significance of numbers and on competition, we consider that any measure that we could adopt to provide new supplies of numbers where they are needed would be unpopular and have the potential to cause disruption, confusion and reduce geographic significance. Our view, taking into account the responses, remains that the least disruptive measure would be to close local dialling, and we propose to do so in four-digit area codes when our current supplies for those area codes approach exhaustion. This measure would delay the need for overlay codes and the effects that respondents mentioned in their responses. If changes to existing phone numbers are to be avoided, then the eventual introduction of overlay codes in areas where more numbers are required would, we consider, be appropriate.

4.119 We note the various opinions from respondents on whether or not local dialling should continue to be provided following the introduction of an overlay code and, if so, in what format.

4.120 We consider that if local dialling was to be permitted once an overlay code had been introduced, it should be in the symmetric format (i.e. only provided between numbers with the same area code). We agree that this would preserve the useful local dialling facility. Asymmetric local dialling, on the other hand, could give rise to enduring distortions to competition between CPs and between local businesses and would likely be very confusing for consumers.

4.121 However, we consider that prior closure of local dialling is likely to facilitate the introduction of overlay codes for the following reasons. First, since consumers would dial the area code in making every local call, the number of digits in dialling numbers with the existing area code and with the overlay code would be the same if local dialling were closed. This would in turn reduce any potential distorting effect that an overlay code may have on local competition, both between CPs and between local businesses. Secondly, the requirement to dial the area code for every local call is likely to reduce the frequency of misdialled calls if and when an overlay is introduced. Thirdly, since the area code would need to be dialled for all valid local calls, networks could detect most calls in which the area code is not dialled, and play recorded

[90] Those respondents were BT, Loho, Mr D Earl and 'Name Withheld 4'.

announcements to inform the caller rather than route misdialled calls to numbers which the callers did not intend to call or to a 'number unobtainable' announcement.[91]

4.122 A number of CPs stressed the need to exhaust our administrative action before contemplating the introduction of overlay codes. We agree that measures to reduce the need for new numbers are a priority and we discuss in Section 3 our overall approach to managing geographic numbers to minimise the need for number supply measures, and hence reduce disruption and defer the need to introduce overlay codes for as long as possible.

4.123 Having taken into account all the above considerations, we remain of the opinion that Option 1 - close local dialling and, if and when further new supplies are needed later, to introduce an overlay code – is our preferred option for any four-digit area codes in which our current supply of geographic numbers approach exhaustion. A more detailed analysis of Options 1 and 2 is provided in Annex 3.

Other number supply measures for areas with four-digit codes

4.124 In the November Consultation we asked:

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

Stakeholders' comments

4.125 Some respondents suggested alternative number supply options for areas with four-digit codes for our consideration.

4.126 Mr Stevens argued that our number supply options should be bolder and that we needed longer term solutions. As well as proposing that we consider options involving changing numbers to a shorter area code and longer local number format, Mr Stevens suggested that number shortage could be addressed by splitting the area covered by the current area code. For example, he suggested that the area covered by the 01202 area code in Bournemouth could be split in two by using 01201 for one part and 01202 for the other. He pointed out that in the 1980s, Bournemouth numbers in the northern and western parts of the area currently covered by 01202 used the 0201 area code, with 0202 used in the central and eastern parts of the area. An attendee at the Bournemouth local engagement meeting also suggested that we consider introducing split area codes.

4.127 A consumer ('Name Withheld 2') suggested that areas experiencing number scarcity should use spare capacity from neighbouring area codes. As an example, when numbers in the Warwick area code (01926) become scarce, people could use spare numbers from the neighbouring and familiar Coventry (024) area code rather than have to adapt to an unfamiliar overlay code.

4.128 In addition, the same respondent (and Mr J Youles) suggested that long-term migration to numbers with a shorter area code and longer local number format need not require that numbers with the existing area code are changed by a certain date. Instead, a new '3+7' or '2+8' digit overlay code could be used to provide new

[91] BT commented that if local dialling were closed it would be relatively straightforward to play a misdial announcement when local numbers that start with the digits 2 to 9 are dialled without the area code. It explained that it would not be easy to play an announcement when local numbers starting with the digits 0 and 1 are dialled without the area code, once such local numbers are allocated.

numbers in the same area, while use of the existing area code could be allowed to diminish naturally over time through customer churn. The respondent envisaged that there would be an option to withdraw the existing area code ultimately if its use fell to a low enough level. The respondent argued that there were several advantages to this approach, such as no number changes being required; lower costs arising from a single-step change; longer-term availability of numbers;[92] and reduced likelihood of confusion and misdialling as local numbers in the two codes would be of different digit lengths.

4.129 Furthermore, 'Name Withheld 2' suggested that we consider multiple overlay codes covering an existing area so that each code provided more targeted location information. For example, instead of introducing a single overlay code to cover the same area as the Bournemouth 01202 area code, we could provide one dedicated '4+6' overlay code for each of Poole, Bournemouth and Christchurch. The respondent argued that this would ensure a larger supply of numbers to meet demand and may aid take-up and acceptance, since the new area codes would benefit from being more closely associated with particular district communities.

4.130 Virgin Media made an alternative suggestion to how overlay codes might be implemented. It considered that if a wide-area code was introduced as an overlay code (i.e. a '2+8' or '3+7' overlay code corresponding to an area covered by multiple four-digit area codes currently) it would allow for more numbers to be made available for the areas, and would also allow CPs to trap misdialled calls easily on the basis of the local number's digit length.

4.131 A consumer ('Name Withheld 3') highlighted the simplicity of the French dialling scheme, which has five regional codes consisting of a single digit. This option would reduce the number of geographic area codes in the UK substantially and broaden the area covered by a local call. Ofcom was encouraged to consider a wholesale move to such a geographic number scheme.

4.132 A consumer ('Name Withheld 5') suggested that new connections in an area experiencing scarcity could be offered a number with an extra digit at the end (i.e. a four-digit area code and seven-digit local number), possibly with the incentive of a reduced line rental. A second consumer ('Name Withheld 4') considered that large ranges of direct dial-in (DDI) numbers used by businesses should be moved to the 03 'UK-wide Number' range, with each business keeping only one geographic number as its primary published contact point. This respondent also argued that all new DDI numbers should be provided from the 03 range.

4.133 C&WW referred to the existence of some five-digit local numbers in the four-digit area codes of Bolton (01204), Blackburn (01254) and Lancaster (01524). C&WW suggested that the numbers in these area codes should be migrated to six-digit numbers which would increase the supply. This should be used as a first step ahead of closing local dialling and the subsequent introduction of overlay codes if required, as it would provide a significant quantity of additional blocks in each area. A consumer ('Name Withheld 2') also referred to five-digit local numbers in four-digit area codes and suggested that no new numbers should be available in this format to allow for the eventual reclaiming of such blocks for use in the '4+6' digit format.

[92] The respondent argued that Leeds could be into its fourth area code by now if it had gained '4+6' overlays instead of converting to a '3+7' area code in 1995.

Ofcom's response

4.134 We welcome stakeholders' suggestions for alternative options for increasing the supply of numbers in four-digit area codes and have given these suggestions consideration as set out below.

4.135 Mr Stevens and an attendee at the Bournemouth local engagement meeting suggested that we consider introducing 'split area codes'. Unlike the introduction of an overlay code, splitting an area code would avoid two area codes overlapping each other in the same geographic area. Splitting an area code may also avoid the need to close local dialling, although this is uncertain because there could be a concern about misdialled calls. Like an overlay code, splitting an area code would double the supply of local geographic numbers (although the geographic segregation of split codes may mean that numbers in one or other of the resulting local area codes could run out sooner than numbers created by an overlay code).

4.136 A possible implementation of Mr N Stevens' suggestion to split area codes in some areas would involve changing the area code of around half of local end-users in the area concerned. To minimise disruption, the local number would presumably not be changed. In this situation, splitting an area code close to exhausting its current supplies of numbers may not produce a sufficient new supply of unused number blocks. Since the area code of around half of numbers in use would be changed, and assuming that the local number would remain unchanged, then each CP which holds allocations of number blocks of the original area code would need to be allocated the corresponding number blocks with the new area code. Each CP serving the area code before the split would thus see its allocations of local number blocks double. The split would therefore also in effect double the number of unallocated local number blocks. If few unallocated number blocks remain in an area code before it is split, the split would create equally few new unallocated number blocks. Splitting an area code under those circumstances may therefore not support adequately future changes in local competition, such as entry by a significant number of CPs new to the area, or significant local growth of a CP which, prior to the split, only had a small quantity of local number blocks.

4.137 Furthermore, the end-users whose area code would be changed by the split would incur inconvenience and potentially significant costs, similar to those described in paragraphs 4.21 to 4.31 above. In addition, the end-users who would be required to change their area code may consider the proposal unfair because they would, in effect, bear almost all of the costs and inconvenience of addressing the shortage of local numbers, while those end-users who retain the original area code would incur relatively little cost and inconvenience.

4.138 In light of the significant disadvantages discussed above, we do not propose to take forward the possibility of splitting area codes.

4.139 We considered the suggestion from a consumer ('Name Withheld 2') to allocate numbers from neighbouring area codes with a more plentiful supply of numbers. Although 'out of area' use of numbers is permitted at end-user request and provided the cost of calls is in line with the area code used,[93] it is not our policy to encourage such use of numbers as this would, in our view, hasten the erosion of geographic significance of numbers. We do not propose to take this suggestion forward.

[93] The use of geographic numbers 'out of area' is further explained in Annex 1.

4.140 We consider that the suggestion that a three-digit area code could be used to overlay an area with a four-digit code could work technically. In our view, however, it is likely that closing local dialling before introducing a three-digit overlay code would be appropriate for similar reasons to those discussed in relation to a four-digit overlay code in paragraph 4.121 above. In light of this, if the three-digit area code is to co-exist with the original area code indefinitely, it is not clear that a three-digit area code would present a material advantage over a four-digit overlay code. A four-digit area code, when applied to an area after local dialling is closed, would more than double the current supply of local numbers, and meet demand in four-digit areas for many decades. The extra numbers created by a three-digit area code are not required. If, on the other hand, end-users with the original area code are to be required at some point to change their numbers to the new format with the three-digit area code then this change would be the same as the one we decided not to take forward as discussed in paragraphs 4.9 to 4.31 above.

4.141 We also considered the suggestion from the same consumer to use multiple geographically-targeted overlay codes for an existing four-digit area code. However, we consider that, since a single overlay code would double the local supply of numbers, the new supply of numbers that it would create is likely to be sufficient at least for a few decades. Therefore, in our view, the additional complexity of the local numbering scheme that would result from multiple geographically-targeted overlays is not required to increase the supply of numbers to meet long-term demand.

4.142 Our considerations of Virgin Media's suggestion of introducing a wide-area code as an overlay code are in part the same as those in paragraph 4.140 above. In addition, we do not propose to take forward the introduction of wide-area codes because we consider that the widespread reduction in the geographic significance of numbers that would result would not be a proportionate response to our current forecast of localised exhaustion of our supplies of geographic numbers.

4.143 Partly for the same reasons, we propose not to take forward development of a similar numbering scheme to the French system, in which the UK would be divided into a few areas, each with a one-digit area code. An additional consideration against doing so is that it would entail widespread disruption of the existing UK numbering plan to achieve one-digit area codes.

4.144 We considered the suggestion from a consumer ('Name Withheld 4') that DDI blocks could be required to use 03 rather than geographic numbers. In the November Consultation we concluded that 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 addition, it would be difficult for us to ensure that use of geographic numbers met pre-defined service criteria. For these reasons we do not agree that DDI numbers should be changed or forced or to use 03 numbers. We considered VON's comments on a more radical and far-reaching approach to the geographic numbering plan in Section 3.

4.145 C&WW argued that we should change the remaining five-digit local numbers in Bolton, Blackburn and Lancaster (which are four-digit area codes) to six-digit numbers. We have looked at the forecast year for number exhaustion in these areas and found it to be 2021, 2023 and 2029 respectively. We plan to monitor demand in these areas and decide whether there is a need to disrupt consumers using numbers in the '4+5' digit format with a number change to ensure the ongoing supply of numbers in these areas. We will take into consideration the forecast date for further measures (e.g. closing local dialling) in those areas if we undertook such a number

change and whether the internal between both measures for consumers concerned make this a reasonable option.

4.146 Having considered the suggested alternative measures which could provide new supplies of geographic numbers above, we do not propose to take them forward. We remain of the opinion that Option 1 - closing local dialling and, if and when further new supplies are needed, to introduce an overlay code – is our preferred option for any four-digit area codes in which our current supply of geographic numbers approach exhaustion.

Which solution should we pursue in five-digit area codes?

4.147 In the November Consultation we considered that areas with five-digit codes required a specialised response to relieving scarcity of numbers. We considered the approach preferred for four-digit area codes, however, closing local dialling would generate a relatively small quantity of additional numbers due to the digit structure and we considered it a disproportionate solution to introduce an overlay code in those areas, each of which has a population smaller than 25,000 people. We therefore suggested an alternative solution of merging five-digit area codes with their corresponding four-digit area codes.

4.148 The two options we put forward for consultation were:

- Option 1: using the approach preferred for four-digit area codes, while maintaining the five-digit area code. Under this option we would first close local dialling followed by the introduction of a five-digit overlay code where necessary; or, alternatively:

- Option 2: merging each five-digit area code with its corresponding four-digit area code. This would create numbers with four-digit area codes and six-digit local numbers. For example, Langholm's area code, currently 013873, would be changed to the 01387 area code that serves Dumfries.[94] Local dialling would be provided at the six-digit local number level. Any subsequent shortage of local numbers would be addressed in the same way as for other four-digit area codes.

4.149 Our assessment in the November Consultation favoured Option 2 because it is likely to provide new supplies of numbers that last longer, leading to a more stable and long-term solution and therefore cause less disruption over time. Option 2 would also standardise these areas to using four-digit codes in line with much of the rest of the UK.

4.150 In the November Consultation we asked:

> *"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."; and*

[94] This would mean that all existing Langholm numbers, which are of the form 013873 XXXXX, would become 01387 3XXXXX. While the digits in each full phone number would not change, users dialling locally (i.e. without the area code) from fixed-line phones would need to prefix existing Langholm five-digit local numbers with the digit '3'.

"Are there any other number supply measures that we should consider for five-digit areas?"

Stakeholders' comments

4.151 Views from respondents on potential solutions for five-digit area codes were mixed. C&WW, IPV6, ITSPA, NSE and two consumers[95] agreed with our preference for Option 2 (i.e. to merge five-digit area codes with their corresponding four-digit area codes and retain local dialling). C&WW considered five-digit area codes to be an anachronism. It did not see any real concerns should the merger of codes result in non-contiguous geographic areas sharing the same area code, and said that it was not aware of any problems created when the area codes for Portsmouth and Southampton were merged into the 023 area code. A consumer ('Name Withheld 2') considered five-digit area codes to be a confusing anomaly and welcomed plans for their removal. This respondent considered that communicating the required changes to local dialling were not considered prohibitively difficult and far more complex area code mergers were carried out during the late 1980s and early 1990s without incident.

4.152 Attendees at our local engagement meeting in Langholm preferred Option 2 (merging area codes) to Option 1 (closing local dialling first and then implementing an overlay code if more numbers are required subsequently). Preserving location identity was seen as the main criterion for selecting an appropriate number supply measure for Langholm. Moving from a five- to six-digit local number by inserting the digit '3' at the front was not expected to create too many problems for local residents.

4.153 Attendees also suggested changing to a new four-digit area code to preserve the Langholm area's local identity rather than merge with Dumfries. Apart from sharing the first four digits of the area code, there was little reason to merge the Dumfries area code with Langholm's given that the areas were not even contiguous (Lockerbie 01576 and Gretna 01461 area codes are in between Langholm and Dumfries).

4.154 Attendees at the Langholm meeting rejected Option 1. The overlay code concept was seen as potentially complicated and confusing and would reduce location significance, which was highly valued and recognised to a fine degree (quoted as recognisable at the 'parish level'). Attendees in Langholm also considered that the ability to dial locally without the area code was a facility worth retaining. It was noted that the population demographic for Langholm (i.e. an older population) would find difficulty with a series of changes. It was also noted that landlines (and their associated numbers) remained very important in rural areas given that mobile coverage is not always reliable.

4.155 Virgin Media suggested that local dialling is closed in the four-digit area code simultaneously with merging with its corresponding five-digit area codes. This would provide more numbers and would make two changes appear as one to the consumer.

4.156 [✂] recommended that local dialling be closed as a first step, and that a further decision to merge area codes made only after a review of number block allocations to CPs in these area codes. It could be that auditing and other administrative measures could mean that closing local dialling is sufficient to meet demand without impacting the existing number digit structure. [✂] also considered that once area codes are merged, there could be a competitive distortion in favour of CPs with pre-existing

[95] Those consumers were 'Name Withheld 1 and 2'.

allocations (e.g. in Langholm, people may prefer local numbers beginning with '3' after merging than an alternative first digit as this would be more common, at least initially). However, [✂] had no technical issue with merging area codes and considered that our assessment of the impacts seemed reasonable.

4.157 BT thought that both options put forward in the November Consultation for five-digit area codes were flawed and that less disruptive solutions existed. BT agreed with our assessment of Option 1, in that closing local dialling would only provide numbers sufficient to meet short-term demand.

4.158 BT did not agree with our assessment of Option 2 that merging five-digit area codes with their corresponding four-digit area codes would be the best way of dealing with shortages in five-digit area codes. It thought that doing so would be unnecessarily disruptive to customers, reducing the geographic significance of local numbers, increasing the number of digits dialled when making local calls, and creating the possibility that local customers could potentially face three successive changes: (i) changing from dialling five to six digits in making local calls (ii) changing from dialling six to 11 digits when making local calls (if and when local dialling is closed in the merged four-digit area code), and (iii) introduction of an overlay code alongside the merged four-digit area code (if and when this proves necessary to create more numbers).

4.159 In addition, BT warned that merging of five- and four-digit area codes would create (i) implications for local call charging areas which would need to be considered, with a probable unintended consequence that call prices would be changed and (ii) number clashes between the first five digits in a five- and six-digit local number. This would make it difficult (if not impossible) to trap misdialled calls and routing them through to network announcements without a post-dial delay leading to a poor customer experience.

4.160 BT supported an alternative solution of allocating remaining numbers in the five-digit are codes in blocks of 100 numbers (as opposed to blocks of 1,000 numbers). It stated that we should first audit number block allocations to CPs in the five-digit area codes and recover or protect unused 1,000-number blocks where appropriate before rolling-out the allocation of smaller number blocks. BT considered that this administrative measure should be sufficient to meet demand for number blocks. If not sufficient in the future, BT proposed that we should introduce a five-digit overlay code with local dialling permitted. NSE also suggested that we consider allocation of smaller blocks of numbers in five-digit area codes, as did TalkTalk and NumberGroup.com in general.

4.161 Mr Stevens did not support the approach proposed in Options 1 or 2. Mr Stevens considered that the supply of numbers that would be created by merging area codes would be very small and would unnecessary lose the local geographic significance of having a distinct code for the area. A longer-term measure would be to change the five-digit area codes to their 1980s format (with the insertion of a digit '1' between the leading '0' and the old three-digit code to create a new four-digit area code). This would release a larger pool of numbers and local dialling would be preserved within each area code. In Mr Stevens' opinion, local residents would have expected to change from their five- to a four-digit area code and, if that was required, it would provide an ideal time to change the area code completely and create more numbers than merging codes would create. To illustrate, Langholm's current 013873 area code would change to 01541 and the existing five-digit local number would have a digit '3' added to the front to create a six-digit local number.

4.162 A consumer ('Name Withheld 2') also suggested that we could consider (i) providing new numbers from a two-digit overlay code covering Cumbria and Lancashire; (ii) changing numbers in Cumbria and Lancashire to a wide area two-digit overlay code; and (iii) changing five-digit area codes to new four-digit codes (rather than merging with existing four-digit area codes). This was considered suitable in particular for Lancaster (01524) and Hornby (015242) as both these areas had a limited supply of numbers currently.

4.163 Another consumer ('Name Withheld 3') argued that the areas covered by five-digit codes were far too small to warrant individual area codes and that the UK should be moving towards regional area codes.

4.164 Loho was concerned that the changes to numbers and/or dialling behaviour involved in Options 1 and 2 may have a significant impact on vulnerable consumers who were least able to adapt to such changes.

Ofcom's response

4.165 We recognised in the November Consultation that the assessment of the impacts of the two options for providing new supplies of numbers in areas with five-digit codes might be finely balanced for some, and that further consultation was appropriate, including more detailed assessment of the views of people who live in areas that may be affected. The mixed views expressed in the responses to the November Consultation and at the Langholm meeting confirm this position.

4.166 A number of respondents agreed with our preliminary analysis that Option 2 would be preferable for areas with five-digit codes. Some felt that it would be a good opportunity to eradicate the anomaly of five-digit area codes. While this may be the effect of Option 2, we do not propose to cause disruption to consumers and businesses in areas with five-digit codes to achieve this if an alternative solution is available.

4.167 We note that geographic significance in local numbers appears to be particularly valued by consumers in Langholm (and presumably the other areas with five-digit codes) and consider that we should try to preserve this where possible. We also note that local dialling is still highly valued (as mentioned by attendees at the Langholm local engagement meeting, the use of landlines compared to mobiles is still relatively high and the area has a relatively older population). These are therefore important considerations when deciding on the most appropriate option for areas with five-digit codes and are supported by our preferred option of merging area codes.

4.168 We have considered the suggestion from Mr Stevens' and the attendees at the Langholm local engagement meeting that we could change the five-digit area codes to distinct four-digit area codes with local dialling available to address number supply shortages. This option would offer more distinct geographic meaning in the resulting area codes than our proposal.

4.169 Furthermore, it is possible that our proposal of merging the codes could result in increased demand from CPs for numbers in the four-digit area codes into which five-digit area codes would merge, and could therefore hasten exhaustion of the current supply of numbers in those four-digit area codes. We think this is unlikely, however, because we consider that end-user demand for numbers in the five-digit area codes is low.

4.170 On the other hand, changing from a five- to four-digit area code would give rise to more disruption and costs to consumers and businesses currently served by the five-digit area codes because their '0' plus ten-digit subscriber numbers (i.e. the phone numbers others dial to contract them from mobile phones and from fixed-line phones with other area codes) would be changed. We consider that our proposal would be less disruptive and costly because the full subscriber numbers of local consumers and businesses would not change, although we acknowledge that local numbers – the numbers dialled from local fixed-line phones – would change.

4.171 We agree with BT and Virgin Media that multiple changes in quick succession should be avoided wherever possible. Our consumer research supports the view that consumers think that ten years is a reasonable minimum gap between changes to phone numbers. Should we need to pursue options to increase the number supply in five-digit area codes, we would discuss with industry the scope to combine changes, if necessary, particularly if forecasts show that there would be less than ten years between any two measures.

4.172 However, following consultation we have given careful consideration to whether alternative measures could be introduced to increase the supply of number blocks available for allocation in areas with five-digit codes that would not affect local consumers given the clear situation that number scarcity results from CP rather than end-user demand in these areas.

4.173 In line with our general view that administrative measures should be explored before implementing supply measures, we have considered in detail the scope for other measures to address scarcity in these areas in Section 5. We summarise these below.

4.174 We conducted an audit of geographic numbers allocated in the 11 five-digit areas during 2009 and will conduct a similar audit later this year. However, we expect to recover very few blocks of unused numbers in these areas as they have been audited a number of times and there are very few spare number blocks remaining allocated. We do not therefore anticipate that the further audit will change materially our assessment of the need to address the shortage of unused number blocks in areas with five-digit codes.

4.175 In the November Consultation we set out our proposal to pursue the allocation of smaller number blocks in a limited number of areas to test their feasibility. BT suggested that the five-digit area codes would be suitable candidates for the limited roll out of 100-number block allocations. We agree that reducing the block size from 1,000 to 100 numbers in five-digit area codes might significantly address number block shortage and meet the demands of CPs for numbers in those areas. In Section 5 we describe our proposal to implement a limited roll out of 100-number blocks in five-digit area codes.

4.176 Depending on the results of our consultation on this proposal, and the subsequent efficacy of the proposal if implemented, it might be the case that no further measures would be needed in the areas with five-digit codes for around 12 years on average. In light of this, we consider that concluding on a supply measure in this document would be premature while we consult on a limited roll out of 100-number blocks in the five-digit area codes.

4.177 However, if, following this further consultation, we do not decide to implement allocation of 100-number blocks in these areas, or if these measures prove unsuccessful, we would need to take alternative action to increase the number supply

in five-digit area codes to meet ongoing demand. In this situation, we will take into account the stakeholder views on options for increasing the supply of numbers in areas with five-digit numbers received in response to the November Consultation and will conclude on number supply measures for areas with five-digit areas in our forthcoming statement on geographic numbers in early 2012.

How should the implementation of number supply measures be planned?

4.178 In the November Consultation we recognised that, in addition to deciding our approach to increasing our supplies of geographic numbers, we needed to work with industry to develop a detailed plan in order to implement the chosen option effectively. We proposed to establish a forum to develop an implementation plan with the industry following the conclusion of our consultation. We considered that the plan would include:

- 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 the consultation.

4.179 We proposed 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 code fall below a trigger level. We said that an appropriate trigger level would be determined as part of the industry's detailed implementation plan, and suggested, for example, that according to our forecast, 20 blocks of 1,000 numbers would meet CPs' demand for numbers for approximately one to two years in most four-digit area codes.

4.180 We also explained that 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.[96] To implement overlay codes, we would need to add the new geographic area code and its name to Appendix A of the Numbering Plan.

4.181 In the November Consultation we asked:

> *"Do you have any comments on how the implementation of number supply measures should be planned?"; and*
>
> *"How long do you consider that CPs would need to plan the implementation of the preferred options for four- and five-digit areas?"*

Stakeholders' comments

Industry forum

[96] Paragraph B3.1.3 of the Numbering Plan on Local Dialling.

4.182 C&WW believed that the proposal to form an industry group, consisting of both CPs and Ofcom, is a logical and appropriate step. It believed that it was vital for the industry to be involved to help direct the logistics of implementation and to help inform the necessary industry communications campaign.

4.183 Virgin Media agreed that the industry forum should discuss how implementation of number supply measures should be planned to ensure action is co-ordinated and effectively executed in the interests of industry and consumers. The forum should work with Ofcom to identify all area codes likely to be affected at the start of its work and develop a single system and work schedule to ensure that common announcements can be deployed. Virgin Media suggested that Ofcom convenes this forum ahead of reaching its conclusions on number supply measures.

Trigger level

4.184 C&WW welcomed a trigger-based mechanism for determining when number supply measures should be implemented in an area. ITSPA also considered that overlay codes should only be considered if the supply of numbers falls below an established trigger level.

4.185 BT considered that 20 blocks of 1,000 numbers was too low a trigger level for introducing number supply measures. BT suggested that around 70 spare 1,000-number blocks would be a more appropriate trigger level. BT supported this suggestion by explaining that from time to time it receives orders from major businesses for thousands or tens of thousands of geographic numbers at a time, for example to establish new call centres.

Timescales for implementation

4.186 ITSPA commented that the timescales required for implementation were likely to be a CP-specific issue and that we would need to discuss requirements in detail with individual CPs. It was likely to vary considerably between CPs that had deployed (or were in the process of deploying) NGNs and CPs still operating on the TDM network.

4.187 BT considered that we need to give at least two years' notice to customers and industry before implementing number supply measures.

4.188 BT estimated that to close local dialling and introduce local numbers starting with the digits '0' and '1' it would take [✂].

4.189 BT estimated that to introduce an overlay code would take [✂].

4.190 C&WW considered that if planning were to commence in mid-2011 then it may be realistic to consider implementation in late 2012 or early 2013 (i.e. around 18 months for implementation). Its considerations of timescales were based partly on a need to update certain Customer Premises Equipment before closure of local dialling. In a particular case involving PBXs (and other least cost routing devices) that use Indirect Access services, co-ordination is required with the PBX maintenance community to make the changes as close to the closure of local dialling. This is to avoid impacting customers' ability to local dial prematurely; guard against implementing changes after the closure of local dialling, as well as to ensure calls are routed via the intended CP.

4.191 Virgin Media stated that closing local dialling would require [✂] which would include necessary technical amendments and the deployment of relevant announcements. If

any further announcements are required, then a further [✂] lead-time would be required. [✂].

4.192 NSE considered that six months would be required for it to implement the preferred options for number supply measures; NumberGroup.com considered that it would be a year and IPV6 between 12 to 18 months.

4.193 [✂] would be able to implement either of the preferred options within six weeks. This time was required to align billing reference data. Loho considered that as a newer VoIP CP, it would be able to make the necessary changes very rapidly and that the timescale would be determined by CPs with legacy networks. It estimated that changes to billing rules and engines would take approximately one to two day's effort.

Communications campaign

4.194 [✂] highlighted that education of consumers is critical in any implementation, and that a suitable model for ensuring that this is done effectively would be required to avoid any issues as changes are made. It assumed that there would be a cross-industry end user education programme that is separately funded.

4.195 Sky commented that a consumer education campaign was essential to support any initiative to remove local dialling, particularly as local dialling requirements will vary from area to area. TalkTalk also referred to a consumer education campaign to support the closing of local dialling and suggested that clear information is provided on Ofcom's website.

4.196 Virgin Media agreed that consumers need a sufficiently long period of time to become accustomed to any changes and make the necessary amendments. This will require a significant and co-ordinated re-education process by industry and Ofcom. Virgin Media estimated that the cost of customer communication could be in the region of up to [✂].

4.197 ITSPA noted that there may be some consumer confusion regarding the closure of local dialling. It believed that "Ofcom should lead on a communications strategy, which trade associations and CPs can align with to help inform consumers about the changes. A suitable advertisement campaign combined with the application of a network announcement (to inform those who have misdialled) would help resolve many of the short term issues".

4.198 The Advisory Committee on Older and Disabled people (ACOD) at its April 2011 meeting also expected Ofcom to co-ordinate the communications campaign to inform consumers of changes. It was vital that a consistent message was provided across industry as it would be easy for individual CP approaches to communication to generate confusion. The communication programme must cover a wide variety of locations to ensure sufficient coverage across all local citizens and we must ensure that messages are provided in different visual and audio formats.

Modification to the Number Plan to implement number supply measures

4.199 BT questioned whether the requirement to provide local dialling should be retained in the Numbering Plan. BT made this suggestion in light of the increasing prevalence of VoIP services which do not always facilitate local dialling and in recognition of consumers' views that local dialling is a useful but not essential facility in our 2010 consumer research report.

4.200 Colt also noted that the Numbering Plan required modification to remove the obligation on CPs to provide local dialling and preferred that the obligation be removed for all area codes and not just those where closure of local dialling is regulated.

Ofcom's response

4.201 We welcome CPs' general support for the proposed forum to plan the implementation of new number supply measures. We will engage with CPs imminently to organise the forum. Issues covered will include the technical and practical aspects of implementing supply measures as well as communications campaigns.

4.202 We agree with BT's comment that 20 blocks remaining may be too low a trigger point for implementing number supply measures and that the suggested 70 blocks may be more appropriate. We will work with industry in the above mentioned forum to determine an appropriate trigger level for the industry as a whole, taking into account our forecasts and the time required to implement changes and to adequately inform consumers.

4.203 We note that the timescales required by CPs for implementation are likely to vary considerably, with the modifications required by legacy TDM networks likely to take significantly longer than for smaller or IP-based networks. We thank CPs for the information provided so far and will work with industry to determine appropriate and achievable timescales for implementation of number supply measures.

4.204 We are particularly interested in understanding the advantages of batching number supply measures in areas as means of providing a coordinated and cost effective work schedule and communication campaign.

4.205 We expect that CPs will take responsibility for funding and communicating the changes to their customers, and coordinating communications campaigns to alert the wider community that a change will occur. However, we expect to take a role in defining the necessary characteristics of an effective communications campaign and ensuring that this is coordinated and delivered in an appropriate manner to local citizens, taking into account the particular needs of vulnerable consumers.

4.206 An early item for discussion and agreement in the industry forum would need to be implementation timescales. In particular, our forecasts indicate that our supply of new number blocks in the area code for Bournemouth (01202) is likely to be exhausted before the end of 2012, and this highlights particular urgency to establish an agreed plan to provide new supplies of numbers for that area code.

4.207 We note comments from stakeholders on the possibility of removing the obligation for CPs to provide local dialling entirely in the Numbering Plan. We consider that local dialling is a useful facility for consumers and worth preserving where there is no need to restrict it due to number supply requirements. However we will consider this further when we consult on the modifications to remove the requirement applicable to certain area codes from the Numbering Plan.

What are the potential implementation costs for CPs for our preferred number supply options in the November Consultation for areas with four- and five-digit codes?

4.208 In the November Consultation we asked CPs:

"What costs do you consider that your company would incur if the preferred options for four- and five-digit areas were implemented?"

4.209 CPs were only able to supply limited cost estimates for our preferred options when responding to the November Consultation. We consider these together with CPs' general considerations on the cost implications below.

Stakeholders' comments

4.210 ITSPA commented that, similar to timescales for implementing number supply measures, the costs incurred would vary significantly among CPs and that we should discuss costs individually with CPs.

4.211 BT stated that there are costs associated with any of the supply measures proposed by Ofcom because they require changes to its network and systems. In terms of networks and systems, BT explained that the bulk of these costs in most cases are for facilitating the measures when they are introduced for the first time, with relatively small incremental costs each time a further area code requires measures. Its current view was that the cost of either closing local dialling or introducing overlay codes would be about the same. However, BT explained that for its network the way that supply measures (in particular overlay codes) are implemented could have a significant impact on the costs.

4.212 BT explained that its networks and systems can be changed to accommodate local numbers starting with the digit '0' or '1'. Its estimated costs of closing local dialling on a set-up and per area code basis were [✂].

4.213 BT estimated that its costs of introducing overlays would be [✂]. However, BT explained that its costs of introducing overlay codes would be far higher were grooming (i.e. the need to move existing lines within the exchange) to be required or if there were a need to disconnect and resupply CPs' broadband services using the Shared Metallic Path Facilities (SMPF) on new equipment. BT pointed out that these difficulties (and costs) would not arise if the overlay code has the same first two digits after the leading '0' (i.e. 01X, where 'X' is the same digit) as the existing area code. Once a different digit after the leading digits '01' is required, then a labour intensive and potentially disruptive solution would be required

4.214 BT argued that while all networks and systems can be changed to accommodate overlay codes, there are some limitations to the number of area codes that can be hosted on a switch and on hardware within a switch. As a result of this and the situation explained in the paragraph above, there would be a finite number of overlay codes that could economically be supported.

4.215 Virgin Media considered that "for a full closure of local dialling the estimated network costs (including trapping calls and announcements) is around [✂]". IPV6 provided a broad estimate of its costs of implementing Option 1 as being between £25,000 and £42,500. NSE considered it would incur a one-off cost of £10,000 to £15,000.

4.216 C&WW was not able to provide accurate figures at this stage in the absence of a detailed business case, however it did not believe that the requirements (and costs) would be material enough to preclude the prospect of pursuing our proposed strategy.TSL also did not believe that the cost would be prohibitive.

4.217 IPV6 responded that accurate figures depended on how number supply measures were implemented. Resources would need to be diverted from 'business as usual'

activity and focussed on database and backend changes, updating customer and marketing material and staff retraining, which would have an incremental impact.

4.218 [✂] considered that its network costs would be limited and consistent with its predicated short implementation programme. NumberGroup.com also considered that the costs would be quite small requiring only a software update.

Ofcom's response

4.219 We thank CPs for the information that they have shared to date on potential costs. In additional to the information supplied in response to the November Consultation, some CPs have provided views and estimates in response to an informal information gathering exercise conducted between August and October 2010. This information has been taken into account in our considerations and will continue to inform our discussions with industry on implementation of closing local dialling and introduction of overlay codes.

4.220 As with implementation timescales, we note that costs are likely to vary considerably and will be determined by the size and type of network employed by the CP.

4.221 We have taken two key points from the information provided. First, the costs of implementing our preferred number supply measures are not thought to be prohibitive. Second, the manner in which number supply measures are implemented could have a considerable impact on costs for some CPs. We intend to explore this further with individual CPs and in implementation discussions in the industry forum.

Conclusions

4.222 We have reached a decision on the most appropriate option for increasing the supply of geographic numbers in areas with four-digit codes after taking into account stakeholders' views and the findings of the 2010 and 2011 consumer research. We set this decision out in paragraph 4.223 below and we explain how we consider that our decision meets the relevant legal tests in paragraphs 4.226 to 4.230. In paragraph 4.224 to 4.225 we set out the next steps for deciding on supply measures for areas with five-digit codes.

Supply measures in areas with four-digit codes

4.223 Our decision on how to increase the supply of geographic numbers, where this is necessary in areas with four-digit codes, 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 a trigger level to be agreed with industry. If and when supplies of new numbers in that area code subsequently should fall below the trigger level again, we would introduce a four-digit overlay code to cover the same geographic area.

Supply measures in areas with five-digit codes

4.224 We are consulting on administrative measures (i.e. the limited roll out of blocks of 100 numbers) to address the need for additional number blocks in the 11 areas with five-digit codes. We consider it appropriate to await the outcome of that consultation before concluding on whether measures to increase the supply of numbers will be required in five-digit area codes and, if so, which would be the most appropriate option.

4.225 We will decide on whether 100-number blocks are to be made available in the five-digit area codes in a statement due for publication in early 2012. If we decide not to proceed with 100-number block allocations in any or all or the five-digit area codes, we will decide in that statement our approach for creating more numbers taking into account all stakeholder comments expressed previously.

Legal duties and legal tests

4.226 We consider that our decision on how to increase the supply of geographic numbers in areas with four-digit codes is consistent with our general duties in carrying out our functions as set out in section 3 of the Act.[97] In particular, we consider that the decision furthers 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.

4.227 In reaching our decisions, 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.

4.228 In early 2012, when we have determined the areas where we will close local dialling first, we will consult on 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 at least the applicable area codes.[98] To implement overlay codes in the future, we would also need to add the new geographic area code and its name to Appendix A of the Numbering Plan.

4.229 We need to show, when proposing modifications to the Numbering Plan, 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 decision to close local dialling to increase the supply of geographic numbers and the resulting proposed modification to the Numbering Plan would meet those 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.[99]

  Without the measures to be implemented, 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 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;

[97] See Annex 7 for further information on our duties and the legal tests.
[98] Paragraph B3.1.3 of the Numbering Plan on Local Dialling.
[99] European electronic communications regulatory framework: Framework Directive Article 10(4).

- **not unduly discriminatory**, in that our analysis of the options for increasing the supply of geographic numbers recognises their different impacts on consumers, businesses and CPs and found that our preferred option would not be unduly discriminatory.

  Our approach in implementing number supply measures only in area codes that require more numbers would result in changes 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 situations regarding number availability that prevail in those areas and is intended to minimise disruption to UK consumers as a whole;

  Closing local dialling requires a change in dialling behaviour and this would be applicable to all who dial numbers locally in an area where the local dialling facility was removed. This may affect consumers differently and the level of impact of removing the local dialling facility may vary across consumer groups. Our 2010 consumer research found half of consumers aged 55 or over valued local dialling as opposed to just over 30 per cent aged between 25 to 44 years.[100]

  Closing local dialling may also have a greater impact on vulnerable consumers. These consumers may be less exposed to communications campaigns and may find the required change in dialling behaviour confusing.

  However, any measure to increase the supplies of geographic numbers would likely have a greater impact on older and vulnerable consumers and there are actions that can be taken to mitigate the risks identified;

  proportionate, in that it is the general objective of our review to ensure that geographic numbers are available to support competition in fixed-line voice services across the UK for the foreseeable future. The policy principles that guide how we meet this objective are that:

  - 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.

  The modifications to the Numbering Plan would be proposed to implement our decision to close local dialling as a means of increasing the supply of geographic numbers in some areas. This would enable the meeting of our objective to ensure that geographic numbers are available in areas when needed and would be in line with our stated policy principles.

  transparent, in that our reasoning for our decision on how to increase the supply of geographic numbers in areas with four-digit codes is set out in this section, with further explanation provided in Annexes 3 and 4. When read in conjunction with the rest of this document, it is explained that the decision 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.

[100] 2010 consumer research report page 10.

4.230 In addition, we consider that our decision on supply measures for areas with four-digit codes fulfils 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 decision to close local dialling makes approximately 200,000 numbers available for use in each four-digit area code where the measure is implemented. These numbers are already in existence but are not available for general use while local dialling is permitted. 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 our decision 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 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.

Section 5

Reducing the need for new supplies of geographic numbers

5.1 In this section we look at how administrative processes can help ensure best use of geographic numbers and improve utilisation of allocated numbers, thereby reducing the need for new number supplies.

5.2 First we set out the proposals put forward in the November Consultation for strengthening our administrative processes. We then summarise stakeholders' responses and explain how we have taken these into account. Finally we consider our position on these proposals and set out what we intend to do next.

5.3 We are consulting further on our proposals to make a limited number of smaller number blocks available for allocation and we have selected 11 areas where we propose to roll these out. We also confirm that we will be reviewing our allocation processes for geographic numbers and that we plan to consult on a reservation process for geographic numbers and on modifications to the set of telephone number application forms.

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

5.4 The November Consultation looked at the challenges we face in managing geographic numbers effectively. We examined whether there was any further scope to reduce barriers to efficient number use, and any way 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 the associated disruption for consumers and CPs that this generates.

5.5 We looked at the way geographic numbers are used at the retail and wholesale level. First we considered whether any changes should be made to the way geographic numbers are used by end-users, including the meaning associated with geographic numbers, such as location information. We concluded that it would not be appropriate to introduce measures that would hasten the erosion of the meaning provided by geographic numbers as this was still highly valued by consumers.[101]

5.6 We also concluded that 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.[102] In addition, it would be difficult for us to ensure that use of geographic numbers met pre-defined service criteria. Numbers are allocated by Ofcom to CPs and then distributed to the end-user for the intended service through a number of ways (e.g. sub-allocation, through resellers etc.). This process can be multi-layered,

[101] Measures considered included encouraging 'out of area' use and eradicating the link between area code and location. However, our 2010 consumer research (page 3) found that 64 per cent of consumers surveyed thought that geographic significance was important, with both businesses and residential consumers valuing this for a mixture of emotional and practical reasons.
[102] There are currently no rules about appropriate service use and a vast range of services are provided on geographic numbers.

giving us limited visibility of the service being provided in some instances.[103] We therefore did not consider either of these matters further. We received no stakeholder comments on these initial conclusions.

5.7 We looked at administration of geographic numbers from the wholesale side. The challenge for Ofcom and CPs 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.[104] As explained in the November Consultation and summarised in Annex 1 of this document, there are sufficient numbers already available in each geographic area to meet the needs of customers. However, we face challenges in managing geographic numbers in the most efficient way due to 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, there are limitations to how we can improve utilisation of allocated numbers.

5.8 We have already taken measures to improve utilisation rates over recent years, including using a rule-based number allocation system, allocating numbers in blocks of 1,000 rather than 10,000 numbers (i.e. roll out of conservation measures to 590 areas); and carrying out audits of CPs' number use followed by withdrawal of unused number blocks.[105] Such measures have increased efficiency in number use. In 2006 we estimated the average utilisation rate across allocated number blocks to be fifteen per cent;[106] in 2010 we estimated this average to be 23 per cent for smaller CPs and 53 per cent for larger CPs.[107] Strengthening our administrative processes within the limitations mentioned in the preceding paragraph should, we consider, further improve efficient number use.

5.9 In the November Consultation we examined 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 encourage CPs' increased utilisation of numbers.

Stakeholders' comments

5.10 A number of respondents supported our intention to strengthen our administrative processes for geographic numbers.[108] Virgin Media considered that there was "significant scope for Ofcom to improve the situation via a complementary package of

[103] A more detailed explanation of how geographic numbers are distributed from Ofcom to end-users is provided in Annex 1 (paragraphs A1.23 to A1.27).
[104] We set out our policy principles in relation to managing telephone numbers in paragraph 3.18.
[105] The measures currently used to manage numbers are explained in Section 2 (paragraphs 2.12 to 2.23).
[106] This figure was calculated using the total of geographic numbers in BT's directory enquiries database in each area and uplifting it by 20 per cent to cover Direct Dial-In numbers not included in the database. We then compared these totals with numbers allocated in each area to provide average utilisation rates.
[107] These estimates are based on information provided by CPs in response to a series of formal and informal information gathering exercises made between August and October 2010.
[108] Those respondents were BT, C&WW, Colt, ITSPA, Magrathea, Sky, TalkTalk, TSL, Virgin Media and [✂].

refinement of our number allocation procedures and a comprehensive tightening of due diligence activity to ensure that numbers in scarce areas are used efficiently".

