

August 1996

The National Numbering Scheme

A Consultative Document



CONSULTATION

The initial consultation period will run until 18th October 1996. There will then be a further period up to 31st October during which comments are invited on any submissions made to OFTEL during the initial period. Comments are invited in particular on the questions highlighted in the text of the document and summarised in Chapter 9.

Written comments should be submitted to:

Consultation on Numbering Policy
Numbering Unit
OFTEL
50 Ludgate Hill
London EC4M 7JJ

Written comments will be made publicly available in OFTEL's library except where respondents indicate that their response or parts of it are confidential. Respondents are therefore asked to separate out any confidential material into a confidential annex which is clearly marked as such.

In the interests of transparency, respondents are requested to avoid confidentiality markings wherever possible.

This document will also be published on the Internet. The address for OFTEL's Web pages is:

<http://www.open.gov.uk/oftel/oftelhm.htm>

Comments on this document can also be sent to OFTEL (if they are relatively short) by using the following e-mail address:

press.office.oftel@gtnet.gov.uk

Confidential responses should not be sent via the Internet.

Recorded messages may be left on OFTEL's Comments Hotline: 0645 600 660 (calls charged at local rate).

In addition, OFTEL is prepared to discuss the document in more detail with any group which has a particular interest.

*The deadline for responses is
Friday 18th October.*

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TELECOMMUNICATIONS NUMBERS AS A NATIONAL RESOURCE

Introduction

- 1.1 The UK has one of the most competitive telecommunications markets in the world. Competition in infrastructure is growing rapidly in all sectors, with over 150 licensed operators. In addition competition for the delivery of advanced services by Independent Service Providers over telecommunications networks is poised for take-off. Fair and equitable access to telecommunications numbers is a key ingredient to the development of competition as numbers provide the means to route calls, to identify and reach customers and services.
- 1.2 Yet numbers are a scarce resource and their supply is finite. Thanks to the PhONEday changes the UK overall is in a strong position, with a potential stock of 9 billion numbers available for public telecommunications use. The challenge now is to develop a Numbering Scheme for the next 15 years or so which makes best use of this resource. It needs to be done in a way that safeguards supply to meet future demands. Because of the rapid pace of change in the communications industry, tomorrow's needs may not be apparent today. Future arrangements must support effective competition by ensuring that access to numbering resources is even handed for all service suppliers. Customers should have the benefit of an understandable scheme that allows them to get a broad indication of service and charge before they make a call. Developments in global or European numbering policy also need to be accommodated. Above all, any scheme must be cost effective and practicable for implementation by the industry, as otherwise additional costs will be passed on to customers.
- 1.3 This document reviews the background to current numbering arrangements and sets out the context within which change is needed. It takes account of anticipated growth in demand for numbers in certain areas of the country and of the growth and development of telecoms services (Chapter 2); the constraints upon the current use of numbers, the information in numbers which is important to customers, and policy developments overseas (Chapter 3). It considers the essential and desirable features of future numbering arrangements (Chapter 4). It then reviews options for the future (Chapters 5 and 6) and sets out proposals for change to enable numbering arrangements to meet the UK's needs in the most effective way over the next 10–15 years (Chapter 7) together with consideration of the development of number portability (Chapter 8).
- 1.4 These proposals are set out for consultation purposes. Whilst OFTEL has benefited from expert advice from its Numbering Advisory Group (see Annex A) in drawing up this document, OFTEL now wishes to stimulate debate on the issues and responses to the questions raised from as broad an audience as possible. Numbering policy decisions affect all sectors – the telecommunications and communications industries, the business community, and residential consumers – and broad consultation is essential before decisions are made. OFTEL is willing to discuss any of the issues raised in this document further with representative bodies and organisations during the consultation period.
- 1.5 Details of how to respond are set out in the inside cover. OFTEL will carefully consider all responses before drawing up and publishing a Statement on numbering policy for the UK in December.

History of the Existing Scheme

- 1.6 The current National Numbering Scheme developed from a review of numbering capacity carried out by OFTEL and the industry in the late 1980s. A plan was agreed in 1991 to move towards a 10-digit scheme (0 plus 10 dialled digits) which would expand numbering capacity in the UK tenfold and meet future market demands. The intention was to structure the numbering resource in a way that was meaningful to customers and which provided flexibility for the future. The

first step was the 1990 London code change which turned all former 01 numbers into either 071 or 081. The second stage was PhONEday in April 1995 which moved all fixed geographic numbers to 01 codes, thus releasing codes beginning 02 to 09 for other purposes. In the meantime, during 1994, OFTEL had taken over full responsibility from BT for numbering administration which thereby became wholly independent of any individual operator.

1.7 The Numbering Scheme as then decided, and currently in effect, is structured as follows:

THE NATIONAL NUMBERING SCHEME	
NUMBERS BEGINNING WITH:	USE FOR:
01	Geographical Area Codes
02	Additional Geographical Area Codes
03	Spare for future use
04	Mobile Services
05	Spare for future use
06	Spare for future use
07	Personal Numbers ('Numbers for Life')
08	Special Services (eg Freephone information)
09	Spare for future use

1.8 All new number allocations to network operators since this date have been made in accordance with the rules of the Numbering Scheme (the Numbering Conventions). However, as allowed for under the Numbering Conventions, many number allocations made prior to the determination of the new Scheme lie in ranges that do not conform to the Scheme. This is illustrated by the following chart.

Free	Local	"d rate"	"k rate"	Premium
01426 0	01339	0456	0370	01426 2
01426 1	01426 8	0700 0	0374	01426 3
0321	01893 9	0701 0	0378	01426 6
0500	0345	0702 0	0385	01426 7
0800	0645	0956	0402	0331
	0845	0958	0421	0336
		0973	0441	0338
		0976	0468	0660
			0585	0836 4
			0802	0839
			0831	0881
			0836 2-7	0891
			0850	0894
			0860	0897
				0898
				0930
				0991
Regional	National			
01426 4	0541			
01426 5	0836 0			
01426 9	0836 1			
01459	0836 8			
01893	0836 9			
0941 1	0870			
	0990			
		d rate – up to 17p per minute (inc VAT)		
		k rate – up to 41p per minute (inc VAT)		

1.9 The table below shows the proportion of codes allocated which currently lie in ranges outside those which conform to the current Numbering Scheme:

Geographic – 0%

(all are behind 01 since PhONEday)

Mobile service – 75%

Personal numbering services – 5%

(personal numbering only recently became a distinct service)

Specially tariffed services – 60%

Regulatory Control

1.10 The rules which regulate the use of the numbering resource were set out in conditions in BT's licence (Condition 34), and in licences of other network operators, which obliged them to adopt a numbering plan and to provide details of it to OFTEL. In 1992 these conditions were modified to allow the transfer of numbering administration to OFTEL and to give OFTEL the legal authority to design, specify and adopt those parts of the

Numbering Scheme left undecided in 1991. The new Condition 34B in BT's licence and corresponding conditions in other operators' licences allowed the Director General to establish the National Numbering Conventions, a set of principles and rules governing the specification and application of the Numbering Scheme. The licence also provided guidance and suggestions about matters the Director General should consider when developing the policy and structure of the scheme. The current Numbering Conventions were determined by the Director General in 1994.

1.11 Under the licence conditions and the Conventions, all licensed operators with the relevant condition must furnish the Director General with a new numbering plan which is consistent with the Conventions and the National Numbering Scheme set out therein. Because an evolutionary approach was

adopted to the full implementation of the Numbering Scheme, and to minimise disruption to emergent and established operators alike, the National Numbering Scheme set out in the 1994 Conventions does not require numbers allocated to services prior to 1994 to migrate to the appropriate code in the new Scheme. So although new allocations of numbers to services have been in conforming ranges, usage of prior allocations of non-conforming blocks has continued.

1.12 The Conventions gave the Director General a duty to review their provisions within two years of adoption, based on practical experience in their implementation. OFTEL is now carrying out that review and believes that some basic changes to the Scheme and Conventions are necessary if numbering policy and administration are to meet the future needs of the UK and support a fully competitive industry.

FUTURE DEMAND FOR NUMBERS

Introduction

2.1 In order to determine the likely future demand for numbers, which services will drive the demand, how much additional capacity will be required and when, OFTEL commissioned an independent study by Coopers & Lybrand into future demand for capacity in the UK Numbering Scheme over the next fifteen years. Coopers carried out their work between December 1995 and March 1996 and evaluated three scenarios:

- a base case, which assumed no significant changes to the status quo;
- a higher demand scenario where a more optimistic growth rate for all services was assumed;
- and a peak demand case, assuming a very rapid growth of new services such as multimedia and broadband.

2.2 The study looked separately at two parts of the Numbering Scheme, considering first the impact of demand for fixed geographic numbers and second the overall levels of demand for other types of numbers.

Geographic Numbers

2.3 The starting point for the study of demand for geographic numbers was the current Scheme. This Scheme – using 01 numbers since PhONEday – was designed by the Post Office in the 1950s and is based around 638 areas, each of which now has an 01 prefix or code. With the exception of London and some other major cities, all these areas are of similar geographic size. This means that the same quantity of numbers – 800,000 – is potentially available in rural areas (eg Bodmin 01208) as in some urban areas (eg Bolton 01204). Annex B explains the history of geographic numbers in more detail.

2.4 Only on average about half of the numbers within each area code are in practice useable. This is because of technical factors and potential demand for particular groups of

numbers (see Annex C for more details). The combined effect of this and standard area size means that, although there are around 650 million potential 01 numbers, only a small proportion of these are actually used. Most codes have relatively few numbers in use and will never run out. But some other codes, mainly in urban areas, will need more numbers at some point to satisfy growing customer demand.

2.5 The results of the Coopers' study for future year-on-year demand for numbers were as follows:

Estimated need for new numbers per year

<i>base case</i>	1.5 million
<i>higher case</i>	between 3 and 4 million
<i>peak case</i>	6 million in 10 years' time.

2.6 The main drivers of demand identified were:

- *business telephony* (by 2000 services such as direct dialling in, new all-digital services, paging and voicemail could between them be requiring 1 million new numbers each year);
- *data and other multimedia services* (by 2010 these services could together be demanding more than 2 million numbers each year);
- *new residential services* such as distinctive ringing (where each member of a household has a different number which causes the phone to ring in a different way) could lead to a demand of up to 5 numbers per household.

2.7 When this demand was assigned to area codes, taking account of the constraints of the existing geographical distribution of numbers and the resultant poor utilisation, the amount of codes that could need more numbers over the next fifteen years was estimated as follows:

Number of area codes that could exhaust by 2012

<i>base case</i>	less than 20
<i>higher case</i>	between 20 and 30
<i>peak demand</i>	over 30

2.8 It is important to remember that the higher

demand and, in particular, the peak case projections are worst case scenarios which assume that new services achieve extremely high year-on-year growth and that all require additional geographic numbers rather than numbers from elsewhere in the Numbering Scheme.

2.9 Taking account of the results of this study and forecasts from network operators, OFTEL has been able to produce a list of code areas where there can be a realistic expectation of exhaustion over the next 15 years or so if no action is taken.

By 2000

01222 Cardiff
 01232 Belfast
 01703 Southampton
 01705 Portsmouth
 0171 Inner London
 0181 Outer London

By 2005

01202 Bournemouth
 01203 Coventry
 01223 Cambridge
 01224 Aberdeen
 01273 Brighton
 01274 Bradford
 01332 Derby
 01483 Guildford
 01642 Middlesbrough
 01772 Preston
 01782 Stoke-on-Trent
 01865 Oxford
 01902 Wolverhampton
 01942 Wigan

By 2012

01204 Bolton
 01344 Ascot
 01582 Markyate
 01604 Northampton
 01706 Rochdale
 01733 Peterborough
 01753 Iver

Numbers for Other Services

2.10 For *mobile services*, the current growth rate for new numbers already exceeds that for fixed geographic numbers. Forecasts vary, but as prices generally come down and innovative pricing packages are directed at more market segments, there could be a 300% increase in demand for mobile numbers over the next 15 years.

Estimated annual demand by 2012

base case 1 million
higher case 3 million
peak case 5 million

2.11 Demand for numbers for *specialty tariffed services* (such as freephone, local- and

national-rate) is expected to rise significantly over the next decade. Businesses increasingly use these services for marketing purpose and demand levels have high growth potential. Estimates of demand are difficult because many of these services are still in their early stages of growth but annual demand for new numbers could reach half a million within the next 15 years.