5.11 A number of CPs strongly supported the strengthening of administrative measures as a critical first step in managing demand and improving efficient use of numbers.[109] Virgin Media commented that "low cost administrative measures.... were exactly the type of proposals Ofcom should be aiming to introduce rather than more costly interventionist measures". Sky considered that "Ofcom is duty bound to manage numbering resources efficiently on behalf of the nation but it is clear that more work needs to be done. It would be inappropriate to require consumers to shoulder the burden of intrusive and costly changes when there is still a significant amount of unused numbering capacity".

5.12 While C&WW welcomed our proposals to tighten our due diligence when allocating numbers (provided they were achievable within the existing administrative timescales), they recognised that this would not be sufficient to remove the need for the additional measures proposed in the November Consultation. However, strengthened administrative measures were seen as representing "an equally vital component for managing future number allocation".

Ofcom's response

5.13 We welcome CPs' support for our plans to strengthen the administrative processes for managing geographic numbers, particularly as these measures may create additional administrative burden on CPs. In line with our regulatory duties, we will ensure that additional information requested (e.g. on application forms as part of the number allocation process; in audits on allocated number use) is relevant to our determination of best use of numbers and is proportionate in what it is intended to achieve. Such measures would not unduly impact the timescales for determining applications for number allocation.[110]

5.14 As mentioned, administrative processes to promote effective and efficient use of geographic numbers are already in place, although we agree with stakeholder comments summarised above that there is scope for more improvement. Taking measures to improve the administration of geographic numbers, including tightening due diligence in the number allocation process, would be an important step for ensuring best use of numbers. Administrative measures can be implemented relatively quickly (subject to consultation) in comparison to other proposals in this document. In addition, such measures can be implemented without impact on consumers.

5.15 We agree with stakeholders that taking reasonable measures to improve utilisation of allocated numbers by developing our administrative processes would be an important step in the management of geographic numbers. However, we consider that given the level of scarcity faced in some areas, it is also appropriate to consider other proposals for improving utilisation at this time and to prepare for creating new supplies of numbers where required.

5.16 We need to consider proposals for strengthening our administrative processes alongside our proposals for introducing a pilot charging scheme for geographic

[109] Those CPs were BT, Sky, TalkTalk, Virgin Media and [✂].
[110] Under Number Condition 17.12, Ofcom must determine an application for telephone numbers within three weeks of receiving the completed application form and the CP providing all requested information.

numbers.[111] The requirement and impact of different measures are related and will be considered in parallel and monitored over time. For instance, one of the measures we considered in the November Consultation was to increase the scope and frequency of our audits on CPs' use and utilisation of allocated geographic numbers. However if we proceed with proposals to introduce charging for geographic numbers, CPs will have incentives to return blocks of numbers when they are no longer needed rather than when requested to review through the audit process. If this is the case, the administrative burden of audits on CPs and Ofcom could be considerably reduced.

Allocating numbers in smaller blocks to improve utilisation of allocated numbers

5.17 In the November Consultation we considered the possibility of allocating geographic numbers in blocks of 100 numbers instead of blocks of 1,000 numbers in some areas. Reducing the block size enables better matching of number allocation to the numbering resource required by CPs.

5.18 However, smaller blocks of numbers require a finer level of digit decoding at the telephone switches to route calls to customers. Under the current number allocation system, a block of 1,000 (or 10,000) numbers is associated with a CP and a terminating network switch. The CP originating the telephone call analyses the first few digits of a called number in order to route the call to the terminating CP's switch. Allocation of numbers in smaller blocks would require the originating CP to decode further digits to identify the terminating switch hosting the number block.

5.19 The digit decoding resource constraint in legacy local exchange equipment deployed on some networks limits the minimum block size for number allocation. The technical constraint faced by some large-scale networks presents a significant barrier to wide scale allocation of smaller number blocks (although the extent of this is very difficult to determine). Moreover, using spare decode capacity to route calls to numbers in smaller blocks might use network switch resources that would otherwise be needed to support new number blocks created by supply measures such as overlay codes. Therefore, even if feasible, it may not be the most efficient use of the limited decode resources in some switches to route numbers in smaller blocks.

5.20 The November Consultation concluded provisionally that it would not be justifiable to reduce the common number block allocation size from 1,000 numbers in all Conservation Areas and 10,000 numbers in all Standard Areas. Nevertheless, our preliminary assessment, based on the information available at that time,[112] was that a limited number of blocks of 100 numbers might be supported by the available decode resources in the telephone switches.

5.21 Recognising the uncertainty regarding the extent of spare digit decoding resources available on legacy network switches, we proposed that one approach may be to limit the roll out of smaller blocks to allow CPs and us to better understand their impact on network decode resources. We sought views on the extent of such an initial roll out of 100-number block allocation. We proposed seven areas that were forecast in

[111] Our proposals to implement a pilot charging scheme for geographic numbers are set out in Section 6 and Annexes 5 and 6.
[112] We gathered information from larger CPs on network decoding constraints and the ability to handle numbers allocated in blocks of 100 through a formal information gathering exercise in August 2010.

November 2010 to run-out of numbers before 2015[113] as possible candidates for an initial roll out so that any potential supply measures in those areas could be deferred.

5.22 In the November Consultation we asked:

> *"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?*"

Stakeholders' comments

5.23 Most respondents to this question were supportive of the principle of allocating numbers in smaller blocks to improve utilisation of numbers. Nine CPs[114] with no digit decoding constraints encouraged us to adopt allocation of 100-number blocks, as did FCS, ITSPA and one consumer. Most CPs either indicated that their network switches could support the routing of calls to blocks of 100 numbers in all geographic areas or did not raise any technical barriers to their provision of such routing.[115]

5.24 In TalkTalk's view, the allocation of geographic numbers in units of 100 was clearly a much more efficient way of addressing the problem caused by under-utilisation of larger number blocks. Sky considered that smaller block allocation could alleviate number scarcity in areas that are likely to experience shortages. Loho thought that "where feasible, this would be another suitable stop-gap measure". ITSPA, NSE and TSL welcomed the option of being allocated smaller number blocks.

5.25 Some respondents, who were, in the main, supportive of smaller block allocation (generally on a limited basis), also pointed out the potential burden of handling a larger number of smaller blocks.[116] IPV6 commented that we should "be aware of the administrative and cost impact (in terms of both man-hours and monetary cost) which would be felt by CPs going through the DMA/activation process[117] for such a relatively small quantity of numbers". However, IPV6 also considered that it might not be as expensive for CPs as the alternative of sub-allocation. Sky pointed out that such a measure could prove unduly burdensome for CPs providing services to residential customers who need large volumes of numbers and would consume 100 numbers in an area very quickly.

5.26 Four CPs with legacy network switches[118] highlighted the digit decoding constraints they would face and how this would limit their ability to support blocks of 100 numbers. They opposed widespread use of smaller blocks and suggested that any roll out of 100-number blocks should be restricted to a limited number of areas where it is feasible and necessary.

5.27 In BT's view, smaller block allocation was a sensible measure in many areas, especially those less densely populated. It supported the principle of 100-number block allocation "as this measure would not impact customers and in some areas could materially extend the supply of numbers". However, BT said it would struggle to

[113] Those areas were Blackpool (01253), Bournemouth (01202), Bradford (01274), Brighton (01273), Derby (01332), Langholm (013873) and Middlesbrough (01642).
[114] Those respondents were IPV6, Loho, Magrathea, NSE, NumberGroup.com, Sky, TalkTalk, TSL and [✂].
[115] Those respondents were IPV6, ITSPA, Loho, Magrathea, NSE, NumberGroup.com, Sky, TalkTalk, TSL and [✂].
[116] Those respondents were BT, C&WW, IPV6, ITSPA, Sky and [✂].
[117] This refers to the Data Management Amendment process required to build numbers onto switches to enable routing of calls to the appropriate terminating CP.
[118] Those CPs were BT, C&WW, Colt and Virgin Media.

route calls to numbers allocated in blocks of 100 in some areas as the decode resource required for routing was limited and closer to exhaustion on some switches than others. It also believed that smaller blocks would not be sufficient to meet the demands of many CPs in bigger towns and cities.

5.28 C&WW also agreed with the smaller block allocation proposal provided that it was limited to a few areas on a trial basis at this stage to understand the full issues with implementation and to constrain any potential unforeseen consequences caused by limitations to network decode capabilities. In order to limit impact, C&WW suggested that 100-number blocks are allocated from distinct 10,000 number units used solely for this purpose and not from multiple isolated 1,000 number blocks. BT also suggested restricting the blocks open for 100-number allocation (i.e. only one block of 1,000 numbers used at a time).

5.29 [✂]. Virgin Media argued that "as CPs with legacy switch constraints, such as Virgin Media, do not support the allocation of number blocks at the 100 block level, any roll out should only be on a strictly necessary basis and in very limited areas (i.e. just the seven identified areas) in order not to distort competition resulting from legacy CPs not able to operate in certain areas". In subsequent discussions, Virgin Media confirmed that it would need to know the areas planned for the roll out of 100-number block allocation and undertake a switch-based assessment to determine the feasibility of supporting blocks of 100 numbers.

5.30 ITSPA recognised the challenges that some CPs with legacy networks face in accommodating 100-number blocks and encouraged Ofcom to help in resolving some of these constraints. ITSPA commented that the process for allocating 100-number blocks needed to be discussed in detail with industry to ensure smaller blocks could be made readily available and to reduce the costs involved. BT also asked us to work further with industry to decide, through collective collaboration and engagement, how to introduce 100-number blocks where feasible, while accepting that it would not be possible to do so everywhere.

5.31 Colt did not support allocation in smaller blocks due to the increased burden of managing larger routing tables containing more blocks. In its response to the November Consultation, Colt argued that "the increase in management of the routing tables for CPs with legacy TDM networks will become too onerous. Complexity may also be added to fault management systems where 'breakout' to the extra digit will have to be implemented". In subsequent discussions, Colt explained that its main concern was with the additional administration and burden on routing tables rather than concerns related to the technical inability to support 100-number blocks. It would need to restructure the relevant table on each switch in order to route on an extra digit. While Colt preferred not to have to do this, if it was deemed necessary by Ofcom and kept to an absolute minimum, Colt indicated that it could support a limited roll out of smaller blocks.

5.32 Mr Stevens argued against allocation of numbers in smaller blocks, having considered the increase to Ofcom's workload from allocating more blocks, as well as the impact on the size of our number allocation database and the time taken to process the data within. It was seen as "a short-term solution from which there is no going back".

5.33 There were different views on the timing of introducing smaller block allocation relative to other measures to address scarcity. IPV6 commented that we should consider smaller blocks after implementing national dialling and after considering the scarcity in each area code. [✂] commented that smaller block allocation should be

implemented immediately and free blocks of 100 numbers should also be broken away from underutilised existing allocations in order to conserve supply. [✂] also considered that introduction of 100-number blocks may encourage investment in more efficient NGN technology. Sky also noted the failure by some CPs to invest in NGN technology was hindering efficient number management and call routing.

Ofcom's response

5.34 We welcome CPs' general support for investigating the feasibility of allocating numbers in blocks of 100. It is apparent from the responses to the November Consultation that most CPs could meet the further decoding requirement associated with routing calls to smaller number blocks. However, four CPs with legacy network switches expect to face constraints in decoding further digits and we recognise the impact of finer digit analysis on their networks. Taking this into account, our view remains that it would not be justifiable to change the common number allocation size across the entire pool of geographic numbers.

5.35 Stakeholders' responses suggest that there is merit in looking further at feasibility of allocating a limited supply of numbers in blocks of 100 in areas where smaller blocks are likely to be effective. Doing so could help to defer or even eradicate the need for number supply measures in some areas, particularly those with low customer demand for numbers.

5.36 We have spoken to the four CPs with network constraints or routing table concerns about their consultation responses.[119] These CPs told us that the feasibility of supporting smaller blocks would depend on the exact list of areas involved as they would have to assess the spare decode resources on specific switches related to these area codes. We are therefore consulting further on this proposal and are providing a list of the areas proposed for 100-number block allocations.

5.37 We would work closely with CPs during the planning and roll out of 100-number blocks. Taking account of stakeholders' comments on managing the impact, we would release blocks in a way that makes routing easier to control. We do not propose to withdraw unused 100-number blocks from allocated 1,000 number blocks at this point, but may consider this in the future once we have assessed the impact on CPs' networks of initial 100-number allocations and discussed the next steps with industry. We would also work with CPs on whether and how to roll out 100-number blocks in more areas if the initial set of areas proved successful (i.e. calls can be routed without detrimental impact on the networks and 100-number allocations meet CPs' demand).

5.38 We do not consider that allocation of 100-number blocks in a limited set of areas would create an unreasonable administrative burden on CPs. With reference to Colt's concerns over the impact on routing tables and fault management, we propose, at least initially, to release a maximum of 100 blocks of 100 numbers in each applicable area. We would limit the number of blocks of 1,000 numbers split into 100-number block allocations, and this will in turn limit the additional levels entered into the routing tables. It will also reduce the impact on Ofcom's allocation process (which we do not expect to be disrupted by 100-number allocation) and the processing of information from our numbering database.

5.39 We would like to understand the impact of 100-number block allocations on CPs as soon as possible. We therefore plan to work with CPs (particularly those operating

[119] Those CPs are BT, C&WW, Colt and Virgin Media.

TDM networks) to understand viability within the current technical constraints. If 100-number blocks are feasible and would help to meet demand for numbers in certain areas in a more efficient manner, then we would like to employ this measure. As discussed below, we are proposing to roll out number blocks in the 11 areas with five-digit area codes initially.

Potential allocation criteria for blocks of 100 numbers

5.40 In the November Consultation we asked:

> *"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?"*

Stakeholders' comments

5.41 Views were expressed on the appropriateness of 100-number blocks for some CPs. In order for 100-number block allocations not to affect competition, innovation and consumer choice, C&WW and Sky argued that due consideration must be given to the needs of the CP requesting the allocation and recognition that different types of CPs and their customers have justifiably different numbering requirements. Where a CP has a genuine demand for more than 100 numbers (e.g. to fulfil an order from a large corporate customer) or previous number consumption rates and network roll out investments support the need for larger allocations, then this must be handled appropriately by Ofcom. [✂] considered that blocks of 1,000 numbers should still be allocated in an area where they can be justified.

5.42 Some CPs suggested considerations specifically for allocation of 100-number blocks. In terms of eligibility for a 100-number block, BT suggested they should only be issued where the CP requesting the block forecasts that it would be sufficient to meet its demand for numbers for, say, over three years.

5.43 [✂] suggested that if only 100-number blocks were available for allocation in an area, then "the CP's technical competence and providence with number management should be a consideration if the resource is scarce, including the ability to sub-allocate to other CPs. In addition, a solid business case and demonstration of requirement for numbers should be provided".

5.44 Magrathea saw no reason why CPs should not have to demonstrate demand for numbers in these smaller blocks in order to secure an allocation (e.g. by providing evidence of firm wholesale or end-user customer orders).

5.45 IPV6 suggested a "colour coding scheme, combining both resource and entitlement" considerations. Under this scheme, the eligibility criteria would be increased as the number availability in an area reduced. Eligibility criteria for a 100-number block would consist of evidence of readiness to provide service (e.g. evidence of an established network or interconnection arrangements) and of customer demand (e.g. a serious letter of intent or proof or requirement).

5.46 Loho responded that no additional criteria should be added because it would create an unfair competitive advantage to CPs who were allocated numbers prior to the introduction of 100-number blocks and any change in eligibility criteria. NSE and NumberGroup.com felt that additional eligibility was not required. ITSPA agreed with applying the standard 'first come first served' allocation process. NSE suggested that we consider an automated allocation process to reduce our administrative burden.

5.47 In terms of determining which 100-number blocks should be allocated to CPs, C&WW suggested that we should consider the usage mode planned for service provision on the numbers. For example, where a CP intends to have limited connectivity to the PSTN and interconnect with a single CP for the foreseeable future, we could group 100-number allocations according to the intended transit provider (e.g. by allocating 100-number blocks for CPs that intend to use BT as their transit provider from the same 1,000 number block, and those that intend to use C&WW for transit from a separate 1,000 number block etc). Such an approach would simplify routing for CPs, although C&WW recognised that this may not be maintainable in the long-term as the allocatee may subsequently change its transit provider.

Ofcom's response

5.48 We agree that it would be appropriate for the size of number block allocated to reflect the CP's forecast demand for numbers as closely as possible. The demands of CPs can vary greatly and our allocation system must retain flexibility to match allocation to requirement. It would not be efficient to allocate multiple 100-number blocks rather than one 1,000 number block in an area to the same CP, as it would create a decode resource burden without improving utilisation. For this reason, where sufficient numbers exist, we intend for blocks of 1,000 numbers to remain available for allocation where we introduce 100-number blocks so that we can match the most appropriate block size to the CP's likely requirement.

5.49 We have considered stakeholders' comments on potential eligibility criteria that might be applied to 100-number block allocations. These include willingness to sub-allocate and provision of interconnection agreements and firm customer orders. Some of these measures are relevant to number allocations in general and are considered in relation to our thoughts on strengthening our allocation and due diligence processes later in this section. We see no case for considering such eligibility criteria for 100-number blocks in isolation (at least at this stage). We therefore intend that applications for 100-number blocks would be considered in accordance with our general requirements under our 'first come first served' system and any future changes to our allocation process that we may make subject to our forthcoming review of the geographic number allocation process and related consultation.

5.50 We propose to open only one block of 1,000 numbers at a time for allocation in blocks of 100 numbers. C&WW's suggestion of grouping 100-number allocations into different 1,000-number blocks according to the CP's intended transit provider is interesting. However, we consider that any advantage this might provide in terms of assisting with routing may be limited as it relies on the CP's choice of transit provider not being changed subsequently. It could also lead to 100-number blocks being set aside for transit providers that are not involved in further applications. We have decided not to put C&WW's suggestion forward in our initial proposals for how 100-number blocks would work. Nevertheless we would be willing to consider it further as part of the consultation if it is likely to have a material effect on CPs' ability to manage the impact from routing 100-number blocks.

Limited roll out of blocks of 100 numbers

5.51 In the November Consultation we asked:

> *"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))"

Stakeholders' comments

5.52 Responses to our question on a limited roll out of smaller blocks were broadly aligned with CPs' views on the level of technical constraints they face in their network switches. CPs facing network decoding constraints were only supportive of a limited roll out of smaller blocks in areas where they were deemed necessary and feasible. CPs without such constraints considered a more extensive roll out would make more efficient use of numbers.

5.53 C&WW strongly favoured a limited roll out of 100-number blocks. It considered that extension of 100-number block allocations to areas beyond those initially trialled should only happen once an area had gone below a defined threshold of numbers remaining available for allocation. [✂] also supported a "threshold of constraint" to facilitate planning and avoid escalating administrative costs.

5.54 BT was supportive of a limited roll out of 100-number blocks. However, in its view, smaller blocks were not suitable for some areas, in particular big cities and towns, as the population density in these areas would generally mean that an allocation of 100 numbers would be too low to meet demand. BT did not agree that the seven areas suggested in the November Consultation were necessarily appropriate. Instead BT suggested that 100-number blocks are piloted in areas with low population and commented that "100 number blocks could make all the difference in five digit code areas".

5.55 Magrathea would not object to allocation of 100-number blocks being extended beyond the seven areas suggested in the November Consultation. In Magrathea's view, it should be used as extensively as possible, in preference to charging for number blocks. They requested clarification from Ofcom on the extent to which it was able to introduce this measure.

5.56 IPV6[120] considered that 100-number blocks should be allocated in areas where 25 per cent or less of capacity remained available for allocation. ITSPA, NSE and TSL encouraged us to push for allocation of 100-number blocks in more areas than proposed if possible. NumberGroup.com considered that 100-number block allocations should be standard across all areas.

Ofcom's response

5.57 Given the uncertainty over impact on legacy networks from routing calls to numbers allocated in 100-number blocks, we agree with the CPs likely to be affected by decode constraints that it would be appropriate to proceed with a very limited roll out to assess the impact. While it may aid better utilisation of numbers if smaller blocks could be rolled out more extensively, it would not be appropriate to do so until we understand the implications better.

5.58 We have given further thought to the most appropriate areas for a limited 100-number block rollout. In the November Consultation we suggested that the seven areas forecast to run out of numbers by 2015 were appropriate, as these areas had the fewest blocks available and therefore measures to increase the number of blocks

[120] IPV6 suggested a "colour coded scheme" taking account of the level of remaining number availability to determine appropriate block size and eligibility criteria – see paragraph 5.45.

may help to defer the need for number supply measures. However, further consideration has cast doubt on whether blocks of 100 numbers are likely to meet the requirements of many CPs in the initially suggested areas, given that six out of seven of these are areas of high CP demand and customer requirement. Allocation of multiple 100-number blocks in the same area to the same CP would not improve utilisation of allocated numbers and would impact legacy networks' decode resource without benefitting number utilisation.

5.59 We agree with BT's suggestion that 100-number blocks might be better employed in areas of lower customer demand and would be particularly useful in the 11 five-digit areas. These areas have a low population but are experiencing number scarcity due to the area code and local number structure providing fewer numbers than in other areas in the UK. We take these thoughts forward in the following paragraphs.

We are now consulting on allocating a limited number of blocks of 100 numbers in the 11 five-digit area codes

5.60 Having considered stakeholder responses, we have decided to proceed with a consultation on a limited roll out of 100-number blocks in the 11 five-digit areas. These areas are listed in Figure 5.1 below in order of block availability as at 3 June 2011. Under this proposal, we plan to make up to 100 blocks of 100 numbers available (i.e. 10,000 numbers in total) per area code that forms part of the initial roll out. Figure 5.1 also demonstrates how many 1,000 and 100-number blocks would then be available for allocation based on availability as at 3 June 2011.

Figure 5.1 Block availability in five-digit area codes proposed for 100-number block roll out

			If 100-number blocks implemented		
Area code	Area	1,000-number blocks available as at 3 June 2011	100-number blocks	1,000-number blocks	Total number of blocks
013873	Langholm	17	100	7	107
019467	Gosforth	19	100	9	109
015394	Hawkshead	19	100	9	109
015242	Hornby	20	100	10	110
016973	Wigton	23	100	13	113
015395	Grange over Sands	24	100	14	114
017687	Keswick	25	100	15	115
017683	Appleby	33	100	23	123
015396	Sedbergh	35	100	25	125
016974	Raughton Head	36	100	26	126
017684	Pooley Bridge	41	100	31	131

5.61 We are limiting the proposed implementation of 100-number blocks because CPs with legacy networks are uncertain as to the extent to which smaller blocks can be supported using their spare decode resources. We consider that this initial roll out would help us to understand the effectiveness of 100-number blocks and assist CPs who face network constraints to better understand the pressure of smaller blocks on decode resources while containing the impact.

5.62 We have selected the 11 five-digit areas as appropriate candidates for the initial roll out. These areas have a particular scarcity of numbers due to the code and number structure (i.e. '0' plus five-digit area code and five-digit local number). This provides only 79,000 numbers available in each code.[121] As demonstrated in Figure 5.1 above, as at 3 June 2011 there were only between 17 and 41 blocks of 1,000 numbers remaining in each of these areas. If we take no action to change this situation, these areas are predicted to run out of numbers to allocate between 2012 and 2020. As each of these codes cover areas with a relatively low population (that is, lower than 25,000 people), we consider that blocks of 100 numbers might have a role to play in matching allocated block size to realistic requirements. Demand for numbers is mainly driven by CPs wanting the ability to offer service in these areas (rather than a realised consumer demand for numbers) and smaller number blocks can more effectively meet this objective.

5.63 We anticipate that by introducing 100-number block allocations in these five-digit areas we can postpone the supply measures consulted on in the November Consultation for a considerable time.[122] We think this is an appropriate approach as it should more effectively use the existing stock of numbers for these areas and avoid

[121] Five-digit area codes have 79,000 numbers available. This is in contrast to four-digit area codes (the general area code structure) which have 790,000 numbers available.

[122] We set out our forecast of the effect of 100-number blocks on number supply in the five-digit area codes in Annex 2. Our proposed approach to creating more numbers when required in the five-digit area codes was to shorten the area code to four digits (and as a result merging more than one five-digit area code under a single four-digit area code). This is further discussed in paragraphs 4.147 to 4.177.

disruptive number supply measures in areas where demand is driven by CP requirement rather than a large population. Annex 2 provides further analysis of the effects of 100-number block allocations in the 11 five-digit areas and the forecast impact on number availability and the need for number supply measures.

5.64 If we proceed with our proposal for 100-number block allocations in the 11 five-digit areas, we intend to remove these areas from our proposed pilot charging scheme for geographic numbers in the 30 areas with the fewest number of blocks remaining available for allocation. All 11 areas are currently within the 30 areas with the fewest number blocks available as these areas have between 17 and 41 blocks remaining. If implemented, our proposal would result in ten blocks of 1,000 numbers being divided into 100 blocks of 100 numbers for allocation in each of these areas. This increase in blocks would still result in the five-digit areas being within the 30 areas with the fewest blocks available (block totals for each area would rise to between 107 and 131 blocks).[123] However, as our proposed threshold for charging relates to scarcity of number blocks, taking measures to increase the supply would suggest that it is reasonable (at least during the charging pilot) to exclude these areas from being considered for number charges. This does not necessarily mean, however, that numbers in these areas would be excluded from any future arrangements for charging.

5.65 We have decided not to propose introducing 100-number block allocations in the more densely populated areas suggested in the November Consultation (i.e., Blackpool, Bournemouth, Bradford, Brighton, Derby and Middlesbrough) because we now consider that allocating smaller blocks in areas of high number demand is unlikely to be efficient. We consider that a CP is likely to require more numbers in high population areas and therefore a block of 1,000 numbers might be a better match between block allocation size and demand for numbers for most CPs. We would continue to allocate blocks of 10,000 numbers in Standard Areas and blocks of 1,000 numbers in the other Conservation Areas.

Summary of our proposed approach on 100-number block allocations and next steps for consultation

5.66 We are now seeking stakeholders' views on our proposal to introduce 100-number allocations in the 11 five-digit area codes. We summarise our proposed approach on a limited roll out of 100-number allocations below:

- the areas that would form part of the initial roll out are:
  Appleby (017683); Gosforth (019467); Grange over Sands (015395); Hawkshead (015394); Hornby (015242); Keswick (017687); Langholm (013873); Pooley Bridge (017684); Raughton Head (016974); Sedbergh (015396) and Wigton (016973);

- we would make up to 100 blocks of 100 numbers (i.e. 10,000 numbers) available for allocation in each area;

- numbers would also be available for allocation in blocks of 1,000 numbers in these areas;

- the CP applying for numbers would have to justify the appropriate block size for allocation through predicted demand for numbers on the application form;

[123] See Figure 5.1.

- 100-number blocks would be allocated on a 'first come first served' basis; and
- we would open one 1,000-number block for allocation in blocks of 100 numbers at one time.

5.67 We propose that once allocated in blocks of 100, the numbers would remain in that size unit. To do otherwise (i.e. to subsequently group the numbers into blocks of 1,000) would cause disruption to any customers using the numbers, as the 100-number blocks would be allocated to different CPs and withdrawal of the numbers would be required. However, should the roll out of 100-number blocks result in an unexpected and major impact (for instance, that rendered the routing of calls to numbers allocated unfeasible), then we would need to assess with industry the most appropriate response.

5.68 Following this consultation on our proposals for the limited allocation of 100-number blocks, we will take stakeholders views into account and will set out our conclusions in a statement forecast for publication in early 2012. If we decide to proceed with our proposal, we would consult on modifications to the Numbering Plan to set out formally the areas where 100-number blocks are available for allocation and to explain how we consider the proposed modifications meet the legal tests.[124]

5.69 As well as looking at the feasibility of allocating blocks of 100 numbers in the 11 five-digit areas, we are requesting information from CPs on potential costs of implementing our proposals as well as likely timescales for 100-number block implementation if the decision is to proceed. We would like to allocate 100-number blocks in the proposed areas (if considered feasible and proportionate to do so) as soon as CPs can accommodate the necessary changes to their switches. We request that CPs provide an estimate of costs and timing in their consultation responses.

5.70 If we proceed, we will monitor the impact of 100-number blocks on number utilisation efficiency and the operational aspects on network switches. We would then consider with industry whether it is desirable and feasible for us to consult on allocating numbers in smaller blocks in other area codes and whether any additional numbers in the five-digit areas should be made available for allocation in blocks of 100 numbers.

5.71 We are inviting the comments of stakeholders on our proposals and in answer to our questions below. In particular, we seek views from CPs who face network decoding constraints.

Question 1: Do you agree with our proposal to allocate up to 10,000 numbers in blocks of 100 numbers (i.e. 100 x 100-number blocks) in the following 11 five-digit area codes?
Appleby (017683); Gosforth (019467); Grange over Sands (015395); Hawkshead (015394); Hornby (015242); Keswick (017687); Langholm (013873); Pooley Bridge (017684); Raughton Head (016974); Sedbergh (015396) and Wigton (016973)

Question 2 (for CPs): Would it be feasible for your network to handle up to 10,000 numbers allocated in blocks of 100 numbers in the 11 five-digit area codes listed in Question 1?

[124] Further information on the legal tests that we must meet before modifying the Numbering Plan is provided in Annex 7.

Question 3 (for CPs): What are your predicted costs and timescale requirements for implementing the necessary changes in your network switches to support routing to blocks of 100 numbers in the 11 five-digit area codes listed in Question 1?

Administrative measures to facilitate CPs sharing allocated number blocks

5.72 In the November Consultation, we explained that sharing of number blocks among multiple CPs happens in the market today through commercial sub-allocation arrangements. The sharing of blocks among multiple CPs helps to improve utilisation while satisfying the digit decoding constraints faced by legacy networks. While we had not identified any specific technical barriers associated with sub-allocation arrangements, we acknowledged that some CPs have encountered difficulties, including minimum requirements (e.g. minimum quantity of numbers sub-allocated or average monthly call traffic generated on the sub-allocated numbers and unattractive commercial arrangements when seeking sub-allocation from other CPs).

5.73 Concerns had 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) and not the sub-allocatee.[125] We had also found that some CPs had certain issues with sub-allocating numbers, including a reluctance to be responsible for the regulatory observance of the CP sub-allocated the numbers and operational difficulties, for instance when it came to facilitating number portability. The information received from CPs suggested that sub-allocation arrangements are not widespread.

5.74 We considered that some of our proposals could help to incentivise commercial sub-allocation arrangements. In particular, charging for geographic numbers might encourage block holders to share numbers with other providers or seek sub-allocation of numbers in preference to a direct allocation from Ofcom. Our initial view was that the barriers to sub-allocation were not insurmountable and we welcomed further feedback from CPs.

Incentivising block sharing and sub-allocation

5.75 In the November Consultation we asked:

> *"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?"*

Stakeholders' comments

5.76 Respondents generally considered that technical obstacles did not prevent sub-allocation although they did impede its effectiveness in incentivising better utilisation of numbers. BT believed there were limitations to the extent to which sub-allocation was achievable or desirable using existing/legacy technology. BT noted that due to the lack of a central database to be interrogated for relevant CP routing information, all calls would need to be routed first to the CP allocated the block and then onward routed to the sub-allocatee. This created inefficiencies and additional costs, which would be avoided by direct allocation of the numbers.

[125] A number of CPs had shared their pre-consultation views on sub-allocation with us through informal discussions and responses to an information gathering exercise.

5.77 C&WW agreed that there was nothing insurmountable in increasing sub-allocation. It felt, however, that we had discussed sub-allocation only at a superficial level in the November Consultation. In particular, we needed to acknowledge the inextricable link between numbering and routing. C&WW considered that the main issues for sub-allocation to arise from this link were (i) the need for onward routing, the costs involved and how they should be recovered; (ii) granularity of handover points for calls to sub-allocated numbers (which might be different from those for the generality of calls to the areas in question) and the costs involved; (iii) facilitating orders for geographic number portability; and (iv) arrangements for a geographic number portability transit network so that smaller CPs can import numbers. Given these issues, Ofcom would need to engage with industry and provide regulatory guidance and oversight if sub-allocation is to be encouraged in an efficient and workable manner.

5.78 [✂] argued that the technical obstacles to sub-allocation were a result of the underlying core network infrastructure, which meant that NGN operators were already ahead of TDM operators in this area. However, this should not be considered a constraint on sub-allocation as NGN operators were able to provide single number sub-allocation to TDM providers using a model similar to geographic number portability.

5.79 Loho argued that the obstacles to efficient use of numbers were those that restricted block size. Such limitations were causing problems in the market as it forced the onward routing of sub-allocated calls. If Ofcom required CPs with legacy networks to update their equipment to handle smaller blocks, this would solve a number of issues simultaneously. Sky also noted that inefficiency was exacerbated by some network operators failing to invest in NGN technology.

5.80 TSL pointed out that when a CP wants to move sub-allocated numbers away from the block holder, the process is not straightforward. The current 'block transfer' process does not enable a CP or service provider (SP) to move 'wholesale'. A process is needed that can easily transfer either CPs' or SPs' numbers between wholesalers or networks, the lack of which has caused problems in the past. TSL argued that new entrants who sub-allocate numbers should be made aware at the outset of the additional costs involved, which include transit charges, additional porting conveyance changes and potentially the cost of the number.

5.81 C&WW and NSE saw problems in relation to porting of sub-allocated numbers (such as verifying porting orders and engaging with the sub-allocatee on the porting process). It was also noted by FCS that improvements in the number portability processes, including a further consideration of a central reference database for all numbers, would eradicate the need for sub-allocation. However, Magrathea argued that the process for porting of sub-allocated numbers was clear and set out in the industry process manual (i.e. porting is carried out between the donor range holder and the network on which the recipient's numbers are hosted; processes are in place to cover communication between network operators and SPs). Indeed, Magrathea considered that the porting obligations and process may be clearer for sub-allocated numbers than for numbers allocated to one CP and hosted on another CP's network.

5.82 NumberGroup.com felt that there were no technical obstacles to sub-allocation as it relied on the routing arrangements employed for ported numbers. TSL saw a role for linking number allocation with geographic number portability, sub-allocation and pre-allocation porting to make more efficient use of numbers. FCS noted that sub allocation worked well for the WLR sector, although a more effective process was needed to accommodate new entrants and VoIP service providers.

5.83 A number of respondents commented that aside from technical considerations, commercial issues could also reduce take-up. NSE felt that sub-allocation was not a viable option as the lack of control over the numbers would reduce the ability to innovate and react to market conditions. Direct allocation of smaller blocks of numbers was seen as a much better solution. VON also argued that sub-allocation did not provide an alternative solution to allocation of numbers as the sub-allocatee would be placed in a position of dependence on the CP allocated the numbers. In case of problems, the sub-allocatee would need to transfer the numbers to another CP.

5.84 IPV6 commented that sub-allocation may not occur as CPs may have a commercial, legal or other reason stopping them from doing business with another CP. If sub-allocation does occur, it should be open to industry to determine the arrangements. They considered that sub-allocation was a commercial decision and saw no reason for Ofcom to intervene.

5.85 Virgin Media commented that sub-allocation of numbers incurred administrative knock-on effects which impede widespread sub-allocation arrangements.

5.86 A number of CPs raised pre-allocation portability (an inter-CP process to port numbers which have been allocated by Ofcom but not yet assigned to an end customer) as a potential alternative means of improving the utilisation of allocated numbers.[126] However, ITSPA commented that this required a more efficient porting process to enable transfer of unused numbers within a reasonable timescale. BT noted that the necessary internal and industry-wide processes to achieve pre-allocation portability did not currently exist.

5.87 Some respondents expressed more positive views on the sub-allocation of numbers. ITSPA, Magrathea and TSL agreed that sub-allocation can assist in increasing efficient use of allocated numbers and was already a useful way of entering the market and operating for some providers. Magrathea pointed out that since the advent of VoIP, there had been an increased demand for sub-allocated numbers, both from smaller providers who wished for all of their numbers to be hosted and from larger CPs who would rather not be allocated a block of numbers in areas with few customers. However, they felt that while there may be benefits in sub-allocation for certain providers, many CPs wish to control their own number ranges. This provides flexibility and greater independence in terms of commercial arrangements, such as termination rates.[127]

5.88 Magrathea thought that increasing sub-allocation could alleviate some of the problems arising if a CP ceases trading. They noted that some CPs obtain their own number blocks and host them on another CP's network. If the CP allocated the numbers ceases trading, there is no obligation on the hosting CP to continue hosting that block once the numbers are ported to another service provider. If numbers are sub-allocated from a network provider's block, then their obligations as range holder are clearer.

Ofcom's response

5.89 In general, respondents considered that sub-allocation may have some merit. Some respondents were active in the provision of sub-allocated numbers and demonstrated

[126] These respondents were BT, ITSPA and Loho.

[127] ITSPA, Loho and Magrathea also commented on the potential relationship between charging for numbers and sub-allocation. These comments are considered in Section 6 paragraphs 6.84 to 6.102.

that sub-allocation is feasible and is a useful service to provide to some CPs. However, sub-allocation is generally seen as a useful entry mechanism for some CPs and a means of gaining numbers in an area with low predicted requirement but, ultimately, it was not considered a viable long-term solution for many CPs for the reasons stakeholders raised in their responses.

5.90 We recognise C&WW's fundamental point that numbering and routing are inextricably linked; the root of restrictions to effective sub-allocation lies in this association. Technical solutions to facilitate sub-allocation exist. However, the need for onward routing and additional transit of calls across networks means that inefficiencies and extra costs are incurred. As highlighted by C&WW, uncertainties prevail over how these costs should be covered and the appropriate routing conventions for sub-allocated numbers.

5.91 A number of CPs commented that the same restrictions caused by legacy networks on block size allocations, and the limitations of the current number portability onward routing process, were creating obstacles to block sharing. Addressing these issues would eradicate any need for sub-allocation as a means for better utilisation of numbers. We generally agree with these comments. Network constraints cause fragmentation of available numbers into blocks, and routing of calls to sub-allocated numbers currently relies on first routing to the block holder and then onward routing to an alternative CP for termination. However, these are the network constraints for some CPs and the current routing processes and we must work within technical feasibility.[128] VON commented that safeguards should be put in place regarding sub-allocation practices in order to protect current players and future entrants, e.g. Ofcom should supervise fees levied by CPs for sub-allocation and intervene if excessive charges are set.

5.92 C&WW argued that if we want to incentivise sub-allocation, we need to engage with industry and provide regulatory guidance and oversight of the issues. The issues that they highlighted, C&WW considered, could not be left for industry to decide. In contrast, some CPs argued that sub-allocation was a commercial decision and there was no cause for Ofcom to intervene.

5.93 In the November Consultation we considered that increased sub-allocation could help drive more efficient number use and help reduce the impact of number charging. We therefore considered it a potentially useful area for further investigation. However, we recognise that sub-allocation is a commercial arrangement and we do not want to take action that might force sub-allocation onto any CP that does not want to provide or make use of sub-allocated numbers.

5.94 The decision to use and provide sub-allocated numbers lies with the CPs concerned and should be taken in the full knowledge of the costs and restrictions on business models involved. Given the nature of sub-allocation we consider that the issues raised by stakeholders on commercial aspects of sub-allocation are more appropriate for industry analysis and resolution.

5.95 TSL thought the process to move sub-allocated numbers between network providers should be clear. We consider that developing a process to move sub-allocated numbers between wholesalers or networks is something which industry could undertake, and that industry is in a better position to develop a process than Ofcom.

[128] We consider stakeholders' general comments on the current geographic number portability processes in paragraphs 5.168 to 5.177.

5.96 We do not, therefore, consider that there is an appropriate reason for regulatory intervention in sub-allocation practices.

Modifying our number allocation and auditing processes to facilitate increased utilisation of geographic numbers

5.97 In the November Consultation we explained that 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.[129]

5.98 We set out that scarcity of number blocks in certain geographic areas was due to the current supply of numbers not being utilised efficiently. We identified three key areas that, if tackled successfully through modifications to our administrative processes, could have an appreciable effect on number utilisation and block availability. These were:

a) allocating fewer blocks that are either not utilised by CPs, or utilised to a very limited extent, within a reasonable timeframe;

b) increasing our due diligence in considering applications for geographic numbers; and

c) understanding more about how numbers are used following allocation and encouraging CPs to return blocks of numbers that are not in use.

5.99 With these key areas in mind, we considered:

a) introducing a time-limited reservation stage in the geographic number allocation process;

b) changing the geographic number application form to elicit more information on the intended number use; and

c) broadening the scope and frequency of our audits of allocated numbers' use and utilisation.

A time-limited reservation stage in the geographic number allocation process

5.100 In the November Consultation we explained that a particular issue for us when considering applications for telephone numbers is that we cannot accurately prejudge the likelihood of a number allocation being put into service within a reasonable timeframe based on the information currently provided by CPs when applying for numbers. However, one way of establishing operational readiness to use the numbers might be through demonstration that an agreement had been reached with at least one other CP to route calls between the two networks.

5.101 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

[129] It is our general duty in carrying out our telephone numbering functions to secure best use of telephone numbers (section 63(1)(a) of the Act. CPs have an obligation to secure that numbers allocated to them are adopted or otherwise used effectively and efficiently (Paragraph 17.6 of the Numbering Condition).

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).

5.102 We therefore considered introducing a time-limited reservation stage in the allocation process for geographic numbers.[130] We considered that for certain applications (i.e. applications from CPs where we have no evidence that interconnection with another CP has been agreed), 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.

5.103 If the CP applying for numbers could not demonstrate, on request, operational readiness to use the numbers under application, then we would consider only a request for the reservation of the numbers at that point.

5.104 Operational readiness could be demonstrated by a variety of means that, if we proceed with this approach, would be established through consultation and set out in guidance for CPs. For instance, we consider that operational readiness to put allocated numbers into use could be demonstrated by providing evidence of interconnection arrangements being agreed with at least one other CP or that geographic numbers from a block already allocated to that CP were in use.

5.105 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)[131] then the reservation would fall away and the numbers would be automatically returned to our pool of available number blocks.

5.106 We recognised that reservation of numbers was a new concept and that there would 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 had the potential to be anticompetitive by, for instance, slowing entry to the market.

5.107 In the November Consultation, we asked CPs for views on the practicalities of implementing a reservation stage in the allocation process for geographic numbers and the likely behavioural changes for CPs that it might produce before deciding whether to proceed further with a consultation on its introduction for geographic numbers.

5.108 In the November Consultation we asked:

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

Stakeholders' comments

5.109 There was general support for the concept of a reservation system for geographic numbers provided that it did not affect CPs' ability and timescales for getting their

[130] Reservation of numbers as well as allocation is provided for in paragraph 17.10 of the Numbering Condition.

[131] 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 17.14(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.

products and services to market.[132] BT felt the proposal sounded sensible, as did a more robust application stage, and the concept merited further consideration. C&WW added that it was the type of due diligence expected when Ofcom considered allocating numbers to new CPs. Virgin Media considered that (along with usage conditions and strengthening allocation qualifying criteria) reservations would "play a significant role in reducing demand for numbers and incentivising efficient usage".

5.110 Magrathea agreed that currently there were no incentives on CPs not to apply for number allocations before they were actually needed and that a reservation system might be useful for CPs yet to establish interconnection arrangements. It did not think reservations should put new entrants at a competitive disadvantage or that a network operator would not enter into interconnection negotiations with a CP with a reserved block. However, they argued that reservations would not be appropriate for established CPs with interconnection arrangements that were already terminating calls on their own number ranges and were interested in what evidence Ofcom might require to move straight to an allocation of numbers.

5.111 ITSPA and TSL similarly accepted the proposal for reservations provided they applied only to CPs who have not demonstrated operational readiness to use the numbers, and that the process was sufficiently flexible to not distort the market or to create burdensome overheads and implementation delays. Further proposals for a reservation process needed to be discussed with industry to overcome any operational problems.

5.112 VON urged us to ensure that potential anticompetitive behaviour, such as larger CPs delaying interconnection negotiations to exceed the reservation period, are reduced to a minimum and protection mechanisms put into place to safeguard smaller CPs.

5.113 IPV6 did not object to a reservation system provided that "Ofcom guarantee that any reserved blocks are immediately converted into allocated blocks upon satisfactory proof of interconnect by the CP concerned". This was essential in order for new entrants to proceed with the purchase of hardware and provisioning of interconnection.

5.114 BT felt a reservation system might be useful when different CPs compete for an order and the allocation of numbers would be required by whichever CP was ultimately successful. However, [✂] believed that this was a potential pitfall, as a competitive bid scenario might result in multiple CPs reserving numbers with only one CP being successful and converting this to an allocation. [✂] suggested mandating that the name of the end user be divulged confidentially in such a situation to ensure only one block is reserved for the business. Ofcom should then expedite the allocation, and BT the Data Management Amendment (DMA) process, to ensure that the numbers were available in time to meet business requirements.

5.115 Some CPs questioned whether a reservation system was necessary. BT wondered whether the aims of the reservation system might be more simply met through improved audit practices. [✂] believed the key was to recover unused or underutilised blocks after a given period of allocation.

[132] Respondents who supported the concept of a geographic number reservation system were BT, C&WW, ITSPA, Loho, Magrathea, NSE, NumberGroup.com, TSL and Virgin Media.

Ofcom's response

5.116 We welcome CPs' support for looking further at a reservation process for geographic numbers. We note that generally CPs' initial impression is that such a process should not unduly impact the meeting of justifiable requests for numbers or encourage anti-competitive practices.

5.117 In light of stakeholders' preliminary views, we plan to consider reservations further. In devising how reservations might be implemented, and in line with our regulatory duties, we will aim to keep the additional administrative burden of a proposed reservation process to a minimum. We recognise that the issues lie in the detail and will work further with CPs to create the reservation process for consultation.

5.118 We agree that a system would need to be devised that ensures against delaying CPs getting their products and services to market. We consider this would be achievable by:

- applying reservations only where the CP's operational readiness to use the numbers is unknown or in doubt. In such a situation, the CP would be asked to provide supporting evidence in its application. If this was not provided, the CP would only be able to proceed with an application to reserve geographic numbers;

- making clear to CPs whose operational readiness to use numbers is known or has been confirmed that they may apply directly for the allocation of geographic numbers;

- ensuring CPs that are reserved numbers are clear on the information required to convert the number reservation to an allocation (e.g. evidence of an interconnection agreement with another CP; evidence (such as billing records) that call traffic is originating and/or terminating on geographic numbers already allocated to that CP);

- Ofcom treating 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 sufficient basis for CPs' interconnection negotiations to commence in the same way that an allocation of numbers would under the obligations to negotiate in General Condition 1.[133] Such negotiations should also proceed on the understanding that on their timely conclusion, the numbers would be allocated;

- agreeing workable timescales with industry for the set reservation period. This period was proposed as six months in the November Consultation, however we did not receive any comments on this proposal from stakeholders. Ofcom's timely conversion of a reservation to an allocation of numbers upon receipt of required information would also be necessary; and

- taking a pragmatic approach to number reservation, for instance, in terms of extending the reservation period if interconnection negotiations remain ongoing.

[133] General Condition 1 on General Access and Interconnection Obligations obliges CPs, to the extent requested by another CP, to negotiate with that CP with a view to concluding an agreement (or an amendment to an existing agreement) for interconnection within a reasonable period.

5.119 Some CPs referred to the use of a reservation system in situations where multiple CPs are competing for the same business order. There may be merit in looking further at this suggestion and we agree that reservations may avoid the need to allocate numbers for a business requirement that may not materialise. We will look at this suggestion further when consulting on a reservation system, including a process for CPs to provide us with tender details in a confidential manner.

5.120 We agree that the case for number reservation needs to be considered alongside other administrative measures and the cumulative burden on CPs must be assessed. Our view is that further thinking on a reservation process should be considered alongside proposals for strengthening the geographic number allocation process more generally. These issues are considered further in this section.

Changes to the geographic number application form

5.121 We have produced a set of telephone number application forms specific to each number type for CPs to complete and submit to us when they apply for the allocation of telephone numbers. 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.

5.122 In the November Consultation we considered that requesting additional information on the geographic number application form might be useful in informing our decisions 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 block request (see paragraphs 5.132 to 5.166 on audits below). We considered that there was a range of relevant information that would be useful for us to gather that was not currently required in the application form, and the supply of which we did not think would be burdensome.[134] Such information might include 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 had carefully considered the business case for numbers and that this business case looked plausible.

5.123 We planned to proceed with the process for modifying the geographic number application form separately from the other proposals discussed in the November Consultation because our decision to consult on modifications to the application form was not reliant on the outcome of other considerations in the consultation. We had anticipated issuing a consultation proposing modifications to the geographic number application form in early 2011. However, we subsequently decided to await stakeholders' views on a reservation process as part of the November Consultation as there would be merit in reviewing the application form in conjunction with our considerations on geographic number reservation.

Stakeholders' comments

5.124 We did not include a specific question on our intention to consult on modifications to the geographic number application form in the November Consultation. However a number of CPs commented on our intention to review the application form and on the

[134] In line with the process for applying for number allocations set out in paragraph 17.10(c) of the Numbering Condition, information requested must be relevant to the application and not place an undue burden on the applicant.

type of information that we should consider seeking as part of the number application process.

5.125 ITSPA and TSL welcomed our intention to strengthen the number application process and considered that further evidence gathering would enable us to make more informed decisions on whether to allocate numbers to CPs.

5.126 Magrathea felt that we did not need to record the type of service for which numbers were to be used as part of the allocation process. To do so would be impractical, given that use could differ from number to number, particularly if numbers were sub-allocated and/or obtained for use by resellers. For the purposes of allocation, Ofcom need only be concerned that the numbers were used in line with the Numbering Plan.

5.127 IPV6 suggested that evidence of interconnection and customer demand (for example, letter of intent from a customer) should support an application for geographic numbers. Magrathea also indicated that CPs should demonstrate demand for numbers when seeking allocation. [✂] argued that in addition to a demonstrated requirement for numbers, we should consider CPs' technical competence (e.g. ability to terminate calls and sub-allocate numbers) and their approach to number management. Sky and [✂] suggested that it may be appropriate to introduce new rules for how CPs activate and utilise their allocations. In Sky's view, large volumes of numbers had been allocated to CPs that would only use a small proportion of their allocations.

Ofcom's response

5.128 We agree with stakeholders' comments that there is potential scope to consider strengthening our rule-based processes for allocation of geographic numbers and potential improvements to our due diligence in following-up on the implementation and use of numbers post allocation. As mentioned above, a reservation stage that takes into account interconnection arrangements is one such potential measure, as is a fuller information provision requirement in numbering application forms.

Ofcom's combined response on a reservation stage for geographic numbers and the geographic number application forms

5.129 We have decided to undertake a review of our administrative processes for geographic numbers. This review will consider changes to our allocation process for geographic numbers. It will include reviewing the geographic number application form and the information that is relevant for determining an application and subsequent monitoring of number adoption and use. It will also provide an appropriate opportunity to consider a reservation stage in geographic number allocation.

5.130 In addition to reviewing the application form for geographic numbers, we think it appropriate to consider the whole set of forms for telephone numbers to maintain consistency if, for instance, we propose to amend the format of the geographic number application form.

5.131 Our initial plans and indicative timescales for taking forward our review of the geographic number application process are as follows:

- planning stage (underway):
    - we will take into account the relevant comments received in response to the November Consultation;

- we will engage with a number of CPs on the details of the current geographic number allocation process and the steps required to agree interconnect arrangements and adopt allocated numbers so that we understand areas that would benefit from improvements;

- stakeholders may forward further comments on the geographic number allocation process to Ofcom for consideration at this stage;[135]

- we will reach preliminary views on the current geographic number allocation process and how we consider that the process could be strengthened and improved;

- consulting on proposals to strengthen the geographic number allocation process (anticipated during the first quarter of 2012):

  - we will set out our preliminary views on the geographic number allocation process and our proposals for modifications;

  - we anticipate that the resulting consultation document would include proposals for introducing a reservation stage for geographic numbers and for modifications to the geographic number application forms;

  - we also anticipate that the consultation will propose modifications to the set of telephone number application forms to ensure consistency;

- statement on measures to strengthen the geographic number allocation process (anticipated during the second quarter of 2012):

  - having taken into account stakeholder responses, we would reach conclusions on whether to implement our proposals; and

  - subject to that, we would then implement measures to strengthen our geographic number allocation processes as concluded following the consultation process.

Broadening the scope and frequency of our audits of allocated number use and utilisation

5.132 Numbering audits are the means whereby we request or require[136] CPs to supply us with information on their use of allocated numbers. We use audits most commonly to establish utilisation of allocated geographic numbers in certain areas and whether any unused number blocks can be returned to us.

5.133 Our experience is that, as a general rule, CPs do not regularly review their utilisation of allocated blocks and return unused numbers to Ofcom without the prompt of an audit request. There are currently no incentives to do so, particularly as reviewing allocations is a resource intensive exercise.

[135] Stakeholders' comments on the geographic number allocation process may be emailed to geographic.telephonenumbers@ofcom.org.uk.

[136] 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.

5.134 We consider that charging for numbers would create an incentive for CPs to review their ongoing need for allocated numbers on a regular basis to avoid incurring costs for numbers no longer required. If we proceed with our proposals for number charging, we foresee a reduction and potentially eventual elimination of the need for audits and the administrative burden (on CPs and Ofcom) associated with them. This would also allow CPs to manage their own allocation reviews in a manner and to timescales that suit their working practices, rather than respond to a large annual audit request in one exercise. There would also be two further advantages – the impact on Ofcom's Numbering Team in processing number withdrawals would be spread throughout the year and DMA requests to withdraw the routing arrangements for the returned number blocks could be better managed if not presented in bulk following an audit.

5.135 Nevertheless, in the current absence of a charging mechanism we considered in the November Consultation 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.

Audits of number block utilisation

5.136 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.

5.137 In the November Consultation we proposed to continue auditing CPs directly on utilisation of allocated number blocks in specific areas. Our audits have mainly 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 blocks are unused and to seek CPs' consent to withdraw those numbers. We focus mainly on blocks that were allocated at the 10,000 number block level and request information on whether any 1,000 number blocks within that allocation are unused and may be returned to Ofcom. We acknowledge, however, that this type of audit will have diminishing returns as the number of blocks allocated at the 10,000-number level reduces with each request.

Audits of CPs' number use

5.138 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 across multiple number blocks, 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

5.139 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. It may also seek evidence of active marketing of the numbers and service provision and request utilisation rates of allocated numbers. The information gathered would also help us to better understand CPs' use of numbers once allocated and the issues that might affect their efficient and effective use.

5.140 Audits are a form of information request to CPs. In the November Consultation we explained that we do not need to consult to issue CPs with formal[137] or informal information requests to conduct the type of audits described in paragraphs 5.136 to 5.139 above. Such information requests may be issued under our powers in the Act[138] and in line with our existing policy statement on information gathering.[139] We signalled to CPs that we intend to broaden the scope and frequency of audits and that they should bear this in mind when applying for the allocation of numbers and when setting their internal number management and data gathering systems.

5.141 In the November Consultation we asked:

"Do you have any comments on our proposed scope of additional audits?"

Stakeholders' comments

5.142 A number of respondents supported our proposals to strengthen and broaden the scope of our numbering audits[140] and some urged us to conduct an extensive audit of number use immediately to establish which number blocks were in use.[141] BT considered this was imperative to accurately gauge the critical areas where we needed to react.

5.143 BT noted how Ofcom and industry working together on numbering matters can be effective. In the November Consultation we set out the high level of CP engagement experienced with our previous audits and the success in terms of unused number block withdrawals with CPs' consent that had resulted. BT argued that this helped to demonstrate that more effective number management from Ofcom might obviate the need for number charging.

5.144 BT agreed that we should make our audits more focused and robust. It supported our proposals to conduct audits on number use more frequently and to audit against information supplied by CPs in their original applications for number allocation (for example, by requiring proof that numbers were used efficiently and not 'cherry-picked' in a way that would make subsequent withdrawal of unused numbers difficult).

5.145 TSL agreed that strengthening and broadening our audits would help to better gauge CPs' use of numbers. It was important for CPs to return numbers that were no longer required and that a stricter audit process would help encourage CPs to update us more regularly.

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[137] However, before issuing a formal information request to a CP, we would generally invite and take into account comments on a draft version.
[138] Sections 135 to 137 of the Act set out our formal information gathering powers.
[139] *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://stakeholders.ofcom.org.uk/binaries/consultations/info_gathering/statement/policy.pdf - Ofcom's 'Information gathering policy statement'.
[140] Those stakeholders were BT, Colt, ITSPA, Loho, NumberGroup.com, Sky, TSL and [✂].
[141] Those stakeholders were BT, ITSPA, Sky, TSL and [✂].

5.146 FCS agreed that audits were essential for the management of numbers and considered that they should be directed at CPs with historically allocated 10,000 number blocks to encourage withdrawals of unused 1,000 number block units.

5.147 Colt considered that we should use our formal information gathering powers under the Act to enquire of CPs how many numbers are currently used and follow this up by actively reclaiming numbers (i) allocated more than six months previously but not adopted (i.e. under Numbering Condition 17.14), and (ii) by requesting CPs to return unused 1,000 number blocks in allocated 10,000 number blocks.

5.148 [✂] felt that the existing regulations provided a good level of control already and that this should be reinforced, primarily around meeting criteria for the allocation of numbers (e.g. a business case against which CPs are later audited). They supported measures to reconcile audit responses across industry.

5.149 C&WW, while recognising the importance of regular audits, pointed out that responding to audit requests was a resource intensive exercise and not just a case of running automated reports. We were urged to provide industry with an audit schedule, and give as much notice of an audit as possible, ensuring sufficient timescales were provided as CPs' numbering teams were not available to respond at short notice. A similar approach should be taken when Ofcom reclaimed numbers after an audit. ITSPA and VON also commented that a balance had to be struck to ensure a more efficient process without overburdening CPs with requests for audit information. NumberGroup.com considered quarterly audits appropriate. ITSPA felt that through discussion with industry, a workable set of processes could be found.

5.150 Virgin Media considered that increased audits may be reasonable if they actively assisted us to manage numbers more effectively (for instance by reclaiming numbers allocated to companies that no longer exist or are surplus to requirements) but was reluctant to endorse our proposals based on information available at this stage. It required more information on the frequency, scope and action required in order to determine whether additional audits were an objectively justifiable course of action given their administrative burden.

5.151 With reference to our intended audits on CPs' number use, Virgin Media encouraged us to work with industry to determine appropriate objective factors that indicate a CP should be audited. It also considered that additional audits may not be necessary if a number reservation process was introduced.

5.152 IPV6 felt that a further consultation on the scope of additional audits was required to ascertain how data collected would be benchmarked and what the impact on CPs required to complete audits would be in terms of additional hardware, software and manpower (including how costs incurred would be covered). [✂] argued that audit guidelines and processes needed to be defined, mutually agreed by a responsible industry group and monitored.

5.153 NSE objected in principle to additional audit requirements due to the additional burden on resources.

Ofcom's response

5.154 We consider that audits are one of the most effective of our current tools for managing geographic numbers. Past annual audits of number utilisation have identified large quantities of unused number blocks and yielded significant quantities

of numbers returned to Ofcom. These returns have made a considerable difference to our forecasts of number exhaustion over recent years.

5.155 We agree with stakeholders that a vital step in effectively managing geographic numbers was to undertake an immediate and extensive audit of number utilisation. Following the publication of the November Consultation we undertook our most extensive audit of geographic number allocations to date to establish unused number blocks that could be returned to Ofcom and to provide us with a more accurate assessment of number availability in each geographic area to update our forecast of number exhaustion.

5.156 As explained in more detail in Section 2 and Annex 2, we conducted this audit between April and July 2011. We had a very good level of CP engagement with this audit exercise, particularly given the resource required to complete returns, and we thank CPs for their co-operation. We agree with BT's comment that Ofcom and industry working together on the management of geographic numbers can yield significant results and audits are a prime example of this collaboration making a difference. Given this, we welcome the support from some stakeholders for our intention to broaden the scope and frequency of our audits.

5.157 FCS and Colt supported the use of audits in the manner already undertaken. In particular, auditing to identify unused 1,000 number units in historically allocated 10,000 number blocks was further encouraged. We plan to continue conducting such audits for as long as such historical allocations (i.e. in blocks of 10,000 numbers) merit review. As mentioned in paragraph 5.137, there are diminishing returns for this type of audit.

5.158 BT and TSL commented that we should make our audits more focussed and robust. This is the intention behind our plans for additional audits on CPs' number use and checks on the fulfilling of statements made at the time of number allocation. We will also undertake analysis of audit results to inform our understanding of the geographic number market, including more robust verification of CPs' returns.

5.159 Colt and [✂] considered that audits could be used to enforce existing regulations and CPs' obligations under the Numbering Condition. We agree that audits have a role to play in establishing whether CPs' number use is in line with certain obligations, for example, by checking that numbers are adopted within six months of allocation.[142]

5.160 We recognise that audits are resource-intensive exercises for CPs (as they are for Ofcom). We consider that charging for numbers would create an incentive for CPs to review their ongoing need for allocated numbers on a regular basis to avoid incurring costs for numbers no longer required. If we proceed with our proposals for number charging, we foresee a reduction and potentially eventual elimination of the need for audits and the associated administrative burden (on CPs and Ofcom). However, with the current absence of incentives for CPs to regularly review number allocations and return unused numbers to Ofcom, we intend to continue with our audits where considered effective in the management of geographic numbers.

5.161 With the resource burden of audits in mind, 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 a way that:

[142] Paragraph 17.14 of the Numbering Condition.

- ensures they are of a manageable size and frequency for both CPs and Ofcom and keeps the administrative burden to a minimum;
- provides CPs with sufficient timescales for completion and notice of issue where practical;
- encourages CP collaboration and secures a high level of response;
- 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'.[143]

5.162 We note that some CPs would like us to consult with industry on the processes for the additional audits and agree guidelines. Virgin Media, IPV6 and [✂] mentioned, in particular, reaching agreement on how data would be collected, benchmarked and objective factors set which highlight a CP for audit.

5.163 As mentioned,[144] we have the power to issue information requests under the Act and in line with our information gathering policy statement. Therefore the Act and the aforementioned statement provide the framework within which audits operate. While we do not propose to consult further on strengthening and broadening the scope of our audits, we want CPs to collaborate in the most effective manner possible. We also want to ensure that the administrative burden associated with audits is minimised. We will take into account all comments on audits received in response to the November Consultation and will consider any further comments that CPs would like to submit on how the audits should function.[145]

5.164 There may be certain elements involved in the audits that we may want to discuss informally with industry or ask industry to address. For instance, we are aware of the impact on some CPs' networks of the mass block withdrawal process that follows an audit on CPs' number use. Industry may need to decide guidelines on managing the submission of large numbers of DMA requests outside of 'business as usual' expectations.

5.165 Responding to Ofcom audit requests is part of an effective process for CPs and Ofcom to work together to ensure that best use is made of geographic numbers and that allocated numbers are used effectively and efficiently. As such, we expect CPs to expend the resource required to respond to audits. On our part, we will ensure such audit requests are made in line with the objectives set out in paragraph 5.161.

5.166 We agree that the need for audits may change over time. As mentioned, audits may become less relevant in the future if we proceed with proposals to introduce charging for geographic numbers, as CPs will be incentivised to return blocks of numbers when they are no longer needed. In addition, as Virgin Media commented, number reservation may also reduce the need to reclaim unused number blocks though the

[143] See footnote 146.
[144] See paragraph 5.140.
[145] CPs wising to submit further comment on the audit process may do so at geographic.telephonenumbers@ofcom.org.uk.

audit process. If this is the case, the administrative burden of audits on CPs and Ofcom could be considerably reduced.

Other administrative measures raised in stakeholders' responses

5.167 Some stakeholders referred to additional administrative measures for efficient use of geographic numbers in their responses. We summarise and respond to these points below.

Industry processes

Geographic number portability

5.168 Number portability is the facility that allows subscribers to retain their telephone number when changing provider. Number portability in the UK uses an 'onward routing' solution, which means that a call to a ported number is routed to the CP allocated the block, and then onward routed to the current provider of service on the ported number.

Stakeholders' comments

5.169 A number of CPs commented that improvements to the current process for geographic number portability could encourage more CPs to port-in numbers and may result in more consumers retaining their numbers when moving to a new provider, rather than taking a new number.[146]

5.170 Sky commented that "the onward routing of calls from the donor network to the recipient network is hugely inefficient and continues to reward CPs for customers that have long since left their network on a cost basis". Until there are drastic reductions in the porting conveyance charges levied by donor operators on recipient providers, Sky argued that many CPs would prefer to allocate new geographic numbers as these numbers were "more profitable and easier to activate". Sky acknowledged that the Office of the Telecommunications Adjudicator (the OTA) is reviewing porting processes.

5.171 [✂] commented that a review of the impact of the current porting regime would be beneficial, arguing that current number portability processes had a significant influence on number supply and the feasibility of some of our proposals. [✂] maintained that there were certain functionalities[147] that, if provided, would help conserve geographic numbers and allow products to be supplied without loss of service or by using new geographic numbers.

5.172 Magrathea remarked that "the UK's antiquated system of number portability can lead to problems with multiple providers in the value chain". TSL explained in their response some of the inefficiencies associated with the current porting process where a reseller chain is involved, including uncertainties over reseller obligations, which can lead to a costly, timely and unsatisfactory experience for all involved, including the customer attempting to port their numbers.

Ofcom's response

[146] Those respondents were FCS, ITSPA, Sky, TSL and [✂].
[147] [✂].

5.173 We agree that the ability for consumers to retain their existing telephone numbers when changing their provider is a key facilitator in enabling switching and for conserving geographic numbers. It is a consumer's right to request to keep his or her telephone number when changing provider.

5.174 Improvements in the geographic number porting processes that would incentivise the provision of number portability and reduce the requirement of new numbers for consumers are welcomed but are outside the scope of this review. We note that the case for implementing a direct routing system for ported numbers was considered and rejected in 2009.[148]

5.175 Sky referred to the work of the OTA in their response. Geographic number portability is an "In-scope Product" for the OTA2 Scheme. The OTA2 website[149] provides information on this and states that the OTA2 Scheme "will, in the exercise of facilitation, assist Scheme Members to reach agreement on and, where necessary, make non-binding recommendations on appropriate product functionality, process specifications, change management, implementation plans and monitoring activities for In-scope Products to maintain appropriately industrialised products and processes including, where new functionality for In–scope Products is introduced, ensuring that such new functionality is reasonably fit for the purpose it is intended to fulfil. These will relate to improvements to existing In-scope Products and In-scope Product processes". We suggest that the OTA is the appropriate forum for Sky (and other Scheme Members) to take forward work on improving the geographic number portability process.

5.176 Sky also thought that we should consider reducing porting conveyance charges. Porting conveyance charges for fixed line numbers are agreed bilaterally between CPs, and are outside the scope of this review.

5.177 In any event, we consider that it is unlikely that increased number porting would be sufficient to address number scarcity in areas where number shortage is already pressing. If a consumer ports his number when switching supplier then the new supplier does not need to provide a new number. Increased number porting may reduce demand for new number blocks in some circumstances, for example, if a CP were to grow using only ported numbers then this could reduce demand for new number blocks. However, the aggregate amount of numbers required is broadly the same whether a consumer ports their existing phone number or not (since if the consumer decides not to port and is given a new number then the old number becomes free[150]). Generally CPs will still require their own number allocations so that they can gain new customers without a current service or customers who want to change their number.

Activation of allocated number blocks: the Data Management Amendment process

5.178 Ofcom allocates blocks of numbers to CPs. The CP must then notify other CPs of the allocation in order for numbers to be built onto networks (the Data Management Amendment or 'DMA' process) and calls to the numbers routed appropriately.

Stakeholders' comments

[148] Statement available at http://stakeholders.ofcom.org.uk/binaries/consultations/gc18_routing/statement/statement.pdf
[149] http://www.offta.org.uk/
[150] Although a previously used number will not be allocated out to a new customer for a period of time to avoid the risk of receiving incorrect calls.

5.179 NSE considered that BT's process for DMA of allocated number blocks (which, in their view, was "laborious, complicated and slow") would make our proposed administrative changes difficult to implement and manage fairly. NumberGroup.com also considered that timescales for DMA created difficulties in using numbers efficiently and in ensuring numbers were ready to use in the event of a large customer order. ITSPA asked us to consider the DMA process of establishing and removing numbers from service, commenting that "this poses a significant administrative overhead to operators and often takes more than 3 months".

5.180 [✂] mentioned that the process for CPs to notify other CPs of their block allocations still relied on action through a '@yahoo.com' email address. This provided no ability to monitor industry performance or apply pressure if delays in DMA processes were encountered.

Ofcom's response

5.181 We acknowledge that the time taken from when a CP submits an application to Ofcom for the allocation of numbers and when those numbers are ready to be put into service and given to customers can be long and sometimes protracted. Ofcom has three weeks after receipt of the completed application form and any additional information required to determine the application for numbers.[151] CPs then need sufficient time to make the necessary amendments to switches' routing tables. The standard time for BT to carry out the DMA process for building a CP's subsequent geographic number blocks is 30 working days (different timescales are likely to apply for a CP's initial geographic block and again if it is a CP's first number block of any type). The time taken by other CPs may vary.

5.182 CPs need to take this timescale into account when planning their allocation requests to ensure that the numbers will be available to fulfil customer orders. This creates an upfront and sometimes unsubstantiated demand for numbers in order to compete for business. Therefore, allocation and DMA timing issues can drive CPs' demand for numbers which, if business does not materialise within a reasonable timeframe, can lead to inefficient use of numbers.

5.183 We are not proposing to undertake a review of the established industry timescales for DMA, or the process for informing industry of allocated number blocks, as part of this work on managing geographic numbers. We do not consider the current timescales as being unreasonable although we can see the benefits if there was any possibility of shortening the timelines.

Ofcom's administrative processes

Critical measures

5.184 In the November Consultation[152] we referred to the effect of "critical measures" on the allocation rate of geographic numbers in certain areas. We explained that when number block availability becomes critically low in an area (e.g. fewer than 20 blocks remain available for allocation), a higher level of due diligence is sometimes applied by Ofcom. These are temporary measures aimed at extending the existing supply of numbers until a solution for creating more numbers is implemented. As such, these measures are designed to promote best use of the limited numbers available. For example, if a CP requests the allocation of a block of numbers in a large quantity of

[151] Paragraph 17.11 of the Numbering Condition.
[152] See paragraphs A2.46 to A2.48 of the November Consultation.

areas, we may ask that CP to give further consideration to whether it needs the numbers in certain areas with the most acute scarcity before proceeding with the application.

5.185 We estimated that critical measures may halve the number allocation rate in areas where applied and extend the number availability in an area by up to three to four years, providing time to create more numbers for the area. We took the effect of critical measures on the allocation rate of numbers into account when we calculated our forecasts in the November Consultation.

Stakeholders' comments

5.186 BT commented that there was no provision for Ofcom's use of critical measures in the Numbering Plan. It argued that there had been no consultation with stakeholders on their application and, in using such measures, we appear to be failing in our duty to ensure that a sufficient supply of numbers is available to meet demand. BT also considered that critical measures run counter to our policy of not hastening the erosion of location significance if we encouraged CPs to use numbers from other areas to meet their requirements in a critical area. Such action could also lead to customers and CPs being disadvantaged through use of numbers 'out of area' by, for instance, restricting number portability options and the ability to offer numbers in all area codes. BT asked Ofcom to stop using critical measures immediately and not view them as a legitimate means of conservation.

Ofcom's response

5.187 Ofcom has a duty "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".[153] This applies to our considerations when determining applications for telephone numbers. We may need to apply increased due diligence measures when deciding what constitutes "best use" of numbers in areas where forecasts suggest demand may temporarily exceed supply until new numbers are created.

5.188 Critical measures do not restrict CPs' access to numbers where demand can be justified. For instance, if a CP can demonstrate its need for numbers in that area (e.g. through a confirmed customer order) then the application would be progressed. The aim of critical measures is to ensure that justified demand for numbers in an area can always be met. They are only used in areas where required to ensure that aim can be met and are not viewed as a solution to number scarcity.

5.189 BT commented that critical measures run counter to our policy of not hastening the erosion of location significance if we encouraged CPs to use numbers from other areas to meet their requirements in a critical area. We confirm that this is neither our intention nor our practice. To clarify, what we meant by offering blocks in alternative areas[154] in the November Consultation was that where CPs request the allocation of numbers in many areas, that they consider whether their requirement extends to numbers in 'critical areas' at that time or whether certain allocations can be postponed while they roll out service on a general basis.

[153] Section 63(1)(a) of the Act.
[154] Annex 2, paragraph A2.46 of the November Consultation.

5.190 We have, however, changed our approach in taking the effect of critical measures into account when calculating our forecasts for number availability. We discuss this in Annex 2.[155]

Other number ranges

5.191 Although our focus was on geographic numbers in the November Consultation,[156] we recognised that they do not operate in isolation from the rest of the UK's telephone numbering plan. We acknowledged that changes made to the way that numbers in one range are administered and regulated could have an effect on other number types.

Stakeholders' comments

5.192 [✂] commented that it was important to raise consumer awareness and confidence in '03' UK-wide Numbers,[157] the increased use of which, they believed, would stem some of the demand for geographic numbers.

5.193 A consumer[158] commented that difficulties in dialling UK numbers in the '08' ranges from abroad meant that geographic number alternatives for the same service were required, increasing demand.

Ofcom's response

5.194 We are currently reviewing non-geographic numbers with a view to simplifying how they operate and improving consumer confidence in calling services that use 03, 08 and other non-geographic numbers. Our consultation on non-geographic numbers[159] looked at a wide range of issues. Evidence gathered for that consultation indicated a general low level of awareness and trust of non-geographic numbers. We are working to improve this situation, including measures that should encourage take-up and use of 03 numbers. We expect to publish a further consultation on non-geographic numbers in early 2012.

5.195 There are a number of reasons why users of 08 numbers may want to maintain a geographic number alternative for contact. Caller access from abroad is one such reason. Some service providers also give consumers a choice of number so they may select the number to call based on the cost applicable to their call package. Such action is in the interests of consumers.

Preliminary conclusions

5.196 In this section we have set out how strengthening our administrative processes could help ensure best use of geographic numbers and improve utilisation, reducing the need for new supplies in some areas. We looked at a number of ways of achieving this.

5.197 We have decided to consult on the roll out of 100 blocks of 100 numbers in each of the following 11 five-digit areas - Appleby (017683); Gosforth (019467); Grange over

[155] Paragraph A2.40 to A2.42.
[156] Paragraph 2.33 of the November Consultation.
[157] 03 numbers are UK wide numbers charged at a geographic rate.
[158] 'Name Withheld 3'
[159] *Simplifying Non-Geographic Numbers: Improving consumer confidence in 03, 08, 09, 118 and other non-geographic numbers*, consultation published 16 December 2010. The consultation closed on 31 March 2011. http://stakeholders.ofcom.org.uk/consultations/simplifying-non-geo-numbers/.

Sands (015395); Hawkshead (015394); Hornby (015242); Keswick (017687); Langholm (013873); Pooley Bridge (017684); Raughton Head (016974); Sedbergh (015396) and Wigton (016973).

5.198 We consider this action would enable us to make best use of the numbers remaining available for allocation in these areas and would avoid the need for number supply measures for a considerable time. The proposed limited roll out would help us to understand the effectiveness of smaller blocks and assist CPs who face network constraints to better understand the pressure of 100-number block allocations on decode resources while containing the impact.

5.199 We are undertaking a review of the allocation processes for geographic numbers and plan to consult on proposals to introduce a reservation stage for geographic numbers and on modifications to the telephone number application forms.

5.200 We have stated that we will continue to audit CPs on their use of allocated numbers (and to broaden the scope of those audits) while this remains effective in identifying unused and inefficiently used numbers and until such time as incentives (such as charging for numbers) ensure that CPs undertake their own audit processes and return any unused numbers independent of Ofcom request.

5.201 We concluded that while sub-allocation of geographic numbers may have some merit and works for certain CPs, for various reasons it is likely to have only limited appeal. Given its commercial nature, we do not want to take action that might force sub-allocation onto any CP that does not want to provide or make use of sub-allocated numbers and we do not propose to intervene in sub-allocation practices.

Duties and legal tests

5.202 Having taken stakeholders' responses on our proposals to strengthen administrative measures for geographic numbers into account, we have decided to:

- consult in this document on a limited roll out of 100 blocks of 100-numbers in the 11 five-digit areas; and
- take forward, in a separate exercise, a review of our allocation processes for geographic numbers, including a proposed consultation on a reservation stage for allocation of geographic numbers and a review of the telephone number application forms.

5.203 We now consider our proposals for 100-number blocks with respect to Ofcom's duties and the relevant legal tests in the Act.[160]

5.204 We consider that our proposals for 100-number block allocations are consistent with our 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 best use is made of the limited geographic numbers remaining available for allocation in the 11 areas proposed for the initial roll out of 100-number blocks and that the numbers are utilised effectively and efficiently. This action helps to ensure that geographic numbers remain available for allocation to CPs in the areas proposed for the limited roll out of 100-number blocks, thus facilitating CPs in their provision of

[160] We set out the legal framework in Annex 7.

communications services to citizens and consumers, and promoting competition and choice for consumers.

5.205 The allocation of smaller number blocks in those areas also aims to further the interests of citizens and consumers by prolonging the availability of existing geographic numbers and thereby delaying the need for number supply measures (which can be disruptive and costly for consumers). By allocating smaller number blocks, we forecast that we could delay the need for the number supply measures in the 11 five-digit areas for between 12 and 27 years depending on the area. Through the allocation of 100-number blocks, we expect that consumers' demand for numbers in these areas would be met in a way that has no adverse impact on consumers.

5.206 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.

5.207 Further to this consultation, if we decide to proceed with our proposal to make a limited number of 100-number blocks available for allocation in the 11 five-digit areas, we would propose a modification to the Numbering Plan in order to implement this measure. Section 60 of the Act provides for the modification of documents referred to in the Numbering Conditions (which includes the Numbering Plan). Under section 60(2) we may only modify the Numbering Plan if we are satisfied that the revision is:

- objectively justifiable in relation to the matter to which it relates;
- not such as to discriminate unduly against particular persons or against a particular description of persons;
- proportionate to what the modification is intended to achieve; and
- in relation to what is intended to achieve, transparent.

5.208 We have given preliminary consideration to whether the proposal for a limited roll out of 100-number blocks would meet these tests:

- **objectively justifiable** - it is Ofcom's general duty in administering numbers to ensure their best use. We consider that the proposal is objectively justifiable as it would further best use of numbers by more closely aligning allocation block size to likely demand and thereby improving utilisation in the relevant areas;
- **non-discriminatory** – in that our preliminary conclusion is that allocation of a limited number of blocks of 100 numbers would not be discriminatory for the following reasons:

  - we would ensure that blocks of 1,000 numbers remained available for allocation alongside 100-number blocks so that the appropriate block size to meet a CP's justified demand would remain available for allocation. CPs would therefore not be unduly constrained by the introduction of 100-number blocks and by doing so, our proposal to make smaller blocks available would not discriminate against CPs with a justified demand for the allocation of a larger block of numbers; and

  - a limited roll out of 100-number blocks would help CPs and Ofcom assess the impact on CPs of routing calls to numbers allocated in blocks of 100 numbers.

We anticipate that CPs operating legacy networks would experience the greater impact. We have discussed the proposals with those CPs and the preliminary view was that the terms of the limited roll out should not prove discriminatory. We will consider CPs' further views on the impact and costs in relation to our proposals for 100-numbers before deciding whether to so could discriminate against certain CPs;

proportionate – in that it is the general objective of our review to ensure that geographic numbers are available to support competition in fixed-line voice services across the UK for the foreseeable future. The policy principles that guide how we meet this objective are that:

- 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.

The modifications to the Numbering Plan would be proposed if we decide to implement our proposal to allocate smaller number blocks as a means of increasing the supply of geographic number blocks in the proposed areas. This would enable the meeting of our objective to ensure that geographic numbers are available in areas when needed and would be in line with our stated policy principles; and

- **transparent** – in that the purpose of introducing 100-number blocks has been set out in this document. In the areas proposed we aim to make better use of the available numbers by more closely matching likely demand to allocation block size. By improving utilisation of numbers, we predict that we can delay the need for number supply measures.

5.209 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** – the numbers remaining available for allocation in the areas proposed for roll out of 100-number blocks are particularly scarce due to the limited quantity of numbers created by their area code and local number structure. Action targeted to address this situation is required. We consider that this proposal would ensure best use of numbers in a manner that has no impact on citizens and consumers in those areas; and

- **encouraging efficiency and innovation** – smaller number blocks can more efficiently meet the numbering requirements of some CPs in the proposed areas.

5.210 We therefore consider that our proposal to make a limited number of 100-number blocks available for allocation in the 11 five-digit areas meets the tests above.

Next steps

5.211 As mentioned, we will undertake a review of geographic number allocation processes in a separate exercise, and we intend that review to include a consultation on our specific proposals for introducing a number reservation system for geographic numbers and for modifications to the telephone number application forms. At the point where we consult on those proposals, we will set out how we consider that they

fulfil our duties under sections 3, 4 and 63 of the Act and meet the relevant legal tests.

5.212 In Section 7 we set out the next steps in our consultation on making blocks of 100 numbers available.

Section 6

Charging for geographic numbers

Introduction

6.1 In the November Consultation we set out our proposals to introduce a regulated charge for geographic telephone numbers allocated by Ofcom to CPs. We considered that charging could help improve number management. We proposed to implement number charging in a limited number of pilot areas initially where number scarcity was most pressing. We considered that the pilot would help us to understand the impact of charging on consumers and CPs, and help to inform any subsequent decision to roll out number charging more widely.

6.2 In this section we summarise the responses to the consultation and discuss refinements to our proposals, under the following headings:

- Objectives of charging regime
- Key features of charging regime
- Proposed charging pilot scheme
- Level of charges
- Use of revenues raised from number charges
- Impact on CPs
- Impact on consumers
- Impact on Ofcom
- Other issues

6.3 Below we briefly restate the case for introducing a charge for geographic numbers, and describe the proposed approach set out in the consultation. We set out the legal framework which describes our powers to raise charges in relation to telephone numbers in paragraphs 6.20 to 6.27 of the November Consultation.

Role of number charges

6.4 In the November Consultation we noted that there is a limited supply of geographic telephone numbers, and that increasing this supply would require us to take measures such as closing local dialling, introducing overlay codes, or changing existing telephone numbers. Such supply measures are disruptive and would result in costs for consumers, CPs and Ofcom.

6.5 At present we allocate geographic numbers to CPs on a first-come first-served basis for no charge. CPs therefore do not currently have an incentive to ensure that the available supply of numbers is used efficiently, and this increases the risk that number supplies may need to be expanded in future. The objective of introducing a charge for numbers would be to ensure that CPs take the social costs of increasing

number supply into account when deciding whether to request additional number blocks from Ofcom.

6.6 We consider that number charging could help improve the efficient management of numbers by:

- ensuring CPs have an incentive to return unused number blocks;
- improving the utilisation of number blocks that have already been allocated (e.g. by encouraging CPs seeking additional numbers to consider obtaining these from blocks that have already been allocated by Ofcom to other CPs as an alternative to obtaining numbers from Ofcom themselves); and
- reducing demand for new number blocks that will be used in relatively low value applications.

6.7 We consider that number charging can provide a stronger incentive to use numbers efficiently than currently exists. For example, the introduction of number charges will ensure that CPs are more likely to consider the business case for requesting an additional number block than is currently the case. We recognise, however, that the effectiveness of number charging will depend on CPs' responses. Whilst it is not currently possible for us to determine the responsiveness of CPs to number charging, we consider that it is possible that even a small charge may lead to a change in behaviour by some CPs.

6.8 We carried out a survey of CEPT administrations[161] which showed that 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 somewhat unusual of those countries we have information on in not charging for numbers.

Proposed charging regime

6.9 We proposed to implement a charging regime with the following key features:

- The charge for geographic numbers will be set by Ofcom.
- The charge will be applied as an amount per allocated number, levied annually, and will apply to all geographic numbers (included those that have already been allocated to CPs and any newly allocated number blocks).[162]
- Revenues from number charges will be paid into the Consolidated Fund of HM Treasury.
- We will continue to recoup our administrative costs associated with number allocation (including number charging) via the annual levy on eligible CPs.

6.10 We proposed to introduce charging in a pilot scheme in a limited number of areas. We suggested that the pilot should include those areas where we believe that number shortage is most acute, and suggested that the charge should be set at 10p per number in these areas.

[161] We surveyed National Regulatory Authorities (NRAs) in 47 other countries that are members of CEPT (European Conference of Postal and Telecommunications Administrations). We have information on 32 charging regimes.

[162] Numbers are allocated in blocks of 1,000 or 10,000 numbers. The charge would be per number with every number in the block attracting a charge (whether used or not).

6.11 We remain minded to implement charging for geographic numbers, subject to the responses to this consultation. However, having considered all stakeholder responses to the November Consultation, we have made some limited modifications to the proposed pilot charging scheme on which we are inviting comments as part of this consultation.

Revised proposal for pilot scheme

6.12 In the November Consultation we proposed to charge in a limited number of 'pilot' area codes initially. We proposed that areas would be included in the pilot scheme where they had 100 or fewer 1,000 number blocks remaining to be allocated. At the time of the November Consultation this captured 58 areas. We carried out a number audit over April-July 2011 which covered122 CPs in 582 four-digit area codes. As a result of the audit over 69 million numbers were returned to Ofcom. Due to the large amount of blocks provisionally returned through the number block audit, the number of areas captured by the threshold of 100 or fewer 1,000 number blocks remaining has fallen significantly – from 58 to 19.[163] In addition, we are planning a limited roll out of 100-number blocks in 11 five-digit area codes facing number block shortage (see paragraphs 5.17 to 5.71) and do not plan to charge in these areas initially.[164] This means the proposed pilot based on the November Consultation threshold would now only capture eight areas.

6.13 We remain of the view that charging under a pilot scheme initially is valuable in order to help inform a subsequent decision on the longer term role of charging. A pilot will allow us to test for any possible unintended consequences and help us to understand the impact of charging on CPs and consumers. However, we do not consider a pilot scheme based on eight areas would be appropriate because the scale of the scheme would not be sufficient to yield meaningful information on the impact of charging or the potential for unintended consequences (e.g. CPs disconnecting consumers in order to return number blocks to Ofcom).

6.14 In light of this we propose to modify the charging pilot so that it includes around 30 areas with the fewest number blocks remaining to allocate. In deciding the number of areas to include in the pilot, we considered the number of CPs that would be affected by the charge, and the total charge per CP. We wanted to ensure that the pilot would uncover any potential issues around charging (i.e. unintended consequences) so the total charge per CP needed to be sufficient to influence CPs' behaviour (e.g. if the charge was only a few hundred pounds CPs might just pay it without considering their number use). However, we also wanted to limit the number of areas in the pilot to reduce the impact of unintended consequences, should they arise. In trading-off these factors we have chosen a pilot of around 30 areas.[165] Based on current information this will result in 154 CPs being charged and 102 CPs will have a charge greater than £1,000.[166]

6.15 Under this revised proposal for the pilot scheme:

[163] We have reflected number blocks provisionally returned through the audit in our assessment of the number charging pilot since we anticipate that these blocks will be returned before charging is introduced. However, the actual amount of blocks returned may differ from that indicated through the audit return.

[164] We will review whether to charge in these five-digit area codes in light of the proposed roll out of 100-number blocks and the charging pilot.

[165] We discuss the reasons for picking a pilot of 30 areas further in paragraphs 6.128 to 6.129 below.

[166] We have reflected the provisional estimate for each CPs' number block returns through the audit in these figures. However, the exact amount of number blocks returned may differ from that initially indicated.

- Charging will still be targeted at areas with greatest number shortage – which are likely to benefit most from charging as a means to delay number supply measures; and

- The number of areas captured should be sufficient to provide meaningful information on the impact of number charging (i.e. how CPs react to the price and possible unintended consequences).

6.16 Our current aim is to have an initial review of the number charging pilot after two years. We would take a decision on rolling out charging more widely once we have gathered sufficient evidence which may involve more than one review.

6.17 We discuss the revised pilot scheme further in paragraphs 6.123 to 6.137 and we discuss how the charging pilot will be assessed in paragraphs 6.140 to 6.142. We have published a provisional list of the area codes with the fewest number blocks remaining and have indicated which areas would be in the pilot charging scheme based on current information in Annex 6. The areas to be included in the pilot charging scheme will be finalised based on the amount of number blocks remaining in each area code at the time of the final statement (the final list will be published with the statement).

Date for implementing number charging

6.18 In the November Consultation we suggested an indicative implementation date of January 2012. We were planning to publish a statement on number charging in summer 2011 thus this provided an implementation period of around six months.

6.19 Magrathea and VON suggested we offer an extended implementation period in order to minimise the impact on small CPs, and avoid the possibility that they disconnect customers in order to return number blocks with low utilisation. We recognise that the possibility of CPs disconnecting customers is a serious issue (discussed further in paragraphs 6.234 to 6.236 below), however, we are not minded to extend the implementation period because there is a danger that some areas will run out of numbers and require number supply measures, which earlier introduction of number charging could have postponed or prevented.