Numbers for Service Providers

2.12 At present, allocation of numbers for access to services is restricted to operators with appropriate telecommunications licence conditions. However, developments in the telecommunications services market and possible revision of the licensing regime may produce a marked increase in those who are entitled to have direct allocations of numbers to provide their services. OFTEL's recent consultation entitled *Promoting Competition in Services over Telecommunication Networks* attempted to assess independent service providers' demand for numbers. The services that might require numbering resources include:

- *specialty tariffed services* (freephone, local rate, national rate and premium rate numbers)
- *personal numbering*
- *call messaging services*
- *electronic data interchange* (EDI) systems (for example the National Lottery with 10,000 terminals; holiday and airline ticket booking systems)
- *electronic funds transfer at point of sale* (EFTPOS)
- *Internet access*.

2.13 Restricting access to numbers for Independent Service Providers (ISPs) to indirect allocation via existing licensed operators has potential for abuse. A more straightforward approach would be to allow direct allocation from the numbering administrator. However, the allocation of blocks of substantial amounts of numbers to service providers who may in fact have a demand for only a few numbers would have a significant impact on lowering

efficiency of the Numbering Scheme. The effect of the proposals in this document on service providers is explained in Chapter 7.

Conserving Numbers

2.14 The impact of this rising demand on the Scheme can be reduced by ensuring that the numbers are managed efficiently. As a result of last year's consultation, OFTEL has introduced a series of "conservation measures" designed to make sure that telephone companies make more efficient use of the numbers they already have before OFTEL allocates more numbers to them. Already these measures are pushing up the average level of utilisation in areas of number shortage and reducing the demand for new numbers. The demand study has shown that this could have a significant impact on exhaustion rates: an increase from 45% to 50% in the average utilisation of number blocks should reduce the amount of areas running out of numbers by a half. Portability will also assist: if customers do not need new numbers when they transfer from one operator to another, the overall level of demand for new blocks of numbers should be reduced.

Longer Term

2.15 Visible public telecommunications numbering is not the only potential addressing mechanism for the future. It is possible that over the next 15 years we will see a shift away from telephone numbers to alternatives such as Internet-type e-mail addresses, PC routing and voice recognition. E-mail addresses usually require network translation from a visible form – for example: *press.office.oftel@gtnet.gov.uk* – into a digit stream which can be of any length and which is hidden to the user, and only needed by an "intelligent" network in order to route electronic information to its right destination. It is not possible yet to know what impact advanced services will make or which addressing method will generally be adopted. Already competitive and consumer issues are arising in respect of the allocation of Internet addresses by the Internet Assignment Numbers Authority in the USA, and it may be that some regulatory action will be needed. However, such developments could lead to a significant reduction – or even an eventual demise altogether – in demand for public telecoms numbers.

THINGS TO TAKE INTO ACCOUNT

The Meaning of Numbers

- 3.1 To most customers, numbers are used as a means of “addressing”, to reach a person they wish to contact or a particular service. Many people also expect to be able to get a broad tariff indication from the type of number they are calling.
- 3.2 Telephone numbers consist of two elements – the area code or service code plus the customer number. Area codes are used for the more “traditional” geographic telephone numbers (like 0171 – Inner London and 01223 – Cambridge) and service codes are used for series such as mobile numbers and, more recently, personal numbers (like 0370 – Vodafone mobile numbers and 07010 – FleXtel personal numbers).
- 3.3 People often wish to use the area code or service code to work out roughly how much they can expect to pay for the call. Currently the maximum number of dialled digits which may be used by telephone networks to determine the tariff for a call is six.
- 3.4 Businesses often use numbers in their telephone equipment to work out the most efficient way of routing calls (for example looking at the code to decide whether it would be cheaper to send by Mercury or BT). Businesses also make frequent use of call barring as a means of selectively restricting employees’ access to certain expensive call types.

Numbers and Networks

- 3.5 To telephone networks, numbers have a different significance. Networks use them to decide how calls should be sent through the network to the correct destination and they also use them to set the charge for the call. Numbers, therefore, have a significant part to play in the billing process.
- 3.6 Numbering capacity is allocated to operators in “blocks” of numbers. For area codes (geographic numbers), these are normally

blocks of 10,000 numbers and for service codes 100,000 number blocks are typical. The reason for numbers being allocated in this way is so that telecommunication networks can work out the destination and appropriate charge for the call by analysing as few dialled digits as possible. This not only minimises call set-up times but also helps to keep down network costs and thus overall costs to customers. Additionally, customers are more easily able to understand the type of service when it can be identified by relatively few digits. Allocation of blocks consisting of fewer numbers – say down to 1,000 for area codes – would require additional digit analysis by telephone networks with the consequent increase in cost.

- 3.7 Any major change in the above arrangements – for example, a reduction in the size of number blocks allocated – could have a material impact on the way operators have to engineer and manage their networks, with consequent cost implications for both operators and their customers.

Geographic Tariffing: Future Trends

- 3.8 Over the years a direct link has grown up, based on historic network configuration, between distance and call charges. Distance is now much less relevant as a cost driver and retail tariffs are today as much determined by when the call was made as by whether it was “local”, “regional” or “national”.
- 3.9 Network modifications, principally the change from analogue to digital, have dramatically changed network architecture. As a result, charging structures based on distance are increasingly artificial. Recent research commissioned by OFTEL shows that the cost to carriers of transporting basic traffic is not systematically reflected in the charge to the caller. Study data was based on network costs, capital investment and operation but excluded retail costs and local loop carriage. Its initial conclusions are that the cost of regional calls may be little more than the cost of local calls, and that although the cost of national calls is greater than the cost of local calls, in general the difference is significantly

smaller than the difference in tariffs. Concentration of infrastructure and population density may be equally important as distance to the cost of carriage of calls.

Europe and International Developments

3.10 As part of the drive to liberalise the European telecommunications market by 1998, the European Commission is seeking to ensure that all Member States have Numbering Schemes which support effective competition. The Commission's approach is to achieve this by two means: firstly, by establishing the political and policy objectives for numbering in Europe through a Green Paper which will be published in the Autumn; secondly, by supporting the work of the European Telecommunications Office (ETO) which, with the pan-European body representing regulators ECTRA, is to produce recommendations for common approaches to numbering administration and numbering schemes.

3.11 The Commission's Green Paper is likely to include consideration of portability and the need for common codes for key services like freephone and premium-rate services. It will also make proposals to meet longer-term objectives such as the harmonisation of European Country Codes. Indications are that, on the areas considered in this OFTEL consultation, the Commission's approach is developing in a way which is in line with the UK's. The main focus of European work to date – the creation of European Telephony Numbering Space for pan-European services – will not impact on the UK Numbering Scheme. However it will clearly be necessary for OFTEL to take account of the Green Paper and ETO's work when drawing conclusions from this consultation.

3.12 At this stage it is important that OFTEL takes account of developments in numbering in other countries so as to try to identify any emerging trends. The table set out below indicates current numbering schemes and future plans in other European countries. The only two main trends that emerge is the use of 800 for freephone and 90 for premium rate services.

European National Schemes – Plans for the Future

Country	Mobile	Personal	Freephone	Shared Cost	Shared Revenue
Austria	6XX*	878*	800*	8XX*	90X or 900X*
Belgium	075† 095†	097†	0800	078 15†	0900-0903 077
Denmark	2X,30, 40,50		80	70	90
Finland	949, 940, 950# 049, 040, 050		0800, 9800		0700, 0600 9700, 9600
France	06§	0878*	0800§	N/A	089
Germany	016, 017	0700*	0800*	0900*	0900*
Holland	06X	087	0800	0900\$, 0909\$	0900\$, 0909\$
Hungary	20, 30, 60	70*	80	40	90
Norway	9XX	88X	800	810	82X
Sweden	010*, 070X	0700*	0800	077	071, 072, 0900 0939, 0944

* New range announced; no firm date for introduction

† Under review

§ New range from 1997

From October 1996

3.13 Internationally, the International Telecommunications Union (ITU) will be introducing a “Global Freephone” in 1997 which will use the international country code 800. This will allow callers in the UK to access freephone services across the world by dialling 00800 followed by an eight digit number. Work is progressing in the ITU on other global services such as shared-cost and shared-revenue services on Universal Personal Communications. In addition, changes in international rules in 1997 mean that the maximum number of digits for the country code and number (for example for the UK +44 171 634 8700) is increasing from 12 (the UK is currently at the maximum) to 15 digits.

Network Data Management Amendments

3.14 To open new, or alter existing, number ranges (eg area codes, blocks of numbers, mobile codes) on telephone networks represents a cost to the network operators as it involves changing the information held by telephone

network switches. These changes are generally termed Data Management Amendments (DMAs). DMAs need to be applied each time destination or tariff information for a block of numbers or code is changed or if new codes or blocks are activated. It is essential that networks are always kept up to date so that calls are correctly routed and charged.

3.15 In an environment of competing interconnected networks, each operator has to make DMAs so that their network is able to handle calls including those terminating on networks of competing operators.

3.16 The DMAs associated with significant changes to the numbering scheme could impose a major significant cost to the day-to-day running costs of the network. A major reorganisation of the numbering scheme could involve not just routing changes but also have billing implications and lead to the need to identify different digit string lengths requiring software changes.

WHAT SORT OF NUMBERING SCHEME?

Evaluation Criteria

- 4.1 Before looking at the best way forward for UK numbering arrangements, there needs to be a clear view of what are the essential – and desirable – characteristics of any future Numbering Scheme.
- 4.2 OFTEL believes that the design, adoption and implementation of an appropriate National Numbering Scheme is a matter which affects the national interest. This means meeting the needs of users by being flexible for the future; supporting the development of competition, and choice for telecoms service consumers; and being economic and efficient in the way it uses the numbering resource. Some detailed criteria are set out below, as a basis for evaluating alternative options.

Keeping Options Open

- 4.3 First and foremost, our numbering arrangements must be able to meet anticipated growth in demand for telecommunications services and be *sufficiently flexible* to meet as yet unknown future needs, and cope with the rapidly changing telecoms marketplace. The Scheme should be organised in a way that allows for good husbandry of the supply of numbers, and provides reasonable capacity to be kept as a *contingency reserve*, to meet as yet unspecified future needs. Arrangements should result in *efficient utilisation* of the UK numbering space – numbers are a finite resource, and the stock should be managed accordingly.
- 4.4 The UK is fortunate in now having an ample supply of telecoms numbers – 9 billion, as a result of the PhONEday changes – to see it through into the Information Age. Digital technology is bringing about a convergence between telecommunications, computing and broadcasting. And fixed and mobile telecoms services are also likely to “converge” in future. Numbering arrangements should *facilitate new market and technological developments*. They should, if and where possible, allow consumers to move up the value chain from

basic voice telephony to higher levels of service without needing to go through a number change. They should also enable the development of service tariffs which are based on actual costs and commercial factors, rather than historic network configuration.

Supporting Competition

- 4.5 Competition, both for network infrastructure and for telecommunications services flowing over those networks, is the main way in which customers benefit from increased choice and variety, better quality of service, and lower prices from the telecommunications market. It is therefore essential that numbering arrangements positively *support effective competition*. Companies with rights to numbering resource should receive *fair and equal treatment* in respect to access to numbers and allocation policy. If any company has undue competitive advantage as a result of pre-existing number allocations then appropriate action would need to be taken.
- 4.6 Numbering arrangements should also support the principle of *number portability* wherever possible – so a customer switching from one supplier to another can exercise that choice without needing to go through the inconvenience of a number change. OFTEL sees this principle applying not just to fixed geographic numbers but also to freephone and other specially tariffed service numbers, and personal/mobile/paging numbers.
- 4.7 Research in the late 1980s indicated that users strongly objected to the idea of telecoms companies developing their own independent numbering schemes behind their code allocations. OFTEL continues to hold the view that there should be *no “Telco branding”* as it impedes rather than facilitates competition and can lead to customer confusion. It is also in direct conflict with portability and can result in inefficient utilisation of numbering resources.
- 4.8 Numbering arrangements should seek to optimise the *supply of “golden” numbers*, to meet growing market needs, and should allocate these in a fair way. These are attractive, memorable numbers (such as

0345 40 40 40 for Forte Hotels). While effective portability rules will help to contain demand, services using golden or coveted numbers are expected to grow rapidly during the next decade.