6.20 We propose to maintain an implementation period of six months after the publication of the final statement, and are inviting comments on this proposal as part of this consultation. We are provisionally planning to publish the final statement in the first quarter of 2012 (however, this might change in light of stakeholders' responses to this consultation). We consider that stakeholders can start to plan their approach to charging before the final statement is issued based on the details of the charging regime provided in this document.

Question 4: Do you agree that the pilot for geographic number charges should be introduced six months after the date the final statement is published? If not, please state your preferred implementation period and reasons.

6.21 We have also made some changes to the guidelines provided on cost recovery when, under a regulated arrangement, the CP providing a service with a number is different from the CP allocated the number by Ofcom. This is discussed further in Annex 5.

Objectives of a charging regime

6.22 In the November Consultation we identified three high level objectives to guide our decisions in implementing a number charging regime. We considered that a number charging regime should:

- promote efficient use of numbers;
- minimise any competitive distortion between existing CPs or between existing CPs and new entrants; and
- minimise any negative impact on consumers from charging.

6.23 We noted that there may be a trade-off between different 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).

6.24 In the November Consultation we asked stakeholders:

> *"Do you agree with the high level objectives proposed for the charging regime?"*

Stakeholders' comments

6.25 Stakeholder responses were mixed. Some stakeholders agreed with the objectives and recognised the need for number charging:

- TalkTalk was supportive of the proposals, but wanted reassurances that the reason for introducing charging was to manage scarcity;
- C&WW acknowledged that charging may be necessary;
- FCS was concerned by the precedent set by charging but understood the need for its introduction;
- Magrathea agreed with the objectives but had some concerns about the proposals and considered that audit and requesting return of number blocks may be a better means of recovering unused number blocks;
- Loho agreed with the objectives; and
- three individual consumers agreed with the objectives, and one consumer partly agreed. One consumer noted that charging should be introduced ahead of number supply measures as encouraging efficient number use represented a longer term solution. Another noted that CPs need a reason to make better use of numbers but that charging could risk stifling innovative services and the capacity could be released from reserves available.

6.26 BT and [✂] also agreed with the objectives. However, BT thought the objectives could be met without introducing number charging and [✂] had concerns about the potential unintended consequences of charging and that charging might become

divorced from its original objectives.[167] Eleven stakeholders were opposed to implementing number charging at this time. BT, Colt, Sky, Virgin Media, TSL, ITSPA and [✂] all thought that number reclamation through audit and/or number supply measures could alleviate number block shortage and that introducing number charging was premature. We discuss the responses further below.

6.27 BT's view was that the supply of numbers could be increased at a relatively low cost and with little disruption to consumers. BT considered that Ofcom's consumer research in 2010 suggested that overall attitudes to overlay codes and closing local dialling were more accepting than in 2005, and consumer reactions to these options were relatively mild. BT argued that administrative and supply measures would alleviate any shortages for the foreseeable future, and thus it was premature and disproportionate to introduce number charging.

6.28 Sky and Virgin Media thought that charging should only be considered as a last resort once all other options, e.g. administrative measures such as audit to reclaim numbers, have been exhausted.

6.29 Sky suggested technical measures, e.g. measures aimed at addressing weaknesses in the number porting regime, should be allowed time to alleviate more immediate number shortages. Sky argued that using ported-in numbers would reduce demand for new number blocks. It thought the current porting arrangements incentivised CPs to issue new numbers rather than use ported numbers. Sky thought that number porting could be encouraged by:

- reducing the porting conveyance charges levied by donor operators; and
- implementing a more efficient routing system for ported numbers (e.g. a shared ported number database that can be queried to identify the recipient network prior to efficiently terminating calls, as opposed to the current system of onward routing whereby the call is first routed to the range holder and then on to the recipient CP).

6.30 Virgin Media considered that charging could encourage number block hoarding if certain blocks were perceived as being scarce and therefore more valuable. It noted that if the overall impact on CPs is minimal then the charge is unlikely to change CP demand for numbers and thus undermine the purpose of charging. Virgin Media also thought that Ofcom should recognise that if demand for numbers is insensitive to charging then the scheme should be withdrawn.[168]

6.31 TSL, ITSPA and Virgin Media thought that insufficient evidence had been provided to support the assertion that charging would meet the objectives. TSL noted that in other countries the incidence and reasons for number charging varied. TSL and ITSPA requested further evidence from other countries that charging has an impact in practice on number conservation.

[167] [✂] also made comments about the level of the charges which are discussed under the level of the charge heading below.
[168] Virgin Media also made some comments about only charging for unused numbers and the sensitivity of CP demand to the 10p charge which are discussed under the charging unit and level of the charge headings respectively.

6.32 NSE was opposed to the concept of charging and questioned whether it was proportionate in relation to what the proposals aim to achieve.[169] VON understood the reasons behind the objectives but did not agree that charging should be introduced.[170]

6.33 IPV6 and NumberGroup.com considered number charging to be a tax. IPV6 thought that the objectives would not benefit stakeholders or consumers.[171] It considered that the introduction of charging was badly timed given the current economic and business climate and pressures facing small businesses.

6.34 NumberGroup.com considered that number charging would damage its free business model. It suggested taking back unused numbers.

Ofcom's response

Reason for introducing charging

6.35 TalkTalk asked for reassurance that the reason for introducing charging was to manage number scarcity, and [✂] was concerned that charging might become divorced from its original objective. We can confirm that the reason for introducing charging is solely to encourage CPs to use numbers efficiently and manage number scarcity.

Use of administrative measures as an alternative to charging

6.36 A number of CPs argued that we should use administrative measures to deal with number scarcity before considering the introduction of number charging. We agree that administrative measures play a useful part in number management (for example, the recent audit resulted in a large amount of number blocks being returned), and propose to strengthen our existing administrative measures by introducing the 'number reservation' step discussed in Section 5.

6.37 We consider, however, that administrative measures have a number of inherent weaknesses that limit their overall effectiveness in managing number supplies efficiently:

- audits provide CPs with little incentive to use existing blocks more efficiently or substantially reduce demand for number blocks going forward;
- audits rely on CPs voluntarily relinquishing number blocks and we have limited legal powers to require CPs to surrender blocks that they have been allocated;
- we have already audited the areas subject to the most significant number scarcity and requested the return of unused number blocks. It is unlikely that further audits of these areas would yield a significant further return of number blocks in the short-to-medium term; and

[169] NSE and VON made some comments about smaller number block allocations which are covered under the charging unit heading below.
[170] VON made some comments about the impact of charging on small versus large CPs which are covered under the 'impact on CPs' heading below. VON also made some comments about sub-allocation practices which are covered in Section 5.
[171] IPV6 made some comments about the impact of charging on small versus large CPs. These comments are discussed under the 'impact on CPs' heading below.

- audits are time consuming and result in costs for CPs and Ofcom.

6.38 We could try to enforce a more stringent administrative process so only CPs who could demonstrate a clear requirement for numbers received allocations. However, we consider it more effective to provide CPs with an economic incentive to use numbers more efficiently through the market mechanism rather than trying to apply our judgement based on imperfect information to determine who should receive number allocations. We consider that, if effective, charging could reduce the need for administrative processes and reduce the costs that CPs and Ofcom face from these processes.

6.39 Overall, and taking account of the responses to the November Consultation and the matters described above, we do not consider that administrative measures alone will be sufficient to deal with number scarcity.

Use of number supply measures as an alternative to charging

6.40 Some CPs argued that Ofcom should deal with scarcity by expanding the supply of numbers (e.g. closing local dialling and the introduction of overlay codes) before considering number charging.

6.41 We do not agree with BT's view (in paragraph 6.27) that the supply of numbers can be increased at low cost and with little disruption to consumers. Our consumer research about number supply measures has never presented respondents with a 'do nothing' option (as some change is required to ensure numbers do not run out). Consumers have always had to choose between options that involve some change (and disruption) – so our research has measured relative dislike – rather than absolute dislike.

6.42 The 2010 and 2011 consumer research suggested that local dialling is generally seen as a 'nice to have', and consumers prefer closing local dialling compared to introducing overlay codes. However, a significant minority (40 per cent) of consumers consider it important to have the facility to dial locally, and the average proportion of calls made using local dialling remains significant at 57 per cent.[172] This suggests that a significant proportion of consumers will have the inconvenience of having to dial more numbers (and the annoyance of redialling if they forget) if local dialling were closed. Moreover, 24 per cent of consumers use the speed dial facility on their telephone, and these consumers will incur hassle and need to spend time reprogramming the numbers if local dialling is closed. There will also be some costs to businesses in reprogramming private branch exchanges (PBX) and other equipment which dials or screens local calls.

6.43 There will also be costs to CPs in closing local dialling because systems will need to be changed and network announcements will need to be used to catch mis-dialled calls (i.e. when the area code is not used) for a period of time. We discuss the costs of number supply measures in Annex 3.

6.44 In areas where the number shortage is most severe, closing local dialling is unlikely to be sufficient in isolation, even in the short term, and further number supply measures, e.g. overlay codes, will be required over time. The 2010 consumer research found that consumers had a stronger dislike for overlay codes. The majority of those surveyed (64 per cent) thought that it was important to be able to tell from the telephone number the location where you are calling. Overlay codes

[172] 2010 consumer research page 9.

dilute the geographic significance of numbers since more than one code applies to the same area. The 2010 consumer research report noted that:

> *"Overlay codes were seen as confusing by almost everyone. Generally, people did not like the idea of dialling a different code for someone who might live very close to them – this seemed to be counter-intuitive to the numbering system they were familiar with. Businesses also 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."*[173]
>
> *"Business users, in particular, disliked this option – one business said, "Yes, I'd definitely want the old Oxford code so if I had to pay more for it, then I would. (Business, Oxford)"*[174]

6.45 There is a general concern that overlay codes may result in confusion, for example:

- not understanding why an area has two dialling codes, or what area the second code covers; and
- not understanding why particular areas in the UK are different to others.

6.46 There is also a risk that some local businesses with a number with the new code may lose business because some potential customers may infer they are not local, or think they are less 'established', i.e. businesses with the old area code could have a competitive advantage over those with the new area code.

6.47 Introducing overlays also results in costs for CPs because it requires changes to networks and systems – these costs are discussed in Annex 3.

6.48 Whilst it is difficult to quantify reliably the costs which might arise as a result of number supply measures, we consider that the 2010 and 2011 consumer research shows that such measures (especially overlay codes) are unpopular with a significant proportion of consumers and businesses, and that they are likely to impose material costs on these groups. For this reason, we consider that number charging could play a potentially valuable role by delaying or avoiding the need for number supply measures by encouraging more efficient number use.

Evidence of impact of number charging

6.49 Virgin Media, TSL and ITSPA thought that we ought to provide further evidence that charging would help to meet our objectives. As discussed above, we consider that number charges would improve the incentive for CPs to use numbers efficiently, and we have suggested a number of ways in which CPs might alter their behaviour. The precise impact of number charging is not knowable at this stage. However, we consider that there is a case for number charging being beneficial through encouraging efficient number use and reducing the need for number supply measures.

6.50 We surveyed NRAs that are members of CEPT regarding number charging regimes in their respective countries in 2010. As part of the survey we asked whether the charges imposed had an impact on CPs' demand for geographic

[173] See 2010 consumer research page 4.
[174] See 2010 consumer research page15.

numbers. Of the 22 NRAs that responded to this question, nine NRAs considered that charging did have an impact on demand, comments included:

"Numbers are utilised more efficiently" (two NRAs)

"A lot of numbers were returned" (two NRAs)

"Some operators returned numbers not in use, reduced demand for new numbers". (one NRA)

6.51 A further ten NRAs considered that charging had no impact on demand. Of the remaining three NRAs who responded to this question, one noted that the impact was small when the charge was introduced, but would potentially be bigger if introduced now; one noted that the impact depends on the CPs' marketing strategy; the final NRA noted that new entrants probably have to make a relatively bigger investment to obtain numbers in all the areas (this NRA charged a one-off allocation fee in addition to a recurring number charge).

6.52 Whilst the survey results indicate that the impact of charging on demand has varied across countries, we consider that this evidence suggests that number charges may influence CPs' behaviour in the sorts of ways we have suggested and help to improve the efficiency of number management. It is clearly the case, however, that the impact of charging is likely to depend on a number of factors (including the level of the charge, the number of CPs in the market and the way in which numbers are managed by the relevant NRA), and hence any direct read-across from the experience of other countries must be interpreted with caution.

6.53 We also asked NRAs whether there were any adverse consequences for competition or consumers as a result of introducing a charge for geographic numbers. All 23 NRAs answering this question reported no adverse consequences.

Number hoarding

6.54 We think it is unlikely that number charges would result in CPs hoarding numbers as suggested by Virgin Media. We see no incentive for CPs to hoard their existing number blocks when new number blocks will be available at exactly the same price as the blocks already allocated. We are not planning to constrain number supply when it is required for legitimate use. In fact, a CP hoarding number blocks which it does not need to will incur unnecessary costs. Charging should encourage CPs only to hold and apply for number blocks which they intend to utilise.

Economic climate

6.55 IPV6 considered that the number charging proposals were badly timed given the current economic and business climate and pressures facing small businesses.

6.56 We do not consider that dealing with number scarcity is an issue which can be deferred, as early action is important to avoid the need for number supply measures in the future. We consider the impact of the charge on CPs (including small CPs) is likely to be small given the relatively low level of the charge and limited number of areas where it is being introduced.

Other measures

6.57 Sky suggested we allow technical measures aimed at addressing weaknesses in the number porting regime time to work before considering number charging. We consider the impact of the current number portability process on demand for numbers in Section 5 (paragraphs 5.168 to 5.177).

Key features of the charging regime

6.58 In this section we discuss the key features of the proposed charging regime. As noted in paragraph 6.9 above:

- The charge for geographic numbers will be set by Ofcom.
- The charge will be applied as an amount per allocated number, levied annually, and will apply to all geographic numbers (included those that have already been allocated to CPs and any newly allocated number blocks).[175] The charge proposed is 10p per number per year.
- Initially charges will be applied in a limited number of pilot areas where number scarcity is most pressing.
- Revenues from number charges will be paid into the Consolidated Fund of HM Treasury. We will continue to recoup our administrative costs associated with number allocation (including number charging) via Ofcom's Network and Services charges on relevant CPs.[176]
- Our current plan is to review the pilot after two years.

6.59 We discuss each aspect in more detail below.

Charging unit

6.60 In the November Consultation we proposed that number charges would be applied 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).[177] We considered that applying a charge to every number in a block would result in better incentives to use numbers efficiently than a charge per number block.

Stakeholders' comments

6.61 NumberGroup.com and Virgin Media suggested only charging for unused numbers. Virgin Media stated that when a number is used this is an efficient use. Virgin Media suggested that Ofcom could obtain information on unused numbers through an annual audit.

6.62 NumberGroup.com suggested that all CPs should be forced to hold only 100 spare numbers.

[175] Numbers are allocated in blocks of 1,000 or 10,000 numbers. The charge would be per number with every number in the block attracting a charge (whether used or not).
[176] Only relevant CPs with a turnover of £5m or more contribute to Ofcom fees.
[177] 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 £1,000.

6.63 Magrathea suggested that CPs should be charged per block rather than per number, i.e. the same charge for a block of 10,000 numbers as a block of 1,000. It suggested that CPs who have long-standing allocations are likely to be holding many blocks of 10,000 numbers, whereas CPs who are new to the market will mostly have blocks of 1,000 numbers. It suggested that this puts the more established CPs at a disadvantage. It noted that a per-block charge was the approach taken in some other European countries. It recognised that we wanted to provide an incentive for CPs to give back unused blocks of 1,000 numbers within 10,000–number blocks. However, it considered that this may only be possible in a few instances, since CPs are likely to have allocated some numbers within most or all of the 1,000-number blocks within a block of 10,000 numbers.

6.64 Magrathea suggested that, to alleviate the impact on small CPs, Ofcom should not impose charges unless CPs have the opportunity to give back unused 100-number blocks within each 1,000-number block.

6.65 NSE also thought that not being able to hand back incomplete number blocks could adversely impact on small businesses to the point of exiting the market. It noted that there could be less onerous options, particularly smaller allocations, which should be used to ensure that the UK maintains an adequate supply of number blocks. VON also encouraged Ofcom to find ways to allocate smaller number blocks to avoid creating a barrier to entry.

6.66 Loho thought it unfair to charge CPs in 1,000 number increments due to CPs with legacy networks having technical restrictions meaning the minimum block size is 1,000 numbers. It thought an alternative approach would be to apply an ongoing (significant) charge to CPs with legacy networks to encourage them to upgrade.

Ofcom's response

Only charging for unused numbers

6.67 Virgin Media and NumberGroup.com suggested only charging for unused numbers. We recognise that charging just for unused numbers could incentivise high utilisation. However, we consider it would place an undue burden on Ofcom and on CPs to collect regular information on whether numbers are being used or not. It is not clear how we would ensure that the information provided by CPs on used numbers was true and accurate. In addition, such an approach might create perverse incentives, e.g. CPs allocating a large amount of numbers to an individual (when they are not required) in order to artificially increase the measured number utilisation rate.

6.68 We also note that this approach could disadvantage smaller CPs/new entrants who would need to request a 1,000 number block but are likely to have a large number of unused numbers (at least initially).

Charging per block regardless of block size

6.69 Magrathea suggested that CPs should be charged per block rather than per number. We do not consider that CPs who already hold blocks of 10,000 numbers will be at a disadvantage under the proposed charging regime for two reasons. First, since number conservation areas were introduced in 2002 numbers have been allocated in blocks of 1,000 in an increasing number of areas. The areas currently captured by the proposed pilot charging scheme were given conservation status in the period 2002-2006 (with the exception of one area which was given conservation status in 2007). Only longer established and larger CPs have 10,000 number blocks and these

larger CPs are likely to have higher overall utilisation relative to smaller CPs, thus have a lower effective number charge cost per number.[178]

6.70 Second, unused blocks of 1,000 numbers within 10,000-number blocks can be returned. CPs are required by the Numbering Condition to comply with the Numbering Plan, which requires that CPs use each 1,000-number block within a 10,000-number block sequentially. Therefore CPs should not have allocated numbers within most of the 1,000-number blocks (and thus be unable to return them), unless the previous block was close to full utilisation.

6.71 Charging per block may advantage existing and larger CPs, who are more likely to have 10,000-number blocks, relative to smaller CPs and new entrants. It would also offer less incentive towards efficient number use because CPs with blocks of 10,000 numbers would not have an incentive to return unused 1,000–number blocks.

Allocation of smaller number blocks

6.72 NSE suggested that not being able to hand back blocks of less than 1,000 numbers would adversely impact their business and Magrathea suggested CPs should be allowed to return unused 100-number blocks within 1,000-number blocks. VON encouraged Ofcom to allocate smaller number blocks.

6.73 As noted in section 3, for technical reasons to date numbers have been allocated in contiguous 1,000-number blocks and it is not possible to hand back incomplete blocks. We are exploring allocating numbers in smaller blocks and, as discussed in section 5, we are consulting on rolling-out a limited number of 100-number blocks in the 11 five-digit area codes. Some CPs with legacy networks face technical constraints in routing calls to smaller blocks and therefore it is not currently possible to introduce smaller number blocks on a more widespread basis (although this is something we will continue to explore). Due to technical restrictions in legacy networks, (i.e. the spare decode resource capacity) it is considered that each area could only support a limited number of blocks of 100 numbers. Thus if a large amount of 100-number blocks were returned to us it is unlikely that they could be reallocated to other CPs (thus would not help to alleviate number shortage) and therefore these blocks might remain unutilised. In addition, allocating 100-number blocks may not be practical in areas with large populations (where CPs would likely need multiple allocations of 100-number blocks).

Other points

6.74 Loho suggested that we apply a significant charge to CPs with legacy networks to encourage them to upgrade their network to enable smaller number block allocations. We do not consider it appropriate to try and incentivise investment in network upgrades in this manner. Any decision to invest in rolling out NGNs is a product of a wide set of factors of which the ability to allocate smaller number blocks is only a small part.

6.75 We consider that such a charge is unlikely to provide a strong incentive to upgrade but could cause higher prices for consumers. The charge would likely be passed

[178] We requested information about number use from a sample of small and medium CPs and larger CPs in 2010. For the sample of small/medium CPs the average utilisation was 23 per cent of allocated geographic numbers, while for the larger CPs the average utilisation was 53 per cent. See November Consultation, paragraph 6.12.

through to CPs who use the networks (e.g. WLR CPs using BT's network who have little alternative but to use this service) and ultimately onto consumers.

6.76 NumberGroup.com suggested that CPs should be forced to hold only 100 spare numbers. As noted above, it is not possible for CPs to return blocks of 1,000 numbers which have been opened (i.e. where some numbers are in use). Therefore it is not possible for CPs to return incomplete number blocks to us so that they are only holding 100 spare numbers per area. In addition, for larger CPs, only holding 100 spare numbers in reserve is likely to be inadequate to meet business requirements.

Mechanism for charging

6.77 In the November Consultation, we considered two main mechanisms for number charging: allocation of numbers by auction, and administered prices based on our powers under the Act to raise charges in relation to telephone numbers.[179] We preferred administered prices over auctions of numbers mainly because 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. We noted that this approach was consistent with that taken by other European regulators.

6.78 We considered that a periodic (recurring) charge applied to all numbers (both new blocks and previously allocated blocks) is preferable to a one-off lump sum charge. A one-off charge for numbers 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. In addition a one-off charge would encourage a CP to retain its existing allocations, even if these were unused.

6.79 We noted that a number charge (whether applied on a recurring or a one-off basis) would disadvantage CPs with lower number block utilisation versus those with higher utilisation. However, this feature of charges provides CPs with the incentive to take steps to increase number utilisation over time. Responses to our information request in 2010 on the utilisation of allocated blocks suggest that smaller CPs have lower overall number utilisation so charging may disadvantage them relative to larger CPs (i.e. smaller CPs can spread the number block charges over fewer customers).

Stakeholders' comments

6.80 Magrathea agreed that administered prices was preferable to auction, and a periodic annual charge was preferable to a lump sum charge.

6.81 FCS thought that charging should only apply to newly allocated blocks of 1,000 numbers (i.e. not to previous allocations). Similarly VON suggested that we avoid any charges with retroactive effect.

6.82 IPV6 were against any type of charging for existing number allocations. It considered that no individual CP has foreseen or provisioned for charges.

[179] In an auction the number charge is determined from the outcome of a bidding process, while under administered pricing the charge is determined by the regulator.

Ofcom's response

6.83 As noted above we consider that if changes were only applied to newly allocated blocks it would create an advantage for existing CPs (particularly those with a large stock of unused numbers) who already have number blocks that were given out for free. This would risk introducing a competitive distortion which would be inconsistent with our objectives.

Sub-allocation

6.84 Sub-allocation provides CPs with a mechanism to recover some of the cost associated with number charges, e.g. by providing unused numbers to other CPs. 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. We discussed some of the benefits of using sub-allocated numbers rather than Ofcom allocations in paragraph 6.42 of the November Consultation – the benefits included less administrative burden and quicker number availability.

6.85 While sub-allocation is currently possible, at present it plays a relatively minor role as there is little incentive to obtain numbers via sub-allocation arrangements 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, e.g. greater control and fewer transactions and conveyance costs (discussed in paragraph 6.44 of the November Consultation).

6.86 We noted that if significant barriers to sub-allocation exist (i.e. CPs find it difficult to switch from demanding new numbers to previously allocated numbers) this could limit the benefits of charging. We noted some possible barriers to sub-allocation in paragraph 6.46 of the November Consultation, but concluded that the information to date did not suggest that these were insurmountable. We welcomed feedback from CPs on anticipated technical or contractual issues with sub-allocation and asked:

> *"i) Do you envisage that sub-allocation would increase if number charging is introduced? And ii) Do you have any comments on out analysis of barriers to successful use of sub-allocation?"*

Stakeholders' comments

6.87 Stakeholders had mixed views on whether sub-allocation would increase if number charging was introduced. Magrathea, C&WW, ITSPA, TSL, NumberGroup.com and [✂] thought that sub-allocation could increase, but noted some caveats which we discuss below. Virgin Media, NSE and IPV6 considered it unlikely that sub-allocation would increase. BT thought it was difficult to know. We have discussed CPs' views on sub-allocation in Section 5 – paragraphs 5.75 to 5.96. Below we discuss comments about sub-allocation in relation to number charging.

6.88 [✂] welcomed measures to increase the extent of sub-allocation as a remedy to number scarcity. It also welcomed Ofcom's conclusion that the barriers to sub-allocation are not insurmountable and noted that [✂]. Magrathea commented that sub-allocation has been a core part of its business for the last decade.

6.89 TSL noted that sub-allocation is already widely used by many new entrants and was the means by which it entered the market. However, it noted that new entrants may reach a point when it makes commercial sense to control their own number ranges. TSL and ITSPA considered that charging might push CPs towards sub-allocation

which could be restrictive to their business models, e.g. reducing flexibility, and reducing independence in terms of commercial agreements.

6.90 Magrathea and BT noted that larger CPs are more likely to sub-allocate to smaller providers than the other way around, so smaller CPs are less likely to find sub-allocation a solution to low utilisation. Both thought that small CPs might have difficulty finding another CP to host their number blocks, as larger CPs may not be able to pass on sufficient numbers within multiple blocks to other CPs.

6.91 BT noted that a CP might prefer the certainty of a direct allocation from Ofcom, as it may be uncertain about how a service via sub-allocation could be guaranteed if the range-holder went out of business.

6.92 BT considered it was difficult to know whether sub-allocation would increase as a result of charging because it was unclear as to whether the potential barriers to sub-allocation were serious or not. It considered that a further obstacle that might discourage number sub-allocation could be management/administration costs to administer individual accounts generating a number charge of say 30p to 50p per year.

6.93 Virgin Media and IPV6 thought it unlikely that sub-allocation would increase if charging is introduced due to administrative costs:

- Virgin Media noted the complexities of the changes required to administrative procedures to track and accurately bill CPs on a per number basis.

- IPV6 noted that sub-allocation may be more expensive than allocation directly from Ofcom because the CP sub-allocating the numbers would need to recover its administrative costs.

6.94 NSE did not feel that sub-allocation would work well for its business and believed it would reduce its ability to innovate and react to market conditions.

6.95 Loho did not believe charging would increase sub-allocation in general, but thought it might work better for newer CPs.

Ofcom's response

Restrictions on sub-allocation

6.96 BT and Magrathea noted that larger CPs are more likely to sub-allocate to smaller CPs than the other way around. TSL, NSE and ITSPA thought that sub-allocation could be restrictive to some CPs' business models. IPV6 and Virgin Media thought the complexity and cost of sub-allocation would restrict its use.

6.97 We accept that sub-allocation will not be a good solution for all CPs. We note that larger CPs are more likely to be able to sub-allocate numbers because the risk of taking numbers from a larger, more established CP may be perceived to be lower. We also agree that in some cases a CP will prefer the certainty and control associated with a direct allocation from Ofcom rather than a sub-allocation.

6.98 The decision to use sub-allocated numbers ultimately lies with the CP and should be taken in the full knowledge of any restrictions this imposes on business models. This is a commercial decision and it is incumbent on the CP to investigate this, along with any costs which would result if it decided to change network provider.

6.99 The fact that sub-allocation already occurs suggests that it is appropriate in some cases. Under number charging, a CP who requires relatively few numbers may find sub-allocation more cost effective (even after taking into account administrative costs) than taking a whole number block from Ofcom. In particular, a niche player whose main business is not providing voice services may find this option attractive. In addition, taking sub-allocated numbers is likely not to require amendment to the routing plan which may mean a shorter lead time and avoided cost.

6.100 BT suggested that if the revenues generated by sub-allocation were 30p to 50p per year this might be insufficient to encourage sub-allocation. CPs will not be restricted to charging 30p to 50p per sub-allocated number per year as suggested by BT. Sub-allocation is a commercial agreement and CPs will be free to negotiate charges (as they do currently).

Hosting another CPs' numbers

6.101 BT and Magrathea thought smaller CPs might find it difficult to get other CPs to host their number blocks.

6.102 It is up to individual CPs to decide whether to host opened number blocks. We note this might be a relatively attractive option to obtain numbers compared to applying for new number blocks from Ofcom because the block is already on the routing plan and already has some existing customers.[180]

Proposed charging pilot scheme

6.103 In the November Consultation, we noted that the social costs associated with increasing number supply are likely to be higher in area codes where numbers are scarcer since it is more likely that requesting a number block would give rise to the need for supply measures in the short term. In light of this, we suggested that charges should vary geographically, and noted that this would allow a more targeted approach which would help limit any potential negative effects on charging (particularly in areas where there is no forecast shortage in numbers over the foreseeable future).

6.104 We noted the disadvantage of geographic variation in charges was the possibility of greater complexity and administrative cost compared to a scheme where a uniform charge is set across the UK. Our preference was to have a charging scheme with geographic variation but one which was simple, transparent and would not incur high administration costs.

6.105 We set out three options in paragraph 6.58 of the November Consultation. Our preferred option at that time was to introduce a charge of 10p per number per year in a limited number of areas initially in a 'pilot scheme'.[181] We proposed to include conservation areas with 100 or fewer remaining blocks in the charging pilot.

6.106 As noted in the introduction to this section,[182] we have decided to adjust the proposed pilot scheme in light of the results of the recent number audit. We discuss

[180] The hosting CP would have to update their routing table, but this would not impact on other CPs.
[181] The HM Treasury Green Book notes that carrying out a pilot study is one way to acquire more information about the risks affecting a project and allow steps to be taken to mitigate adverse outcomes. Source: http://www.hm-treasury.gov.uk/d/green_book_complete.pdf paragraph 5.74 and box 4.2.
[182] See paragraphs 6.12 to 6.17.

stakeholder responses to our original pilot scheme proposals below, and then set out our revised proposal on which we are inviting feedback as part of this consultation.

6.107 In the November Consultation we asked:

> *"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"; and*
>
> *"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".*

Stakeholders' comments

6.108 C&WW agreed with our preferred option of a pilot scheme and the threshold of 100 or fewer 1,000 number blocks. It cautioned that there is a small chance that it will drive suboptimal use of the Numbering Plan (e.g. customers in an area of shortage being encouraged to take a number from an adjoining area in order to reduce their CPs costs) which would serve to dilute the relationship between area codes and geographic location; however it did not believe that this should preclude Ofcom's preferred approach. C&WW was also concerned that Ofcom had overlooked that a threshold should be used in order to remove the application of charging for a given area; e.g. if an overlay code is introduced and the number shortage disappears then charges should be removed. IPV6 made a similar point about what happens if blocks are returned such that an area no longer falls within the charging threshold.

6.109 Virgin Media thought it was premature to consult on an option, and that Ofcom should hold off until the impact of supply side and administrative measures has been assessed. If these measures prove insufficient then Virgin Media agreed with the pilot scheme option and a threshold of 100 or fewer blocks of 1,000 numbers. Similarly one consumer thought that the pilot scheme option could be used if essential, but it was better to release capacity from the reserves available.

6.110 BT disagreed with number charging *per se*, but of the three options it preferred the pilot scheme. BT noted that if the fundamental purpose of charging was to save on the social costs of number supply measures, then Ofcom should look to apply charging where it has reason to believe that supply measures may be saved as a result. It was not in a position to suggest any specific threshold but thought 100 or fewer 1,000 number blocks (100,000 numbers) sounded about right.[183]

6.111 FCS thought a charge of 10p per number should only apply to newly allocated conservation area blocks of 1,000 numbers.

6.112 TSL believed that only charging where scarcity is most pressing will create a two tier system. It considered that this could affect the decisions of competing CPs to offer services in a particular area, affecting competition and consumer choice. Additionally, it considered that if a CP decides to compete in an area subject to number charging, its cost base will be affected, and the prices it charges consumers

[183] BT also made some comments about charging for mobile numbers which are discussed under the 'other issues' heading below.

may be increased. It thought that proposing geographic differences at a time when the government is encouraging rural and 'not spot' services was out of step with prevailing policy.

6.113 [✂] was concerned that number charging would create a tax on particular local areas.

6.114 Magrathea noted that as charging changes the business model for CPs it should only be introduced with an appropriate notice period and only in areas where number shortage is most acute.

6.115 In relation to the threshold for including areas within the pilot scheme, [✂] considered that it did not have enough information to answer the question fully. [✂] feedback was that, based on the additional changes and impact these may have on the number ranges, the threshold should allow for two blocks of 1,000 numbers per CP, plus ten blocks of 1,000 numbers as a buffer in case of any sizeable new entrants to the market.

Ofcom's response

Extent of pilot scheme

6.116 FCS suggested that the charge should apply to number blocks allocated within conservation areas. This goes significantly beyond our proposal for a pilot scheme which would only apply a charge to numbers in conservation areas with the most significant number shortages. However, we may consider expanding the charging scheme to all conservation areas at a future point in time once the results of the pilot have been assessed. We have discussed why the charge should not apply to new number allocations only in paragraph 6.83 above.

Impact on local areas subject to charging

6.117 [✂] and TSL were concerned about the impact of charging in the local areas where it is introduced. TSL thought that charging could have a detrimental impact on competition and consumer choice in these areas, and that CPs may charge higher prices in chargeable areas.

6.118 It is possible that CPs will be deterred from offering services in areas where charging is introduced. However, given the relatively low level of the charge we consider this unlikely. The cost of a 1,000-number block will be £100 based on a 10p per number charge, and the cost of getting a full set of area codes is £3000 (based on a pilot scheme applying to 30 areas). There is also the possibility of obtaining numbers via sub-allocation which may be cheaper than getting whole blocks from Ofcom when few numbers are required. Given the large number of players already in the market (300+)[184] we consider that, even if CPs are deterred from offering services in some areas, it is not likely to impact significantly on competition or consumer choice.

6.119 We recognise that a CP could choose to pass though the costs of charging just to consumers in affected areas rather than spreading it across all consumers. However, we noted in the November Consultation (paragraphs 6.103 to 6.105) that the Universal Service Obligation means that BT Retail must provide all residential households with access to a fixed line at a standard charge. In addition, most large CPs have uniform national pricing policies even though the cost of supply does vary

[184] Source: Ofcom's numbering database (CPs with number allocations).

across the country. Overall we think it unlikely that CPs will charge different (higher) tariffs in areas subject to number charging.

6.120 TSL thought that proposing number charges for particular areas of the UK was out of step with government policy which encourages service provision in rural areas and 'not spots'. We consider that these issues are substantially different. Introducing number charging would not imply that consumers in a chargeable area could not obtain a fixed line telephone service or a telephone number. We consider it a proportionate approach to target charges on particular areas where numbers are most scarce and number supply measures are most likely to be required.

Timing and extent of charging

6.121 Magrathea suggested that charging should be introduced after an appropriate notice period. We agree with this. We are proposing an implementation date six months after the final statement and invite views on this proposal. We also agree with Magrathea that charging should be introduced where number shortage is most acute – that is why we are adopting a pilot scheme initially. We would not expect to extend the charge to areas where there is no foreseeable number shortage (e.g. non-conservation areas).

Other points

6.122 Virgin Media thought that Ofcom should delay the introduction of charging until the impact of supply side and administrative measures had been assessed - we discussed this in paragraphs 6.36 to 6.48 above.

Revised proposal for pilot scheme in light of number audit

6.123 At the time of the November Consultation the pilot scheme would have applied to 58 areas (based on number blocks available to allocate at 9 July 2010). We have updated the information on the number of blocks remaining to allocate in light of allocations since July 2010[185] and the significant (provisional) return of number blocks as part of the recent audit. In addition, we are consulting on the limited roll out of up to 100 blocks of 100-numbers in each of the five-digit area codes (see paragraphs 5.17 to 5.71) and do not plan to charge in these areas (at least initially). This means the pilot based on the November Consultation threshold now only captures eight areas.

6.124 The return of number blocks has increased the number block forecast exhaustion date[186] for some areas. However, despite the return of number blocks we still forecast that 25 areas will require number supply measures over the next ten years and 49 areas will require number supply measures over the next 15 years.[187] Moreover, we consider that the underlying problem of weak incentives to use numbers efficiently will remain in the absence of an appropriate number charge. Therefore we consider that the case for charging remains.

6.125 While some stakeholders are opposed to number charging *per se*, there was general support for the pilot approach. We still believe that charging under a pilot scheme is

[185] We have taken a snapshot of number blocks available at 3 June 2011.
[186] The date when we forecast that there are no further blocks remaining to allocate unless a supply measure is implemented.
[187] The number of areas facing exhaustion is based on the provisional estimates for number blocks returned as part of the audit. The actual number of blocks returned may differ from the provisional information provided by CPs.

valuable for the reasons set out in paragraphs 6.13 above. However, we do not consider a pilot scheme based on eight areas would be worthwhile because: i) the scale would not be sufficient to reveal the potential for unintended consequences or meaningful information on the impact of charging; and ii) the set up and ongoing costs for CPs would be high in relation to the potential benefits from charging in such a limited number of areas. In light of this we have reconsidered the threshold for including an area in the pilot scheme.

6.126 We looked at the alternative proposal for including areas in the pilot scheme put forward by [✂]. We understand this proposal to be that we allow two blocks of 1,000 numbers per CP, plus ten blocks of 1,000 numbers as a buffer, and that charging would arise when the number of blocks allocated exceeds this amount. There are currently around 310 CPs with number block allocations from Ofcom so this would mean 620 blocks of 1,000 numbers per area (assuming that every CP would take number blocks in every area code) plus the ten 1,000-number block buffer. In total this would amount to 630 blocks of 1,000 numbers. Most conservation areas have 790 blocks of 1,000 numbers available, so this suggestion would imply that charging would generally arise in an area if there were fewer than 160 blocks of 1,000 numbers remaining available to allocate.

6.127 Overall we do not agree with this approach because the introduction of charging would be linked to the number of CPs in the market which could vary over time leading to uncertainty. We consider that number charging should be linked directly to the scarcity of number blocks.

6.128 We are proposing an alternative pilot scheme which captures around 30 areas with the fewest number blocks remaining to allocate. The average date when the existing supply of numbers is forecast to run out in these areas is 2019, with a maximum date of 2026. In deciding the number of areas to include in the pilot we considered the number of CPs that would be affected by the charge, and the total charge per CP. We wanted to ensure that the pilot would uncover any potential issues around charging (i.e. unintended consequences) so the total charge per CP needed to be sufficient to influence CPs behaviour (e.g. if the charge was only a few hundred pounds CPs might just pay it without considering their number use). However, we also wanted to limit the number of areas in the pilot to reduce the impact of unintended consequences, should they arise.

6.129 In trading-off these factors we have chosen a pilot of around 30 areas which covers 13 per cent of the UK population.[188] Based on current information this will result in 154 CPs being charged, of which 102 CPs will have a total charge greater than £1,000. The total revenues raised from a 10p per number charge would be around £2m. If we increased the number of areas in the pilot to 40 it would make a relatively small difference to the CPs affected – the number of CPs subject to charging would only increase by three and the number of CPs with a charge greater than £1,000 would increase by nine. If we decreased the number of areas in the pilot to 20 it would not make a material difference to the total number of CPs charged, however, the number of CPs charged more than £1,000 would fall to 87, and the total charges to all CPs would fall to £1.4m. Thus we consider a smaller pilot would be less likely to have a meaningful impact on CPs' behaviour.

6.130 Under this revised proposal for the pilot scheme:

[188] Based on 2001 census data.

- charging will still be targeted at areas with greatest number shortage – which are likely to benefit most from charging as a means to delay number supply measures; and

- the number of areas captured should be sufficient to provide meaningful information on the impact of number charging (i.e. how CPs react to the price and possible unintended consequences).

6.131 In Annex 6 we have included a list of the 50 areas with fewest blocks remaining to allocate, and indicated which 30 areas would currently be captured by the pilot charging scheme. We will publish a final list of areas to be included in the pilot scheme when the statement on number charging is published. The exact areas captured by the pilot scheme may change before the final list is published if blocks are allocated or returned, however, we would not expect the list to change significantly.

6.132 In order to provide CPs with certainty about charges, the areas included in the pilot scheme will be fixed from the final statement until the first review period regardless of subsequent allocations or number block returns during this period.

Impact of number supply measures on charging areas

6.133 C&WW asked whether number charges would be removed when a supply measure is imposed. We have considered the case where i) local dialling is closed and ii) an overlay code is introduced. As noted in Section 4 these supply measures will be applied sequentially as number blocks run out, i.e. local dialling will be closed first, followed by an overlay code if and when more numbers are needed.

6.134 Where local dialling is closed it is possible that this will release sufficient blocks such that the area is no longer in the 30 areas with fewest blocks remaining to allocate. However, in these circumstances we consider that it is appropriate to continue charging for number blocks on the basis that this will help to defer the need for an overlay code which is particularly disliked by consumers. This also helps to avoid perverse incentives, e.g. CPs snapping up number blocks to push an area into closed local dialling and thus possibly escaping charging for a period of time. Therefore we will continue to apply charges to areas with closed local dialling regardless of the number of blocks remaining to allocate.

6.135 Where an overlay code is introduced it may be appropriate to withdraw charging on the basis that numbers are no longer scarce for that area. We do not anticipate that any area codes will require an overlay code before the pilot scheme is reviewed. We will consider the issue around whether charging should be withdrawn in the event that an overlay is required as part of the review of the pilot charging scheme.

6.136 More generally, we will consider the appropriate charging footprint when we review the pilot scheme.

6.137 We welcome stakeholder views on the revised pilot scheme.

Question 5: Do you agree that we should introduce charges in a pilot scheme initially? If not, please state your preferred approach and reasons.

Question 6: Do you agree that the revised pilot scheme should capture around 30 area codes with the fewest number blocks remaining available to allocate? If not, please state your preferred threshold and reasons.

Time period before review

6.138 In the November Consultation we proposed to conduct the first review 18 months after the launch of the pilot. We have reassessed this and our current plan is to have an initial review two years after launch (we might review earlier if unintended consequences arise). However, it may take a longer period to establish the impact of charging on demand for number blocks and other reactions to a charging, e.g. developments in the sub-allocation market. Therefore we may have more than one review before we make a decision about the future of number charging.

6.139 The subsequent reviews may occur after longer or shorter intervals – this would be considered as part of the initial review. The charges would not vary between reviews, i.e. once set the charge would apply up until the next review was undertaken.

Assessment of charging pilot

6.140 The purpose of number charging is to ensure that CPs face an incentive to use numbers efficiently. We have identified a number of potential steps that CPs could take that might improve number management, including returning unused blocks, reducing demand for new blocks, and taking steps to increase the utilisation rate of blocks that are in use. We consider that there is a variety of evidence that could potentially be relevant to assess the impact of number charging, including:

- the quantity of number blocks returned in areas where charging is implemented versus other areas (over the same time period).
- the quantity of new number blocks allocated in areas subject to charging versus other areas (over the same time period).
- the overall profile of demand for number blocks over time in areas where charging is introduced, i.e. the quantity of blocks allocated pre and post the introduction of charging.
- the development of sub-allocation arrangements between CPs (e.g. any increase in the number of CPs offering or taking sub-allocated numbers post the introduction of charging).
- whether charging had resulted in any unintended consequences (e.g. CPs disconnecting consumers to return number blocks as discussed in paragraphs 6.234 to 6.236 below).

6.141 Another area we would consider is whether the introduction of charging for geographic numbers affects demand for other types of numbers, e.g. non geographic numbers.

6.142 We also need to be mindful that in addition to introducing number charging, we are also going to introduce a number of administrative measures which may affect consumption of number blocks, e.g. more strict rules around number applications might deter CPs from applying for blocks where demand is uncertain. Because these measures will be implemented around the same as charging it may be difficult to determine whether any changes in the supply and demand of number blocks are attributable to administrative measures, charging or some combination of the two.

Level of the number charge

6.143 In the November Consultation we said that, in principle, the number charge should reflect the social costs of expanding number supplies. This would help to ensure that CPs take these costs into account when considering their requirements for numbers. The social costs include costs to consumers, CPs and Ofcom as discussed in paragraph 6.49 of the November Consultation.

6.144 We recognised that, in practice, it is not feasible for us to accurately quantify the social costs of expanding number supplies, particularly those that are borne by consumers. In order to quantify these costs, consumers would have 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. In addition, social costs are likely to vary according to local factors (such as preferences towards geographic significance of numbers and local dialling) and according to scarcity. Hence social costs are likely to vary from area to area.

6.145 In the unavoidable absence of dependable evidence on the social cost of number supplies, we looked at the experience in other European countries in order to inform the level of the number charge.[189] As set out in the November Consultation, that average annual charge in these countries is 7p per number. We also noted that charges vary widely around this average (from 0.06p to 27p per number). This 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).

6.146 We considered the circumstances prevailing in the UK and thought that a 10p per number per year charge was appropriate for the following reasons:

- we considered 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.

- at the time of the November Consultation the overall impact of a charge of this magnitude was relatively small (total revenues raised in the order of £3m[190] per year which compares to total fixed voice industry revenues of £2.3bn in Q4 2010[191]), thus the impact on CPs and consumers is likely to be limited. However,

[189] We noted 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 estimated in the UK 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).
[190] In light of the proposed changes to the pilot scheme the total anticipated revenues from charges have fallen, to around £2m per year.
[191] *Telecommunications market data tables Q4 2010, published April 2011* http://stakeholders.ofcom.org.uk/binaries/research/cmr/Q4_2010.pdf

it should provide an incentive to use numbers more efficiently in the areas targeted; and

- 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.

6.147 In the November Consultation we asked:

> *"Do you agree with our view on how charges could be set? If not, please propose an alternative approach with supporting evidence" and "Do you agree with the proposed level of the charge (i.e.10p per number per annum)?"*

Stakeholders' comments

6.148 One consumer agreed with the proposed level of the charge noting that 10p per year is easily recouped.

6.149 C&WW agreed that Ofcom had proposed a workable means by which charges for the allocation of numbers could be set. C&WW noted that the proposed per number charge was low but for CPs with substantial number holdings the total sums were large. It noted that 10p per number is just above the average in other European countries, however the average calculation is skewed by a few NRA's charging substantially more than their peers. C&WW thought Ofcom's justification for the 10p charge appeared "light". However, it did not believe the proposed charge was unreasonable and thought that the empirical evidence about the effect on demand and supply amassed during the pilot scheme could be used to refine the charging mechanism.[192]

6.150 BT noted that Ofcom's rationale for introducing charges was to avoid supply measures to the greatest extent possible, and the premise must therefore be that significant costs arise for customers and CPs, or their interests are significantly damaged, as a result of supply measures. BT agreed that clearly costs would arise, but noted that Ofcom has not sought to quantify them.

6.151 BT considered that charges would be justified (i) if there were a shortage that could not readily be addressed by other measures at relatively low "social cost" and (ii) if it was clear that CPs would be able to react to charges without incurring high systems development costs or in a manner that would not be detrimental to customers. In BT's view other measures do exist and the extent to which CPs could respond to a relatively low initial price was not clear, whereas existing range-holders could do little to reduce their use of numbers without forcing customers to change numbers to allow the release of lightly utilised blocks. It considered that if blocks were not in use then Ofcom could recover them through administrative measures.

6.152 BT expected that a pilot scheme would be of most value if the level of the charge trialled were that used if the pilot were to be extended. It thought the fact that only some numbers would be charged for did not support a deviation from, say, the European average charge as one of the things that Ofcom might be looking to understand from a pilot is how CPs respond to price. BT noted that higher charges would increase bills for end-users. It did not consider there was sufficient evidence to know what charge is likely to strike the right balance in terms of encouraging

[192] C&WW made some comments about the revenues generated by number charging which are discussed under the revenues from charging and recovery of administrative costs heading.

efficient use, limiting the impact on consumers and unduly penalising CPs with significant legacy supplies of numbers in use. BT considered that the European average price per number to be a better starting point, though there was an argument for starting lower and raising the charge if it were ineffective.

6.153 Virgin Media considered that if the overall impact on CPs was minimal (as stated in paragraph 6.34 of the November Consultation) then the charge is unlikely to alter CPs demand for numbers. However, having to deal with the administrative procedures to set up charging will be inefficient and disproportionate to the 10p cost itself.

6.154 Colt and [✂] considered there was a risk that the level of the charge would need to be increased above the proposed 10p per number to achieve number conservation, and possibly above the social costs associated with CPs demanding number blocks. Colt argued that this would penalise CPs who were using numbers efficiently, and CPs would pass the costs through to consumers.

6.155 IPV6 considered that neither setting a charge equal to administrative costs nor the proposed 10p per number were sustainable. It suggested closing local dialling, and allocation being administered according to the colour coding scheme, as described in paragraph 5.45. It was concerned that charging would spread rapidly to include all number ranges and the charge would increase by at least the rate of inflation. It considered that the charge passed through to the consumer would be much more than the level that Ofcom sets, as billing systems, billing software, administrative processes and procedures will have to change and be updated. It envisaged the charge being inflated to at least £10 per number (excluding VAT), once other factors are taken into consideration.

6.156 FCS believed that 10p per year should be a maximum and retained for some years. It thought that there could be pressures in the future to develop an EU norm.

6.157 Magrathea did not agree with the justification of a charge higher than the European average on the basis that it only covers areas where numbers are scarcest because broadening the reach of the charge remains a possibility. It noted that the charge could potentially extend to 79 per cent of allocated numbers if charging is applied to all conservation areas. It considered that a charge should be levied on the assumption that it could, one day, apply everywhere. It believed it should be around 7p per number, in line with the European average.

6.158 VON thought that the 10p charge proposed was substantial and considerably above the European average. VON proposed that CPs be given a sufficiently long implementation time to allow them to prepare, and that Ofcom should avoid the application of any charges with retroactive effect.

6.159 NumberGroup.com and Loho did not agree with the level of the charge. Both considered that the charge might have less impact on larger CPs but would have a significant impact on smaller CPs and could be a barrier to entry. NumberGroup.com questioned why a CP should pay £62,000 per year to provide a UK wide allocation of area codes.

Ofcom's response

<u>Use of number supply measures as an alternative to charging</u>

6.160 BT suggested that we should use number supply measures as an alternative to charging. We have considered this point when assessing our approach to this review of geographic numbers in Section 3 and have discussed in paragraphs 6.40 to 6.48 above why we think number charging should be introduced ahead of number supply measures.

Sensitivity of demand to price

6.161 BT argued that CPs may not respond to the low initial charge, or be unable to respond without reclaiming numbers from consumers in order to return number blocks to Ofcom. [✂] and Colt considered that to be effective a number charge would need to be higher than the initial level of 10p proposed by Ofcom. Virgin Media noted that if the impact on CPs is minimal then it is unlikely to alter CP demand for numbers.

6.162 We recognise that the impact of introducing a number charge on demand for numbers is uncertain. Part of our reasoning for starting with a low charge is to assess the impact and refine in light of experience. We consider that this should mitigate the risk of unintended consequences, e.g. CPs forcing customers to change numbers in order to return lightly utilised blocks (discussed further in paragraphs 6.234 to 6.236).

6.163 While the impact of a 10p per number charge on demand is uncertain, we believe that any charge (even if low) will provide an improved incentive for CPs to return unused number blocks which are not required, since paying anything for these numbers may be an unnecessary cost for business. We also think that number charging could cause CPs to consider applications for numbers more carefully. Based on current information we anticipate the charging pilot will result in 154 CPs being charged, with 102 CPs having a total number charge bill in excess of £1,000.[193]

6.164 We do not consider that a number charge will unnecessarily penalise CPs who are using numbers efficiently as suggested by Colt. All CPs would be subject to number charges and CPs with efficient utilisation would have a lower cost per number relative to those with low utilisation (since every number in block is subject to a charge so the effective cost per customer is lower when utilisation is higher and the cost is spread over more customers).

6.165 We have noted that CPs are likely to pass number charges through to consumers, but given the low level of the charge we do not consider that this will result in significant consumer detriment. A 10p per number charge applied to areas currently within the proposed pilot scheme would raise revenues of around £2m. Assuming CPs pass this cost through to all consumers the average increase in line rental would be approximately 6p per year.[194] We also note that the aim of charging is to postpone or eliminate the need for number supply measures, thus avoiding the costs these measures impose on consumers.

Reason for charging more than the European average

[193] We have reflected the provisional estimate for each CPs number block returns through the audit in these figures. However, the exact amount of number blocks returned may differ from that initially indicated.

[194] Based on 33.3 million exchange lines in the UK at Q4 2010. This increase to the consumers' bill is likely to be subject to VAT at 20 per cent.

6.166 Several CPs suggested the European average charge of around 7p per number would be a more appropriate starting point. The reasons for charging above the 7p average charge in other European countries are set out in paragraph 6.146 above.

6.167 As discussed above, we consider that expanding number supplies is likely to give rise to material social costs, but it is not possible to quantify these costs. Given this uncertainty, we recognise that there is a risk that if we set charges too high relative to the social cost, this could unduly deter efficient use of numbers. Whilst we cannot rule this out, we consider that a charge of 10p per number strikes a reasonable and appropriate balance between ensuring that CPs face a meaningful incentive to adjust their behaviour, whilst limiting the risk of deterring efficient use of numbers. We will consider whether the per-number charge should be adjusted as part of the review process.

Evolution of charging over time

6.168 Some CPs suggested that the charge would be likely to increase or be extended to other number ranges over time. We do not currently have plans to extend the charge beyond geographic numbers. However, we may consider extending number charges to other ranges if number block scarcity becomes an issue. We have noted that we may consider extending number charging to all conservation areas (subject to review of the pilot) but we do not plan to extend charging to geographic areas which have plentiful number blocks (e.g. areas with two or three digit codes).

6.169 We will review whether the number charge should be adjusted (up or down) as part of the review of the pilot scheme. We would remain mindful of the risk of deterring efficient number use in any future decision to increase charges. In addition, we would only amend charges at review points and would provide CPs with sufficient notice of any changes.

6.170 We are not aware of any pressures to develop a pan-EU norm for number charges as suggested by FCS. Given the diversity of circumstances and charging objectives across the EU it is unlikely that a pan EU charge would be appropriate.

CP responsiveness to a number charge

6.171 BT thought that CPs with number blocks in use may be unable to respond to charging since this would involve forcing customers to change numbers. We recognise the potential for significant consumer harm if CPs decided to clear number blocks in order to return these to Ofcom – we consider this an unlikely scenario for the reasons mentioned in paragraph 6.235 below. Even where CPs are unable to return number blocks because they are in use, charging could encourage more efficient use, e.g. by encouraging sub-allocation to other CPs.

Cost pass-through to consumers

6.172 A number of CPs commented that the costs associated with number charging will be passed through to consumers. We agree that this is likely. In paragraph 6.165 above we estimated that the average increase in the consumer bill under the pilot charging scheme would be around 6p per year. In the event that a 10p per number charge was applied to all conservation areas the total revenues raised would be around £25m. Assuming CPs pass this cost through to consumers and spread this cost across all customers the average increase in line rental would be around 75p per

year.[195] We consider that bill increases of this magnitude will not result in significant consumer detriment and are proportionate in relation to the objectives of introducing charging, i.e. avoiding number supply measures which result in costs for consumers and CPs.

6.173 IPV6 considered that after including the additional administrative costs associated with implementing number charging the cost would increase to £10 per number. IPV6 has offered no justification or evidence for this estimate. We consider that this is likely to be an overestimate as the incremental administrative costs associated with introducing charging should be relatively small for most CPs. We discuss the costs of implementing charging in paragraphs 6.191 to 6.205. We are inviting CPs to provide further information on the costs of implementing charging as part of this consultation.

Other points

6.174 NumberGroup.com thought it unfair that it would have to pay £62,000 per year for a UK wide allocation of number blocks. It is unclear how NumberGroup.com has calculated this cost. At the time of the November Consultation we were planning to charge in 58 areas at a cost of 10p per number (£100 per 1,000-number block). The cost of obtaining a UK wide allocation of area codes was thus £5,800. Based on the revised pilot scheme set out above the cost of obtaining a UK wide allocation of number blocks would be £3,000. We do not believe a cost of this magnitude is a significant barrier to entry.

6.175 If, following a review of the pilot scheme, we decided to apply a 10p charge to all conservation areas the cost of obtaining a UK wide allocation of number blocks would be £59,000. In this case a CP could limit the initial cost by only requesting allocations in area codes where it has customer demand or by using sub-allocated numbers.

Revenues from charging and recovery of administrative costs

6.176 In the November Consultation we proposed that any revenues from charging for numbers be passed to the Consolidated Fund (i.e. to HM Treasury). We noted that, from a policy perspective, this had merit because consumers, who are likely to bear the cost of charging through higher prices (assuming that CPs pass number charges through), will receive an indirect benefit from the revenues raised. In addition, it is consistent with the approach in spectrum allocation where revenues raised from administered incentive pricing (AIP) charges are passed to the Treasury.

Recovery of administrative costs

6.177 In the November Consultation we noted that costs we currently incur relating to number allocation (dealing with applications, number audit etc) are recovered via the annual Networks and Services fees levied on certain CPs. We noted that we would not recover these costs twice, i.e. through annual fees and as part of number charging. Thus 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.

[195] Based on 33.3 million exchange lines in the UK at Q4 2010 (source: http://stakeholders.ofcom.org.uk/binaries/research/cmr/Q4_2010.pdf page 5). This increase to the consumers' bill is likely to be subject to Value Added Tax at 20 per cent.

6.178 We considered that option ii) would probably be favoured by larger CPs since they are the ones who pay Ofcom fees.[196] 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 with geographic number allocations from Ofcom are not liable for Ofcom's Networks and Services charges). Furthermore, allowing number charging revenues to offset Ofcom fees could undermine the incentives to use numbers efficiently where the fees paid by the CP exceed its bill for number charges. This is because a CP can effectively get numbers for 'free' up to the value of the annual fee it pays to Ofcom – in this case there is no incentive to use numbers efficiently in order to minimise charges. We would have to decide whether eligible CPs got the same reduction in fees, or whether it varied to reflect the number of blocks allocated to them (or some other measure).

6.179 In light of the problems associated with option ii) we preferred option i) which essentially keeps the current regime of recovering administrative costs via the annual fees levied on certain CPs.

6.180 We estimate the incremental administrative costs for Ofcom to introduce number charging are one-off set-up costs of around £50,000 to £100,000 and ongoing costs of around £40,000 to £80,000 per year. These additional costs are very small in relation to the total Ofcom fees and charges for network and services which are £23.8m in 2011/12,[197] thus this option will only have a small impact on the CPs who pay Ofcom fees.

6.181 We remain of the view that 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 and would not recover administrative costs.

Stakeholders' comments

6.182 C&WW proposed an alternative use for revenues raised. It suggested that revenues are allocated towards the communication campaigns associated with any supply-side measures, and that any excess be used to reduce Ofcom administration fees for CPs holding geographic numbers.

6.183 C&WW also thought the charging mechanism should be demonstrably linked to the benefits of number conservation rather than associated with revenue generation. As such it expected that any future increase in revenues to be justified by increased numbering reclamation efficiencies.

6.184 BT commented that the revenues from number charging could be used to address industry issues, for example to contribute towards Ofcom's own costs and for social interventions like the Universal Service Obligation.

6.185 Colt did not think that we had specified how revenues from number charging would be accounted for or used.

Ofcom's response

[196] Only relevant CPs with a turnover of £5m or more contribute to Ofcom fees; 31 CPs currently contribute and have geographic number allocations. The list of network and service providers who were billed for Ofcom administrative charges in 2010/11 is available at http://www.ofcom.org.uk/about/files/2010/08/list10_11.pdf

[197] See http://stakeholders.ofcom.org.uk/binaries/research/Tariff_Tables_2001112.pdf page 19.

6.186 We do not agree with the alternative suggestions for use of revenues generated by charging. Using the revenues to fund communications campaigns associated with supply measures or other industry costs could reduce the incentive for individual CPs to minimise these costs. Using the revenues to reduce fees paid to Ofcom would benefit larger CPs relative to small CPs (as discussed above) thus would not meet our objective of minimising competitive distortions between CPs. Furthermore we consider that our preferred approach is both more simple and transparent than the alternatives suggested.

6.187 The objective of introducing number charging is to improve the efficiency of number use, not to raise revenues. Ofcom will not retain any revenues raised from number charging – these will be remitted to the Treasury (and thus back to consumers who will ultimately bear the costs associated with charging). It is for the UK Government to decide how to use the revenues generated; this is not a matter for Ofcom.

Impact on CPs

6.188 In this sub-section we focus on the administrative costs CPs face in implementing number charging and the cost recovery mechanism when, for regulatory reasons, the CP using a number is different to the range holder. We also discuss some comments CPs have made in relation to the impact on small versus large CPs.

Administrative cost of implementing number charging

6.189 In the November Consultation we recognised that CPs may 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 anticipated that these incremental costs would be very small as they will not require new processes or absorb substantial amounts of time, e.g. CPs already handle invoices and make data management activity changes. We expected that costs associated with charging would be passed through to consumers in the form of higher prices, so the overall impact on CPs was likely to be small.

6.190 We asked stakeholders:

> *"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?"*

Stakeholder responses

6.191 Loho considered that there would not be incremental administrative costs, as Ofcom would just issue an invoice once a year. They did not consider that CPs should find paying an invoice a significant administrative cost.

6.192 C&WW envisaged that there would be additional costs for industry, e.g. relating to substantiating and issuing bills. At this stage C&WW was not able to quantify the extent of these costs. C&WW also made some comments in relation to the proposals for cost recovery of number charges for ported and WLR numbers. These are discussed in Annex 5.

6.193 Virgin Media thought there would be a significant amount of internal administrative work required to implement the charging regime, but it was unable to provide cost

information. For example, CPs will need to implement procedures to allocate the cost internally between different segments of the business and externally (i.e. for porting and any sub-allocation agreements). Virgin Media considered that having to deal with the administrative procedures to set up charging will be inefficient and disproportionate to the 10p charge.

6.194 BT said that charging for numbers would be complex to put into practice. BT noted that it does not have a central repository of telephone number usage data or a function to bill for number use. In order to be able to bill for numbers, it would need to amalgamate data from various systems to understand the level of utilisation achieved to reconcile number block charges. It considered that each CP would need to do something similar.

6.195 BT would need to do a feasibility study to consider how to implement the charging processes. [✂].

6.196 BT questioned whether services using the line but not provided by the CP paying the number charge would also share the costs associated with number charging. For example, where the CP paying the number charge only bills for the line, but calls or broadband are supplied by other CPs over the line. It noted that carrier pre select (CPS) providers would not appear to be liable for a proportion of the number charge.

6.197 BT thought another area where agreement would have to be reached is how additional conveyance of sub-allocated numbers would be recovered, i.e. the cost of onward routing of inbound calls from the range-holder to the customer's CP, and how this would work in interconnect payment terms.

6.198 BT also thought there could be an impact on data management activity of all CPs. It noted this activity is not directly charged for currently. It expected there to be an increase in blocks being built and unbuilt as a result of charges being introduced and considered the approach of not charging directly may not be sustainable. It thought there could be implications for the overall resourcing of this activity separate from the cost.

6.199 [✂] thought that reducing number blocks to 100 numbers in some areas could increase cost of handling number range applications. It thought that reducing block size would increase this cost proportionally if demand remains the same.

6.200 C&WW requested more information as to how Ofcom intends to invoice CPs and whether this will be linked to the annual Ofcom administrative fee or to the number audit schedule. BT also noted that some extra details would need to be agreed, e.g. industry would need to agree how frequently utilisation levels should be reviewed, and how frequently billing should be expected. We discuss the administrative mechanism for charging in Annex 6.

Ofcom's response

6.201 Responses from CPs suggest that number charging may give rise to some incremental administrative costs. However, on the evidence available, the materiality of such costs is unclear.

6.202 We consider that CPs who only take direct number allocations from Ofcom and do not have ported in or ported out numbers should have low costs. As noted by Loho above, it should just be a case of validating and paying an annual invoice to Ofcom.

6.203 CPs have indicated that it may be necessary to incur costs to develop systems that allow them to charge one another for ported numbers, e.g. issuing and substantiating bills as noted by C&WW above. This is potentially most relevant to BT as the largest donor of ported out numbers, although we note that other CPs may also need to incur costs. We are proposing to simplify the guidance for cost recovery when numbers are ported out and this may limit the need for CPs to incur these costs. These changes are discussed in Annex 5.

6.204 BT may also incur costs related to its wholesale business in order to develop functionality to identify which lines are attached to chargeable numbers and bill retailers/resellers on this basis.

6.205 At present, CPs have provided very limited information on the administrative costs that they would incur as a consequence of number charging. For this reason, and also because we are simplifying the cost recovery guidance, we are not able to accurately estimate the cost to industry of administering number charging. We welcome further feedback from CPs in relation to the administrative costs associated with number charging particularly in light of the additional information provided on how number charges will be administered and the simplification of the cost recovery guidance (discussed in Annex 5).

Question 7 (for CPs): Are you able to provide an estimate of the administrative costs of implementing number charging? Which aspects generate the most significant administrative costs for CPs?

Other services which use the telephone line

6.206 BT questioned whether services which use the line, e.g. CPS or broadband, would share the costs associated with number charging. Ultimately it is a commercial decision for CPs to determine how to recover the number charge costs. We would not seek to prescribe how CPs recover number charge costs from retail customers, however, CPs would need to comply with existing regulatory requirements.

6.207 We generally consider that the number is integral to the line rental and it is currently uncommon for a fixed line to be supplied without a number. Therefore we expect that number charge costs will be recovered from the retail customer as part of the line rental charges.[198]

Recovery of additional conveyance costs for sub-allocated numbers

6.208 BT noted an area where agreement would need to be reached is recovery of conveyance costs for sub-allocated numbers. We agree that terms may need to be agreed, and it is for the parties involved in a sub-allocation agreement (i.e. the number range holder and the CP using the sub-allocated numbers) to agree the conveyance costs. Sub-allocation itself is a commercial activity and is not an area where we intend to intervene.

Building and unbuilding blocks

6.209 BT thought that the introduction of charging would lead to more building and unbuilding of blocks. If charging results in a large number of blocks being returned

[198] We have separately considered charges for numbers used by payphones. Payphones do not have an end user paying line rental to recover the number charge costs from and are essentially a 'social' good. In light of this we are minded not to apply charges to numbers used by payphones.

then there could be a one-off cost impact in terms of unbuilding blocks. It is unclear to us why there would be more blocks being built and unbuilt on an ongoing basis as a result of number charging. We agree that charging means CPs are likely to manage their number allocations more carefully and return blocks which are not in use rather than retaining them (indeed charging is intended to incentivise this behaviour), and this may result in the need to unbuild blocks. However, number charging is likely to make CPs think more carefully before requesting new block allocations so we might expect fewer blocks to be built going forward. In addition, the introduction of the number reservation stage proposed in Section 5 might result in fewer number blocks being built and subsequently unbuilt because they are not required.

Smaller blocks

6.210 [✂] thought that the cost of handling number range applications would increase if blocks are reduced to 100 numbers. As noted above, we are only proposing to introduce 100-number blocks in a small number of areas. In addition, we will only allocate 100-number blocks to small CPs, who are unlikely to need more than 100 numbers in an area for a reasonable length of time. We do not anticipate many CPs having multiple 100-number blocks in the same area, thus we do not consider that the cost of handling number block applications will increase proportionately if the block size is reduced. Larger CPs will continue to be allocated 1,000 number blocks, as will CPs who anticipate demand for more than 100 numbers within a foreseeable timeframe.

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

6.211 In the November Consultation we noted that there are cases where, pursuant to regulatory requirements, 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 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. 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').

- 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.

6.212 In the November Consultation we set out that 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.[199]

[199] Although General Condition 18 obliges CPs to provide us with information on ported numbers and the recipient provider if requested to do so.

6.213 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).

6.214 We set out guidance for CPs on cost recovery for number charges in relation to these regulatory arrangements (i.e. number portability and WLR) in Annex 4 of the November Consultation. We discuss stakeholder comments on this guidance and changes in light of comments in Annex 5 of this document. We are inviting comments from stakeholders on some revised options.

Impact on small CPs/new entrants versus larger CPs

6.215 A number of respondents commented that charging would disadvantage smaller CPs relative to larger CPs. We summarise these comments here.

Stakeholders' comments

6.216 VON thought that a charging regime could result in potential competitive distortions between smaller and larger CPs and impact on the business model for small and innovative CPs. It was mindful that charging could create a barrier to entry which it considered would be disappointing given Ofcom's past decision to open geographic number ranges to VoIP service providers.

6.217 IPV6 was against charging for existing number allocations on the basis that CPs had not provisioned for this and it would have a detrimental impact on smaller CPs. It considered that larger CPs may be able to sustain the cost internally or pass the cost to their consumer base. However, smaller CPs would have no means to sustain this cost internally and will be forced to pass the cost to their customer base. It believed this will force many smaller CPs into administration or mergers/takeovers. Its view was that this would lead to less consumer choice and less competition.

6.218 IPV6 also considered that charging would discriminate against smaller CPs and new entrants, as imposing a charge would transfer the cost of fulfilling Ofcom functions from designated fee payers based on turnover to smaller CPs.

6.219 Loho thought that the charging mechanism did not take in to account the size of the CP. It considered that for a charge to be effective in encouraging responsible usage of numbers it needs to be meaningful to each CP, e.g. a small charge to a very large provider could just be paid without considering improving efficiency, whereas a small charge to a new entrant would potentially have a significant effect.

Ofcom's response

<u>Impact on small CPs</u>

6.220 One of our objectives in introducing charging is to ensure that we do not distort competition between existing CPs, or between existing CPs and new entrants. As discussed above, number charges will have a more significant impact on CPs who have a relatively low block utilisation rate, and we recognise that this could, in theory, disadvantage these CPs relative to rivals with high utilisation rates (because CPs with lower utilisation have fewer customers over which to spread the number block charge).

6.221 In the November Consultation we concluded that, on average, it was likely that large CPs had higher utilisation than their small and medium counterparts, but this was not always the case. For small and medium CPs who responded to the informal information request (issued before the November Consultation) we have calculated the impact of our preferred approach for number charging (i.e. a charge of 10p per number for around 30 area codes that have the fewest number blocks remaining) in relation to their annual gross revenue.

6.222 Twenty of the 34 CPs providing information had number allocations in the proposed pilot areas. For 17 of these 20 CPs, a 10p charge would make up less than one per cent of gross annual revenues. For the remaining three CPs the estimated impact would amount to between one and two per cent of gross annual revenues. Based on this sample, we consider that our preferred option of charging in a pilot area would appear unlikely to have a significant disruptive impact on CPs businesses.

6.223 We also note a number of ways which CPs could mitigate the impact of low utilisation. First, CPs could return any unused number blocks to avoid charges. 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.

6.224 New entrants who only require a few numbers in an area might find it more cost effective to obtain numbers via sub-allocation from other CPs rather than applying for whole number blocks from Ofcom. TSL noted in its response to the consultation that "Sub-allocation is currently a widely used access to the market for many new entrants."[200] We also noted that it might be appropriate for small CPs/new entrants with innovative services to use other number ranges for which we are not currently proposing to charge.

6.225 Loho thought that we ought to make the charge meaningful to each CP (e.g. applying lower charges to smaller CPs). We consider that any such mechanism would be very complex, lack transparency and it is not clear how we could try and differentiate the charge for small and large CPs without introducing an element of arbitrary discrimination.

6.226 For these reasons, we consider that the relatively low charge we are proposing will have a small overall impact on small and medium sized CPs. We also note that, even in the unlikely event that CPs decide to exit the market or merge as a result of number charging, we consider this would have a very small impact on consumer choice or competition given the large number of players in the market (300+).[201] Our duty is to further the interests of consumers and promote competition in general, not to protect individual CPs.

Recovery of Ofcom administrative costs

6.227 IPV6 suggested that number charging would transfer the burden of paying for the costs of fulfilling Ofcom's functions from larger to smaller CPs. As set out in the November Consultation (paragraphs 6.69 to 6.71), we plan to continue recovering administrative costs associated with number allocation (including costs arising due to number charging) via the annual fees levied on certain CPs. The number charge would not be used to recover administrative costs and thus would not transfer the cost of fulfilling Ofcom functions from designated fee payers based on turnover to

[200] Page 6 of the TSL consultation response.
[201] Source: Ofcom's numbering database (CPs with number blocks allocations).

smaller CPs. Any revenues from number charging will be remitted to the Treasury and would not be used to offset Ofcom's costs.

Impact on consumers

6.228 We have discussed 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.

6.229 In the November Consultation we recognised there may also be costs to consumers of introducing a number charge. We identified three possible costs:

- prices to consumers may be higher to the extent that CPs pass on the costs associated with number 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 which could reduce the location significance of numbers.

6.230 We discuss these costs in more detail below.

Stakeholders' comments

6.231 BT noted that charging could result in the above consumer costs and noted several other possibilities, as follows:

- consumers would have less opportunity to get the right code for their area;
- there would be fewer companies to whom a consumer might take their number once they had been allocated the "wrong code"; and
- CPs may re-circulate previously used numbers after a shorter sterilisation period in order to avoid applying for new blocks, which could lead to increased calls in error.

Ofcom's response

Reduced location integrity and ability to get correct code for area

6.232 We discussed in the November Consultation (paragraphs 6.113 to 6.115) that CPs might seek to reduce demand for number blocks in areas subject to charge by using 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. We recognise using numbers from area codes with abundant number blocks in area codes which are subject to charging could adversely affect the individual concerned (who may prefer a local number but wants a service offered by a provider who only offers out-of-area numbers) and also consumers more generally as, if such a strategy became widespread, it could undermine the geographic significance of numbers.

6.233 However, we consider that this issue may not lead to significant consumer detriment as competition between CPs should help to ensure that consumers would be compensated by their CP 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. We recognise that more generally consumers may place a value on retaining the geographic significance of numbers and they would not be offered any compensation for the loss of geographic significance. However, given the low level of the charge we consider it unlikely that CPs will be incentivised to strongly encourage consumers to take non-local numbers leading to significant dilution of location integrity.

Consumer forced to change number so CP can return underutilised block

6.234 We recognise that number charging might lead CPs with very low block utilisation to consider clearing number blocks by taking numbers back from customers in order to return them and avoid charges. In these circumstances the CP would either try to persuade customers to return their number or, if the customer will not agree to give up the number voluntarily, a CP may resort to disconnecting the customer. A CP who holds a block of numbers may theoretically 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. However, any CP returning numbers to Ofcom in this way would have to consider the contractual rights of its customers, other contractual rights (e.g. arising from number portability agreements) and any consumer protection issues.

6.235 We consider that the risk of CPs reclaiming numbers is small given the proposed low level of the charge. There is the potential for significant disruption for those consumers who might be affected, because they would likely have to change telephone number. We would consider further how to address this issue if it arises. 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[202] if numbers are reclaimed (which is more likely if they are keen to retain customers). We are only introducing charging in a limited number of pilot areas initially to test for these unintended consequences and to limit the impact of any potential disruption.

6.236 To mitigate the possibility of clearing number blocks, we would consider facilitating the transfer of an underutilised block to a different provider who had a need for the number allocation if requested to do so by a CP. This might facilitate the consumers retaining their numbers if they agreed to switch provider. Magrathea welcomed this approach.

Consumer faces a higher bill

6.237 We have noted that we expect the costs imposed on CPs as a result of number charging to be passed though to consumers in the form of higher prices, e.g. a higher price for phone line rental and/or calls. We set out in paragraph 6.119 above and in paragraphs 6.103 to 6.105 of the November Consultation that we think CPs are likely to continue to offer nationally averaged prices, rather than increasing prices in just the areas subject to charging.

6.238 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. As noted above, we estimate that the pilot charging scheme would

[202] This could be contractual or in most cases will be at the discretion of the individual CP.

raise revenues of around £2m. Assuming CPs spread this cost across all customers the average increase in line rental would be approximately 6p per year.

6.239 It is also relevant to note that taxpayers will benefit from revenues raised from number charges, since these will be passed by Ofcom to HM Treasury, and this may offset the impact of increased charges on consumers.

6.240 As discussed above, the purpose of charging for numbers is to encourage CPs to take into account the costs associated with making numbers available. We anticipate that introducing charges will result in a better alignment of incentives with underlying costs than is currently the case, and that this will provide long term benefits to society by reducing the risk that we will need to close local dialling or introduce overlay codes in future in order to increase number supplies.

Limited choice of provider for consumers with 'wrong' code

6.241 For technical reasons, some CPs cannot accept ported in numbers with 'out of area' codes, thus if consumers were encouraged to take 'out of area' codes they may be limited in the CPs they could switch to while retaining their number.

6.242 The fact that some CPs cannot accept ported in numbers with 'out of area' codes is already a problem today. Charging will only make this issue worse if it results in significant additional use of 'out of area' codes, e.g. to avoid charges a CP refuses to offer a service in a chargeable area unless the consumer accepts an 'out of area' code. We consider this unlikely because the low level of the charge is unlikely to significantly encourage CPs to promote 'out of area' codes to consumers (as discussed in paragraphs 6.232 to 6.233 above).

Re-circulating numbers after a shorter sterilisation period

6.243 BT considered that charging might lead to CPs re-circulating numbers more quickly, leading to the customer who is allocated the reused number getting calls in error. We consider it unlikely that a CP would be managing demand and supply of numbers so tightly that they need to reuse numbers shortly after they are returned. It is likely that CPs have a spare pool of numbers which can be used to meet demand. Ultimately the sterilisation period is down to industry/individual CPs to decide. We do not consider it to be in a CP's interest to reuse a number so quickly that the new customer would receive calls in error because this would lead to a poor customer experience and might encourage the consumer to consider moving provider (although the customer would face some costs in doing this, e.g. changing their number again).

Impact on Ofcom

6.244 In the November Consultation we noted that if charging is introduced we would need to undertake some additional tasks (e.g. calculating and collecting charges) which would result in some additional costs. Our estimate for the incremental costs is £50,000 to £100,000 one-off to set up and £40,000 to £80,000 ongoing per year. In the November Consultation we proposed to recover these costs through the Networks and Services charges on eligible CPs, and this remains our intention.

Other issues

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

6.245 In the November Consultation we proposed not to charge for non geographic numbers at this time on the basis that we have not identified number scarcity as an issue in these ranges. 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. We noted that we would keep this under review.

Stakeholders' comments

6.246 BT requested that Ofcom consider the case for applying charges to all or most number types. It understood this to be the situation in other countries where charging is applied. It considered this would ensure there was no discrimination between the regulation of fixed and mobile providers. It considered that such differential treatment of platforms is not justified. It noted that there are eight 07X levels available for mobile services but nineteen 01X and 02X levels for geographic numbers. As almost the same quantities of mobile and geographic numbers have been allocated BT thought mobile numbers should be twice as scarce as geographic numbers.

Ofcom's response

6.247 The reason for introducing charging for geographic numbers is to encourage efficient use and thus alleviate number scarcity which is a recognised problem in some geographic area codes. As explained above, geographic numbers have location significance for users, and the evidence suggests that measures to increase the supplies of geographic numbers result in material costs for consumers and businesses (e.g. through closing local dialling or overlay codes, which diminish geographic significance, or number changes which give rise to financial costs). By contrast non-geographic and mobile numbers do not have any geographic significance, and hence the costs and impact associated with expanding supplies of these number ranges are likely to be lower. We do not plan to introduce charges for other number ranges at this time, however, we may introduce charges if number block scarcity becomes an issue.

6.248 We note that number charging in other countries has different objectives, e.g. recovery of administrative costs meaning that charging is appropriate for a wider range of number types.

Golden numbers

6.249 Any number block may contain 'golden numbers' which are of relatively high value to particular end users, e.g. because they are particularly memorable or spell a company name. In the November Consultation we noted that in principle we could try and capture this value through our charging regime.

6.250 However, given the difficulty in determining the value of specific numbers at the point of allocation (discussed in paragraphs 6.127 to 6.129 of the November Consultation), and the fact that a specific policy around golden numbers will not address our primary concern of dealing with number scarcity, we did not think it appropriate to pursue such a policy at this time. We asked stakeholders:

"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."

Stakeholders' comments

6.251 All respondents agreed with our proposal. One consumer noted that charging for golden numbers would add to costs for users of large, contiguous number blocks that coincidentally include individual numbers arbitrarily considered 'golden'. The consumer noted that if networks eventually evolve to the point where Ofcom can issue numbers to CPs or end users individually instead of in blocks, there would be merit in revisiting the matter.

Other stakeholder comments

6.252 A few stakeholders raised other comments in relation to our proposals which we discuss here.

6.253 [✂] thought a consideration was how the proposed charges might impact on the demand it could see to sub-allocate or host number ranges on behalf of other carriers, and maintain the existing customers whilst utilising the other telephone numbers within a block. It felt it should not be commercially impacted through assisting a smaller CP in maintaining their current customers whilst utilising the additional numbers, which would otherwise be wasted.

6.254 Magrathea suggested the possibility of notionally allowing a CP to return number blocks to Ofcom while retaining numbers already allocated for, say, five years to give customers time to migrate away from the numbers.

6.255 IPV6 raised a number of questions:

6.256 "Will a CP be able to return the unused numbers within an opened block, or will Ofcom enforce return of the whole block? If a CP returns the whole block, who will compensate the consumers who will lose numbers? Will the CP be in breach of its own terms of supply to consumers if it is forced to return whole blocks and thereby disconnect paying customers who may not wish to cease service? "

6.257 "If a part used block is returned to Ofcom and a new customer emerges in the same area, the CP may then have to reapply for numbers in that area. Once a number block is granted, there is then a lengthy DMA and activation process to go through (c.60 days) and associated costs. IPV6 considered that withdrawal of ranges after this lengthy process has been completed will indirectly cause a real and implied financial loss to the CPs concerned."

6.258 "In a situation where a number range holder has sub-allocated within its ranges, who will Ofcom invoice - the range holder or the sub-allocated party? In the event of failure to pay such an invoice, who would be responsible for payment of such a debt - the range holder or the sub-allocated party?"

Ofcom's response

<u>Impact on commercial arrangements</u>

6.259 [✂] thought that it should not be commercially impacted through assisting a smaller CP in maintaining their current customers whilst utilising the additional numbers,

which would otherwise be wasted. We encourage the use of different solutions which might improve efficient number use. Sub-allocation and hosting of numbers are commercial arrangements therefore it is for each CP to make a commercial decision and to consider any impacts number charging (in areas where it is applied) might have on these arrangements.

Notional return of number blocks

6.260 Magrathea suggested the possibility of notionally allowing a CP to return number blocks to Ofcom while retaining numbers already allocated for an extended period e.g. five years. We are not minded to allow CPs to 'notionally' return number blocks to us because it is not clear how Ofcom could require return of the number blocks at the end of the 'notional' period if the CP changed its mind about handing the numbers back and this approach would add complexity. In addition, this will not alleviate number shortage in the short term as we would not be able to allocate numbers within the notionally returned blocks to other CPs. It is likely that for some areas supply measures will be required within five years.

IPV6 questions

6.261 IPV6 asked whether it was possible to return unused numbers in an opened block. It is not possible currently to return blocks smaller than 1,000 contiguous numbers ending in the digits '000' to '999'. Before returning (complete) number blocks to Ofcom each CP should consider its likely prospective number needs, and weigh up the benefit of avoiding number charges versus the possible need to reapply for numbers and costs of setting up numbers should sufficient end user demand arise. A CP who wants to return number blocks but is concerned about future demand could consider obtaining numbers via sub-allocation should the need arise.

6.262 IPV6 asked who would compensate consumers in the event that they are disconnected so a CP can return a number block. In the event that a CP reclaims numbers from end users in order to return a block, it is for that individual CP to decide whether to compensate a consumer for the loss of the number (and the CP would have to fund any compensation). Any CP returning numbers to Ofcom would have to consider the contractual rights of its customers. We consider that this is a commercial decision and not an area where we would intervene.

6.263 IPV6 asked who Ofcom would invoice where numbers are sub-allocated. In answer, Ofcom will continue to invoice the range holder. It is the range holder that would be held responsible for a failure to pay Ofcom the number charges invoiced.

Duties and legal tests

6.264 We set out the legal framework which describes our powers to raise charges for numbers under the Act in paragraphs 6.20 to 6.27 of the November Consultation. We consider that a decision to charge for geographic numbers is consistent with our general duties in carrying out our functions as set out in section 3 of the Act. In particular, we consider that geographic number charging furthers 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.

6.265 In reaching our decision, 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.

6.266 Section 58(1g) of the Act states that Ofcom may require payments in respect of the allocation of telephone numbers through a General Condition. 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:

- 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.

6.267 Section 47(2), as recently amended by the Electronic Communications and Wireless Telegraphy Regulations 2011, no longer requires as a test for Ofcom to be satisfied that a General Condition is objectively justifiable in relation to the networks, services or facilities to which it relates. However, for completeness, we set out below why we consider that in any event the proposed measure is objectively justifiable.

6.268 We remain of the view that introducing geographic number charging meets the above tests (subject to further evidence we receive on the issues we are consulting on) for the following reasons:

- **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 6.79 and 6.220 to 6.222 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 6.223 to 6.224 the means by which CPs with low utilisation could reduce the impact of number charging.

  We consider that the areas included within the pilot scheme have been identified on an objective basis, i.e. in relation to the number of blocks remaining to allocate in the area which reflects number scarcity;

- **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 6.165, the overall impact of the charging under the pilot scheme is small (total revenues raised would be in the order of £2m per year which compares with total fixed voice industry revenues of £2.3bn in Q4 2010). We note that some CPs have suggested that they may incur material costs in order to implement the number charging pilot. However, we do not have sufficient evidence to reach a conclusion on the likely materiality of administrative costs borne by CPs and are consulting further on this point. We currently remain of the view that number charging is a proportionate approach in relation to the aim of improving the efficiency of number use. We will review this conclusion in the light of further relevant information received from CPs in relation to administrative costs.

We consider that charging in a pilot scheme initially is a proportionate way to test for any unintended consequences. We consider that a pilot of around 30 areas is the appropriate amount of areas to achieve our aim of uncovering unintended consequences, while also restricting any unintended consequences to a limited number of areas should they arise;

- **transparent –** we consider that the proposals and reasoning for introducing geographic number charging (as set out in paragraphs 6.4 to 6.7 above and paragraphs 6.8 to 6.16 of the November Consultation) are transparent. We have discussed our objectives and approach in detail in the November Consultation and in this section. Moreover, we intend to publish a consultation setting out our proposed General Condition implementing our policy decisions following the outcome of this consultation; and

- **objectively justifiable –** Although this is no longer a test for setting a General Condition under section 47(2) of the Act, we note that 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 6.4 to 6.5). 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 6.7). 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 6.4 above and 6.49 of the November Consultation);

6.269 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.

6.270 We therefore consider that our proposal to charge for geographic numbers meets the tests above.

Conclusions

6.271 We have set out above and in the November Consultation 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.

6.272 We have set out our preferred charging regime, and discussed the possible effects on consumers, CPs, competition and Ofcom. In recognition of the somewhat uncertain impact of introducing a charging regime we are taking 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 any decision is taken to roll out the scheme more widely or adjust the charges.

6.273 We have proposed that geographic number charging will start six months after the final statement is published and we invite feedback on this proposal.

Section 7

Summary of decisions, 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 decisions and further proposals for managing geographic numbers. We explain the process for this further consultation and next steps. We also provide an indicative timeline for implementation should we proceed with our proposals.

Summary of our decisions

Providing new supplies of geographic numbers

7.3 In Section 4 and Annexes 3 and 4, we set out our analysis of options for increasing the supply of numbers. We have concluded that the following is the most appropriate action:

- we will not make changes to existing geographic numbers;
- we will implement localised measures that address localised shortages;
- we will use a two stage approach to increasing number supply in four-digit area codes where required – closing local dialling, followed by an overlay code if more numbers are needed subsequently; and
- we will take a specialised response to increasing the supply of number blocks in the 11 five-digit area codes (see paragraph 7.7).[203]

Summary of proposals in our further consultation

Proposals to charge for geographic numbers

7.4 We have initially concluded that, in principle, charging could reduce demand for new number blocks and encourage more 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. Having considered responses to the November Consultation, we are still minded to proceed with charging for geographic numbers, initially in a pilot scheme.

[203] If our proposed approach for increasing the supply of number blocks in the five-digit area codes (i.e. Allocation of smaller number blocks) does not proceed following consultation, we will conclude in our forthcoming statement on the approach to be taken to increase the supply of number blocks in these areas.

7.5 We are consulting further on revised proposals on some aspects of the pilot charging scheme. In summary, these are:

- that the pilot scheme should be introduced six months after the publication of the final statement (or whether alternative implementation timescales should be considered);
- that the revised pilot scheme should capture around 30 area codes with the fewest number blocks remaining to allocate; and
- the options for dealing with number charges for ported and WLR numbers.

7.6 We are also asking CPs for an indication of the administrative costs of implementing number charging and for information on which aspects are likely to generate the most significant administrative costs for CPs.

Proposals relating to our administration of geographic numbers

7.7 We are consulting on proposals to make a limited number of smaller blocks available for allocation in certain areas. Specifically our proposals are to roll out 100 blocks of 100 numbers in each of the 11 five-digit area codes.[204] We are asking CPs for their views on feasibility, likely costs and timescales for implementing this proposal. The administrative measures proposed would not affect consumers in those areas.