Cost Effective Arrangements

4.9 Any change in numbering arrangements gives rise to costs – costs to network operators and costs to customers. The costs and inconvenience of change should fall within reasonable bounds and change should be *cost justified*, ie costs should be outweighed by overall benefits to the economy and to customers. For example, some may consider it desirable to move to a plan that provided everyone with “numbers for life”. However, the need for network investment to enable intelligent routing to individual addresses via full number analysis makes such an option extremely expensive at present and therefore not cost justified in the short to medium term. Change must be *technically feasible* and reasonably practicable to implement. Some options may be more costly now because of technological limitations. Timescales and procedures for implementing changes to the Scheme should be looked at in the context of what is practicable and convenient for all concerned. Numbering policy cannot be used to drive operators’ capital investment plans. The Scheme should also be reasonably *easy to manage and administer*.

Meeting Customer Needs

4.10 Customers’ overriding need is to have enough numbers for the future not to run out. Anticipated growth in demand must be met, and capacity should be set aside for the needs of future users. Customers also value the choice and better services that flow from effective competition. And they will not want to see some non-essential but maybe “nice to have” features introduced into numbering arrangements if these carry an expensive price tag. Thus the three main factors already described go a long way to meeting customer needs.

4.11 Over the years, because of the historic configuration of the network, customers have

grown to expect a link between telecoms numbers and call charges, and between numbers and geographic places. These precise links will be difficult to sustain in future. Distance is becoming less relevant as a basic cost driver, and retail call tariffs are now as much determined by when the call was made as by whether it was “local”, “regional” or “long distance”. OFTEL believes the current tariff structure is unlikely to survive in the medium term and should not unduly constrain numbering policy decisions where these have a sound basis for other reasons.

4.12 The public’s expectations from numbers are starting to change. Recent research indicates that the majority of people cannot identify charge bands from lists of their nearby area codes. Forty per cent of people do not know where the boundaries of their own local area code lie, and most customers do not use the location information in a phone number. People do, however, expect to have a broad indication of the cost of calls, especially if these calls incur a charge significantly above the standard geographic tariff. Using numbers as a method of enabling end-users to understand the rate at which a call will be charged can be a clear way of providing this information.

4.13 OFTEL therefore intends to ensure, as far as possible, that numbers of different types give a *broad indication of service/price* wherever possible. This would help meet the convenience and preference of end-users by allowing customers to understand, from the number, the general charge rate for the call. For example “find me anywhere” services, which would be provided by cellular, personal communications, personal numbering or paging companies, could all be grouped on the same number range beginning 07, with the general pricing message that such calls cost more than normal calls, rather than being randomly distributed throughout the Numbering Scheme as at present. Similarly, premium rate services could be grouped behind 090 numbers. Changes such as this would give a far more *understandable* Numbering Scheme, but to achieve it the Numbering Plans of network operators would need to be compatible.

- 4.14 Some code and number changes have always been a feature of the Numbering Scheme. Research indicates that when planned and managed with care, this need not cause too many problems. For example, the vast majority of people did not experience a significant problem when numbers changed on PhONEday, including 89% of residents in the five cities where the area code changed as well as the number. OFTEL would take steps to ensure that any changes necessary caused minimum disruption, cost and inconvenience for customers.
- 4.15 Other factors which customers value and which are desirable in a Scheme include *standard number patterns* (ie a standard number length and a standard structure or number layout where possible), and the ability to keep *short-* and *local-dialling*.

Fit with International Developments

- 4.16 The liberalisation of telecoms markets in the European Union is leading to a number of

regulatory developments at European level. There are also global developments for services such as freephone and unique personal numbering, led by the International Telecommunications Union. The UK Numbering Scheme must *fit with broader EU and global developments* and be compatible with relevant international agreements and developing standards.

Summary

- 4.17 The most important requirements for future UK numbering arrangements are future flexibility; the underpinning of effective competition for telecommunications networks and services; cost effectiveness; and the ability to meet customer needs by a broad indication of service/tariff whenever possible. These factors should be borne in mind when reading the next two chapters – on geographic numbers and on other types of numbers – and Chapter 7, which sets out OFTEL's proposals.

Do you agree that future UK numbering arrangements should be evaluated on the basis of the criteria set out in this chapter?

MEETING THE DEMAND FOR GEOGRAPHIC NUMBERS

Introduction

5.1 The analysis in Chapter 2 shows that the vast majority of area codes, which each have around 800,000 numbers, will not need additional numbers in the foreseeable future. However, demand estimates indicate that there could be a number of places where the current numbering arrangements may not be sufficient to meet requirements over the next fifteen years or so because of the continuing increase in local competition and the likely demand growth from services such as:

- home personal computers and faxes
- “distinctive ringing” for residential customers
- “direct dialling in” for business customers
- ISDN

5.2 Places facing number shortages in the next 5 years or so are Belfast, Cardiff, London, Portsmouth and Southampton. The 20 or so other places which could need more numbers by the year 2012 are set out in Chapter 2.

How Can This Demand Be Met?

5.3 One approach would be to look at ways to continue using 01 numbers for as long as possible. For example, when an area code started to run out of numbers it could be divided in two (a code split), with customers in half the area having a new 01 code. This would double capacity. Another way would be to lay a second 01 code on top of the code area with the same boundaries; so two codes would operate together, with new customers having numbers with the new code. Again, this would double capacity. A third way would be to overlay a new code range – 02 – with regional boundaries so that several 01 areas rested within each 02 code area. People would have a choice of moving to the new 02 geographic numbers and such voluntary migration could reduce the need for 01 code

changes. These ideas were discussed in last year’s consultative document *Geographic Telephone Numbers* and all were rejected by the majority of respondents. Overlay schemes were felt likely to create customer confusion and be anti-competitive. The code split approach would only double the amount of numbers available and would therefore be unlikely to provide a durable solution.

5.4 The preferred solution for local number shortages emerging from last year’s consultation was to change the area code by making it shorter (*short code*) and making the local numbers longer. *Short codes* of four dialled digits were used on PhONEday to provide more numbers in Bristol, Leeds, Leicester, Nottingham, and Sheffield; and the Reading code 01734 is in the process of changing to 0118. In Reading a 9 has been added to the beginning of local numbers; so a Reading number is changing:

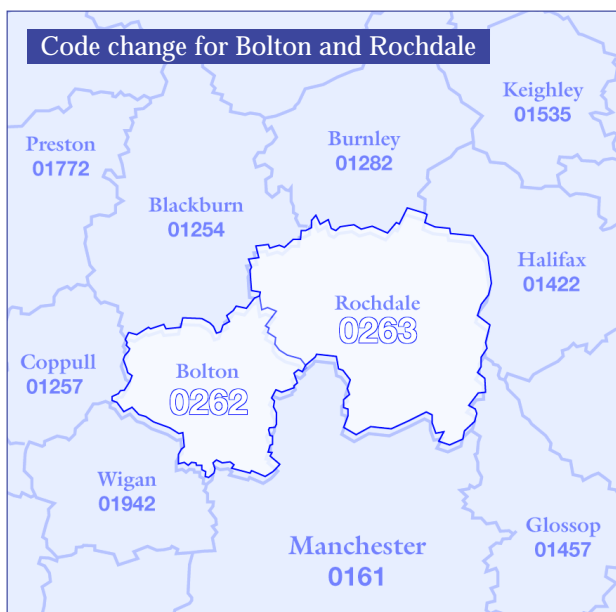
01734 547 547 → 0118 954 7547

This change “creates” a ten-fold increase in capacity – nearly 8 million more numbers – by allowing the eventual use of 7-digit local numbers beginning with 2 to 8.

5.5 This solution cannot be pursued in future using 01 codes alone. There are only thirteen 01 *short codes* remaining for 7-digit local numbers: 0110, 0111 and 0119 are available now; 0100–0109 will not be available until after 1997 because of the former use of 010 as the international access code. For an area like London, which already has 7-digit local numbers, effectively ten of these *short codes* would be needed to form an even shorter 3-digit code. To get enough *short codes*, it would be necessary to use other resources in the Numbering Scheme. The 02 range has already been set aside for geographic numbering expansion. It has 100 *short codes*, each with 8 million numbers. This should be more than enough to meet anticipated demand over the next fifteen years. If further *short codes* were needed – for example if other areas requested extended local dialling by adopting the *short code* approach (see Option 2 below), then the resources in the 03 range could be used. There are two main ways in which *short codes* could be used. These are described and evaluated below.

Option 1: Code Change with Current Boundaries

5.6 When an 01 code area with 6-digit local numbers runs out of capacity, the code would change to an 02 *short code* with 7-digit local numbers. So Rochdale's current code 01706 could change to the *short code* 0263 with 9 being added to the local number. So 01706 808 123 would change to 0263 980 8123. Similarly Bolton's code could change from 01204 to 0262. When areas like London currently with 7-digit local numbers needed more capacity, an even shorter code – like 020 – could be introduced with 8-digit local numbers.



5.7 This follows the type of change which took place in the “five cities” on PhONEday and is now a tried and tested way of creating more numbers in an area. Market research which OFTEL carried out in Bristol and Leeds after PhONEday, found that 89% of customers did not find the change a problem and 65% got used to it within a few days. A code change does, however, require careful planning and management to ensure that disruption for customers is kept to an absolute minimum.

5.8 While this approach is attractive in its simplicity, it may not provide the UK with the best way forward in the longer term. Each change from an ordinary 01 area code to an 02 *short code* gives a ten-fold increase in the supply of local numbers available. Even the most extreme demand estimates do not project this level of need over the next 15–20 years or beyond. By mirroring the 01 boundaries the UK would be fossilising the old analogue network structure rather than using opportunities to extend local dialling and use the new supply of numbers over a wider catchment area. Tariffing policy is dynamic and is expected to evolve quickly in response to changing cost structures and market forces. There is no longer any cost or technical rationale for keeping a relationship between local dialling arrangements and charge group boundaries.

Option 1

- tried and tested
- technically feasible
- easily understood
- competitively neutral
- inefficient use of numbers
- links old numbering structure to current tariffing arrangements
- does not allow for future developments

Option 2: Growing the Area by Changing the Code

5.9 This option would provide a more flexible and responsive approach to meeting local number shortages, taking account of changing market

conditions and patterns of demand. Rather than replicating the old area code boundaries exactly, it would use the opportunity offered by the need for a code change – and the extra supply of numbers that brings – to allow two or more 01 areas to be combined together. It would give the convenience of local dialling across a much wider area and make better use of the extra numbers. The timing of the code change for neighbouring areas not facing an immediate number shortage would normally be phased to minimise inconvenience and give the area “time to grow”.

5.10 Under this approach a phased evolution to more rational local numbering arrangements could be achieved. It allows considerable flexibility and could be adapted to meet varying local needs. For instance both Rochdale (01706) and Bolton (01204) area codes are expected to need more numbers over the next 15 years. Instead of changing these neighbouring 01 codes to two 02 *short codes*, it would be possible to combine them in a single 02 code. There would be sufficient numbering capacity to go further and include the Blackburn code area (01254) into the new 02 area, if this was supported by the local communities. Under this approach, OFTEL would expect to consult fully with Local Authorities and Chambers of Commerce in the relevant areas before any such change were agreed.

5.11 Growing the local dialling area in this way was done with success in the 1980s when Newcastle, Durham and Sunderland were brought together into a new Tyneside code (0191). If generally adopted this approach would allow other communities in the UK to gain the benefits of wider local dialling – as currently enjoyed in London and the big cities. By 2012 up to two-thirds of the population could enjoy wider local dialling using numbers in *short codes* and would be using dialling arrangements similar to those used in the United States. If other communities wanted to “opt-in” and enjoy similar benefits, then more extensive changes could also be accommodated.

5.12 Under this option changes would need to be carefully planned and implemented in order to make them as user-friendly as possible. There might initially be some concern were the current link between local dialling and local charging to be broken. OFTEL’s view, however, is that this link is unlikely to be sustainable in the medium term, as commercial pressures will change and simplify current tariffing structures such that “distance” per se will be less directly reflected in tariffing. Already the time of day when a call is made has more bearing on call cost than distance. In addition, because the substructure of the range would in the first instance follow existing area code boundaries – as with 0191 with distinct parts of the code for Durham, Newcastle and Sunderland – there should be no interconnect issues for network operators.