7.8 We have confirmed our intention to consult, in a separate exercise, on the following proposals to strengthen our administrative processes for geographic numbers:

- introducing a time-limited reservation stage prior to allocation of geographic numbers for some applications. This stage would apply to CPs that have not demonstrated operational readiness to put the requested numbers into use; and
- 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 As part of this future exercise, we will also conduct a general review of all of our telephone number application forms so that they remain consistent (where relevant) with any modifications proposed to the geographic number application forms.

7.10 We will also continue with our work on strengthening and broadening our audit processes.

Next steps

Providing new supplies of geographic numbers

7.11 We need to take action on the implementation of our decision on number supply measures in those areas with four-digit codes where more numbers are forecast to be needed in the coming years.

[204] Those areas are Appleby (017683); Gosforth (019467); Grange over Sands (015395); Hawkshead (015394); Hornby (015242); Keswick (017687); Langholm (013873); Pooley Bridge (017684); Raughton Head (016974); Sedbergh (015396) and Wigton (016973).

7.12 We will establish an industry forum to develop a detailed plan for implementation, including:

- an appropriate communications campaign;
- notice periods for changes and relevant timelines for implementation;
- 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.

Charging for numbers and 100-number blocks

During the consultation period

7.13 This further consultation lasts for 10 weeks and closes on 15 November 2011. Details on how to respond are provided in Annexes 10 to 12.

7.14 During this period we will engage further with CPs on the feasibility of a limited roll out of 100-number blocks in the 11 five-digit areas.

7.15 We would also consider any approaches from CPs to discuss our proposals for charging or the 100-number block roll out on a bilateral or forum basis.

Forthcoming statement

7.16 Once this further 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 2012.

7.17 We expect to be in a position to conclude on a number of matters in the statement (although this is dependent on the nature of responses received).

7.18 With respect to our proposals for a pilot charging scheme for geographic numbers (on which we have provided details of our preferred charging regime) we expect to be in a position to conclude on whether we will proceed with charging for geographic numbers and, if so finalise:

- our overall approach to the charging regime;
- how the pilot scheme would operate (if that is how charging is introduced);
- the areas included in the charging scheme;
- when charges would start to accrue and the billing cycle; and
- the approach for cost recovery of number charges when the CP using the number is different from the range holder.

7.19 We also expect to conclude on whether we will proceed with the proposed limited roll out of 100-number blocks allocations, and if so:

- the areas where the 100-number blocks would be made available;
- how many blocks would be made available in each area; and
- when those blocks would be available for allocation.

Further consultation on setting or modifying General Conditions and the Numbering Plan

7.20 We would need to consult further to implement our decision to restrict the provision of local dialling in some areas and to implement our proposals for number charging and 100-number block allocations if we decide to proceed.

7.21 Our decision and proposals, if implemented, require the setting or modification of General Conditions and modifications to the Numbering Plan. 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 relation to setting or modifying General Conditions and in section 60(2) of the Act in relation to modifications to the Numbering Plan.[205] 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.

7.22 We note that Section 47(2) of the Act, as recently amended by the Electronic Communications and Wireless Telegraphy Regulations 2011, no longer requires as a test for setting or modifying a General Condition for Ofcom to be satisfied that this General Condition is objectively justifiable in relation to the networks, services or facilities to which it relates.

7.23 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.

7.24 We have conducted an initial assessment of how our proposals in relation to number supply measures; 100-number block allocations and charging for geographic numbers would meet with the legal tests and duties set out above. Our further consultation(s) would include a full analysis.

7.25 We expect to publish the further consultation on implementation measures at the same time as the statement concluding this consultation (i.e. early 2012). 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 and modify the Numbering Plan, or (ii) longer if new proposals need to be considered by stakeholders. This would be followed by a (expected final) statement.

[205] See Annex 7 for further information on the legal framework and legal tests.

Review of the telephone numbering application forms, including a consultation on a proposed reservation stage for geographic numbers

7.26 As set out in Section 5, we have decided to review our allocation process for geographic numbers. 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 decisions 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. We also intend to review all telephone number application forms as part of this process and to consider proposals for a reservation stage further.

7.27 Our initial plans and indicative timescales for taking forward our review of the geographic number allocation process are as follows:

- consulting on proposals to strengthen the geographic number allocation process, including consultation on modifications to the geographic (and other) numbering application forms and a reservation stage for allocation of geographic numbers (anticipated late 2011 to early 2012); and

- issuing a statement on measures to strengthen the geographic number allocation process (anticipated by April 2012) and implement as appropriate.

Potential implementation of proposals: indicative timelines

7.28 Figure 7.1 below provides an overview of our proposed approach and timescales for publication of our further consultation and statement on proposed modifications to the Numbering Plan and the Numbering Condition in the event that we proceed with our proposals.

7.29 Figure 7.2 below provides an indicative timeline for implementation of our decisions and 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.

Figure 7.1 Planned approach and timescales for further consultations and statements on decisions and proposals in this document

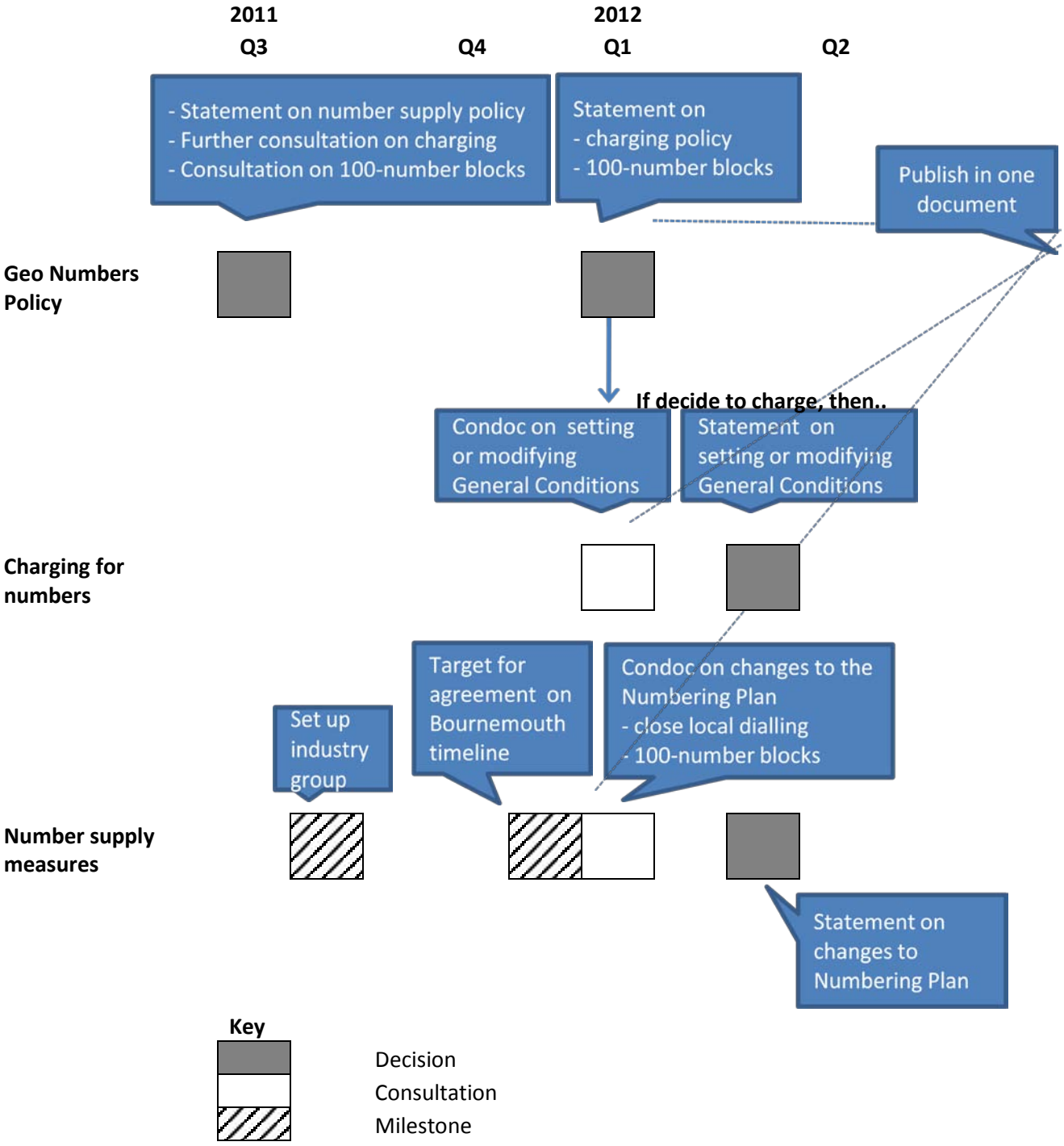
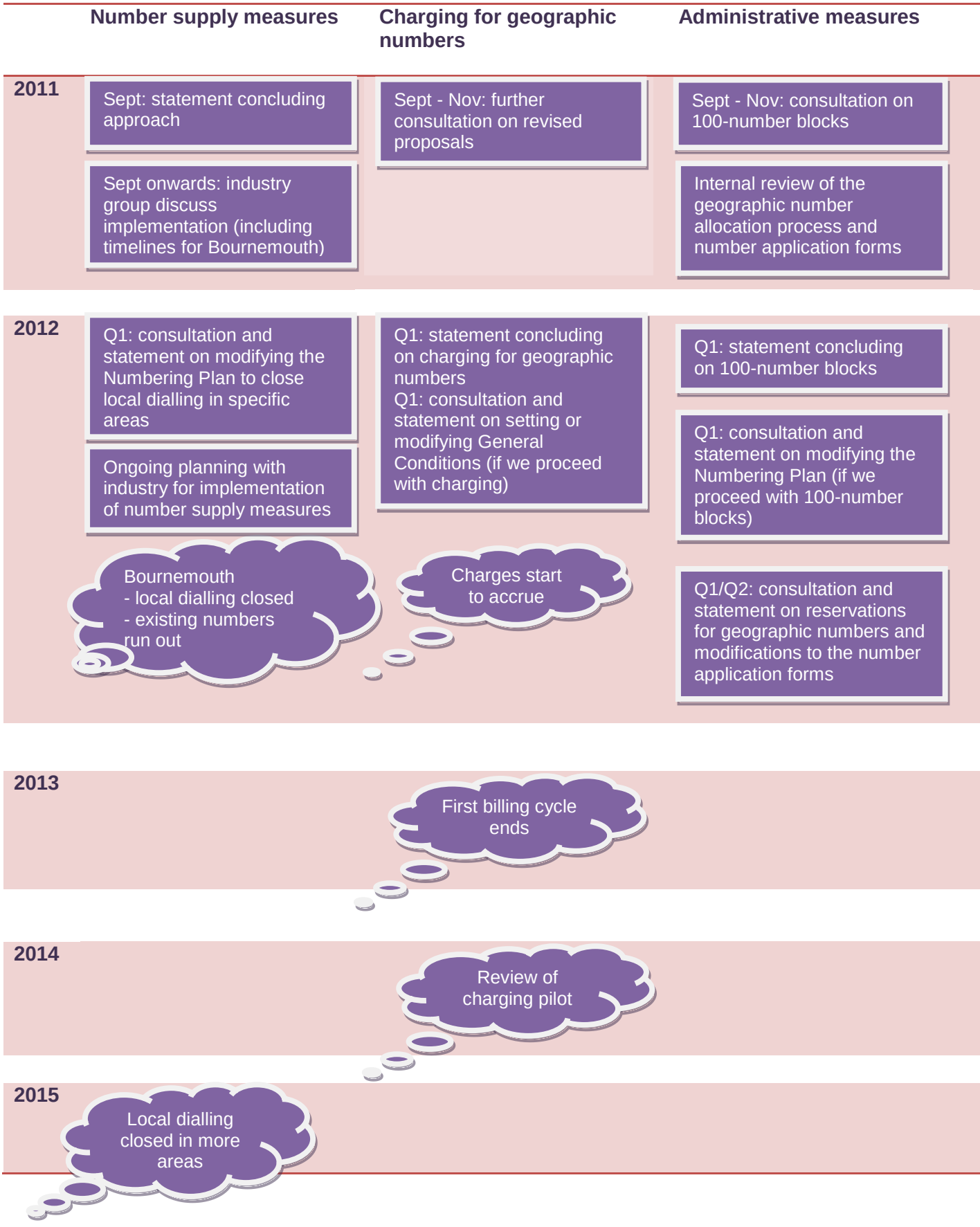


Figure 7.2 Indicative timeline for implementation of our decisions and proposals if adopted



Annex 1

Background on geographic numbers

Introduction

A1.1 In this section we set out the definition and characteristics of geographic numbers, explain how numbers are distributed from Ofcom to end-users and consider why geographic numbers are in high demand from consumers and CPs. We provide this background to inform understanding of our decisions and consideration of the proposals set out for consultation.[206]

Definition and characteristics of geographic numbers

Definition

A1.2 Geographic numbers are defined in the Numbering Plan 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".

A1.3 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

A1.4 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.[207] We also provide a 'telephone area code checker' on our website to help consumers identify area code location.[208]

A1.5 We know that consumers highly value the location significance inherent in geographic numbers.[209] 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. 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 consumer research has found that the proportion of consumers who think that

[206] More detailed background information on geographic numbers is provided in Section 3 of the November Consultation.
[207] Appendix A of the Numbering Plan.
[208] Area code checker Ofcom | Telephone area codes.
[209] See the 2010 and 2011 consumer research and our analysis of its findings in Section 4 and Annexes 3 and 4.

geographic significance is important has increased from 52 per cent of those surveyed in 2005 to 64 per cent in 2010.

Tariff transparency

A1.6 Consumers also value geographic numbers because they generate trust through transparent tariff arrangements.[210] 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.

A1.7 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

A1.8 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.

A1.9 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[211] and second, the cost of calling the number must remain as associated with a call to a number with that area code.[212]

A1.10 These restrictions support our guiding principles for managing geographic numbers; specifically that we "will not hasten the erosion of location significance but will recognise (and not stifle) the effect of network and service evolution on that 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".[213] The 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

A1.11 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

[210] 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.
[211] Paragraph B3.1.2 of the Numbering Plan sets out this restriction associated with 'out of area' use of geographic numbers.
[212] Definition of 'Geographic Number' in the Numbering Plan.
[213] See paragraph 3.18.

alternatives. Essentially any type of service may be provided on a geographic number as long as its use is in accordance with the definition of 'Geographic Number' in the Numbering Plan and any relevant restrictions for the adoption of telephone numbers.

Structure of geographic numbers

A1.12 Geographic numbers are generally 11 dialled digits in length[214] and comprise of:

- the leading digit '0' which denotes national dialling and does not form part of the area code;
- the area code (which is the same for all numbers within a specific area); and
- the local number.

The area code and the local number together form the unique 'Subscriber Number'.

A1.13 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.[215]

A1.14 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 A1.22 below).

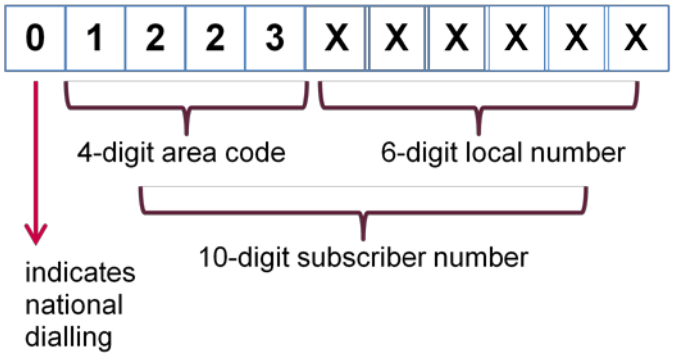
A1.15 A two-digit area code and eight-digit local number, such as the London '020' area code, provides 79 million numbers for that area. There are five area codes in the '2 + 8' digit format created in the year 2000. All these codes have a sufficient supply of numbers available to meet demand beyond the foreseeable future and are categorised as being a 'Standard Area' in the Numbering Plan, with numbers allocated in blocks of 10,000.

A1.16 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).

A1.17 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 (except for Jersey 01534 and Guernsey 01481) 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.

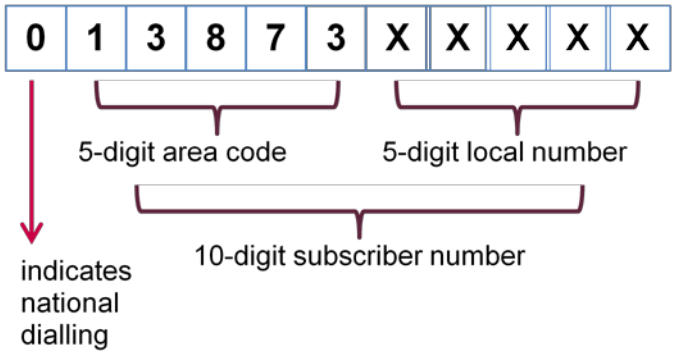
[214] The vast majority of geographic numbers are '0' plus ten-digits in length; however, there remain some '0' plus nine-digit numbers in certain area codes.
[215] Annex 1 of the November Consultation provides more detail on how the geographic number plan has evolved over the past two decades.

Figure A1.1 Structure of four-digit area code and six-digit local number



A1.18 A five-digit area code and five-digit local number, such as the '013873' area code for Langholm, provides only 79,000 numbers for that area. There are 11 five-digit area codes covering areas with low populations (under 21,000 people).

Figure A1.2 Structure of five-digit area code and five-digit local number



A1.19 There is also one area code (Brampton 01697(X)) that has numbers with both four- and five-digit area codes.

A1.20 Given the relative abundance of numbers available for allocation in areas with a '2 + 8' and '3 + 7' digit structure, our focus in this review of managing geographic numbers is on areas with a '4 + 6' and '5 + 5' digit structure.

Local dialling

A1.21 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.[216]

A1.22 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

[216] 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.

beginning with the digits '99' to prevent potential misdials to the '999' emergency services number.

How geographic numbers are distributed from Ofcom to end-users

A1.23 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 an Electronic Communications Service".[217]

A1.24 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.[218]

A1.25 The time taken from request to completion of the data management amendment process ('DMA') associated with adopting numbers (i.e. the opening of another CP's numbers on a CP's network so that their customers can call the numbers) varies across networks and can depend on the nature of the request (e.g. whether the CP has numbers already open on that network). The process generally takes from between one week and 60 working days according to information gathered from CPs.[219]

A1.26 Once the process of number adoption has been concluded, the CP can give out the numbers to their consumer and businesses customers.[220] 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.

A1.27 Regardless of the number of parties involved, it is the CP allocated the numbers by Ofcom that is responsible for taking all reasonably practicable steps to ensure that the numbers are used in accordance with regulation (including conditions of use in the Numbering Plan and obligations under the Numbering Condition).[221]

Demand for geographic numbers

A1.28 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

[217] Definition of a 'Communications Provider' in the Numbering Condition.
[218] Condition 17.14 of the Numbering Condition states that Ofcom may withdraw allocations of numbers from CPs if not adopted within six months of allocation.
[219] Based on CPs' responses to our information requests between August and October 2010.
[220] In accordance with requirements in connection with the transfer of use of allocated telephone numbers set out in Condition 17.9 of the Numbering Condition.
[221] Condition 17.8 of the Numbering Condition.

steadily over several years,[222] it remains the case that allocation of geographic numbers increases year-on-year. Some reasons for this are offered below.

A1.29 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.

A1.30 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 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.

A1.31 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.

A1.32 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.

A1.33 The 'call whisper' service mentioned 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.

A1.34 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

[222] The number of fixed lines continued to decline in 2010, falling by 2.3 per cent (0.8 million) to 33.4 million - *The Communications Market 2011*, Figure 5.32, page 278, available at http://stakeholders.ofcom.org.uk/binaries/research/cmr/cmr11/UK_CMR_2011_FINAL.pdf

by using several geographic numbers, one local to each of the area codes of its customers, with all calls routed to its central location.

A1.35 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.

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 forecast 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 decisions and proposals set out in this document.

A2.2 In particular, our data analysis and forecasting:

- allows us to understand the current trends for geographic number demand 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 existing numbers are forecast to run out; and
- provides a tool for monitoring the effectiveness of our measures in managing demand.

A2.3 In this annex we briefly explain the forecasting model that we used (including the information considered and the basis for our analysis) and the number demand trends identified. We set out our revised forecasts for number block availability in four- and five-digit areas, the effect we anticipate our proposed number supply measures would have on future availability and examine the main reasons for the differences between the current forecast and the forecast presented in the November Consultation.

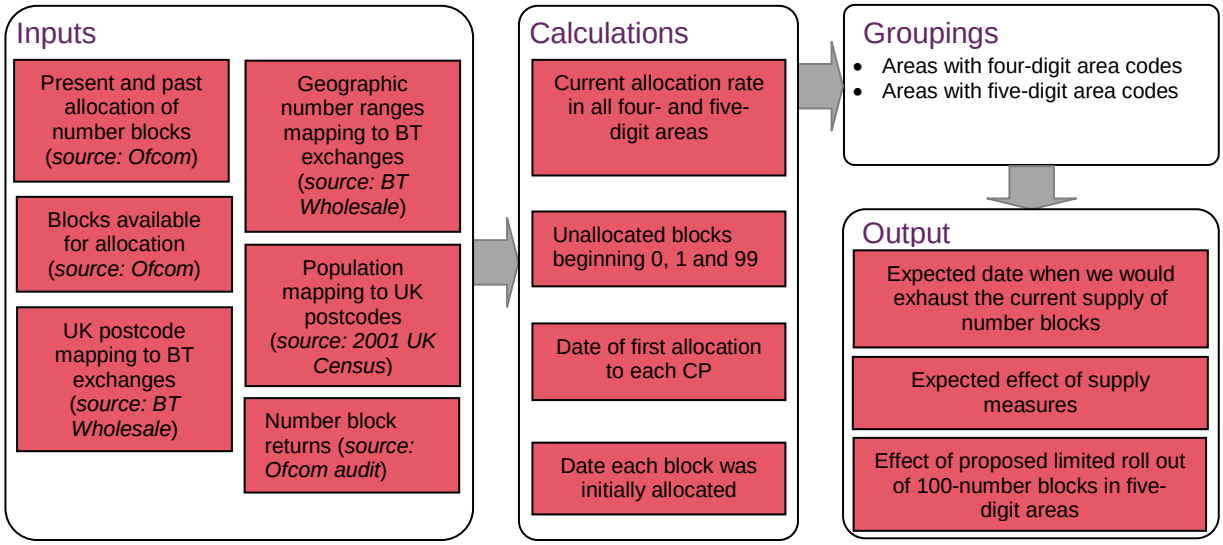
Model overview

A2.4 Figure A2.1 sets out the inputs we used in our analysis for the forecasts on number availability, the calculations we performed and the forecast results.[223] In producing our results, we considered four- and five-digit areas separately, taking into account the different solutions for creating more numbers that we plan to implement in these areas.

A2.5 Our updated forecast is based on the status of number block availability as at 3 June 2011. It takes into account the numbers that CPs have pledged to return to Ofcom following an extensive audit of number use carried out between April and July 2011.

[223] See Annex 2 of the November Consultation for a more detailed description of the forecast model. The same model has been used to generate the forecasts presented in this document and the November Consultation. Stakeholders made no comment on our forecast model in response to the November Consultation.

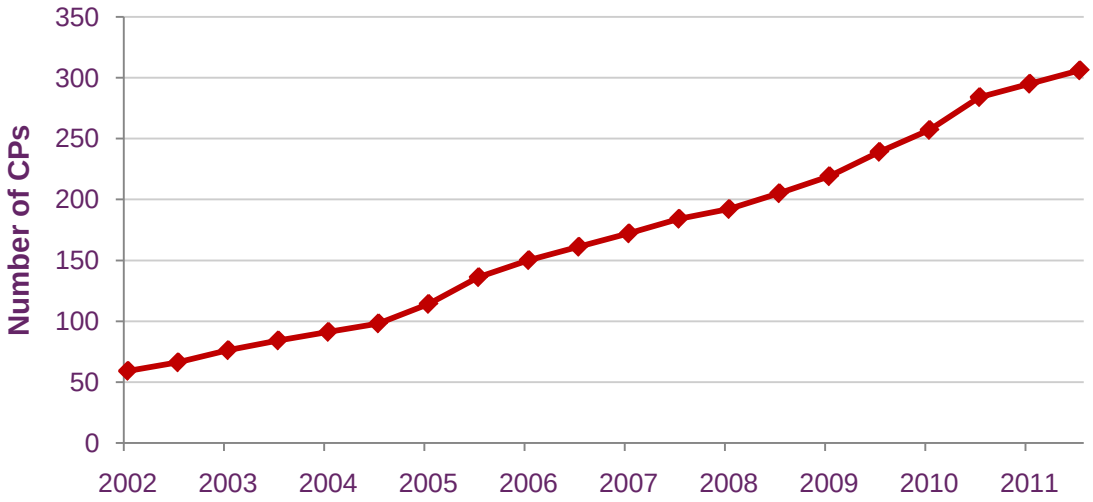
Figure A2.1 Overview of our forecast analysis model



Number demand trends[224] and assumptions used in the forecast

A2.6 The demand for geographic numbers is primarily driven by new entrants in the communications market. In the November Consultation we presented evidence that new CPs enter the market at a steady rate. Our more recent data (Figure A2.2) shows that this assumption still holds. There are currently more than 300 CPs with geographic number allocations.

Figure A2.2 Number of CPs with geographic number allocations



[224] Further allocation trend analysis was carried out in paragraphs A2.28 to A2.35 in Annex 2 of the November Consultation, the results of which are still valid. In this consultation we present only the evidence on the rate at which new CPs enter the market, which is the main parameter driving the demand for numbers.

Assumptions considered in our analysis

A2.7 In preparing our forecast model we made the following assumptions based on our analysis of number demand trends:

- there are no signs of saturation in the market for geographic numbers. We therefore have no reason to assume that the demand for numbers is likely to decline in the future; and

- the demand for numbers in each area is stable. Even if there are external parameters that affect the demand rate, we assume that their aggregated effect is negligible. Therefore we have extrapolated the number allocation trends based on a linear approximation model (i.e. we assume that the same number of blocks will be allocated each year).

Effect of proposed measures on our forecast

A2.8 We do not estimate the potential effect that our proposals to introduce charging for geographic numbers and to strengthen our administrative process (both subject to consultation) might have on allocation rates and our forecast for number availability.

Forecast results

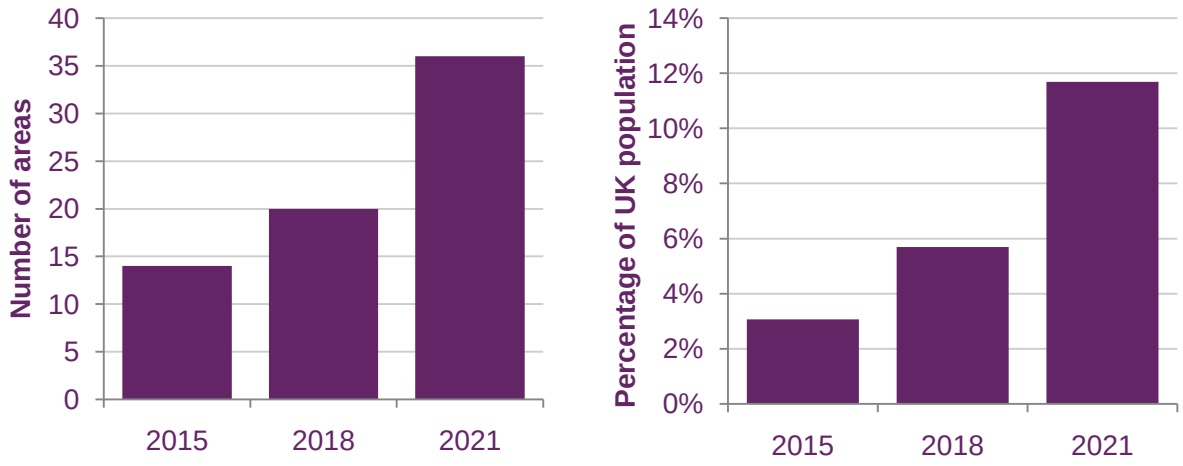
A2.9 In this section we first present our estimates on number availability if no action is taken to address scarcity. We then describe how our proposed number supply measures are expected to extend number availability in the areas where applied.

Availability of the existing supply of numbers

A2.10 By extrapolating the number allocation trends we forecast (Figure A2.3) that our current supply of number blocks to allocate to CPs in 36 areas may exhaust by the end of 2021, if no action is taken to ensure number availability. These areas are made up of 25 four-digit area codes and the 11 five-digit area codes. We estimate that areas affected by 2021 would cover approximately 12 per cent of the UK population.

A2.11 We forecast that 14 of these areas may run out of numbers before 2015, affecting approximately three per cent of the UK population.

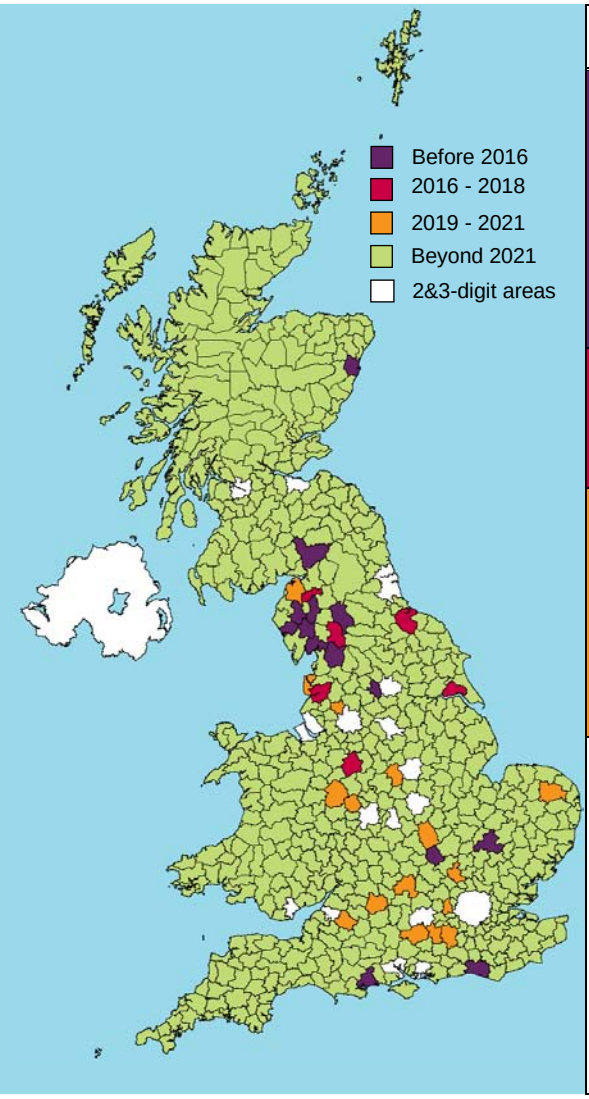
Figure A2.3 Areas and population percentage affected by 2021



A2.12 Figure A2.4 provides geographic context to our forecast of areas to run out of numbers by 2021 and lists alphabetically the 25 four-digit and 11 five-digit areas that are expected to require additional geographic numbers. We have divided the areas into three groups based on our estimated exhaustion date. We expect that 14 out of the 36 areas will run out of the current supply of numbers before the end of 2015, followed by a further six areas by the end of 2018. The remaining 16 areas are expected to run out of the current stock of numbers between 2019 and 2021.

A2.13 Figure A2.4 also shows the 17 areas with two- or three-digit area codes in the Numbering Plan. These areas have a significantly larger supply of numbers meaning that it is unlikely that they will face number shortages. We have excluded these areas from our forecast analysis.

Figure A2.4 Areas forecast to run out of their current supply of numbers by 2021



Estimated timeframe	Area and Area Code
Before 2016	Aberdeen(01224), Appleby(017683), Bournemouth(01202), Bradford(01274), Brighton(01273), Cambridge(01223), Gosforth(019467), Grange over Sands(015395), Hawkshead(015394), Hornby(015242), Keswick(017687), Langholm(013873), Milton Keynes(01908), Pooley Bridge(017684)
2016 to 2018	Hull(01482), Middlesbrough(01642), Preston(01772), Raughton Head(016974), Sedbergh(015396), Stoke-on-Trent(01782)
2019 to 2021	Aldershot(01252), Basingstoke(01256), Bath(01225), Blackpool(01253), Bolton(01204), Derby(01332), Guildford(01483), Luton(01582), Northampton(01604), Norwich(01603), Oxford(01865), Slough(01753), Swindon(01793), Telford(01952), Wigton(016973), Wolverhampton(01902)
Areas not affected (two- & three-digit areas)	London (020), Portsmouth & Southampton (023), Coventry (024), Northern Ireland (028), Cardiff (029), Leeds (0113), Sheffield (0114), Nottingham (0115), Leicester (0116), Bristol (0117), Reading (0118), Birmingham (0121), Edinburgh (0131), Glasgow (0141), Liverpool (0151), Manchester (0161), Durham, Sunderland & Tyneside (0191)

Effect of proposed supply measures in four-digit area codes

A2.14 In Section 4 we describe our approach for increasing the supply of numbers in four-digit area codes:

a) close local dialling; and

b) where more numbers are needed at a future date, introduce overlay codes.

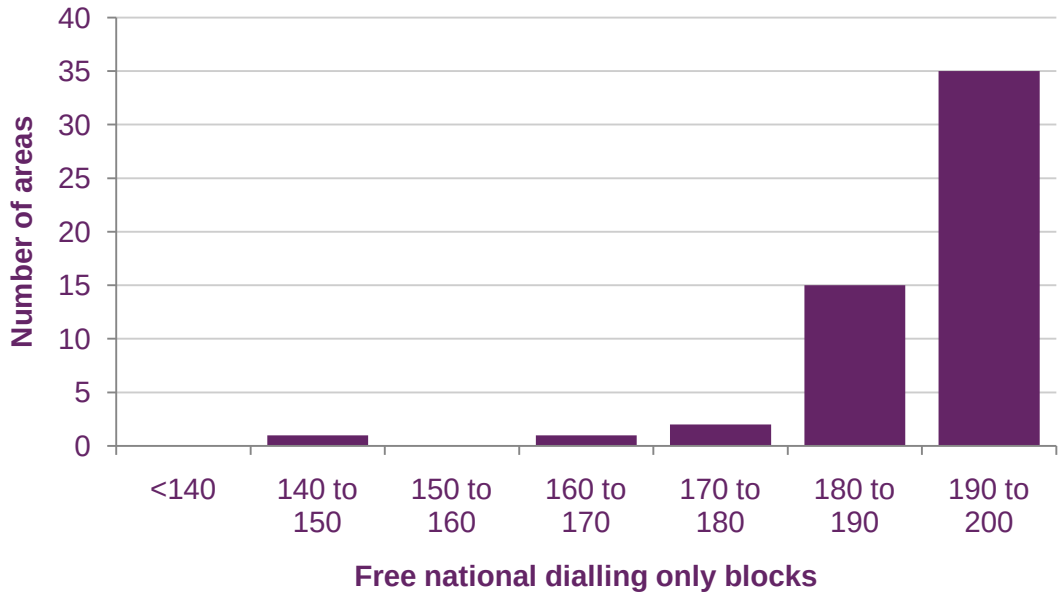
A2.15 Below we demonstrate how these measures are likely to extend the availability of numbers in four-digit area codes across the UK.

Closing local dialling

A2.16 Closing local dialling allows the allocation of local numbers beginning with the digits '0', '1' and '99'. These numbers are currently reserved for national dialling only purposes (i.e. used only for services where end users would not dial the numbers). In 428 of the 579 four-digit areas, closing local dialling would make up to 210,000 numbers available. There are, however, 54 area codes where closing local dialling

would create fewer than 200,000 additional numbers. This is because national dialling only blocks have already been allocated to CPs in some area codes, for example to terminate calls to non-geographic numbers. We have considered these existing allocations when estimating the effect of closing local dialling in each four-digit area. Figure A2.5 provides the distribution of potentially available numbers in four-digit area codes with 200 or fewer blocks available if local dialling was closed.[225]

Figure A2.5 Current availability of national dialling only blocks in four-digit area codes (excluding area codes with more than 200 available national dialling only blocks)



A2.17 The amount of free national dialling only blocks in an area and the allocation rate for that area determine how long number availability is forecast to be extended if local dialling is closed. We estimate that closing local dialling would extend number availability in four-digit areas for between six and 26 years. The average across all four-digit areas would be 14 years.

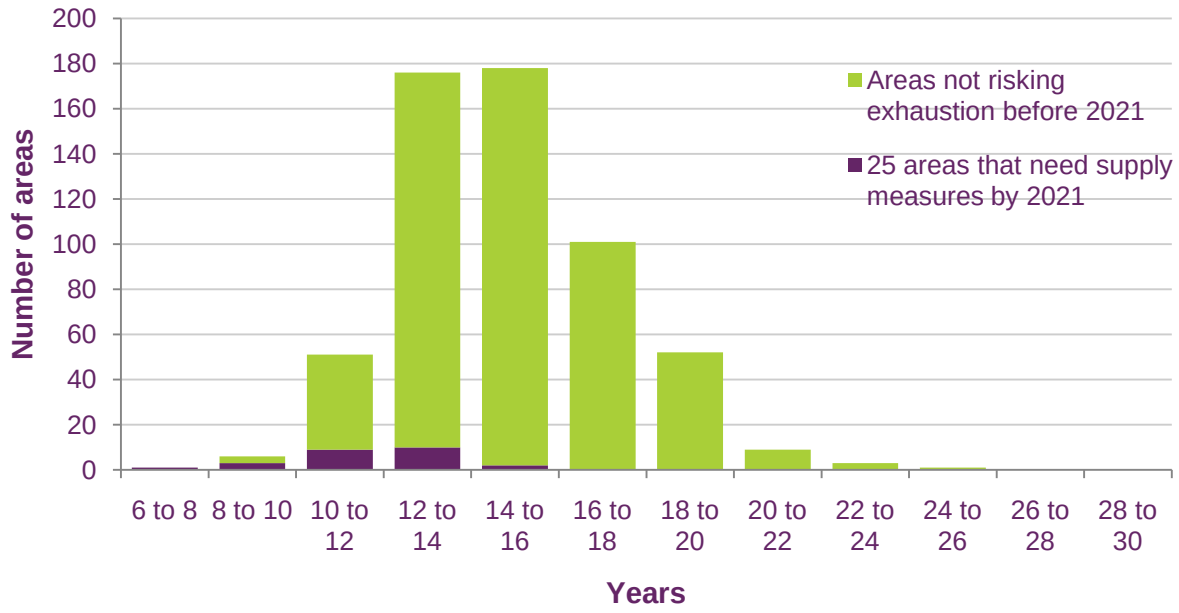
A2.18 Closing local dialling in the 25 four-digit area codes forecast to run out of numbers by 2021 is expected to extend number supplies for between six to 15 years. The average for these 25 area codes would be 11 years.

A2.19 There are seven area codes where closing local dialling is forecast to extend number availability by less than ten years. This is because some of the national dialling only number blocks are already allocated and/or the high demand for numbers from these area codes. Four of these area codes are forecast to require the closure of local dialling before 2021. These areas are Aberdeen (01224), Bournemouth (01202), Brighton (01273) and Milton Keynes (01908). A further area - Rotherham (01709) – is not forecast to need number supply measures until 2022. The remaining two areas – Chipping Norton and Camberley - have sufficient numbers for at least the next 15 to 20 years.

[225] This graph is for illustrative purposes. We only intend to close local dialling in area codes where there is a demand for additional number blocks.

A2.20 Figure A2.6 shows the distribution of the additional number availability gained by closing local dialling, distinguishing between the 25 area codes expected to face supply shortage first (in purple) and the remaining four-digit area codes (in green).

Figure A2.6 Increase in number block availability resulting from closing local dialling in areas with four-digit codes



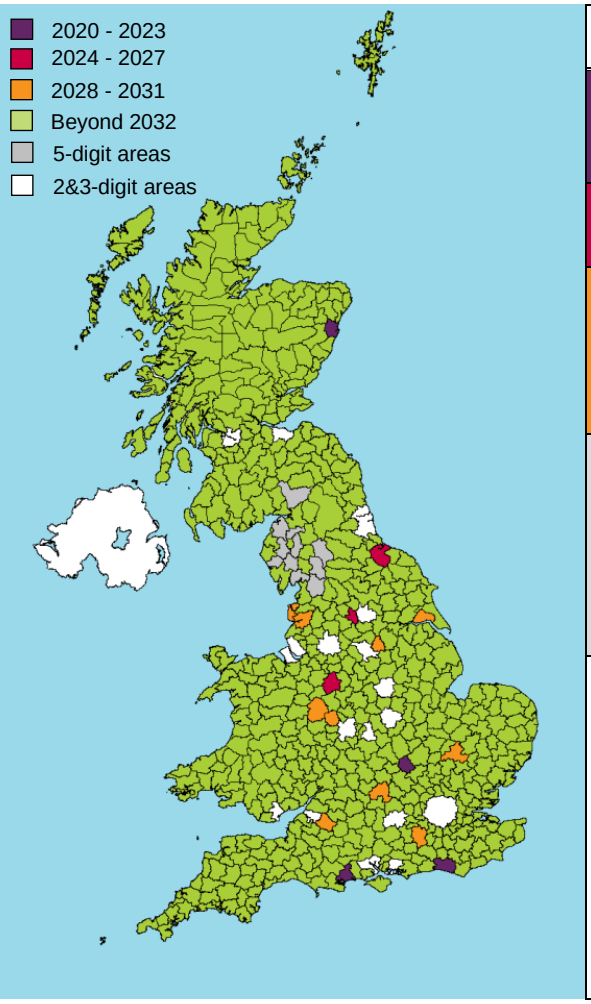
Overlay codes

A2.21 The introduction of an overlay code doubles the supply of numbers in an area. This translates as up to an additional 1,000 blocks of 1,000 numbers becoming available for allocation in four-digit area codes with closed local dialling. Current trends suggest that such a supply of numbers would last for more than 40 years in areas with high demand, and for over 100 years in other areas where demand is lower. On average, a four-digit overlay code would provide numbers to meet demand for 70 years.

A2.22 Figure A2.7 depicts the areas that we forecast may require an overlay code between 2020 and 2031. Four areas are expected to need an overlay code to operate alongside the current area code between 2020 and 2023. These area codes are (with the existing area code shown in brackets) Milton Keynes (01908), Bournemouth (01202), Brighton (01273) and Aberdeen (01224). In total 17 areas are likely to require an overlay code before the end of 2031.

A2.23 Areas that do not face number shortage (i.e. areas with two- and three-digit codes) and those where different supply measures are sought (areas with five-digit codes) are excluded from the analysis presented in Figure A2.7.

Figure A2.7 Areas forecast to need an overlay code by 2031



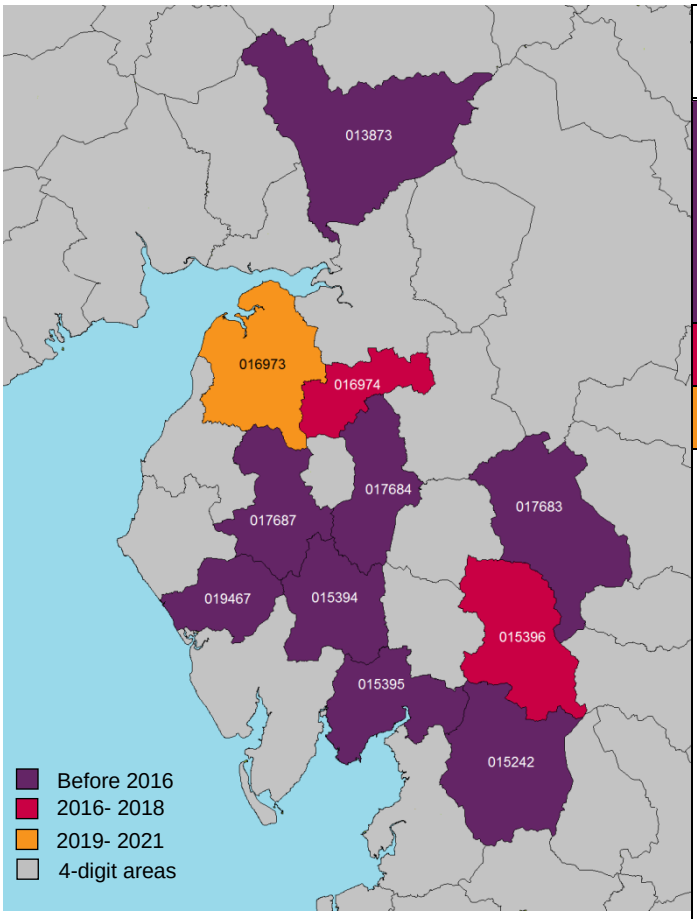
Estimated timeframe	Areas forecast to need an overlay code
2020 to 2023	Aberdeen(01224), Bournemouth(01202), Brighton(01273), Milton Keynes(01908)
2024 to 2027	Bradford(01274), Middlesbrough(01642), Stoke-on-Trent(01782)
2028 to 2031	Bath(01225), Blackpool(01253), Cambridge(01223), Guildford(01483), Hull(01482), Oxford(01865), Preston(01772), Rotherham(01709), Telford(01952), Wolverhampton(01902)
Areas where different solution is sought (Five-digit areas)	Appleby(017683), Gosforth(019467), Grange over Sands(015395), Hawkshead(015394), Hornby(015242), Keswick(017687), Langholm(013873), Pooley Bridge(017684), Raughton Head(016974), Sedbergh(015396), Wigton(016973)
Areas not affected (two-&three-digit areas)	London (020), Portsmouth & Southampton (023), Coventry (024), Northern Ireland (028), Cardiff (029), Leeds (0113), Sheffield (0114), Nottingham (0115), Leicester (0116), Bristol (0117), Reading (0118), Birmingham (0121), Edinburgh (0131), Glasgow (0141), Liverpool (0151), Manchester (0161), Durham, Sunderland & Tyneside (0191)

Effect of proposed supply measures in five-digit area codes

A2.25 Figure A2.8 shows the 11 five-digit area codes along with our estimate of when the current supply of numbers would exhaust, if no action is taken.

A2.26 The limited supply of numbers in these areas means that number supply measures are likely to be required in eight out of the 11 areas before 2016, while the first three areas (Gosforth, Hawkshead and Langholm) are likely to run out of numbers during 2012.

Figure A2.8 Forecast number block availability in five-digit area codes



Time estimate	Area codes forecast to run out of numbers if no action is taken
Before 2016	Appleby(017683), Gosforth(019467), Grange over Sands(015395), Hawkshead(015394), Hornby(015242), Keswick(017687), Langholm(013873), Pooley Bridge(017684)
2016 to 2018	Raughton Head(016974), Sedbergh(015396)
2019 to 2021	Wigton(016973)

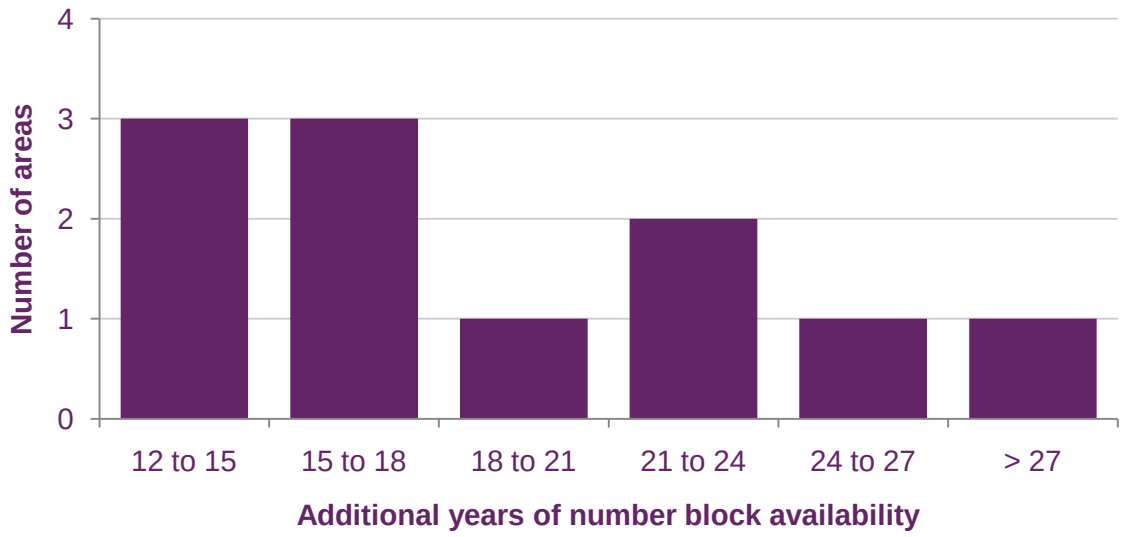
A2.27 We are proposing to make available a limited supply of smaller blocks for allocation in each of the 11 five-digit area codes. We propose to divide ten blocks of 1,000 numbers into 100 blocks of 100 numbers in each area, thus increasing the supply of available number blocks for allocation.[226]

A2.28 We estimate that the provision of 100 blocks of 100 numbers would extend number availability in the five-digit area codes for a minimum of 12 years, and for 19 years on average (see Figure A2.9).

A2.29 Langholm (013873), the first of the five-digit area codes forecast to run out of numbers under the current 1,000-number block allocation system, should have sufficient numbers to meet demand for 12 years if 100 blocks of 100-numbers are made available.

[226] We present our proposals for addressing number supply in areas with five-digit codes in Section 5.

Figure A2.9 Effect of the introduction of 100 blocks of 100 numbers in five-digit area codes



A2.30 In Figure A2.9, the calculations are based on the assumption that the demand for number blocks would not be affected by the allocation of smaller blocks of numbers. If we proceed with 100-number block allocations, we would validate this assumption.

A2.31 If the proposed administrative measures for smaller number blocks are not adopted in any or all of the five-digit areas following consultation, we would need to determine the most appropriate measures to increase the number supply where and when necessary.

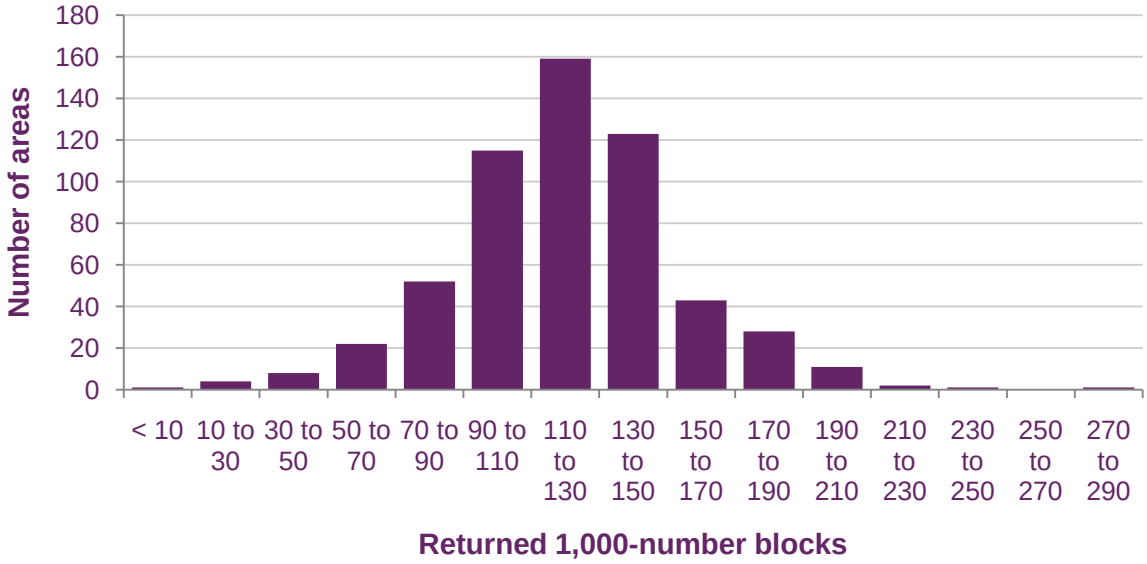
Differences between the current forecast and the forecast presented in the November Consultation

Effect of number audit

A2.32 We carried out an extensive audit of CPs' use of allocated numbers between April and July 2011, reclaiming 69,000 blocks of 1,000 numbers across 582 four-digit area codes. This figure equals 20 per cent of the areas' aggregate number allocations before the audit.

A2.33 The returns were not distributed uniformly across the areas. For example, 271 1,000-number blocks were returned in Orkney (01856) and fewer than 20 blocks were returned in seven areas. The average return in a four-digit area code was 120 blocks. Figure A2.10 shows the distribution of the returned blocks.

Figure A2.10 Distribution of returned 1,000-number blocks



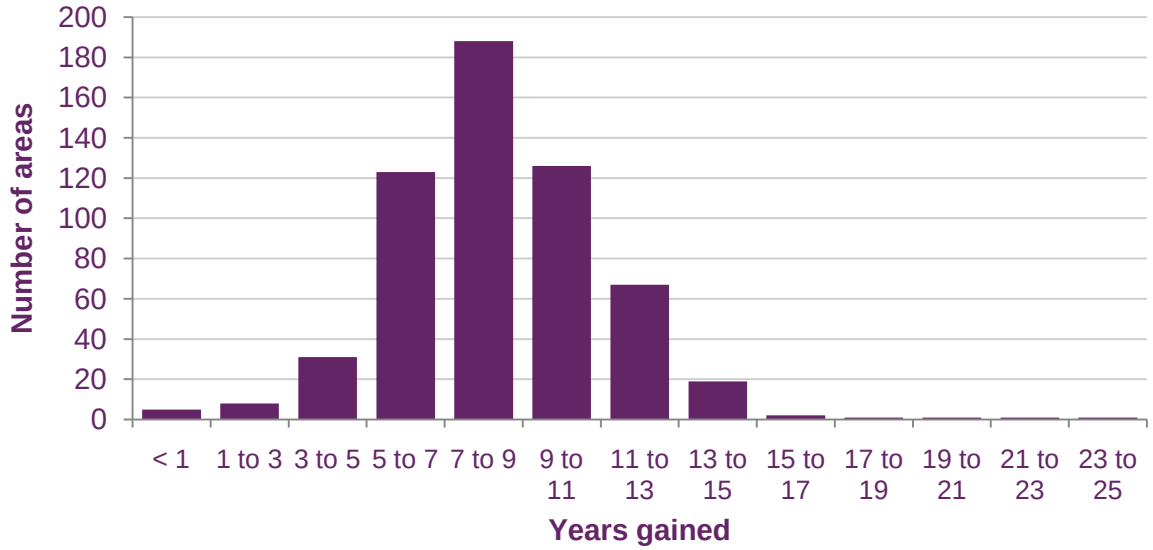
A2.34 The results of the audit have extended our number exhaustion forecasts by eight years on average, and by considerably more in some areas. For example, the number returns in Orkney extended number availability for another 23 years, based on current allocation trends.

A2.35 However returns in several other areas were significantly less. Bournemouth (01202), Aberdeen (01224), Basingstoke (01256) and Guildford (01483) gained only a few months of number supply through the returned blocks; while Brighton (01273), Slough (01753) and Weybridge (01932) gained just over one year before number supplies are forecast to run out.

A2.36 The audit has had a significant effect on the areas forecast in the November Consultation to run out of numbers in the next ten years. As a result of the audit returns, 7,036 blocks are pledged to be returned in the 61 four-digit area codes previously forecast to run out of numbers by 2020. Our revised forecast predicts that 43 of these areas will continue to have sufficient numbers available beyond 2021.

A2.37 Figure A2.11 shows the number of years gained for block availability in area codes as a result of the audit. We have based our forecast on our expectation of receiving all blocks pledged for return by CPs. However, the anticipated level of pledged block returns may not eventually materialise and we will need to adjust our forecast and its effect on areas accordingly.

Figure A2.9 Distribution of years gained for number block availability as a result of the audit



A2.38 Despite the success of the recent audit, we do not expect future audits to have similar results. The returned blocks are unused 1,000 number units that were part of 10,000 number blocks allocated before conservation measures were introduced. Since April 2010, conservation measures have been applied in all four-digit areas (except for Jersey and Guernsey), meaning that numbers are now allocated in 1,000 number blocks. It is therefore unlikely that CPs will have a substantial amount of numbers remaining in unused 1,000-number blocks to return in future audits. We have not, therefore, estimated the effect of any future audits on our forecast of number block availability.

A2.39 There may also be a possible knock-on effect, where CPs that have returned several blocks may need to request new allocations to meet business requirements. This may lead to an increase in the allocation rate and faster consumption of the available blocks than forecast. We will monitor for any evidence of this and update our forecasts accordingly.

Withdrawal of the effect of 'critical measures' from the forecast

A2.40 Our forecast in the November Consultation included the effects of "critical measures". These are temporary measures designed to ensure best use of numbers in areas where supply is at a critically low level (i.e. measures used when an area has fewer than 20 blocks remaining available for allocation) until number supply measures are put in place.

A2.41 In the forecasts presented in the November Consultation, we estimated the effect of 'critical measures' as reducing the allocation rate by 50 per cent once an area has fewer than 20 blocks left. We considered that trying to estimate the effect of critical measures on number availability in the November Consultation was important while we consulted on the framework for supply measures. As we have established our approach for creating more numbers in the four-digit areas, and are proposing a measure to increase block availability in the five-digit areas, we have removed the effect of critical measures from our analysis to allow us to better estimate when supply measures should be implemented and to avoid the need to use critical measures.

A2.42 Our forecasts of the November Consultation found that the effect of critical measures was to extend the availability of numbers by approximately one to two years in four-digit areas and up to four years in five-digit areas. The precise effect depended on the demand for numbers in each area. For example, in Bournemouth there are 24 blocks of 1,000 numbers available and approximately 21,000 numbers are allocated each year.[227] By removing the effect of critical measures from our forecast calculations we estimate that number supplies will exhaust by August 2012. This is approximately one year earlier than if our forecast included the effect of critical measures in our calculations.

Effect of conservation measures on allocation rate

A2.43 At the time of the November Consultation, there was insufficient data on allocations in the 336 four-digit areas where conservation measures were introduced in April 2010 to reliably adjust for the future reduction in allocation rates. To estimate the effect conservation measures would likely have in these areas, we calculated the average reduction on the allocation rate in the 204 four-digit areas where conservation measures were introduced between 2006 and 2008. Based on this calculation we estimated that the number allocation rate in the 336 areas would be reduced by 87.5 per cent.

A2.44 We have now evaluated the number allocation rate in these 336 areas based on the number of blocks allocated since April 2010. Our results show that the number allocation rate has reduced by 84 per cent on average. This means that the allocation rate in those areas is higher than expected, by 28 per cent on average.

A2.45 In the November Consultation we estimated that closing local dialling would extend number availability by 17 years on average. Our updated forecast is lower due to the difference between the estimated and actual effect of conservation measures in 336 areas where conservation measures were introduced in April 2010. As the measured allocation rate in these areas is higher than expected, it lowers the average extension in number availability.

A2.46 The allocation rate immediately following the implementation of conservation measures can be higher than the average for existing conservation areas. This is due to a reduction in allocations during the consultation period on conservation measures, followed by a rise in allocations once the conservation measures are introduced. We expect that the allocation rate in these 336 areas will reduce gradually by around 87.5 per cent of the former allocation rate (i.e. by our initial estimation).

Additional parameters that could affect the forecast

A2.47 Forecasting the availability of numbers in the future is a difficult 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 quantity of numbers available and the

[227] Based on data available as at 3 June 2011.

allocation rate, which may lead to changes to the actual allocation trends and forecasts of number block availability; and

c) our model cannot estimate the possible effect from policy changes, such as the effect of charging for numbers. We would need to adapt our model if and when such changes were introduced.

Annex 3

Detailed assessment of geographic number supply options

Introduction

A3.1 As explained in Section 3 and 4 of this document, we favour options that limit the extent of disruption that could be caused by increasing the supply of geographic numbers. We therefore confine our detailed evaluation in this annex to the two approaches described below that would not require changes to existing phone numbers and which would suit localised rather than UK-wide implementation. These are:

(i) Closing local dialling: consumers making local calls from fixed-line phones in the area concerned would need to dial the area code; and

(ii) 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 These approaches can be implemented in a number of different ways, for example applying them together (either simultaneously or sequentially) or individually. For the reasons set out in paragraphs 4.24 to 4.29 of the November Consultation, we considered that we should assess the following options for implementation to increase the supply of geographic numbers in four-digit area codes:

(i) Option 1: Close local dialling, and introduce an overlay code later if necessary. Local dialling would be closed if and when the supply of local numbers in an area falls below a trigger level.[228] 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 the 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 As set out in paragraphs 3.25 to 3.28, the analysis presented throughout this document represents an impact assessment as defined in section 7 of the Act. In this annex we update the analysis that we undertook for the November Consultation to incorporate new evidence and arguments received. We start by restating the regulatory framework for considering number supply options, including the relevant considerations for their assessment. We then update our analysis of the potential impact of the different options, including relevant responses to the consultation[229] and new research findings.

[228] A trigger level would be determined with industry as part of a detailed implementation plan.
[229] The full assessment of responses received on number supply measures is provided in Section 4.

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 review of geographic numbers in Section 3. 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:

i) the numbers consumers want are available when they are needed;

ii) the numbers consumers currently use are not changed if this is avoidable;

iii) the meaning which numbers provide to consumers is protected; and

iv) number allocation processes support competition and innovation.

A3.5 In light of our duties and the above principles, we consider that it is necessary to consider the following in order to assess the number supply options:

a) the potential impact on the supply of geographic numbers available;

b) the impact on consumers, including:

i) residential consumers;

ii) business consumers; and

iii) vulnerable consumers;

c) the effect on competition between CPs; and

d) the implementation requirements and potential costs on CPs.

A3.6 We note that the following assessment, particularly in relation to the impact on consumers, is based on the general principle of an overlay code, and the actual impact is likely to be affected by the type of overlay code introduced (i.e. number of digits, similarity to existing code etc). We do not consider that these variations are significant enough to prevent us from reaching a conclusion on the appropriate supply measure at this stage, but this will be considered in greater detail during the implementation process where we will seek to minimise the negative impact on consumers (and CPs if neutral to consumers) where reasonably possible, in line with our regulatory objectives.

Assessing the impact on number supplies

A3.7 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.

A3.8 Closing local dialling would extend current number supply by approximately 25 per cent (depending on local circumstances).[230] Overlay codes, on the other hand,

[230] The exact number of blocks that could be made available for allocation to CPs after closing local dialling would depend on the number of blocks that are currently already allocated for 'National Dialling only' purposes. Based on block allocations as at 3 June 2011, on average 207 blocks could become available in the 579 areas with four-digit codes. In 54 of these areas, closing local dialling would release less than 200 new blocks, while in one area (Milton Keynes) the benefit from closing local dialling would be limited to 141 new number blocks.

would effectively double the quantity of numbers that are available by introducing a completely new set of numbers that start with the new (overlay) 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.[231]

A3.9 We have used our forecasts of the demand for numbers to estimate how many years' supply of numbers each option could provide. Our current forecast predicts that, for the 25 areas[232] 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 11 years. We similarly estimate that the average extension of number availability across all 590 four-digit area codes is 14 years. As discussed in Annex 2, the forecast is based on historical allocation trends and is subject to significant uncertainties because future events are likely to be influenced by many variables.

A3.10 However in seven areas with four-digit codes we estimate that the new supplies created by closing local dialling might meet demand for a shorter time. We forecast that in Aberdeen (01224), Bournemouth (01202), Brighton (01273), Carmarthen (01267), Chipping Norton (01608), Milton Keynes (01908) and Rotherham (01709), 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.[233] 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 implemented with a relatively short interval between the measures. We therefore currently prefer options, where possible, that would provide new supplies of geographic numbers sufficient for at least ten years. Closing local dialling alone may therefore not be a sufficient solution in all areas although it is expected to be sufficient to meet demand for ten years or more in the vast majority of areas with four-digit codes.

A3.11 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.

[231] 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.
[232] We predict that 36 area codes could need new supplies of numbers in the next ten years. Eleven of those areas have five-digit area codes and the remaining 25 have four-digit area codes.
[233] 2010 consumer research report page 4.

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

	Closing local dialling	Overlay with open local dialling (Option 2)	Overlay with closed local dialling (Option 1)
Volume of numbers added	Up to 25%[234]	100%	Up to 150%[235]
Average extension of number availability for four-digit area codes	14 years	70+	100+

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

A3.12 Our current forecast predicts that, for the 25 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 11 years. This compares with the estimated average extension of number availability across all areas with four-digit codes of 14 years, as presented in Figure A3.1 above.

A3.13 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.

A3.14 Therefore Option 1 has the potential to increase the supply of geographic numbers well beyond the foreseeable future.

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

A3.15 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 areas with four-digit codes would provide new supplies of numbers that could last for at least 30 years, and, on average, over 70 years.

A3.16 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 as Option 1 because it would create fewer numbers.

[234] The amount of blocks that are made available after closing local dialling depends on the length of the area code and the number of blocks that are already allocated for "National Dialling only" purposes. Our data shows that on average 207 blocks become available in the 579 four digit areas. In 54 of these areas the benefit is limited to under 200 blocks, while in one area (Milton Keynes) the benefit from closing the dialling plan is limited to 141 1,000 number blocks.

[235] Closing local dialling and introducing an overlay code together increases the total supply of numbers in an area by 150 per cent, because closing local dialling makes 25 per cent extra numbers available in the new overlay code as well as in the original area code.

Initial conclusion on the impact on number supplies

A3.17 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 inform our preferred approach.

Assessing the impact on residential consumers

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

A3.18 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 aid understanding of any future introduction of overlay codes, where this proves necessary, because dialling the full area code for local calls would have become normal practice. This may help reduce confusion around dialling behaviour for numbers within the same geographic area with different area codes (i.e. the original code and the overlay), particularly the longer the interval between the two stages.

A3.19 In addition, closing local dialling would defer the need for an overlay code, which is potentially more disruptive because it could affect the geographic significance of numbers for consumers both 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.

A3.20 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.[236] 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.[237]

A3.21 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 suggests that those who used a memory facility tended to store a six-digit number without the area code.[238] Although having to change stored

[236] 2010 consumer research report page 8.
[237] 2010 consumer research report page 4.
[238] 2010 consumer research report page 8.

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 appears to have decreased from 36 per cent in 2005 to 25 per cent in 2010 according to our consumer research.[239]

A3.22 It is also possible that closing local dialling could result in some misdials (although this could also be the case under Option 2, discussed further below). However, we 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[240]) rather than connect to a wrong active number.

A3.23 However, it could be argued that since closing local dialling alone may be insufficient in some areas, local dialling should remain open and overlays alone (Option 2) should be the preferred approach to avoid disrupting customers more than once. In particular, while the loss of local dialling may be acceptable if it was a permanent solution, it could be considered inappropriate to remove a useful facility when doing so can only be a delaying tactic for further, more significant change. This is discussed further under Option 2 below.

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

A3.24 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 2020, Option 2 would be likely to result in the introduction of overlay codes in many areas within the next ten years.

A3.25 The impact on consumers of overlay codes with open local dialling has the potential to be initially small for the majority of people in the area, although for the minority of consumers who are more directly affected, there is the potential for a much more significant impact. We now discuss this distinction.

A3.26 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 local number that starts with a new overlay code that they would need to include the area code. In addition, 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, which reduces the number of consumers directly affected by the overlay code.[241] Many existing CPs have relatively low utilisation rates and large volumes of unused numbers with the original area code may be available to consumers in many geographic areas for some time. Therefore the introduction of numbers that start with the overlay code is likely to be gradual and it could take a long time for these numbers to become common, so the impact on consumers who have a number with the original area code is likely to be small initially.

[239] 2010 consumer research report page 4.
[240] This would depend on the implementation approach, which will be determined in consultation with the industry. There may be certain number blocks that it would be prudent to allocate only once consumers have adjusted their dialling behaviour to always including the area code, as dialling the local number without the area code in error may result in connection to a chargeable service (e.g. a 118XXX directory enquiry service).
[241] This may have implications for competition between existing and new entrant CPs, see discussion below.

A3.27 However, in our 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.[242] For example, lack of consistency was a concern identified in our 2010 consumer 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)

A3.28 This view was reiterated in the 2011 consumer research:

> *"It doesn't seem right that you could be living next door to someone with a completely different area code. I'm not sure it happens elsewhere".* (25-34 years old, Consumer, Bradford) [243]

A3.29 In addition, many consumers may remain unaware of the geographic significance of the overlay code while the quantity of active numbers with the new code remains small. This could have a particularly negative effect on the (relatively small number of) consumers that would be using or calling a number with the overlay code, particularly while local dialling remains open, for three main reasons explained below.

A3.30 Firstly, it could result in a heightened perception of the distinction between the original code and the overlay code, not only in terms of the code itself, but also in terms of the dialling pattern required to make calls. This may weaken the geographic significance of both area codes, and could be particularly important for consumers in light of our research which indicated that the proportion of consumers who considered geographic significance to be important had increased since 2005 from 52 per cent to 64 per cent in 2010.[244] Several research respondents felt the overlay code option could only work if the new code was very similar to the old one. In particular, it could be argued that an overlay code which is very dissimilar to the original area code may exacerbate confusion and unpopularity of an overlay code. However, in our research there was also widespread acceptance that if a new code was brought in then people would get used to it eventually.[245]

A3.31 Secondly, in order to use local dialling correctly under Option 2, 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).

A3.32 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

[242] 2010 consumer research report page 4.
[243] 2011 consumer research report page 9.
[244] 2010 consumer research report page 4.
[245] 2010 consumer research report page 16.

necessary, awareness and understanding of the overlay and its geographic significance may also be more limited outside the immediate area.[246]

A3.33 However, we also acknowledge that in those areas where an overlay is ultimately required under Option 1, Option 2 could have a relative advantage by only disrupting consumers once. That said, while we accept that there could, under certain circumstances, be benefits to only introducing a single, one-off supply measure (i.e. an overlay code), we do not consider that it is clear that earlier introduction of overlay codes will automatically minimise disruption.

A3.34 Firstly, introducing an overlay code in an area where closing local dialling would be sufficient for many years may lead to a higher overall impact on consumers in that area since our research suggests overlay codes may have a greater negative impact on consumers (see below). Secondly, as discussed above, we consider that closing local dialling may help to aid understanding and acceptance of an overlay code where one is required, which may mean that an overlay code alone could have a greater (and potentially longer term) negative impact than the combined approach under Option 1. As a result, while Option 1 potentially involves a two-step change compared to the single change under Option 2, it is not clear to us that the single change under Option 2 will automatically minimise overall disruption in the longer term.

Residential consumer research results

A3.35 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 local dialling[247] and so all businesses and almost all residential users preferred to lose the local dialling facility rather than introduce a new code into their area.[248]

A3.36 Our 2010 and 2011 consumer 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.[249] Few people appeared to have concerns if it were to disappear. Consumers appeared to be more concerned with maintaining the geographic meaning of numbers.[250]

A3.37 One reason for the 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)*;[251] and

[246] 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.
[247] 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 2010 consumer research report page 11.
[248] 2010 consumer research report page 4.
[249] 2010 consumer research report page 4 and 2011 consumer research report page 5.
[250] 2010 consumer research report page 5 and 2011 consumer research report page 6.
[251] 2010 consumer research report page 9.

"Nothing really changes, we're already doing this on mobiles" (Residential, Brighton).[252]

A3.38 The views about overlay codes were largely negative when compared to the 'close local dialling' option:[253]

"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)*.

A3.39 In addition, our 2011 consumer research[254] which compared an overlay code with closed local dialling to a number change found that those who rejected the overlay code option did so because they felt that two codes would be confusing and lead to misdialled calls, would reduce the geographical significance of an area code and could lead to discrimination between businesses (discussed below) and consumers with numbers with new and old codes. For example, some residential consumers anticipated that two areas codes would also encourage a division within the area based on new versus old telephone numbers, i.e. new numbers going to 'new people'

"If the new numbers go to new developments, then people could be identified by these new numbers. I can see there being some snobbery about this in Brighton". (25-34 years old, Consumer, Brighton)

A3.40 Residential consumers were also concerned about the potential for confusion and misdials with an overlay code, particularly if the same number was issued to both codes:

"It would be a pity if you had the same number as a take away with the other area code – that would be a pain". (18-24 years old, Consumer, Milton Keynes).

A3.41 These results are consistent with our 2005 consumer research.[255] 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.

A3.42 However, we also note that the rejecters of the overlay code option in the 2011 consumer research were generally those who had little to lose by any changes to a fixed line number. Conversely, those residential consumers who supported the overlay code option as opposed to number change were generally heavier fixed-line users, who were often older and who liked this option because it was easy to

[252] 2010 consumer research report page 14
[253] 2010 consumer research report page 14.
[254] 2011 consumer research report pages 9 and 10.
[255] *Numbering Review, Report on Market Research Findings*, 23 February 2006, page 22. http://stakeholders.ofcom.org.uk/binaries/consultations/numberingreview/annexes/marketresearch.pdf

understand and it involved no change to existing numbers so was viewed as being more convenient for them:[256]

> *"It's just the easier option for me – nothing changes. We'd get used to either option really, but since you've asked I'll go for the one that affects me least". (55+ years old, Consumer, Brighton)*

> *"This seems good to me, I don't have to change anything". (45-54 years old, Consumer, Stoke on Trent)*

A3.43 Therefore while consumers tended to prefer closing local dialling and disliked overlay codes, this suggests there is the potential for overlay codes to be relatively well understood by consumers and generally accepted.

A3.44 The 2010 consumer 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.[257] 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.[258] This is supported in our 2011 consumer research[259] which considered three main options: the simultaneous introduction of overlay code and closed local dialling; a number change; and the closure of local dialling first to be followed by the introduction of an overlay code in ten to 15 years' time.[260] Out of these options, it was the latter that appeared to make sense to a lot of residential consumers because they considered it to be straightforward and were unsure of what would happen to technology in the interim time period.

> *"Who knows where we'll be in 10-15 years, will we even use fixed lines then?" (35-44 years old, Consumer, Brighton)*

A3.45 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 alleviate the problem for less than ten years before overlay codes were required, 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.[261] 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.[262] Key would "be to ensure there is a solid rationale that is part of a wider national strategy; there is some reassurance that the solution is long-term and there is clear communication of the details of the change".[263]

[256] 2011 consumer research report page 9.
[257] 2010 consumer research report page 5.
[258] 2010 consumer research report page 15.
[259] 2011 consumer research report page 13.
[260] As set out above, it is expected that the delay before an overlay code is required as a result closing local dialling could be, on average, as long as 17 years.
[261] 2010 consumer research report page 15.
[262] 2010 consumer research report page 5 and 2011 consumer research report page 13.
[263] 2011 consumer research report page 6.

Initial conclusion on impact on residential consumers

A3.46 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 that Option 1 is likely to be preferred by residential consumers over Option 2. This is because we forecast that closing local dialling also delays the need for an overlay code which is a more intrusive supply measure since it has the potential to affect the geographic significance of numbers for consumers within and outside the affected areas. Indeed, as set out above, closing local dialling may be sufficient for many areas into the considerable future (depending on future demand for numbers).

A3.47 Therefore, given that closing local dialling appears to have a lower negative impact on consumers than an overlay code, a strategy which can delay the introduction of an overlay code and may also aid understanding of an overlay code if it is ultimately required may benefit residential consumers. This is particularly true given the potential for technological and consumer preference changes in the interim, as well as the other measures proposed in this document for incentivising more efficient use of existing geographic numbers (for example, strengthening our administration measures). These may further delay any need for an overlay code and may also reduce the impact on consumers if an overlay was ultimately introduced.

A3.48 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, particularly given many consumers are used to dialling the full number on (and to call) a mobile phone.

A3.49 However, we recognise the importance of planning the effective communication of any change to support consumers' understanding.

Assessing the impact on business consumers

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

A3.50 As with residential consumers, 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.

A3.51 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, 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 dial 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 its implementation. As a result, we do not consider that significant changes to promotional materials are likely to be required immediately after closing local dialling and there are a number of ways for businesses to plan around this.

A3.52 In addition, with the increasing use of mobile phones for which dialling the full phone number is always required, it seems likely that many businesses already print their full number in promotional material to allow mobile-originated calls. Many

locally-based businesses are also likely to 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. Therefore we do not expect the majority of locally-based businesses to be in a position where significant changes to promotional materials are required.

A3.53 Should an overlay code ultimately be required under Option 1, then there are a range of effects on businesses that could result, discussed below under Option 2. However, Option 1 would defer the introduction of overlay codes and may aid consumer understanding (as discussed above), and therefore may reduce the impact of their introduction where they may be necessary.

Option 2: Overlay with local dialling (symmetric dialling)

A3.54 Our 2010 consumer research shows that the geographic significance of telephone numbers continues to be important for businesses as well as residential consumers for a mix of 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.[264] 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 based:

> *"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)*

A3.55 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, a view particularly held by businesses in the Oxford and Brighton areas.[265]

A3.56 This could affect businesses that are new to the area, as well as existing businesses that require new geographic number(s) 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)*[266]

A3.57 This 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

[264] 2010 consumer research report page 4.
[265] 2010 consumer research report page 4 and 2011 consumer research report page 11.
[266] 2010 consumer research report page 15.

can only get a phone number with an overlay code then it might be at a disadvantage relative to its competitors. We note that to some extent businesses might be able to choose a CP that has stocks of available numbers that start with the original area code, which reduces the number of businesses directly affected by the overlay code.[267] Many existing CPs have relatively low utilisation rates (see Section 6), and so volumes of unused numbers with the original area code may be available to businesses in many areas for some time. However, 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

A3.58 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)*[268]

A3.59 Businesses almost unanimously preferred closing 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)*[269]

A3.60 Our 2011 consumer research which focused on overlay codes and number change[270] found those businesses who did not like the overlay code option felt that it was important to maintain geographical significance for identifying businesses and they felt that two area codes would dilute the geographic significance of a single area code.

A3.61 For some business consumers, this meant that trade could be affected:

> *"In this area, people know that a Milton Keynes code will spread across to Nottingham and other neighbouring areas. I think a new code will confuse people and they will go elsewhere because they're not sure". (Business, Milton Keynes)*

[267] This may have implications for competition between existing and new entrant CPs, see further discussion in this annex.
[268] 2010 consumer research report page 10.
[269] 2010 consumer research report page 11.
[270] 2011 consumer research report pages 11 and 13.

> *"I don't like the idea of two codes, it will confuse customers when they are looking for a business and it's not what we're used to". (Business, Milton Keynes)*

A3.62 Two businesses also relied on area codes for organising their mobile teams. One business, based in Milton Keynes commented:

> *"We still use area codes as back up for identifying where we should send our ambulances. If someone gives us the wrong postcode, then we use the area code to check. A new area code could be confusing for our operators".*[271]

A3.63 Our 2010 consumer research also found that 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 another one of our offices based on their area code". (Business, Brighton)* [272]

A3.64 Several businesses felt that two codes could also lead to discrimination between businesses with old and new numbers. Many agreed with consumers that businesses with the old code might be favoured over those with the new code, therefore unfairly penalising new or expanding businesses. Several residential consumers admitted in the 2011 consumer research that they would probably purchase certain goods or services from businesses with an old number:

> *"It would depend on the business, but if I were looking for a builder, I'd definitely go for the one with the old number as they would seem more established". (35-44 years old, Consumer, Milton Keynes)*[273]

A3.65 However, those businesses that supported the overlay code option (rather than number change) did so because there was no direct cost or inconvenience to them as their number did not have to change.

> *"This is fine, it doesn't affect me and we won't incur any costs". (Business, Stoke on Trent)* [274]

A3.66 In addition, when presented with an option to close local dialling and then introduce an overlay code in ten to 15 years' time, it appeared to make sense to businesses as they were unsure of their future over that length of time:

> *"I've no idea whether I'll be doing what I'm doing now in 10-15 years, so let's keep it the same and wait and see". (Business, Stoke on Trent)* [275]

[271] 2011 consumer research report page 11.
[272] 2010 consumer research report page 13.
[273] 2011 consumer research report page 10.
[274] 2011 consumer research report page 10.
[275] 2011 consumer research report page 14. As explained earlier in this annex, it is expected that the interval between closing local dialling and the need for an overlay code would, on average in the vast majority of areas with four-digit codes, be longer than ten years.

Initial conclusion on the impact on business consumers

A3.67 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 that Option 1 is likely to be preferred by business consumers because we forecast that this would defer any need for overlay codes. In addition, closing local dialling may aid understanding and recognition of the overlay itself if ultimately required, which may reduce some of the competition concerns identified above.

Assessing the impact on vulnerable consumers

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

A3.68 Closing local dialling could have a significant impact on vulnerable consumers. This is due to two main effects.

A3.69 Firstly, implementing this option would require a change in dialling behaviour that some could find difficult to learn or adopt, particularly given that many consumers will have been able to dial a local number without the area code for many years.

A3.70 Secondly, it would also require that any phone 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.

A3.71 In the event that an overlay code is also required, this would have further implications for vulnerable consumers, as discussed below.

A3.72 However, we consider that the negative impacts of this option on vulnerable consumers could potentially be reduced by targeted communications through relevant consumer interest groups and care organisations, to increase awareness and understanding of the changes by vulnerable consumers.

Option 2: Overlay with local dialling (symmetric dialling)

A3.73 If overlay codes were introduced with open dialling, vulnerable consumers would not have to change their dialling behaviour. In addition, a significant proportion of vulnerable consumers may not actually have to dial numbers with a new area code for a significant period of time.

A3.74 However, for the vulnerable consumers that were exposed to the overlay code, they 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. Under Option 2, the misdialled call could get through to a vulnerable consumer in error and may be confusing and/or distressing for that end-user.

Consumer research results

A3.75 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 from 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.

A3.76 Although not fully representative, the 2011 consumer research found that some of the older consumers thought dialling the code and number in full would be extra work but they were happy to sacrifice this facility if there was no change to their number:

> *"It's a bit of nuisance but you'll get used to it. We dial the code for Worthing and other local areas so it's no big deal" (55+ years old, Consumer, Brighton)* [276]

Initial conclusion on impact on vulnerable consumers

A3.77 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 and targeted communications plans and careful implementation.

A3.78 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 as they are unlikely to need to make calls to the new overlay code on a regular basis. However, for those it does impact, Option 2 could cause greater difficulty and distress because it could take vulnerable consumers longer to understand the use of the overlay code and learn to deal with it, particularly if the timing between the communications plan and exposure to the overlay code is longer (as suggested it may be for vulnerable consumers). However, again, an effective and well targeted communications plan may help to reduce these negative effects.

A3.79 Our conclusion is, therefore, that neither option offers a clear advantage to vulnerable groups.

Assessing the impact on competition between CPs

A3.80 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 potential options to increase number supply might affect competition.

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

A3.81 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

[276] 2010 consumer research report page 9.

therefore do not foresee any impacts on competition between CPs from closing local dialling.

A3.82 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, Option 1 would defer the introduction of overlay codes, and potentially reduce the differentiation between customers with the overlay code and the original code if the local dialling facility was already closed. This may, to some extent, aid understanding and help mitigate negative consumer perceptions of a new code, reducing the potential competition concerns associated with an overlay code.[277]

Option 2: Overlay with local dialling (symmetric dialling)

A3.83 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 (see discussion above). 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).*[278]

A3.84 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. In particular, those with fewer of the preferred numbers might find it harder to compete for new business. 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 frequently dial have the original area code. In comparison, those customers with the overlay code would only be able to call a subset of numbers in the same area with local dialling. This could exacerbate the impact on competition.

A3.85 Figure A3.2 below shows that most numbers allocated in six sample geographic area codes 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 new to the particular area and CPs which rely on new number allocations could be at a potential competitive disadvantage.

[277] We also note that, when overlay codes were first implemented in the United States of America, the Federal Communications Commission (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 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/fcc99122.pdf.

[278] 2010 consumer research report page 15.

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 number block with the same geographic area code prior to 31/12/04.

A3.86 Additionally, there may be a competitive distortion between existing CPs with stocks of numbers with the original area codes, because larger or more established CPs with a larger stock of existing numbers may be at a competitive advantage relative to established CPs with a smaller stock of existing numbers.

A3.87 As a result of the potentially negative consumer view of an overlay code discussed above, it is possible that some CPs with stocks of numbers with the original area code may seek to charge premium prices for scarce but desirable numbers from the "preferred" original area code. This may unfairly favour the incumbent companies who have a supply of numbers with the original code and are able to extract additional revenue for this. In addition, it may raise consumer protection concerns. However, we also recognise that charging for particular numbers is already in practice by some CPs under the current regime (for particularly attractive numbers, for example), and the availability of alternative numbers and competing CPs mean the impact on consumers is unclear.

A3.88 Although there may be some negative competition effects as a result of overlay codes, in the near term there are many CPs with number blocks in the specific areas close to exhaustion, which may support robust competition.

A3.89 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.

A3.90 Additionally, effective communication of the overlay code might support consumers' understanding and, potentially, promote 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

A3.91 We consider that Option 1 – closing local dialling and introducing an overlay code later if necessary – is 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 have a negative impact on competition by putting those CPs who do 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 to some degree mitigate the competitive disadvantage that some CPs may face if and when an overlay is introduced. As a result, some CPs may prefer Option 1 to Option 2, particularly those which are unable to rely upon existing number allocations to meet their customers' requirements and so will be likely to require numbers with the overlay code.

A3.92 It is also possible that, by delaying the introduction of overlay codes, CPs might benefit from changes in technology and consumer preferences that occur in the meantime, or CPs might be able to make more efficient use of the existing blocks of the original codes (aided by the administration measures previously discussed in Section 5). Such changes could not only further delay the need for an overlay code, but may also reduce the potential distortion to competition that could result if an overlay code was ultimately introduced.

Assessing the impact on CPs

A3.93 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 across the UK 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.

A3.94 As part of an informal information gathering exercise 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.[279]

A3.95 Finally, in response to the consultation we received several comments about implementation from CPs. The general view was that the costs for each CP could vary significantly and would depend upon the precise implementation approach (as discussed in more detail in Section 4). While the implementation approach might affect CPs' costs and their individually preferred number supply option, no respondents stated that the costs of either option would be prohibitive to its introduction. Again, therefore, we do not see any reason to distinguish between the options described above purely on the basis of implementation costs.

A3.96 We do, however, recognise that the details and timing 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. Details about the next steps of the implementation plan are set out in Section 4.

Conclusions for areas with four-digit codes: Option 1 is the preferred solution

A3.97 Having considered the impacts of the two different options we conclude 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.

[279] 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. We have not received information in response to the November Consultation that causes us to change this view.

A3.98 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 for as long as possible. The change in behaviour that closing local dialling would require appears to be largely acceptable to most consumers, and may actually aid understanding of the overlay code should one ultimately be required. 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.

A3.99 Although we note the potential for a significant impact on vulnerable consumers as a result of our preferred option, we consider that neither option offers a clear advantage to vulnerable groups. However, doing nothing is not a viable option in areas where geographic numbers are forecast to run out. In addition, we consider that the impacts of Option 1 could be mitigated by effective and targeted communication and careful implementation. Therefore the potential impact on vulnerable consumers of Option 1 does not lead us to change our preferred approach, and we have not received any evidence in response to the consultation to cause us to change this view. However, we will continue to engage with representative groups of vulnerable consumers to understand the concerns and needs of vulnerable consumers in greater detail as implementation progresses.

A3.100 As set out in the November Consultation, we consider that any option should establish a longer term strategy 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. Option 1, with the availability of an overlay code in the future should one be required, would provide this long-term strategy.

A3.101 We again stress that our preferred option is a two-staged approach (closing local dialling first and then introducing an overlay code if and when necessary), because although the first step may create sufficient new numbers in many area codes for a long time (with limited impacts on consumers and on competition), a few areas may require a subsequent increase in the supply of numbers. The other elements discussed in this document (such as proposals for number charging and administrative measures) as well as potential technology changes in the future may affect the interval between the two stages, and these interactions with number supply are set out in Sections 5 and 6.

Figure A3.3 Summary of the key impacts of Options 1 and 2

Supply measure	Advantages	Disadvantages
Option 1: Close local dialling, introduce an overlay code later if necessary	Would maintain existing association between a geographic area and only one area code for as long as possible Defer the need for overlay codes, whose introduction could be more disruptive to consumers and to competition Changes dialling behaviour prior to introduction of overlay codes, which could make their subsequent introduction easier	Would affect everyone in the area who uses local dialling Two-stage process, so potential to have greater impact on consumers and CPs in those areas where an overlay code is ultimately required

Option 2: Overlay with local dialling (symmetric dialling)	Reduces the number of people that are affected by the number supply change in the short term Would not require a change to existing dialling behaviour	Would hasten the introduction of overlay codes, which, according to our research, consumers do not favour Could distort competition between CPs because CPs with a larger stock of numbers with the original code could have an advantage More likely to confuse people affected by the change Could erode geographic significance of numbers more quickly.

Annex 4

Supply options involving number change

Background

A4.1 In the November Consultation, our proposal for creating new supplies of geographic numbers in any four-digit area code where they are needed was to:

> i) close local dialling – increase the quantity of local numbers by around 25 per cent by releasing for use numbers which start with '0', '1' and '99'. Local users would have to include the area-code when dialling local calls; and
>
> ii) if and when further supplies are needed, introduce an overlay code. Two area codes would then apply to the same geographic area, doubling the quantity of local numbers.