Option 2

- technically feasible
- competitively neutral
- efficient use of numbers
- easily understood
- allows benefit of ten-fold increase in numbers to be spread outside single area
- facilitates future developments
- does not tie numbering structure to current tariffing arrangements

Alternative Approaches

5.13 Other alternative approaches have been considered which would use the numbering resources in the 02, 03, 04 and 05 ranges to move the UK to a consistent 8-digit numbering scheme. They are not considered further in this document because OFTEL believes that their implementation would require either a further national code change in the near future or a gradual “overlay” type introduction over 10 to 15 years which would be likely to result in considerable customer confusion. However, the proposals in Chapter 7 for ways in which option 2 above can be used include the possible further extension of areas with 8-digit numbering. OFTEL would welcome any further proposals on the use of 8-digit numbering provided that it could be demonstrated that they met the evaluation criteria set out in Chapter 4.

Delaying Change

5.14 The above options involve – to varying degrees – changing people’s numbers. Change is disruptive and, if not planned properly, can be costly. In Chapter 7 OFTEL is proposing measures which will keep the cost and disruption of change to an absolute minimum. However, there are other steps which could be taken which might delay, or even avoid, some of that change.

5.15 *Buying time by full dialling:* By ending local dialling, local numbers beginning 0, 1 and 9 become available for use. This increases the amount of numbers in an area by up to a third. It could therefore delay the need for a change by up to five years but other solutions would eventually be needed in most cases. It could, however, be introduced either permanently on a national basis or area by area as a temporary first step to meeting the need for more numbers. As a national introduction would increase disruption and inconvenience, and would generally be customer unfriendly, OFTEL’s view is that it should not be pursued. OFTEL would, however, welcome comments on this. The temporary use of full dialling could, however, be an effective tool to use in areas running out of numbers where it may facilitate complex

code changes. OFTEL therefore considers that the use of full dialling as a temporary measure in certain circumstances should be pursued and would welcome views on this.

Full Dialling

- cost effective
- technically feasible
- efficient use of numbering resource
- competitively neutral
- ends local dialling
- not future proof
- “creates” only 30% more numbers

5.16 *Buying time with longer local numbers:* Currently most local numbers are either 6-digits or 7-digits long and with a few exceptions numbers are a standard length after the code. As explained in Chapter 2, area codes – even when they are approaching exhaustion – have blocks of numbers unused. By making these unused numbers one digit longer – either 7-digit or 8-digit numbers – there is a ten-fold increase in spare capacity. In almost all cases this would create at least 100% more numbers.

5.17 For example, in Portsmouth 01705 the ten blocks beginning with 9 are unused. If these were used for 6-digit numbers, as with the rest of the code, they would provide 100,000 more numbers – sufficient for perhaps another 3 years. If the blocks were used for 7-digit numbers they would provide nearly 1,000,000 numbers – sufficient for up to ten years. Existing Portsmouth numbers would stay the same: there would be a mixed digit length behind the 01705 code.

5.18 This has the advantage of delaying number changes for existing customers – almost certainly by more than five years – but may be confusing to customers expecting a standard number length. It may also mean that telephone companies would have to examine more digits for routing calls around their networks and business customers may have to change equipment such as switchboard and

least cost routing apparatus programmed to expect a standard number length. And new customers would need to use the longer numbers. OFTEL's provisional view is therefore that this approach should not be pursued but OFTEL would welcome comments.

Longer Local Numbers

- may be costly for operators
- may require businesses to upgrade equipment
- not competitively neutral
- puts off change for up to a decade *but*
- uses non-standard length numbers
- not completely future-proof
- doubles amount of available numbers

Making Better Use of Geographic Numbering Resources

5.19 Currently all geographic services have numbers from the geographic numbering range and therefore should follow the tariffing and numbering rules which apply to that range. OFTEL's proposals on these rules are set out in Chapter 7. There are some paging services currently using the 01 range which, in OFTEL's view, need to migrate out of the 01 range. There are also other services currently using 01 numbers which may benefit from using other ranges where different tariffing and numbering rules might apply.

A Corporate Numbering Range

5.20 Part of the Numbering Scheme – for example all numbers beginning with 05 – could be put aside for the sole use of businesses. Use of the range could be attractive for large national or regional businesses by providing greater “ownership” of their numbers, a business identifier, increased stability away from the geographic range, and an opportunity to integrate their internal corporate numbering plan with the public numbering plan. If the range proved attractive, it could remove significant amounts of demand from 01/02.

OFTEL's demand study estimates that over a 15 year period this could delay a change in 10 to 15 places which otherwise may need a code change.

5.21 A company or public body which wished to use the range would have a single code, for example 05432, followed by the direct dial extension of employees which they would use regardless of the geographic locations of their offices. Employees could keep their number if they moved to other offices in the company. The range would not be subject to the code changes which take place to meet demand for geographic numbers.

5.22 It is likely that the range would be used mainly by large corporate users who have multiple sites and a substantial private network with multiple points of ingress. Calls would enter via the closest access point to the caller and once in the network would be routed according to the rules agreed for that network. Just as large private networks optimise their outgoing calls by routing them over their private network before breaking out onto the public network, so the proposed scheme would allow a company to decide how, and from which telephone company, to accept its incoming traffic.

5.23 The tariffs applicable to such a range would need to be decided by the industry and users as a whole. They would, however, probably be fixed and either set by the company being called depending on how much of the conveyance costs of calls to the network it was prepared to pay, or fixed across all companies on that range.

5.24 OFTEL has carried out an initial survey of businesses to explore this issue further. In answer to key questions about whether the benefits of a corporate range would outweigh the potential inconvenience of leaving the existing range and whether the proposal is worth further exploration by OFTEL and UK telecoms operators, the overwhelming response has been positive and enthusiastic. One of the principal attractions of such a range appears to be the ability for major telecommunications users to “own” their numbers. This would give a great deal of

control to the user over how calls were routed within their organisation and how their own customers were charged.

- 5.25 The alternative to setting aside a distinct number range for this purpose would be to use resources in the 08 numbering range. It is, however, unlikely that sufficient capacity would be available in 08, taking into account potential future demands for 08 numbers. Some corporate networks already use 8-digit numbering and will therefore need access to substantial capacity. The potential supply of golden numbers, likely to be attractive to corporate users, would also be more restricted.

Corporate Numbering Range

- promotes choice
- gives greater ownership of numbers to users
- supports competition
- facilitates future developments
- allows businesses to exploit new market developments
- moves significant number demand out of 01

Other Possibilities

- 5.26 At present numbers for all-digital services (using ISDN) are allocated within the fixed geographic range. OFTEL proposes that this arrangement should continue: it will allow future flexibility and help encourage customers to migrate up the “value chain” to a higher level of service as and when appropriate, without the need for a number change. Using geographic numbers provides a cheap and efficient means for network operators to route these calls.

- 5.27 However, some other services could move to other numbering ranges and help take pressure off 01 – and also help to maintain clear rules and customer understanding about what 01/02 numbers are used for. For example, there may be a benefit in opening up codes in the 08 range to facilitate Service Provider access (see Chapter 7).

Summary

- 5.28 The traditional and favoured method of providing more geographic numbers is to make the code shorter and the local number longer. This leads to a ten-fold increase in the amount of numbers available. This change can be applied in one of two ways:
- with current area code boundaries; or
 - by growing the boundaries to include neighbouring codes areas.
- 5.29 The number of areas needing such a change over the next 15 years could be significantly reduced by three methods:
- the introduction of full national dialling; *or*
 - the use of longer local numbers for new allocations without changing the code; *or*
 - the introduction of new ranges to draw off demand from 01 codes.

The first two have significant drawbacks but could delay change by up to ten years; the third could promote competition and increase choice, particularly for business customers and service providers.

- 5.30 OFTEL's key recommendations for geographic numbering are set out in Chapter 7. The next chapter looks at numbering for non-geographic services.

OTHER SERVICES: HOW TO MAKE SENSE OF THE REST OF THE NUMBERING SCHEME

Introduction

- 6.1 The analysis in Chapters 1 and 2 showed that, despite the structure of the current Numbering Scheme, existing mobile, personal, specially tariffed and premium rate services are still dispersed across numbering ranges. OFTEL has a responsibility to ensure that, as far as possible, numbers are organised in a way that is helpful and gives some meaning (in terms of broad service/tariff indication) to customers; in a way that encourages effective competition; and in a way that ensures compatibility between operators' Numbering Plans. It is also important to ensure that number resources are properly husbanded and conserved, with some entire ranges kept free for future use. Any revised Numbering Scheme will need a simple, understandable structure, as all research evidence shows that people are easily confused by complex numbering arrangements.
- 6.2 The previous chapter suggested using 02 numbers for geographic numbering expansion with 03 in reserve. It also suggested the possibility of making 05 numbers available for larger business users. This chapter looks at how the rest of the Numbering Scheme might best be organised: 04, 06, 07, 08 and 09 numbers. There are one billion numbers potentially available in each of these five ranges.

Mobile, Paging and Personal Numbers

- 6.3 This market of around 7m subscribers has recently been growing at 25–30% each year and is expected to grow to 10–12m users by 2000. Mobile, paging and personal numbering services are “Find Me Anywhere” type services and involve more complex routing by means of an intelligent network (IN) platform to discrete network locations. Under the current rules new mobile and paging services use codes beginning 04, and

personal numbering services 07, but services in operation before 1995 use codes from nearly all parts of the Numbering Scheme. There is at present no way of letting people know from the number code the type of service they are calling, nor the approximate cost of the call. Currently around 75% of mobile numbers and most paging numbers lie on ranges other than that specified in the Numbering Scheme. Most personal numbering services have been using 07 since the launch of their services.

- 6.4 The Numbering Conventions at present require that new services use allocations from the specified range but allow codes allocated to operators before the current Scheme was agreed in 1994 to continue. This policy was designed to bring about a gradual evolution to a coherent scheme while minimising the need for change for existing customers. One option would be to continue with this policy. However, this would be likely to result in codes remaining in the non-conforming range indefinitely. The alternative approach would be to change the rules so as to freeze the use of any new numbers not on the designated range and require operators to allocate all new numbers to customers using the specified number range (ie operators would not be allowed to use numbers which they had already been allocated but had not used or which they had recovered, if they were not in the conforming range). A “sunset date” could be set by which time all existing numbers not in the specified range should have migrated – say December 2001. As the average churn for mobile customers is 2.6 years, this should be possible without undue inconvenience for customers. Numbers for analogue mobile phones may need special arrangements because of technical restrictions within Cellnet's and Vodafone's analogue networks (see Chapter 7).
- 6.5 A major benefit would result from all mobile type services being consolidated together on the same number range: customers making calls to these numbers would know they were calling a service able to connect them to someone on the move – and that they had a good chance of getting a call through to that person. They would also know that they would be paying a premium for such

convenience – calling numbers of this kind costs more than calling ordinary fixed numbers (with the exception of certain paging services).

- 6.6 The next issue to resolve is where numbers for mobile, paging and personal numbering services should move to in the Numbering Scheme. Is the current split between 04 for mobile and paging services and 07 for personal numbering services a meaningful one? The numbering demand study showed that a single range – containing a billion numbers – would provide sufficient capacity for the foreseeable future for all mobile, personal and paging services, even under peak growth scenarios. Evidence suggests that it is tariff and broad service type, rather than information about the type of technology which delivers the service, which is important to people making calls to these numbers. The differences to the user of personal and mobile services are becoming more and more difficult to perceive. Digital mobile networks are now providing “call diversion” to fixed phones and to voice mails, which appear virtually identical to personal numbering services. And the type of tariffs used by personal numbering services and mobile services are similar – each service currently uses either one or another of two general rates.
- 6.7 For these reasons there would appear to be a number of advantages in putting mobile, personal numbering and paging services into a single “Find Me Anywhere” range. This could be either 04 or 07. It has been suggested that there is a trend across Europe towards the use of 06 for mobile but the table in Chapter 3 does not support this. OFTEL’s preference is to use the 07 range, which has begun to be recognised as a “Find Me Anywhere” range.
- 6.8 Because of current service divisions within the market, personal, mobile and paging numbers would probably continue to have separate 07 codes to begin with, but the leading 07 digits would indicate to the caller that these services offer to reach the person anywhere and that they could expect a higher than standard charge. It might be appropriate to retain all paging services (which tend to be a single drop charge which can vary from “free to caller” to

over 50p) on one or two codes. For the rest of the mobile and personal services, one way forward would be to structure the 07 range so, for example, 0700–0749 codes covered services with tariffs up to double the standard national rate for geographic calls, and 0750–0799 could be used for any mobile/personal tariff. However, this could cause difficulties for existing numbers migrating into the 07 range by 2001. If the rule “add a 7 to the front of the number” was applied – the easiest solution following the successful PhONEday precedent – then the old codes would be spread across the new 07 range and it would be more difficult to structure 07 numbers in a meaningful way. It should also be remembered that by 2001 significant developments to tariffing arrangements may well have occurred; today’s tariff bands may not be relevant to next century’s market. These proposals raise a number of issues relating to portability for mobile, personal and paging numbers which are discussed in Chapters 7 and 8.

Special Services

- 6.9 This market has grown rapidly from freephone and premium rate services in the 1980s. Uptake to date suggests there could be a five-fold increase in the freephone market by the year 2000, a ten-fold increase in local rate numbers, a fifteen-fold increase in national rate numbers and up to a thirty-fold increase in premium rate numbers, leading to a potential demand for 500,000 new specially tariffed service numbers every year by the year 2010. The growth in competition, together with opportunities for new service/tariff offerings, could stimulate demand further. At present there are around 100,000 freephone numbers in operation, around 30,000 premium-rate, 25,000 local-rate and 20,000 national-rate numbers.
- 6.10 Under the current rules, new services with a “special tariff” (such as freephone, local rate, national rate or premium rate) are allocated to 08 numbers. These are services where the number dialled may need to be translated into another number to give the actual call destination, and where the tariff is fixed at something other than the standard tariff. It

can be either free to caller (with the number “owner” bearing the cost of calls); or local rate (with the cost of the call shared between the caller and the person being called); or at a higher tariff such as regional or national rate (in which case the caller usually bears the cost of the special call handling); or it can be at a premium rate (in which case there is a content element to the service in addition to call transmission, and the premium call revenue is shared between the operator and the number “owner”). Other tariffing arrangements are possible, subject to market demand. It should be noted that such numbers tend to be used by business organisations (for customer service centres, information lines, etc) and that their use is promoted through advertising. Freephone numbers are also widely used by voluntary bodies providing helplines.

- 6.11 The chart in Chapter 1 shows that many codes for these services sit outside the designated range. OFTEL is receiving an increasing number of consumer representations on this issue, which is clearly a matter of considerable customer concern.
- 6.12 OFTEL, together with the Independent Committee for the Supervision of Standards of Telephone Information Services (ICSTIS), has recently carried out consumer research into premium rate service (PRS) numbering and this has revealed a strong preference to move premium rate services, which have a higher tariff, shared revenue arrangements and a content element, out of the 08 range onto 09 numbers. In the survey 67% of respondents were in favour of a move to 09. There is also a significant demand for premium rate service numbers to be structured in a way that gives customers more information about the likely cost of the service. This would amongst other things allow them to bar access to content services above a certain cost from their household’s line. In the survey 59% of respondents would prefer to have a structure based on cost; only 16% favoured a structure based on services (such as separate codes for competition lines and adult services). Full details of this research have been published separately.
- 6.13 Such an arrangement would leave 08 numbers free for specially tariffed services up to a certain maximum tariff. These could also include new ranges allowing Service Provider uses as required. Such a range might be useful for services such as Internet access, rather than using valuable 01 number resource. This could guarantee that users still only paid a local rate, but could avoid the need to use the relatively expensive number translation service.
- 6.14 The structure of the 08 range would need to be agreed. The most logical way forward would be to plan for the competitively-neutral migration of codes so as to consolidate freephone services behind the 0800 code (800 has become established internationally as the freephone identifier) with tiered steps in the code range so higher 08XX numbers indicated a higher fixed (for example local rate, national rate) charge to the caller. The 08 range could embrace both shared cost and some shared revenue services but in order to protect consumers there would probably need to be a price ceiling for the maximum charge to the caller. Such an approach could provide considerable flexibility for the development of innovative new service and tariff packages.
- 6.15 To give consumers the benefit of understandable numbering arrangements which indicate broad service type and cost, OFTEL would need to ensure that a migration plan was implemented within a given time frame. It is likely to be possible to introduce a form of number portability prior to the migration plan being actioned. The primary objective will be to ensure, as far as possible, a competitively neutral process.
- 6.16 PRS numbers would also need to migrate to 09. Demand for premium rate service numbers is likely to grow significantly, but would still need only a small part of the 09 range. The rest of the 09 range could be kept in reserve for use by multimedia type “content services” which may develop in future, such as teleshopping, telebanking and interactive learning systems.

Access Codes

6.17 Access Codes are very short, memorable numbers beginning with “1”: for example, 100 for Operator Assistance and 1471 for Call Return. Because they are so user friendly, they are a key competitive resource. But they are also in limited supply. Currently access codes are only allocated to network operators and are of four types:

- *Common Service codes* These are generally well known and widely used throughout the UK by all operators offering a particular service. They may not be used for any other purpose than the specified service. Examples of these codes are 100 – Operator Assistance; 141 – Caller Identification Blocking. These are known as “Type A” codes in the current Numbering Conventions.
- *Operator Routing codes* These codes are a key competitive ingredient in the UK market, where infrastructure competition exists in the local loop, the long distance and the international calls market. Although the primary means for customers to make choices about the carriage of their telephone calls is by changing their local operator, operator routing codes provide a well-established alternative method. Callers use these codes to tell their own operator that they want their call to be sent across another operator’s network. For instance BT’s directly connected customers, who also have a Mercury service account, dial 132 before full national numbers when they want to tell BT to use Mercury’s network to deliver calls. These codes, often referred to as “indirect access codes”, are known in the current Numbering Conventions as “Type B” codes.
- *Inter-Network Service codes* These codes are used in markets where a rapid growth in competition is expected to develop. They are used in the same way as Operator Routing codes but enable customers of one network to access other operators’ or Independent Service Providers’ enhanced services such as charge card, voice mail and Internet access. These codes are also included in the current Numbering Conventions as “Type B” codes.
- *Own Network Service codes* These codes are currently used by operators to offer their

own directly connected customers access services – both customer helplines and the range of enhanced services. Examples of such access codes are 150 – Residential Customer Service, various operators; 17050 – internal use by BT; 174 – Orange sales enquiries. Different operators may use the same code for different purposes. These are known in the current Numbering Conventions as “Type C” codes.

- 6.18 The future allocation of access codes raises two issues: first ensuring that there are sufficient to meet demand; and second that allocations support fair and effective competition.
- 6.19 In general, Common Service, Operator Routing and Inter-Network Service codes, which have been allocated by OFTEL since 1994, are four digits long (ie 1XXX). Because of limitations within operators’ networks, Operator Routing codes cannot exceed four digits. However, there are some Common Service codes in existence which are only three digits (ie 1XX) long which were allocated before 1994. Own Network Service codes may be of a length decided by the operator and many are only three digits long.
- 6.20 Because of the historic use of 3-digit access codes, the large number of indirect access operators now offering service using access codes and the growth of Own Network Service codes, the stock of unallocated 4-digit codes has been significantly depleted. The table in Annex D summarises the current position. For the future, international facilities liberalisation and the continued growth in network competition are likely to put further pressure on the access code resource.
- 6.21 The development of Independent Service Provider (ISP) competition is likely to lead to greatly increased access code demand as shown in Chapter 2. A key area of competition between ISPs and operators is likely to be in the provision of enhanced services such as voice mail, directory or Internet services. So an increased demand for Inter-Network Service codes and Own Network Service codes can be expected from ISPs and network operators respectively.

Allocation and use of these codes for enhanced services should be made on a fair and equitable basis. OFTEL envisages that future arrangements should ensure that customers of “dominant networks” (networks with significant market power) can access enhanced services with dialling parity between ISP’s services and their own network’s services. This issue will be considered further in OFTEL’s forthcoming Statement on Independent Service Providers.

- 6.22 OFTEL has identified two options by which this growing demand on the access code resource can be met. These are either by limiting the ways in which access codes can be used or by lengthening codes to increase the supply available. These options are discussed below.

Option 1: Limiting the Use of Current Capacity

- 6.23 Under this option access code use would be limited to Common Service codes and Operator Routing codes. The length of Operator Routing codes would be standardised at 4-digits. This would meet expected demand from growth arising from further network competition and international liberalisation. By withdrawing Own Network Service and Inter-Network Service codes – over, say, a two year period – access to such services would be by some other means such as 0800 numbers.
- 6.24 These measures could make available over 800 4-digit access codes for Operator Routing purposes, compared with the 420 currently available. However, the withdrawal of access codes as a means of customers simply and conveniently reaching the growing range of services becoming available over modern

telecoms networks could impede innovation and the spread of competition. The table in Annex D illustrates one way in which Option 1 could provide additional capacity.

Option 2: Increase the Number of Codes Available

- 6.25 Under this approach, access codes could continue to be used for all four types of services. However, to accommodate expected future demand, the length of Inter-Network Service and Own Network Service codes would be standardised at 5- or 6-digits and that of Operator Routing codes at 4-digits. Any existing numbers which did not comply would need to migrate to longer codes over, say, a two year period.
- 6.26 This should provide an adequate supply to meet future needs. The table in Annex D illustrates one way in which Option 2 could provide additional capacity.

Summary

- 6.27 This chapter has reviewed the options available for meeting number demand and structuring the Numbering Scheme to benefit competition and consumers for non-geographic numbers and for access codes.
- 6.28 OFTEL’s proposals on:
- a range for mobile, personal and paging numbers;
 - the allocation of and portability arrangements for freephone, shared-cost and shared-revenue numbers;
 - changes to access codes arrangements to enable full and fair competition
- are contained in the next chapter.

OFTEL'S PROPOSALS

Outline of Proposals

7.1 OFTEL has reviewed the options for revising the National Numbering Scheme with valuable assistance and advice from the Numbering Advisory Group. OFTEL's preliminary conclusions, which will be subject to the outcome of this consultation and any further significant developments in numbering policy at European level, are that UK numbering resources should be organised in a

revised Scheme as follows:

- 01 Geographic Numbers**
- 02 Geographic Numbers**
- 03 Reserved for geographic expansion**
- 04 Reserved for future use**
- 05 Reserved for Corporate Numbers**
- 06 Reserved for future use**
- 07 Personal, Mobile and Paging Numbers**
- 08 Specially Tariffed Service Numbers**
- 09 Content Service Numbers**

7.2 The "rules" that would apply to the use of numbers in each of the number ranges are set out below.

Numbering rules

01/02/03

- Caller pays the "standard tariff" for the geographic destination
- Calls usually route to a fixed geographic destination
- Calls may route to other services provided that caller pays a "standard tariff" for the geographic destination
- Numbers allocated to public network operators but customers have right to keep their number when changing operators
- Normal allocation will be in blocks of 10 000 numbers
- Standard number length of eleven dialled digits
- Customers may move their geographic location and keep their number subject to the called party or their network operator paying for extra costs incurred

05 *Subject to further evaluation*

- Calls to corporate private networks
- Caller pays a set tariff, perhaps determined by the number "owner", not greater than standard national rate
- Calls routed to the nearest point of entry to the private or virtual private network
- Numbers allocated directly to users
- Numbers allocated initially in multiples of 10 000 number blocks

07

- "Find me" service which is geographically independent
- Calls routed to the service providing operator or, in future, portability routing operator
- Call charge not distance dependent and nearly always higher than standard geographic tariff
- Numbers allocated to operators and in some cases service providers but users may have the right to keep their number when changing operator or service provider
- Numbers allocated in multiples of 100 000 number blocks
- 071 for paging services
- Possibly reserve a code range for Universal Personal Telecommunications

08

- Calls routed to the service providing operator or, in future, a portability routing operator
- Caller pays a special rate which is fixed for the code range
- Numbers allocated in the short term to public network operators. In future, direct allocation of numbers should be possible to customers for 0800 numbers and other ranges (with full 08 portability).
- Initially numbers will be allocated in multiples of 10 000 blocks. With full 08 portability, single numbers can be allocated to customers.

7.3 Such a Scheme would, in OFTEL's view, represent a considerable improvement on current arrangements and would give greater meaning in terms of broad service/tariff indication to customers. However, the benefits of a planned Scheme with clear rules will not be realised unless all services comply with the proposed arrangements. Steps may therefore be needed to ensure that numbers currently allocated to non specified ranges migrate to codes compatible with the new Scheme after a reasonable transition period. In addition if undue competitive advantage is conveyed to network operators from existing number allocations – particularly in the case

special service numbers and access codes – then OFTEL will not hesitate to take further action.