A4.2 These two measures to increase number supply would be new to the UK – currently local dialling is provided in all areas and no overlay codes have been introduced. Number change has been our approach to increasing the supply of numbers in the past.

A4.3 We had decided not to propose options for increasing the supply of numbers in an area code that required changes to existing telephone numbers in the November Consultation. This approach was in line with our conclusions in the 2006 strategic review of telephone numbers and our policy principle that "the numbers that consumers currently use are not changed if this is avoidable". This was to minimise the impact and costs on consumers of number supply measures.

A4.4 During the November Consultation we held local engagement meetings in three locations – Brighton, Bournemouth and Langholm in Dumfriesshire - whose area codes are close to exhaustion to discuss responses to our proposals. Attendees provided helpful comments and some questioned why we were not pursuing number changes. In addition, consumers who provided written responses to the consultation were generally concerned about the prospect of overlay codes, and some suggested that we should consider number changes instead.

A4.5 We therefore commissioned the 2011 consumer research to understand attitudes to closure of local dialling and introduction of an overlay code on the one hand and to an alternative of a local number change (without closure of local dialling) on the other.

A4.6 The research was qualitative, and showed mixed opinions about the options when the overlay code was presented as occurring at the same time as closure of local dialling. Numerically, slightly more residential participants favoured number change, with 36 preferring number change and 27 preferring overlays, while businesses were evenly split. However, both residential and business participants overwhelmingly preferred closing local dialling and introducing an overlay code when this option was presented with a period of time between the two stages of change (i.e. with an overlay introduced between 10 and 15 years after closure of local dialling).

A4.7 This annex compares our preferred option of closing local dialling followed by an overlay code if required on the one hand, and an option that involves number change to address number shortage on the other hand.

The options

A4.8 Option 1 is our preferred option as described in the November Consultation and in paragraph A4.1.

A4.9 Option 2 is a feasible option for increasing number supply through number change where necessary, described in paragraph A4.14 below.

A4.10 We note that Option 2 described below is not the only option for increasing number supply that would involve number change. Option 2 has been chosen based on our preference for using local solutions for addressing number shortage, where feasible, and the need to operate within the constraints of available numbers.

A4.11 For example, the option to introduce Wide Area Codes, as considered in previous consultations,[280] may no longer be feasible without a complete change of area code and local number because of limitations on available migration paths from old to new numbers. Furthermore, we have not considered more extensive number change options – such as a UK-wide program of number change to resolve local shortage and maintain geographic significance – as these were considered to be unlikely to satisfy the need for a proportional response.

A4.12 It should also be noted that Option 1 and Option 2 are mutually exclusive in practice. It would be unnecessarily disruptive for consumers to adapt to closed local dialling and then decide at a later date on overlay codes or number change, as number change does not require the closing of local dialling.

Option 1: Close local dialling and then introduce an overlay code (our preferred option in the November Consultation)

A4.13 Under this option we would close local dialling then, when further exhaustion occurs several years later, introduce an overlay code. For example, in Bournemouth, local dialling in the 01202 code area would be closed in 2013, then, by a date likely to be no later than 2022, new local phone numbers would have the new local code. Numbers previously allocated with the 01202 code would remain unchanged.

Option 2: Number change (proposed number change solution)

A4.14 Under this option we would change the local dialling code to a shorter code with a single carefully-defined transition plan for all current local phone numbers. For example, in Bournemouth this might work as follows. Current local phone numbers have 6 digits and are of the form 01202 XXXXXX. From 2013, all new local numbers would have the dialling code 0103 and the local number would have 7 digits, for example 0103 8XXXXXX. Meanwhile, parallel running would be provided for around two years so that the pre-existing numbers could be dialled either in their original form of 01202 XXXXXX or in a new form 0103 9XXXXXX. After a certain date in, say, 2015, it will no longer be possible to reach users by dialling the 01202 code, and only the 0103 code will work. Thereafter, users dialling the 01202 code

[280] Telephone Numbering, Safeguarding the future of numbers, consultation document published on 23 February 2006, available at http://stakeholders.ofcom.org.uk/binaries/consultations/numberingreview/summary/numbering.pdf .

will hear a recorded message asking them to redial using the new code. Local dialling would remain available.

Analysis

A4.15 Either option can be expected to cause significant concerns to consumers in different ways. We have presented the analysis in the form of a table below. The table below divides the impacts into two sets: those that can be expected in the course of implementation of the changes, and, separately, those that can be expected to endure in the long-run.

A4.16 The final columns present an assessment of which option minimises impacts, and an assessment of the likely degree of the impact. While the latter is, by its nature, largely speculative and subjective, it is nevertheless useful when comparing a range of different types of impact.

	Description of potential impacts		Our assessment of the likely impacts	
Impact category	Option 1 Close local dialling, followed by overlay code where necessary	Option 2 Number change	Favours option:	Likely impact
IMMEDIATE IMPACTS OF CHANGE				
Disruption to consumers and businesses	Start dialling area code for all local calls. Re-program local numbers stored in fixed phones. Mis-dialled calls (if area code is not dialled on local calls – would hear a network announcement; would impact callers from fixed local lines only).	Inform contacts of changes. Re-program all stored local numbers. Mis-dialled calls (if dial old-code number after a certain stage of the transition – would hear a network announcement; could impact any caller). Many businesses would need to update displays of phone numbers on shop-fronts, vehicles, fixed advertising, web-sites and stationery.	1	High
Costs to businesses	Minor costs to some businesses in re-programming PBXs and other equipment which dials or screens local calls.	Estimated at between £1500 and £18,000 per business for the 02X code changes in 2000.[281] Likely to have reduced since then because of greater use of web, email and mobile phones.	1	High
Costs to CPs	BT estimates its own costs at around [✂].	CPs have suggested this would be significantly higher than for Option 1.	1	Medium
Consumer concerns	General concern about any change. Loss of "nice to have" local dialling from fixed phones. Unfamiliar concept of two codes for same area	General concern about any change. Costs to businesses and to some individuals (e.g. in voluntary groups) Hassle of informing contacts.	1	High

[281] *Numbering Review: Report of Market Research Findings*, 23 February 2006, paragraph 1.10
http://stakeholders.ofcom.org.uk/binaries/consultations/numberingreview/annexes/marketresearch.pdf

	Concern likely to be heightened if new code is overlaid <~10 years after closing local dialling.			
ENDURING IMPACTS AND RISKS AFTER THE CHANGES				
Supply of local numbers	Plentiful - multiplies original supply by approximately 2.5 in two distinct steps.	Plentiful - multiplies original supply by 10 immediately.	=	High
Dialling convenience	Reduced - the area code would need to be dialled for all local calls.	Reduced slightly - a prefix digit would need to be added to six-digit local numbers to make them seven-digits in length.	2	Low
Costs to businesses	After overlay of the new area code: - risk that some local businesses with a number with the new code may lose business because some potential customers may infer they are not local, or think they are less “established”; and - risk that some businesses and consumers may need to pay extra for CPs to assign either a number with the old code or a non-geographic number to their new lines.	Some deferred changes to displays of phone numbers, e.g. on shop-fronts.	2	Low
Consumer concerns	Non-uniformity – “Why are dialling arrangements in Bournemouth different from those that apply everywhere else in the UK?” After overlay of the new area code: - risk of confusion – some consumers may not be sure what area is covered by the new code; - strange outcomes – e.g., “Why does my next-	Risk of some confusion about whether or not to add a prefix digit when dialling a new (7-digit) local number	2	High

	door neighbour have a different area code from me?"; "Why does my second line have a different code from my original line?" - equality and fairness - Some users may feel that a phone number with the new code puts them at a commercial or social disadvantage.			
The UK's numbering plan (efficient and effective use of numbers)	After overlay of the new area code, risk that confusion could weaken consumers' established trust in the meaning of geographic numbers.	No impact on consumers' understanding of the location significance of geographic numbers. Slightly less efficient use of numbers than Option 1 – produces much larger new supply of numbers than is likely to be needed.	2	High

A4.17 The above table shows that, in terms of the immediate impacts of the change, the option of introducing an overlay code provides better outcomes than number change for both consumers and businesses, on both the basis of cost and less tangible impacts.

A4.18 Over the longer term, the table indicates that concerns regarding the impact of overlay codes might arise. In particular, overlay codes are predicted to cause more confusion over the long term compared to number change. Furthermore, because local dialling will be closed in some areas of the UK and not other areas, there might be enduring confusion about what dialling arrangements apply, and why there is a difference in dialling arrangements between areas. There is also the concern that the introduction of overlay codes might increase consumer confusion regarding the geographic number plan in general.

Conclusions

A4.19 The impacts of number change are likely to be substantial and are very tangible, involving direct costs to all affected businesses and consumers. For some businesses these costs might be significant. Meanwhile, the costs of overlay codes and local dialling closure are spread over a longer time. Although there might be some businesses and consumers who are not pleased by these changes, the impact is likely to be more intangible.

A4.20 Although we can see that, depending on whether short term tangible costs are preferred to long term intangible costs, a different conclusion would be reached regarding which option provides the least negative impacts. However, we believe that, on balance, the evidence of our consumer research and our analysis of the positive and negative impacts of the options examined leads to the conclusion that closing local dialling and introducing an overlay code should be the preferred option.

Annex 5

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

Introduction

A5.1 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.[282] We have identified two specific cases where this situation arises:

- Number portability – this is the facility that allows subscribers to keep the same telephone number when they change provider. 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.[283]

- Wholesale line rental (WLR) - this 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. 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.

A5.2 In the November Consultation we considered that the range holder should 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 CPs and Ofcom) than attempting to track the CP using each individual number and recover a number allocation charge from them.[284]

A5.3 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).

A5.4 In Annex 4 of the November Consultation we set out three options for cost recovery guidelines as follows:

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

[282] This explicitly excludes sub-allocated numbers which involve a commercial agreement between CPs.
[283] 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.
[284] General Condition 18 obliges CPs to provide us with information on ported numbers and the recipient provider if requested to do so.

are subject to a number charge. For example, if Ofcom sets the number 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).

A5.5 We assessed the options against the principles for cost recovery and concluded that Option 2 was our preferred option (see paragraphs A4.12-A4.44 of the November Consultation). We also proposed to apply a cap to the charge per number of five times the Ofcom per number charge to ensure that a prospective recipient CP would not face a high cost recovery charge in the event that the range holder had low block utilisation.[285]

A5.6 Stakeholder responses to the November Consultation proposals are discussed in detail at the end of this annex. Stakeholders generally accepted that the range holder should be able to recover costs from the recipient using the number. However, some stakeholders commented that the preferred approach would potentially be complicated and costly to implement because systems development would be required to calculate bills for cost recovery. In particular, BT noted that it does not have a central repository of telephone number usage data or a function to bill for number use. In order to be able to bill for numbers, it would need to amalgamate data from various systems to understand the level of utilisation achieved to reconcile number block charges (see paragraph 6.194).

A5.7 In light of this we are proposing two new options which aim to reduce implementation costs and we invite stakeholder feedback on these options as part of this consultation. The two new options are:

Option 4: Reciprocal approach - CPs recover costs from each other on a reciprocal basis based on BT's average utilisation for number blocks in chargeable areas.

Option 5: Discount approach - Ofcom does not levy number charges for ported or external WLR numbers. The range holder provides Ofcom with a list of numbers which are ported out/used for WLR and we apply a discount to the bill for these numbers.

A5.8 These options are discussed in detail in below.

Option 4: Reciprocal approach

A5.9 Under this approach there would be a single cost recovery charge so CPs would pay and be recompensed at the same rate when numbers are ported to or from them. The charge could be based on the average utilisation across industry or BT's utilisation (discussed further below). This approach is simpler than Option 2 in relation to ported numbers since under Option 2 the cost recovered depends on each range holder's utilisation (meaning each CP would charge a different rate), and should lead to fewer costs for CPs in calculating utilisation rates and verifying bills compared to Option 2. In this option, the cost recovered by BT in relation to

[285] i.e. 50p based on the current proposal to charge 10p per number.

number charges for WLR numbers would be based on BT's average utilisation in chargeable areas as in Option 2.

A5.10 Having a single cost recovery charge for ported numbers based on average utilisation would tend to disadvantage CPs who have lower than average utilisation relative to CPs who have above average utilisation (our information gathering has indicated that small CPs tend to have lower utilisation than larger counterparts). This is because the actual cost of using each number depends on the utilisation of the block. For example, if a CP has utilisation of 20 per cent (i.e. 200 numbers are used in a 1,000-number block) then the number charge cost per customer is 50p.[286] If industry average utilisation was 50 per cent then under the reciprocal approach the allowable cost recovery would be 10p/50 per cent = 20p per number ported out, thus in this example the CP would not be able to recover the full 'per customer' cost of providing the number. However, given that smaller CPs are likely to have relatively few ported out numbers we consider that this disadvantage is likely to be minimal.

A5.11 Under this option if the recipient CP had higher utilisation than average it would face a higher cost in using a ported number relative to using its own number allocation, which could encourage it to 'persuade' customers not to port their numbers. For example, if industry average utilisation was 50 per cent then a recipient CP would face a cost per customer of 20p for using a ported number. If the recipients own utilisation was 80 per cent then the cost of using a number from its own allocation would be 12.5p.

A5.12 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 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 £285 in 2010.[287] We consider that the difference between the cost of using a ported number to one from a CP's own allocation is unlikely to be sufficient for CPs to encourage consumers not to port their numbers.

How to measure average utilisation?

A5.13 We have considered whether it would be appropriate to base the cost recovery charge on a measure of industry average utilisation or BT's average utilisation for chargeable areas. We anticipate that the measure of average utilisation would be calculated once a year.

A5.14 Using BT's average utilisation would likely be a simpler and lower cost option (BT would already have to calculate its average utilisation for cost recovery for WLR numbers). Computing a measure of industry average utilisation would result in greater cost because each CP (or a sample of CPs) would need to provide utilisation information and Ofcom would have to compile the information.

A5.15 The disadvantage of using BT's utilisation is it may not face an incentive to minimise number charge costs since it can pass the costs through to the recipient CP. However, we consider that BT Group would face a general incentive to use numbers efficiently and minimise number charges since a significant amount of

[286] £100 block charge/200 used numbers.
[287] Based on fixed voice revenues of £9,516m and fixed exchange lines of 33.4 in 2010. Data taken from http://stakeholders.ofcom.org.uk/binaries/research/cmr/Q4_2010.pdf

numbers are used for its own (i.e. BT Retail) customers and BT Group is motivated to maximise overall profits. Overall we prefer using BT's average utilisation on the basis that this is more practicable. We anticipate that BT's average utilisation will be above the industry average which should incentivise CPs to strive for higher utilisation. However, if for some reason we cannot use BT's average utilisation we may consider using a measure of industry average utilisation.

Option 5: Discount approach

A5.16 We anticipate that the reciprocal approach described above would help to simplify the cost recovery mechanism relative to the preferred option (Option 2) in the November Consultation. However, we note that CPs will still need to implement systems to recover costs from other CPs and will incur administrative costs to do this.

A5.17 We are keen to minimise the costs associated with setting up number charging and, in light of this, we have also considered an approach whereby CPs do not need to recover costs for ported/WLR numbers from each other. Under this option we would effectively exempt ported and WLR numbers from number charges. This would work as follows:

- annually each range holder would provide Ofcom with a standard schedule listing the quantity of geographic numbers ported out on a given day each year (to be determined), disaggregated by recipient CP. Separately, BT would also provide Ofcom annually with a schedule listing the quantity of WLR lines used by CPs outside BT Group, disaggregated by CP.

- Ofcom would apply a discount to the number charge bill based on the amount of ported out/WLR numbers. The discount for WLR numbers would only apply for numbers used by CPs external to BT (i.e. it would not apply to WLR numbers used by BT Retail[288]).

- if a CP does not provide information on ported out or WLR numbers then it will forgo the discount.

- CPs would not recover number charge costs from each other relating to ported out/WLR numbers.

A5.18 We have considered what rate of discount should be applied for each ported out/WLR number. One option would be to apply a discount at the Ofcom per number charge (i.e.10p) per ported/WLR number. This would be a simple approach but would not reflect the actual cost of using the number (which depends on utilisation as described above).

A5.19 In recognition of this, the per-number discount could be adjusted to reflect a 'per customer' cost using BTs average utilisation (which we would expect to be calculated annually). To the extent that CPs have utilisation rates different from BT the per-number discount may not reflect the cost per number for each CP. However, we consider that using a single utilisation rate has the merit of simplicity and if each CP had a discount rate based on its own utilisation this would increase

[288] The discount would not apply to WLR lines used internally by BT Retail because it would undermine the incentive for BT Group to use numbers efficiently.

the implementation costs. We expect BT to have higher utilisation than average which should incentivise CPs to attain high utilisation.[289]

A5.20 We have considered whether we should separately apply a number charge to the CP actually using the ported in/WLR number. We have looked at whether charging the CP using the ported/WLR number would help to achieve our objective of encouraging efficient number use. While applying a charge might deter CPs from using numbers in low value applications, overall we consider that charging for these numbers is unlikely to significantly encourage efficient use because the CP using the ported/WLR number does not control the block it is allocated from, thus the charge would not encourage more efficient block utilisation.

A5.21 In addition, charging CPs separately for ported in/WLR numbers would create significant additional administrative burden for us (which would ultimately be passed on to CPs through administrative fees) because we would need to collate information from every range holder CP to produce a list of ported in numbers used by each CP.

A5.22 In light of these factors we are not minded to bill CPs using ported in and WLR numbers separately. We recognise that this will benefit CPs who largely use ported numbers or WLR relative to other CPs, and this could confer a competitive advantage to some CPs. However, for our initial pilot of around 30 areas this is unlikely to have a material impact on CPs. We could review this as part of the pilot scheme review.

A5.23 The discount approach is the simplest option and would minimise the costs to CPs because they do not need to develop systems to recover number charge costs. CPs would incur some costs to send Ofcom information about ported and WLR numbers, and Ofcom would incur some additional costs to apply the appropriate discount to the bill. We anticipate that these costs will be relatively small. If a CP considered that the cost of providing this information to Ofcom exceeded the discount to its bill, then it could opt not to send the information and forgo the discount.

A5.24 We are mindful that the discount approach is potentially open to gaming by CPs. For example, where it is unlikely that numbers will be used CPs could agree to port out numbers to each other in order to avoid charges. We would need to monitor this type of behaviour and review if necessary.

Summary

A5.25 Below we provide a brief comparison of our original preferred option from the November Consultation (Option 2 above) and reciprocal and discount approaches.

Table A5.1: Comparison of advantages and disadvantages for cost recovery options

Option for cost recovery	Advantages	Disadvantages
Option 2 – Guidance that CPs recover number charge costs from each	Cost recovered reflects the actual cost to the range holder in providing the	Most expensive for CPs to implement because they need to develop systems for cost recovery

[289] If, for some reason, we cannot use BT's average utilisation we may consider using a measure of industry average utilisation.

other based on **own utilisation** (subject to cap of five times the Ofcom per number charge)	number. Does not confer a competitive benefits on any particular type of CP.	and calculate number block utilisation. Difficult to verify bill from range holder because it is hard for the recipient to check range holder utilisation. Recipient CP is charged based on range holder utilisation – something which the recipient cannot influence. The recipient CP is penalised where the range holder has low utilisation (although constrained by cap). Potential for disputes if CPs cannot agree on cost recovery mechanism.
Option 4 Reciprocal approach – Guidance that CPs recover cost from each other based on **BT's average utilisation**	Lower implementation costs for CPs than Option 2. Less impact on competition compared to Option 5.	Still expense for CPs in building cost recovery systems. CPs with utilisation lower than BT are unable to recover full cost of providing number (benefit to CPs with high utilisation relative to those with low utilisation). Potential for disputes if CPs cannot agree on cost recovery mechanism.
Option 5 Discount approach – No number charges applied for WLR/ported numbers	Simple option. Low implementation costs for CPs.	Competitive advantage to CPs who largely use ported/WLR numbers. CPs with utilisation lower than BT are unable to recover full cost of providing number (benefit to CPs with high utilisation relative to those with low utilisation). Possibility of gaming.

A5.26 We are keen to come up with a workable solution and welcome CPs' views on the three options above.

Question 8: Which option for dealing with number charges for ported and WLR numbers do you prefer? Please set out reasons for your preference.

Mechanism for cost recovery

A5.27 In the November Consultation, we proposed 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.

A5.28 We will reconsider whether it is appropriate to set out the cost recovery principles in a General Condition in light of stakeholder responses to the options we have set out above.

Stakeholder responses to the November Consultation proposals

A5.29 In the November Consultation we set out three options for cost recovery guidelines (described in paragraph A5.4 above) and assessed the options against the principles for cost recovery. When the November Consultation was published we preferred Option 2, however, as noted above we are now consulting on additional options. Below we discuss stakeholder comments on the proposals in the November Consultation.

Stakeholder comments

A5.30 C&WW accepted Ofcom's analysis and conclusions around the level of costs that the range holder would be able to pass through to the recipient. However, it cautioned that in the case of an inefficient range holder and an efficient recipient (from a numbering utilisation standpoint), there could be an incentive on the recipient to encourage customers to take a new number rather than port their existing number from the range holder, as this would result in lower costs for the recipient CP. It thought this would have the perverse effect of meaning more numbers were used in the location with a numbering shortage. It considered that the backstop of 20 per cent being lowest permissible assumed utilisation, i.e. most range holder can charge recipient is 50p per number will probably prevent this, but it believed that Ofcom would need to monitor the situation and raise the 20 per cent figure if it is shown to be insufficient.

A5.31 C&WW also referred to the need to ensure that numbering changes do not inadvertently incentivise behaviour which undermines the porting process. In the scenario of a CP with an ill-utilised 10,000 number block, were it to gain a new customer there would be no marginal cost of allocating a number from the existing block holding as the numbers are already held, already incurring charges and cannot be returned to Ofcom due to the poor distribution of usage. However, were the new customer to be allowed to have a ported number, the marginal cost is e.g. 30p to 50p per year. It thought there was a danger that customers could be "persuaded" not to port their number and hence number charging could serve to undermine the porting process.

A5.32 BT thought that the measures around porting looked complicated, open to gaming/arbitrage and could lead to disputes between CPs. However, BT agreed that Option 2 strikes the most proportionate balance between the various considerations concerning cost recovery. It considered that the complication in charging different prices for different areas was unlikely to be justified, especially as Ofcom was not proposing there to be different charges for numbers in different regions. It thought that charging based on 100 per cent utilisation (Option 1) would not be fair on CPs who are net exporters of numbers who would then be providing a subsidy on each number.

A5.33 BT suggested that Ofcom considered the case for reciprocity so that CPs would pay and be recompensed at the same level of charge when transferring numbers between each other (this could be based on the average utilisation of the CPs, or based on BT's utilisation). It saw practical benefit in there being a single charge for a number moved between providers, this being based on what is deemed to be an average level of number utilisation achieved by the industry. In discussions with Ofcom BT also suggested the discount approach which is discussed above.

A5.34 BT further commented that the utilisation based approach does not seem to take account of the need to recover the cost of administering sub-allocated numbers. It considered that the true cost of a number in a number charging regime would have to allow for the recovery of overheads, which could be considerable.

A5.35 [✂] agreed that the six principles for cost recovery were a reasonable proxy for assessing cost recovery options in this case. It also noted that charging for number porting is a complex area and its experience was that the cost it incurs in this area exceeds the amount that it is able to recover under GC 18. It thought that adding a "per number" cost recovery for number charging into this equation was likely to exacerbate this situation.

A5.36 It requested that, should any change to the General Conditions be made to reflect number charges for ported numbers, they should be explicitly set in such a way as to not apply retrospectively, not to impact any other commercial number based charging mechanism, and to be made in consideration of the economic consequences of implementing a charging regime.

A5.37 [✂] also noted that some charges which could be considered for numbers also contain cost recovery for value add services, such as the rental of inbound platform technology, and separating out the charges to prove compliance with a General Condition could be problematic and may lead to disputes unless Ofcom are categorically clear in the wording and making allowances for the commercial reality.

A5.38 Magrathea welcomed the proposal to allow the range holder to recover costs based on average utilisation subject to a cap. However, it considered that more work was required to consider the practicalities, e.g. how would CPs bill each other for this? Where billing is automated, how would they know whether the charge did or did not apply to a particular number? How could it be introduced retrospectively into porting contracts? How would it work in the case of subsequent ports?

A5.39 Sky considered that of Ofcom's three options for cost recovery for BT's WLR service, Option 1 was preferable as it provides the strongest incentive for BT to maintain efficiency.

A5.40 NumberGroup.com thought the proposals would create administrative problems, and Ofcom could easily open up new area codes for critical areas, e.g. 02X, 04, 06.

Ofcom's response

<u>Disincentive to use ported numbers</u>

A5.41 C&WW noted that where a range holder has lower utilisation than a recipient there could be an incentive on the recipient to encourage customers to take new numbers rather than port their existing number from the range holder. As discussed in Section 3, we agree that we should take into account the impact of numbering policy on number portability. We discussed the point made by C&WW in paragraphs

A4.28 to A4.31 of the November Consultation. We proposed to apply a cap to the charge per ported number to mitigate this. Under the new options we set out above this is unlikely to be an issue since the cost recovery charge will be based on BT's average utilisation rather than the utilisation of each range holder. We expect BT's utilisation to be higher than the industry average, thus the incentive for a recipient CP to encourage a customer to take a new number rather than port their existing number will be reduced.

Reciprocal charging

A5.42 BT suggested we consider the case for reciprocal charging - we have discussed this above. We consider that the two alternative options should reduce the complexity of the process of cost recovery and reduce the likelihood of disputes.

Recovery of costs for administering sub-allocated numbers

A5.43 BT commented that the approach set out does not account for the recovery of the costs of administering sub-allocated numbers. Neither this Annex, nor Annex 4 in the November Consultation, seeks to deal with cost recovery for sub-allocated numbers. Sub-allocation is a commercial arrangement. The charges for sub-allocated numbers should be negotiated between the parties involved.

Cost recovery under GC18

A5.44 [✂] commented that charging for number porting is a complex area and its experience was that the cost it incurs in this area exceeds the amount that it is able to recover under GC 18. It thought that adding a "per number" cost recovery for number charging into this equation was likely to exacerbate this situation.

A5.45 The existing cost recovery mechanism for portability under GC18 is not within the scope of this consultation. We are mindful of not having an overly complex system for recovering number charge costs and have set out two alternative options above which attempt to simplify the cost recovery approach. We consider that the options above would adequately compensate CPs when numbers from their allocations are used by a different CP.

Separating number charges from other services to prove compliance with the GC

A5.46 [✂] noted that some charges include a number of services, e.g. for numbers and rental of inbound platform technology. It thought that separating the charges to prove compliance with a General Condition could be problematic. In order to address concerns about separating charges to prove compliance with the GC, a CP might consider itemising the costs associated with number charging as a separate item in the bill.

Billing mechanism

A5.47 Magrathea requested more detail on the billing mechanism. We do not want to be too prescriptive about the mechanism for billing for cost recovery of number charges. It would be difficult to come up with a single solution which fitted the diversity of different billing solutions used by CPs and might limit CPs flexibility. As noted above, there may be merit is itemising the number charge costs separately to allow the recipient CP to reconcile the charges against the numbers which they use.

Retrospective application

A5.48 [✂] requested that number charges for ported numbers should not apply retrospectively. We can confirm that all the cost recovery proposals outlined above would apply to all ported numbers, including those that have already been ported.

A5.49 Magrathea asked how cost recovery arrangements for number charges could be introduced retrospectively into porting contracts. We consider it should be possible to vary contracts to the extent and on the grounds of a regulatory change.

Subsequent ports

A5.50 Magrathea asked how cost recovery would work for subsequent ports. In the case of subsequent porting the number range holder would recover costs from the recipient CP serving a customer with the number under Options 2 and 4. The recipient and the range holder must already have a porting agreement and the range holder will already be billing the recipient for conveyance costs associated with porting. We suggest that the number charge costs could be billed for in a similar manner to the conveyance charges.

Other points

A5.51 Sky considered that of Ofcom's three options for cost recovery for BT's WLR service, Option 1 was preferable as it provides the strongest incentive for BT to maintain efficiency. We agree that Option 1 provides the strongest incentive for efficient number use. However, under this option unless BT achieves 100 per cent utilisation it will fail to recover the actual costs associated with providing numbers. We noted in paragraph A4.19 of the November Consultation that while we want to encourage BT to achieve high utilisation, expecting it to achieve 100 per cent utilisation was not reasonable, thus Option 1 seemed unduly harsh on BT.

A5.52 We recognise that allowing BT to 'pass through' number costs under Options 2 and 4 might not encourage high utilisation, however, we noted in paragraph A4.22 of the November Consultation that BT Retail is a large user of numbers thus BT Group is motivated to achieve high utilisation to minimise the number costs faced by BT Retail.

A5.53 NumberGroup.com suggested opening up new area codes for critical areas, e.g. 02X, 04, 06. We are keen to avoid opening up new area codes where possible because this diminishes the geographic meaning of number which consumers have indicated they value. If numbers continue to be used inefficiently and we simply open up new ranges to meet demand then it is possible that over the long term these number ranges will run out.

Annex 6

Implementing a pilot charging scheme for geographic numbers

Introduction

A6.1 In Section 6 we set out our proposals for a pilot charging scheme for geographic numbers. In this annex we provide additional information on potential areas for inclusion in the proposed pilot and a set of billing assumptions. This information should help CPs respond to our proposals for a pilot charging scheme (including the specific questions in Section 6) and to plan for the potential implementation of charging should we decide to proceed following consultation.

Indicative list of areas for inclusion in the proposed pilot charging scheme

A6.2 We are proposing to implement a pilot charging scheme for geographic numbers in around 30 areas with the fewest 1,000-number blocks available for allocation at a set point in time. If we proceed with the pilot, we will confirm the list of areas included in the pilot in the statement planned for early 2012.

A6.3 To provide an indication of the potential areas for inclusion in the pilot, Figure A6.1 below sets out the 50 areas with the fewest blocks available as at 3 June 2011, adjusted for expected audit returns.

A6.4 Figure A6.1 includes 50 areas to give visibility to the areas that have the potential to be included in the pilot following movement in allocation levels over the next few months, and the areas that might subsequently fall out of the pilot charging scheme. For each area included in the list, we have provided the number of blocks available as at 3 June 2011 and our forecast for when that area is expected to run out of the existing stock of number blocks to allocate to CPs based on current allocation rates.

A6.5 The list of potential areas for the pilot charging scheme does not include the 11 five-digit areas.[290] All 11 areas would currently feature in a list of the 30 areas with the fewest number blocks available as these areas have between 17 and 41 blocks remaining. However, we intend to remove these areas from our proposed pilot charging scheme as we are proposing an alternative solution to number supply measures to meet the demand for numbers in those areas. If implemented, our proposal would result in ten blocks of 1,000 numbers beginning divided into 100 blocks of 100 numbers for allocation in each of these areas. This increase in blocks would still result in the five-digit areas being within the 30 areas with the fewest blocks available (blocks totals for each area would rise to between 107 and 131 blocks).[291] However, as our proposed threshold for charging relates to scarcity of number blocks, the proposed measures to increase the supply (combined with lower levels of demand in these areas) would suggest that it is reasonable (at least during the charging pilot) to exclude these areas from being considered for number

[290] Those areas are Appleby (017683); Gosforth (019467); Grange over Sands (015395); Hawkshead (015394); Hornby (015242); Keswick (017687); Langholm (013873); Pooley Bridge (017684); Raughton Head (016974); Sedbergh (015396) and Wigton (016973).
[291] See Figure 5.1 in Section 5.

charges. In the future we might revisit this and it is possible that charging might be implemented in these areas.

Figure A6.1 Indicative areas for inclusion in the proposed pilot charging scheme

	Area	Area code	Number of 1,000-number blocks available as at 3 June2011 (adjusted for audit)	Year forecast to run out of existing numbers
1	Bournemouth	01202	24	2012
2	Cambridge	01223	62	2015
3	Milton Keynes	01908	69	2014
4	Brighton	01273	73	2014
5	Bradford	01274	73	2015
6	Middlesbrough	01642	75	2016
7	Aberdeen	01224	95	2015
8	Preston	01772	97	2017
9	Hull	01482	109	2017
10	Telford	01952	123	2019
11	Luton	01582	127	2021
12	Stoke-on-Trent	01782	130	2017
13	Swindon	01793	130	2020
14	Bath	01225	132	2019
15	Norwich	01603	134	2019
16	Oxford	01865	141	2019
17	Derby	01332	145	2020
18	Aldershot	01252	149	2020
19	Guildford	01483	154	2020
20	Slough	01753	158	2021
21	Northampton	01604	164	2020
22	Plymouth	01752	168	2022
23	Camberley	01276	170	2026
24	Blackpool	01253	173	2020
25	Watford	01923	173	2023
26	Bolton	01204	175	2021
27	Dudley	01384	176	2026
28	Basingstoke	01256	180	2021
29	Wolverhampton	01902	182	2021
30	Warrington	01925	184	2025
31	Blackburn	01254	186	2023
32	Ipswich	01473	194	2024
33	Newbury	01635	196	2025
34	Chester	01244	201	2026

	Area	Area code	Number of 1,000-number blocks available as at 3 June2011(adjusted for audit)	Year forecast to run out of existing numbers
35	Romford	01708	201	2028
36	Wakefield	01924	201	2025
37	Barnsley	01226	203	2026
38	Lancaster	01524	206	2029
39	Peterborough	01733	207	2024
40	Wigan	01942	209	2026
41	Bracknell	01344	211	2026
42	Basildon	01268	214	2027
43	High Wycombe	01494	216	2028
44	Chelmsford	01245	217	2030
45	Crawley	01293	221	2033
47	Rotherham	01709	223	2022
46	Huddersfield	01484	223	2028
48	Dartford	01322	224	2025
49	Weybridge	01932	224	2025
50	Bedford	01234	225	2029

Billing assumptions[292]

A6.6 We propose the following billing assumptions for the pilot charging scheme:

- Ofcom will bill CPs annually;
- CPs will be billed in arrears; and
- Charges will accrue for each number block in chargeable area codes on a daily basis.

Reasons for the proposed billing assumptions

A6.7 We want to develop a process that minimises the administrative burden (and associated costs) on CPs and Ofcom as much as possible, while delivering the incentives for CPs to utilise numbers efficiently considered in our analysis of a pilot charging scheme in Section 6.

A6.8 To minimise the administrative burden, we consider that one bill issued annually would be appropriate.

A6.9 We propose to bill CPs in arrears for numbers held in each area included in the pilot charging scheme during the proceeding charging year. This removes the need for complicated reconciliation for CPs and Ofcom if we were to issue bills that covered

[292] We set out some options for how to deal with number charges for WLR and ported numbers in Annex 5.

payments for holding numbers for any period in advance and the numbers were returned to Ofcom during that period.

A6.10 One of the intended outcomes from charging is that CPs return allocated number blocks to Ofcom that are no longer required as soon as possible. We consider that charges that accrue daily are the best incentive on CPs to act in this way. Charges accrued on another basis (for instance monthly) may create perverse incentives to retain blocks for longer than required. In addition, such methodology may create difficulties for Ofcom's Numbering Team in processing applications for numbers by certain cut-off dates.[293] We do not foresee that the choice of charging frequency applied (e.g. daily, weekly, monthly etc) should create additional administrative burden as it relates to the calculation rather than frequency of any billing actions.

A6.11 For the avoidance of doubt, Ofcom's payment terms, rather than any terms employed by the CP, would apply.

Question 9: Do you have any comments on Ofcom's intended billing assumptions for the proposed pilot charging scheme for geographic numbers?
(i.e. that Ofcom will bill CPs annually; CPs will be billed in arrears; and charges will accrue for each number block in chargeable area codes on a daily basis.)

The 'Charging Year' and billing cycle

A6.12 The 'Charging Year' to be applied to the billing cycle if we proceed with our proposals for charging would be the 12-month period ending on a specific annual date. The most appropriate billing cycle for number charging would be determined in the statement due for publication in early 2012 should we decide, having considered consultation responses, to impose charging.

A6.13 Our considerations would include:

- any potential to avoid the busiest periods for CPs' and Ofcom's finance teams (considered to be January to May, however we would welcome CPs' views);
- any perceived benefits in linking the billing cycle to the financial or calendar year end (or in avoiding these periods);
- any considerations of HM Government (for example, in relation to accounting for amounts paid into the Consolidated Fund); and
- the date on which number charges start to accrue in the first 'Charging Year' (proposed as six months after the publication of our statement concluding on our charging proposals).

A6.14 If we proceed with our proposed pilot charging scheme, we will confirm the 'Charging Year' and billing cycle details in the statement planned for early 2012.

Question 10: Do you have any views on the appropriate Charging Year and billing cycle for the pilot charging scheme for geographic numbers?

[293] Under the Communications Act 2003 (and reflected in the Numbering Condition), we must process applications for numbers within three weeks of submission of all the required information.

Annex 7

Legal framework

The legal framework

A7.1 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.

Ofcom's general duty as to telephone numbering functions

A7.2 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."

Principal duties of Ofcom

A7.3 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

A7.4 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.

The Numbering Plan

A7.5 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;

ba) such requirements as they consider appropriate, for the purpose of protecting consumers, in relation to the tariff principles and maximum prices applicable to numbers so adopted or available for allocation; 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."

A7.6 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."

A7.7 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."

A7.8 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

A7.9 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…."

A7.10 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.

A7.11 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.

A7.12 The test set out in section 47(2) is that the condition or modification is:

"(a) objectively justifiable in relation to the networks, services, facilities, apparatus or directories to which it relates (but this paragraph is subject to subsection (3));

(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."

A7.13 Section 47(3) states:

"Subsection (2)(a) does not apply in relation to the setting of a general condition".

The Numbering Application Forms

A7.14 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.

A7.15 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 (…).

Annex 8

Respondents to the November Consultation

A8.1 We received 29 responses to the November Consultation, one of which is confidential. The non-confidential responses are available on our website here.

A8.2 Non-confidential responses were received from the following organisations:

British Sky Broadcasting Group plc (Sky)

BT plc (BT)

Cable&Wireless Worldwide (C&WW)

Colt

Federation of Communication Services (FCS)

IPV6 Limited (IPV6)

Internet Telephony Service Providers' Association (ITSPA)

Loho Limited (Loho)

Magrathea

Net Solutions Europe (NSE)

NumberGroup.com

SSE

TalkTalk Group

Telephony Services Limited/Gradwell dot com Limited/(aq) Limited (TSL)

Virgin Media

Voice on the Net Coalition Europe (VON)

A8.3 Non-confidential responses were received from the following individuals:

Mr D. Earl

Mr A. Morris

Mr J. Pitts

Mr N. Stevens

Mr D. Wright

Mr J. Youles

and six consumers who requested that their names be withheld from publication and are referred to as 'Name Withheld 1-6'.

Annex 9

Consultation questions

A9.1 We have included a number of specific consultation questions throughout this document and we would like you to consider these when responding. We have set out these questions below for ease of reference. We also welcome general comments on our consultation proposals.

Section 5: Reducing the need for new supplies of geographic numbers

Question 1: Do you agree with our proposal to allocate up to 10,000 numbers in blocks of 100 numbers (i.e. 100 x 100-number blocks) in the following 11 five-digit area codes?
Appleby (017683); Gosforth (019467); Grange over Sands (015395); Hawkshead (015394); Hornby (015242); Keswick (017687); Langholm (013873); Pooley Bridge (017684); Raughton Head (016974); Sedbergh (015396) and Wigton (016973)

Question 2 (for CPs): Would it be feasible for your network to handle up to 10,000 numbers allocated in blocks of 100 numbers in the 11 five-digit area codes listed in Question 1?

Question 3 (for CPs): What are your predicted costs and timescale requirements for implementing the necessary changes in your network switches to support routing to blocks of 100 numbers in the 11 five-digit area codes listed in Question 1?

Section 6: Charging for geographic numbers

Question 4: Do you agree that the pilot for geographic number charges should be introduced six months after the date the final statement is published? If not, please state your preferred implementation period and reasons.

Question 5: Do you agree that we should introduce charges in a pilot scheme initially? If not, please state your preferred approach and reasons.

Question 6: Do you agree that the revised pilot scheme should capture around 30 area codes with the fewest number blocks remaining available to allocate? If not, please state your preferred threshold and reasons.

Question 7 (for CPs): Are you able to provide an estimate of the administrative costs of implementing number charging? Which aspects generate the most significant administrative costs for CPs?

Annex 5: Cost recovery for number charges when the CP using the number is different from the range holder

Question 8: Which option for dealing with number charges for ported and WLR numbers do you prefer? Please set out reasons for your preference.

Annex 6: Implementing a pilot charging scheme for geographic numbers

Question 9: Do you have any comments on Ofcom's intended billing assumptions for the proposed pilot charging scheme for geographic numbers?
(i.e. that Ofcom will bill CPs annually; CPs will be billed in arrears; and charges will accrue for each number block in chargeable area codes on a daily basis)

Question 10: Do you have any views on the appropriate Charging Year and billing cycle for the pilot charging scheme for geographic numbers?

Annex 10

Responding to this consultation

How to respond

A10.1 Ofcom invites written views and comments on the issues raised in this document, to be made **by 5pm on 15 November 2011**.

A10.2 Ofcom strongly prefers to receive responses using the online web form at http://stakeolders.ofcom.org.uk/consultations/XXX, 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 12), to indicate whether or not there are confidentiality issues. This response coversheet is incorporated into the online web form questionnaire.

A10.3 For larger consultation responses - particularly those with supporting charts, tables or other data - please email **geographic.telephonenumbers@ofcom.org.uk** attaching your response in Microsoft Word format, together with a consultation response coversheet.

Responses may alternatively be posted or faxed to the address below, marked 'Geographic telephone numbers':

Elizabeth Greenberg
4th Floor
Competition Group
Ofcom
Riverside House
2A Southwark Bridge Road
London SE1 9HA

Fax: 020 7783 4109

A10.4 Note that we do not need a hard copy in addition to an electronic version. Ofcom will acknowledge receipt of responses if they are submitted using the online web form but not otherwise.

A10.5 It would be helpful if your response could include direct answers to the questions asked in this document, which are listed together at Annex 9. It would also help if you can explain why you hold your views and how Ofcom's proposals would impact on you.

Further information

A10.6 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

A10.7 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, 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.

A10.8 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.

A10.9 Please also note that copyright and all other intellectual property in responses will be assumed to be licensed to Ofcom to use. Ofcom's approach on intellectual property rights is explained further on its website at http://www.ofcom.org.uk/about/accoun/disclaimer/

Next steps

A10.10 Following the end of the consultation period, Ofcom intends to publish a statement in early 2012.

A10.11 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

Ofcom's consultation processes

A10.12 Ofcom seeks to ensure that responding to a consultation is easy as possible. For more information please see our consultation principles in Annex 11.

A10.13 If you have any comments or suggestions on how Ofcom conducts its consultations, please call our consultation helpdesk on 020 7981 3003 or e-mail us at consult@ofcom.org.uk . We would particularly welcome thoughts on how Ofcom could more effectively seek the views of those groups or individuals, such as small businesses or particular types of residential consumers, who are less likely to give their opinions through a formal consultation.

A10.14 If you would like to discuss these issues or Ofcom's consultation processes more generally you can alternatively contact Graham Howell, Secretary to the Corporation, who is Ofcom's consultation champion:

Graham Howell
Ofcom
Riverside House
2a Southwark Bridge Road
London SE1 9HA

Tel: 020 7981 3601

Email Graham.Howell@ofcom.org.uk

Annex 11

Ofcom's consultation principles

A11.1 Ofcom has published the following seven principles that it will follow for each public written consultation:

Before the consultation

A11.2 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

A11.3 We will be clear about who we are consulting, why, on what questions and for how long.

A11.4 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.

A11.5 We will consult for up to 10 weeks depending on the potential impact of our proposals.

A11.6 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.

A11.7 If we are not able to follow one of these principles, we will explain why.

After the consultation

A11.8 We think it is important for everyone interested in an issue to see the views of others during a consultation. We would usually publish all the responses we have received on our website. In our statement, we will give reasons for our decisions and will give an account of how the views of those concerned helped shape those decisions.

Annex 12

Consultation response cover sheet

A12.1 In the interests of transparency and good regulatory practice, we will publish all consultation responses in full on our website, www.ofcom.org.uk.

A12.2 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.

A12.3 The quality of consultation can be enhanced by publishing responses before the consultation period closes. In particular, this can help those individuals and organisations with limited resources or familiarity with the issues to respond in a more informed way. Therefore Ofcom would encourage respondents to complete their coversheet in a way that allows Ofcom to publish their responses upon receipt, rather than waiting until the consultation period has ended.

A12.4 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/.

A12.5 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

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	☐	Name/contact details/job title	☐
Whole response	☐	Organisation	☐
Part of the response	☐	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)