Minimising Disruption for Customers

7.4 The proposals in this chapter mean that codes for some services will need to change over a phased migration period. This needs to be balanced against OFTEL's plans for greater number portability (see next chapter) and the introduction of “conservation measures” (Chapter 2) which will reduce the need for number changes for customers in future.

7.5 We know from the changes carried out by telephone companies over the last ten years and from market research that people adapt relatively quickly to code and number changes. However, even though people get used to dialling the new numbers quickly, code and number changes can still cause significant costs to businesses who may have to change stationery, signs and some equipment. OFTEL is also mindful that the UK has recently undergone the National Code Change and that further change should only take place where necessary in the interests of UK customers as a whole.

7.6 To minimise inconvenience and disruption, OFTEL is proposing a series of principles:

- No new 01 code changes before the year 2000
- New numbers available for at least one year before an 01 code change wherever practical;
- Parallel-running for at least three months before an 01 local number change (usually when 5-digit local numbers change to 6-digit)

7.7 “Parallel-running” allows a new code or longer number to be introduced gradually, and the period of parallel running is the length of time when both the old and the new numbering arrangements run alongside each other leading up to the actual code change. It allows customers a transition period to get used to the new arrangements. Changed number announcements allow anyone who calls the old

- Number “owning” customers may pay of for all or part of the call charges or may receive part of the call revenues
- Maximum tariff charge for the range set at standard national rate

09

- 0901–0908 for premium rate services (with 091 in reserve):
 - Calls charged at more than standard national rate
 - Calls have an information or entertainment content element and revenue is shared between the network operator and the service provider
 - Numbers allocated to public network operators or number “owning” service providers/customers
- 0909 for shared revenue non-content services charged above the standard geographic national rate
- 092–099 reserved for multimedia content services
- Initially numbers will be allocated in multiples of 100 000 numbers. With full 09 portability single numbers can be allocated to customers.

number after the code change to get a free message telling them the correct number to dial.

Geographic Numbering

7.8 OFTEL proposes that geographic numbers – currently using 01 – should also use 02 and that use of 02 should be triggered by potential local number exhaust. Whereas 01 is used for numbers with 6- and 7-digit local numbers, 02 will be used for 7- and 8-digit numbers. 01 and 02 should be used by telephone companies for the generality of services which are delivered to a fixed geographic location on their network and which are charged to the caller at a “standard tariff” – currently partly distance dependent. 03 numbers should be reserved to provide additional *short codes* for geographic numbering should this be necessary at some future stage. The rules for the geographic range would allow services like mobile and personal numbering to have allocations using 01 codes provided that they followed the tariff rules for the range. Any additional costs associated with the conveyance of a call to these services would be met by the relevant network operator or by the person being called, not the caller.

7.9 Under these proposals, OFTEL would introduce 02 codes as and when 01 codes run out of numbers. Furthermore, OFTEL believes that customers should be offered an opportunity to benefit from the significant increase in numbers which such a change brings. It is therefore proposed that, whenever a change from an 01 area code to a 02 *short code* is necessary, OFTEL should look at the feasibility and desirability of extending the local dialling area by including neighbouring 01 codes within the new *short code*. An expansion would not necessarily take place at the same time as the “core” code change: technically it may be easier to enlarge the area in two or three stages. The decision on whether to proceed would be made on a case by case basis taking into account whether there is a shared community of interest between areas (following consultation with the relevant Local Authorities and Chambers of Commerce) and other factors. OFTEL would also be prepared to consider requests from local bodies to enlarge other local dialling areas by means of changing to an 02 *short code*.

7.10 In assessing which areas should be included in a *short code*, OFTEL considers that it would need to be guided by the minimum and maximum population size appropriate for the 8 million numbers in a *short code* area, and a requirement that it was made up of only contiguous 01 areas. OFTEL would also need to take account of:

- the need for efficient utilisation of numbering resources
- anticipated growth in the demand for numbers
- demographic and business trends
- the existence of a “community of interest”
- tariff and other market developments.

7.11 *OFTEL would welcome views on the proposal that 02 short codes are used whenever an 01 area needs more numbers, and that an expansion of the boundaries of the area code is considered whenever such a change is made. OFTEL also invites comments on the suggested factors to be taken into account in considering the case for “growing” the local dialling area.*

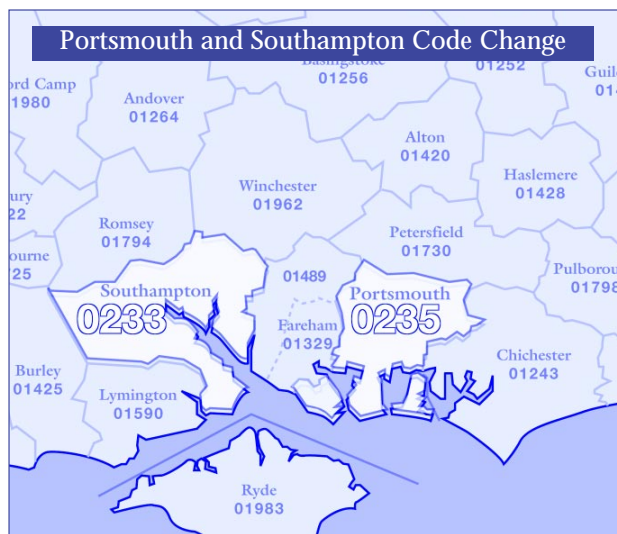
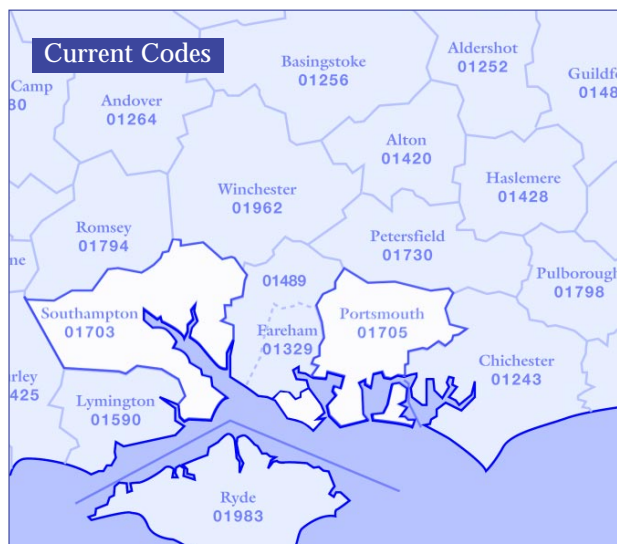
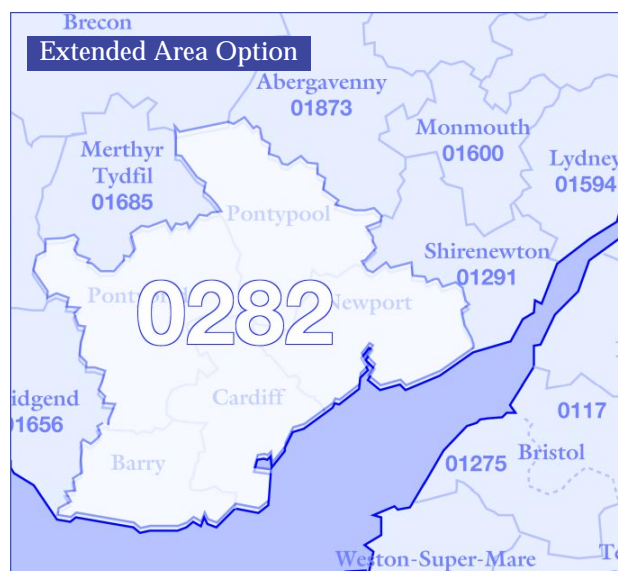
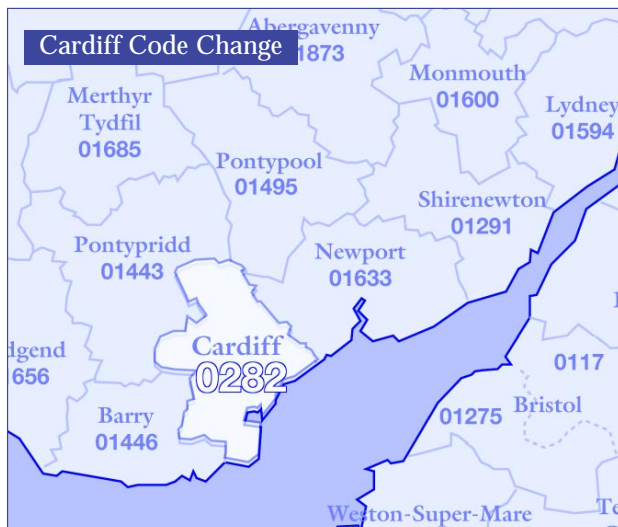
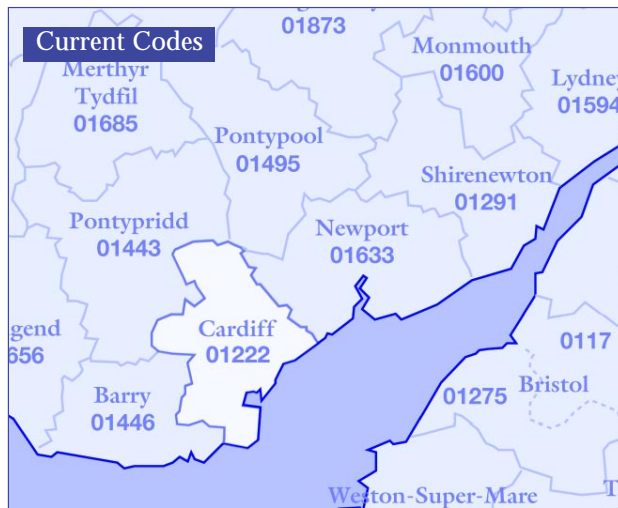
Number Shortage Areas

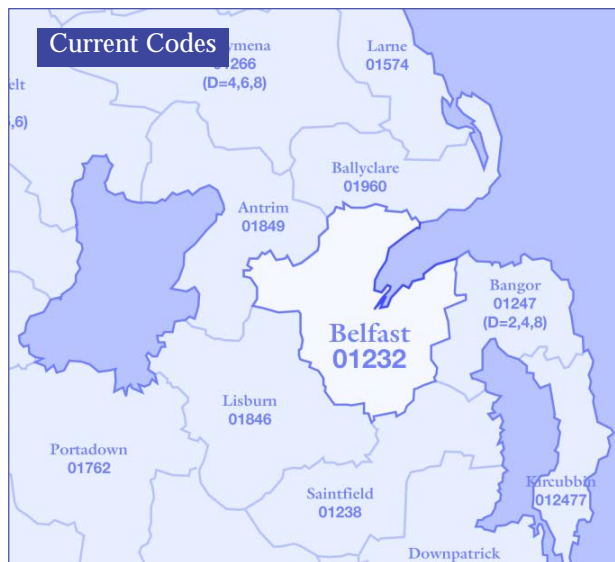
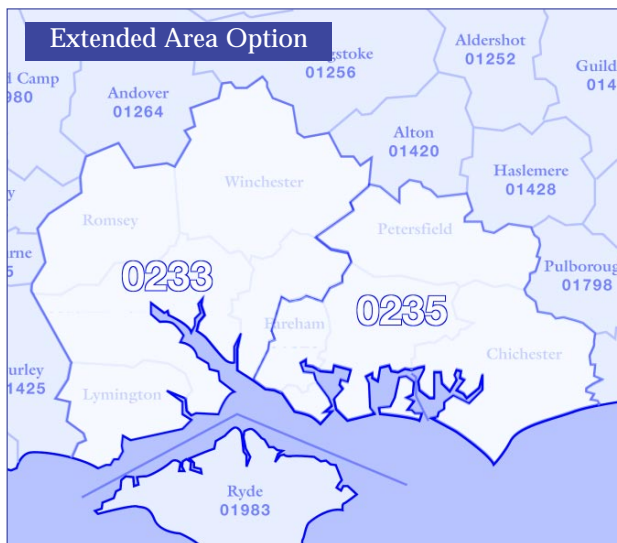
7.12 Detailed arrangements for most of the areas listed in Chapter 2 where exhaustion is expected by 2005 or 2012 will be published as part of an on-going programme, once this consultation has agreed the general approach to be adopted. However, firm plans for providing more numbers in some places need to be settled soon. Proposals for meeting number demand around Portsmouth, Southampton, Cardiff, Belfast and London are set out below, with more detail given in Annex E. The views of bodies representing customers in these areas are particularly invited in response to this consultation, so detailed plans can be drawn up this autumn.

7.13 For **Cardiff**, the proposal is to change the code from 01222 to a *short code* 0282 in the year 2000. Here it would also be possible to incorporate neighbouring 01 code areas into the new 0282 code at an appropriate time if that was considered desirable. Annex E suggests that Barry (01446), Newport (01633), Pontypridd (01443) and Pontypool (01495) could join a

South East Wales code, providing over 1 million people with the benefit of wide-area local dialling.

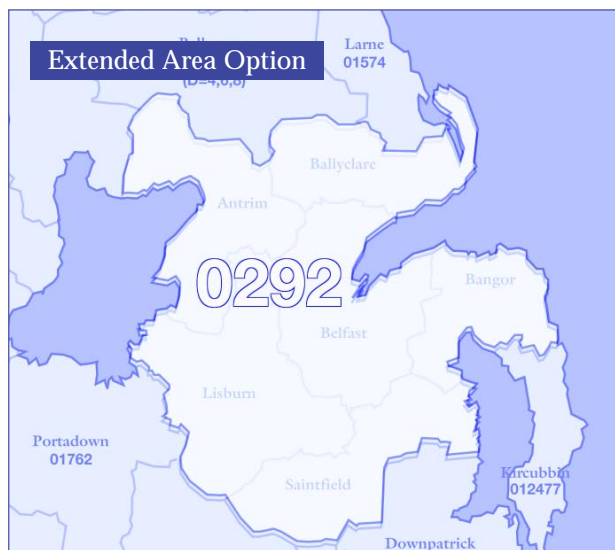
7.14 Both **Portsmouth** and **Southampton** need more geographic numbers. In view of the population density of each city and surrounding areas, OFTEL proposes that both Portsmouth and Southampton should retain separate codes. Southampton 01703 could change to 0233 and Portsmouth 01705 to 0235, both in the year 2000. These areas could then grow to accommodate neighbouring 01 codes which

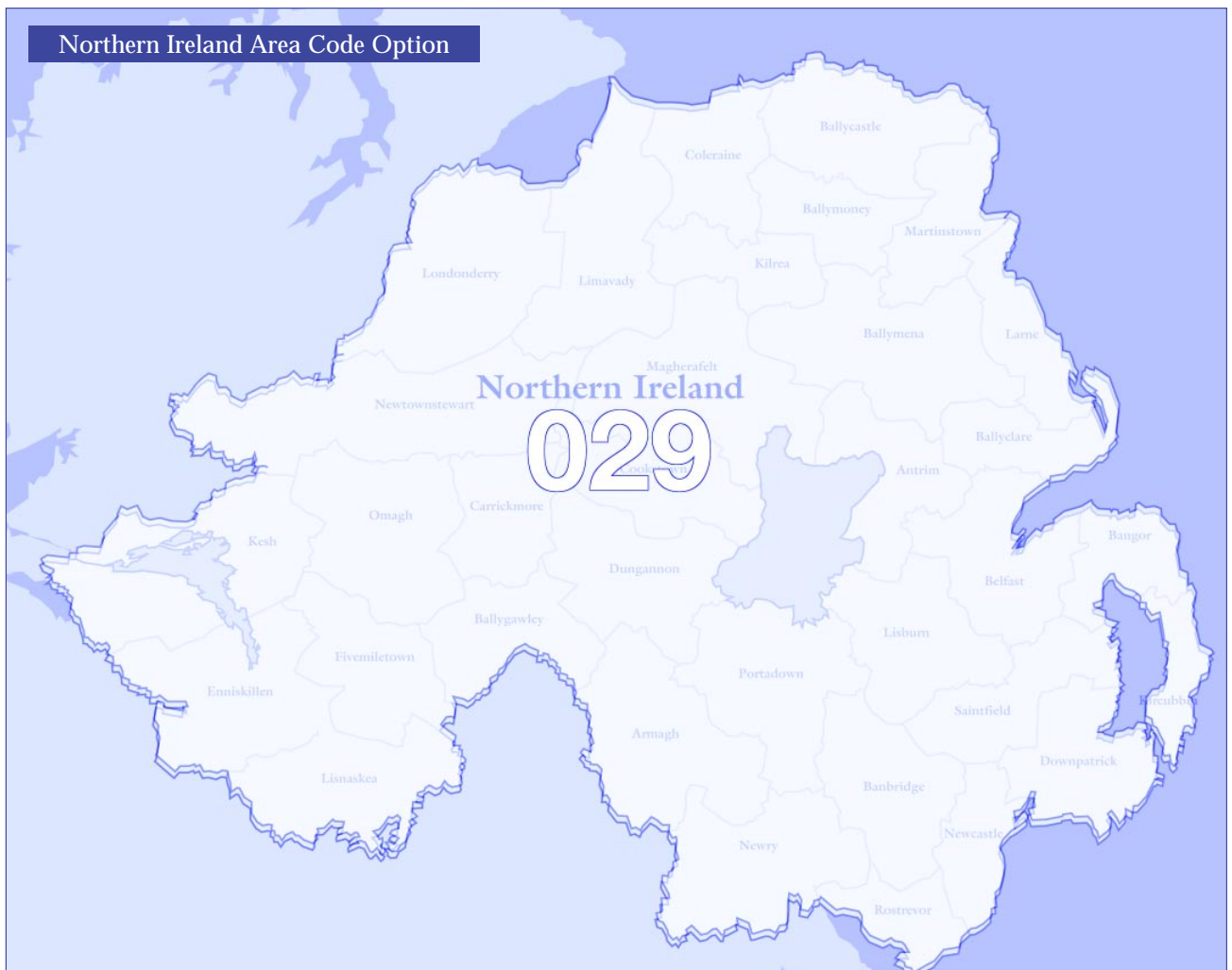




wanted to move into the larger local dialling areas. The method for growing each area is explored in more detail in Annex E.

7.15 For **Belfast**, one option is to change the code from 01232 to the *short code* 0292 in the year 2000. It would be possible to incorporate other 01 code areas into the new 0292 code if these areas wanted to change. The Annex suggests that Bangor (01247), Saintfield (01238), Lisburn (01846), Antrim (01849) and Ballyclare (01960) could all choose to join an expanded Belfast code. This would give approximately 600 000 people the benefit of local dialling throughout the area. A single Northern Ireland code is another possibility, allowing all the one and a half million people within the Province to call each other without dialling any code. If this approach was preferred a shorter code – such as 029 – with 8-digit local numbering would be necessary to allow an easy migration.





London

7.16 The division of the old London code 01 into two in 1990 was intended to achieve two purposes. Firstly, it doubled the amount of available numbers from 8 million to 16 million to meet growing demand. Secondly, it was an essential early step to enable the PhONEday changes as it freed up the 01 range. Because the development of competition and growth of demand in London for new services – particularly from businesses – has been exceptionally strong over the last 5 years, it is clear that London will now need more numbers by the year 2000.

7.17 OFTEL is conscious of the need to avoid further unnecessary disruption for Londoners. However, since it took over full responsibility for numbering arrangements in 1994 OFTEL has a duty to ensure that numbering capacity is sufficient to meet anticipated future demand. If this means further change to London's numbering arrangements then it is important that the best possible solution is found.



7.18 OFTEL has reviewed options for providing more numbers for London – for both 0171 and 0181 code areas. OFTEL is proposing a code change for London in the year 2000 with 8-digit local numbers. The method chosen which is described in more detail in Annex F would enable the 0171 and 0181 code areas either to migrate to a single code again – 020 – or to remain as a two separate code areas – 020 and 022 (021 is not proposed because of possible confusion with the old Birmingham code). A single code for London would increase overall capacity in London from 16 million to 80 million numbers. An analysis of likely demand for numbers suggests that this far exceeds even

the largest possible foreseeable growth. If demand reached the peak case described in Chapter 2, an additional 14 million numbers would be needed over the next fifteen years. A single code provides an additional 64 million numbers; two codes provide an additional 144 million numbers.



7.19 A single code which would give Londoners local dialling again across the whole of London is likely to be popular. In an OFTEL survey last year this was favoured by 61% of Londoners questioned. However, with the degree of uncertainty about the future that exists in telecoms markets, there might be a risk that London could need more geographic numbers again in the future. OFTEL's current view is that this risk is a low one. Also, within the next fifteen to twenty years new technologies are likely to have emerged which could mean that ordinary telephone numbers will no longer be the primary means of addressing people for digital network communications. However views are invited on this issue, especially from London based customers and their representatives: one code with a low risk of exhaustion in the future or two with virtually no risk?

7.20 The actual code change to achieve either option would take place in 2000. To help people who would want to use the new code before 2000, new numbers could be made available earlier, say in 1999, for those who wanted them.

7.21 *OFTEL would welcome comments on the proposed changes for Belfast, Cardiff, London, Portsmouth and Southampton.*

Business Numbering Range

7.22 OFTEL believes there may be considerable benefits in the introduction of a business numbering range using 05 numbers. Businesses using this range would have greater “ownership” of these numbers. They would have increased stability away from the geographic range and an opportunity to integrate their internal corporate numbering plan with the public numbering plan. OFTEL believes such a range would prove attractive to businesses and a market led migration to 05 could remove large amounts of demand from 01/02 and delay change in many places which otherwise could need a code change – and so benefit the wider community.

7.23 However, because the introduction of a new business range would be a significant new development, OFTEL intends to carry out further study on its implications and possible introduction. In the first instance, OFTEL would welcome comments on the principles set out here and in Chapter 5. One of the important elements of the study would be to ensure clarity of tariffing for callers. OFTEL's initial preference is for fixed tariffing for the range: either a single per minute charge, possibly local-rate, for the entire 05 range or two charges within distinct bands based on standard tariffs – say 050 to 054 for tariffs up to geographic local-rate and 055 to 059 for up to geographic national-rate. This study would also need to look at the rules for the minimum and maximum allocation sizes and the allocation of golden numbers that might apply. If the response to the principle of a corporate numbering range is positive, then OFTEL intends to establish a joint industry/user Study Team to review options and make detailed proposals by March 1997.

7.24 *OFTEL would welcome views on the principle of the introduction of a corporate numbering range and on the rules that might apply.*

Personal Numbering and Mobile and Paging Services

7.25 OFTEL proposes that all mobile, personal numbering and paging services should move to the 07 range by 2001. The 07 indicator would tell callers that they will be able to reach people (either directly or via a Messaging service) regardless of location. All services would be intelligent network based and call charges would not be distance dependent. The range would be divided – initially at least – into two main tariff bands for personal and mobile services: for example codes beginning 070 (currently used for existing personal numbering applications) and 072 could be for services charged at up to double peak national-rate tariff; 073 to 079 for any service charge. This would provide customers with a better indication of the cost of calls. However, it is recognised that a tariff band suitable for today's market may soon become meaningless as costs of calling mobile phones fall over time. OFTEL supports the principle of portability (Chapter 8) within each service category for all 07 numbers – the only controlling rule being that the caller should not have to pay more than the expected price of a call to that code, even if the person being called has ported to a more expensive service (for example porting between mobile operators with different tariff structures). OFTEL seeks views on the scope for and timing of a move to full portability between 07 services.

7.26 For all three service types, 07 numbers would normally comprise eleven-dialled digits. All new codes allocated to telephone companies for these services would be in the 07 range. All existing services not in the 07 range would be expected to move to appropriate 07 codes by 2001 at the latest. To minimise disruption the new codes for these existing numbers should be made available by telephone companies well in advance – ideally during 1998 – so that customers can decide the best time for them to move. Taking into account the long period of “parallel running”, the migration from analogue to digital networks which will be taking place over this period, and the churn rate for mobile customers, disruption should be relatively small.

7.27 It will be necessary to consider how the migration of mobile numbers to 07 should apply to analogue mobile networks. For technical reasons these networks are not able to expand their own numbers to eleven-dialled digits. Other solutions may need to be found in this case. These could include using “virtual” 07 numbers for calls to analogue phones which are then translated by the mobile networks to the “old” number. Alternatively, 9-digit 07 numbers could be used for analogue services, although this would be an inefficient use of the numbering resource. Even though this is only a short to medium term problem, with the analogue network due to be closed by 2005, views are invited on how the 07 rules should apply to analogue numbers.

7.28 Paging services are different from personal and mobile numbering, not least because they provide only one-way communication. OFTEL is therefore proposing that a different part of the range – possibly 071 – should be put aside for paging services. OFTEL would also welcome views on whether a part of the range should be reserved for possible Universal Personal Telecommunications use.

7.29 OFTEL invites comments on the proposals for:

- a single “Find Me Anywhere” range for all mobile, paging and personal numbering services;
- the use of 07 for this range;
- the use of 071 for a discrete paging range.

Views would be welcome in particular on the principle of tariff bands within 07, on the levels at which any bands should be set and on whether bands should apply to existing 07 personal numbering codes or be limited to new allocations. Portability issues are discussed further in Chapter 8. However, comments are invited on the proposals to extend portability to all 07 services and on the scope and timing for a move to full portability between 07 services.

Specially Tariffed Services: Freephone, Shared Cost, Shared Revenue

7.30 OFTEL proposes that the 08 range should be used for specially tariffed services up to a set value without a content element: codes such as 0800 for freephone, 0845 for local-rate and the 0870 for national rate. OFTEL’s aim is for these numbers to be used, within each category of number, on a fully portable basis and wishes to move as soon as possible to a position where allocations of numbers can be made to end-users who then seek service connection from the operator of their choice. However, as an interim step, the industry is in the process of agreeing the means by which basic inter-operator portability (using a technical arrangement known as “data-decode”) could be introduced earlier, following the model adopted for geographic numbers.

7.31 For freephone services, OFTEL believes that inter-operator portability should be made available for 6- and 7-digit numbers in the 0800, 0500 and other freephone ranges early in 1997. When full 0800 7-digit single number allocation becomes available – possibly during 1998 – it is very important that arrangements are put in place to minimise disruption to customers and to facilitate a fair and equitable migration to the new numbers. OFTEL intends therefore, as a matter of urgency, to put in train work to establish the rules by which full freephone number portability should be achieved. This will include the establishing of rules on the continuation of numbers in non-specified ranges, the continuation of 6-digit 0800 numbers and on the treatment of “duplicate” numbers (eg 0500 600 600 and 0800 600 600).

7.32 For local-rate and national-rate services, OFTEL proposes that the 08 codes are used by all operators. The codes 0845 and 0870 are currently designated for local-rate and national-rate services respectively. Since few numbers are currently in use in these codes, it would be possible to use other codes – 0811 and 0880 have been suggested. OFTEL would welcome views on the most appropriate codes. Numbers in these ranges should be portable using the interim data-decode method as soon as this is

practicable (which OFTEL expects to be by early 1997). As required by the current Numbering Conventions, once operators are able to use these ranges with 7-digit numbers (eleven-dialled digits), they should not allocate any further numbers in non-specified ranges for these services. OFTEL's intent would be to establish full number portability on these ranges with individual allocations to end-users by 1999 at the latest.

7.33 OFTEL expects that when 0800, 0845 and 0870 (or alternative codes as suggested by the previous paragraph) are available to customers as fully portable 7-digit numbers and used by all operators, there will be a market-led migration to these numbers and therefore a "sunset date" for migration may not be needed. However, OFTEL proposes to review the position in 1999.

7.34 All new numbers in the 08 range would comprise eleven-dialled digits. All new codes allocated to telephone companies for these services will be in the appropriate part of the range. All calls to the code should be charged to the caller at the rate designated for the code in the Scheme.

7.35 OFTEL also believes that there may be merit in setting a per minute tariff ceiling for services in the 08 range. This would provide customers with a degree of reassurance about the maximum call charge on 08 numbers. A ceiling of approximately the standard national rate is suggested.

7.36 *OFTEL invites comments on the:*

- *appropriate code ranges for local-rate and national-rate numbers;*
- *timing and method for migration of existing 6-digit numbers to the new 08 ranges;*
- *principle and level of a ceiling on the 08 range.*

As discussed in Chapter 5, OFTEL also invites proposals on the use of 08 codes to facilitate Service Provider access.

Content and Other Premium Rate Services

7.37 OFTEL is proposing that premium-rate services with a content element use the 09 range, with 090 used for these services with 091 in reserve for future use. This will provide callers with a clear indication of the type of service and tariff and will bring the UK into line with numbering schemes in Europe and internationally. Premium Rate Services for this purpose are defined as telecoms services charged at a higher than standard rate where there is an information or entertainment content element and where the revenue from the service is shared between a network operator and a third party service provider. The market research referred to in Chapter 6 has suggested a need for a more effective means to provide to the calling customer a broad expectation of the likely cost of the call. There may also be a need for businesses to be able to provide access to specific content services such as computer helplines – perhaps only to some of their staff – while barring general access. To reflect this OFTEL is proposing structuring the 090 range to give some basic tariff and service information:

0900 Overall call-cost no greater than £1

0902 Overall call-cost no greater than £5

0904 Overall call-cost may be greater than £5

0906 Calls to business services where the service provider requires appropriate authorisation before access

0909 Shared revenue services above standard national tariff (no content element)

7.38 Under these rules adult services would generally fall within 0904 where a specific following digit could be used to facilitate barring, for example 0904 9. A similar rule could apply to 0900 and 0902 if adult services met the tariffing criteria. Codes such as 0901 and 0903 would be kept in reserve to allow for service growth and tariff developments. The 0906 code is intended to provide an opportunity to facilitate new means for business access to content services. OFTEL would welcome comments on this proposal and alternative suggestions to provide easier access to business services.

- 7.39 If the proposal for a ceiling on 08 tariffs is agreed, there is likely to be a need for an 09 code for non-content shared revenue services greater than the 08 tariff ceiling. Current premium rate uses which could fall within the new code include incoming calls to hospital payphones. OFTEL proposes that 0909 should initially be used.
- 7.40 Because of the clear consumer protection issues involved, OFTEL believes that there is a need to set a “sunset date” for content services in non-specified ranges. It is proposed therefore that existing services not in the correct range should move to appropriate codes by 1999. To minimise disruption the new codes for these existing numbers should be made available by telephone companies in advance of these dates, possibly from 1997.
- 7.41 OFTEL proposes that 092 to 099 are kept in reserve for use by multimedia-type content services which may develop in future such as teleshopping, telebanking and interactive learning systems.
- 7.42 *OFTEL invites comments on the proposals for the use of 09, the substructure and the migration methods.*
- 7.44 OFTEL favours Option 2 which would ensure continued wide availability and usage of access codes for a range of purposes whilst providing capacity, flexibility and resilience for the future and ensuring that all providers of similar services are treated on an equal basis. This would require migrating 3- and 4-digit Own Network and Inter-Network Service codes to 5- or 6-digit codes. A two-year period – until 1999 – should be a sufficient period in most cases. OFTEL would favour using 5-digit rather than 6-digit codes: this creates at least 1000 such codes and keeps codes as short as practical.
- 7.45 *OFTEL invites comments on the proposal to adopt Option 2 and in particular seeks views on whether 5- or 6-digit codes should be used and on the proposed migration period.*

Independent Service Providers

- 7.46 Chapter 2 explained that changes in the market are likely to result in a demand from Independent Service Providers (ISPs) for allocations of telephone numbers, blocks and codes directly from the Numbering Scheme administrator. The proposals for the Scheme set out above address the needs of ISPs in two ways: firstly by changing the rules to allow some direct allocations to ISPs; and secondly by ensuring that there is sufficient flexibility in the Scheme to meet possible demand. However, it is important to recognise that certain types of demand from ISPs may lead to poor utilisation which could result in capacity in parts of the Scheme, which otherwise would have sufficient numbers. In making the proposals OFTEL has had to balance the need to encourage fair and effective competition for ISPs and fair access for them to numbering resources with the need to optimise the efficiency of the Numbering Scheme.

- 7.47 As a matter of principle, in order to make best use of number resources, OFTEL proposes that capacity be allocated to ISPs only when the primary purpose is to use those numbers in the provision of service to third parties. The detailed rules for access by ISPs to numbers would vary depending on the type of service being provided

Access Codes

- 7.43 In Chapter 6 two principle methods were identified to provide sufficient access code capacity to meet emerging demands and to ensure fairness and parity in the means by which customers gain access to equivalent competitive services provided by either network operators or Independent Service Providers (ISPs):

Option 1:

Limiting the use of current capacity to Common Service and Operator Routing codes.

Option 2:

Increasing the number of codes available by introducing 5- or 6-digit access codes for Inter-Network service or Own Network Service codes, while maintaining Operator Routing and Common Service codes at 4-digits.

Geographic Numbers (01/02)

7.48 ISPs have not so far indicated a strong demand for geographic numbers other than to meet their own in-house numbering requirements. Any demand that there may be for allocations for third party use is likely to be small – for instance for “virtual points of presence” and messaging systems – and would more usually be provided by numbers in other parts of the Numbering Scheme. Because such demand is likely to be significantly smaller than the normal block size of 10 000 numbers, allowing allocations to ISPs would be likely to lead to a serious reduction in numbering efficiency and the premature exhaustion of many area codes. In theory it would be possible to meet this demand by making smaller allocations of numbers – for example in blocks of 1000 or 100. However, this would increase the amount of digit analysis within switches and under the current network structure would lead to prohibitively high implementation and ongoing costs. OFTEL is therefore proposing to limit direct geographic number allocations to public network operators. However, OFTEL would welcome further comments on this point. This policy would be reviewed in 1998/99 to assess whether technological developments have made smaller block allocations more cost-effective.

Corporate Numbering (05)

7.49 Allocations of capacity would be made to end users, not to ISPs or network operators.

Mobile, Personal Numbering and Paging Services (07)

7.50 Indications from ISPs suggest that there is likely to be strong demand for direct allocations of blocks of numbers from the 07 range, in particular for personal numbering services. OFTEL is proposing that ISPs would be able to apply for direct allocations of numbers for these services. Numbers would be allocated in multiples of 100 000 number blocks. This would provide access to numbers for ISPs on the same basis as public network operators.

7.51 It would be essential to ensure that ISPs were subject to the same portability requirements as public network operators when they were

providing service with direct number allocations.

Special Services: Freephone, Shared Cost, Shared Revenue (08/09)

7.52 The extent of likely demand from ISPs for special service numbers for third party use is currently not clear, although there is an expectation of a high demand for capacity for content services (09). OFTEL's proposals allow for direct allocations to ISPs of single or small blocks of numbers once portability of these services is fully available (ie with allocations of all such numbers directly to end-users rather than to public network operators). OFTEL also invites suggestions for other uses of 08 and 09 numbers which may be appropriate for the ISP market.

Access Codes

7.53 Access codes are a key competitive tool and demand for codes from ISPs is expected to be strong. OFTEL recognises that it is important to ensure that public network operators and ISPs can offer access to similar services in similar ways. It would not be acceptable, for instance, for a dominant operator to be able to provide access to a voice mail service through 4-digit *short codes* when ISPs were able only to provide access through full national numbers (eleven-dialled digits). In making proposals on this issue, a key factor is the limited number of access codes: fewer than 300 4-digit codes currently available for new indirect access services. In paragraphs 7.43–7.45 therefore, OFTEL is proposing to expand the access code range by requiring the use of longer 5-digit codes for enhanced services. This would ensure equal treatment of ISPs and public network operators.

7.54 *OFTEL would welcome comments on numbering for ISPs and in particular on the proposals for allowing direct access to the numbering resource outlined above.*

NUMBER PORTABILITY

Introduction

- 8.1 OFTEL is committed to the principle of number portability – customers’ ability to keep their existing numbers when changing from one network or service provider to another. Having to go through a number change whenever they change supplier can be a major inconvenience for customers and a barrier which prevents them from fully exercising their choice – and taking advantage of growing competition. OFTEL is firmly committed to encouraging competition and removing such barriers.
- 8.2 Number portability can be expected to have an impact on the future demand for numbers in the UK. In general, it is likely to lead to more efficient use of the existing stock of numbers and therefore mitigate the demand for new numbers. However, the rules governing portability interact closely with general numbering strategy. There are a number of issues on which OFTEL wishes to consult before setting in place further detailed rules governing number portability.
- 8.3 Portability of geographic numbers is now being introduced in the UK following the outcome of a Monopolies and Mergers Commission (MMC) reference last year. OFTEL anticipates that within the next two years the majority of UK customers will be able to take existing 01 geographic telephone numbers, and in future 02 numbers, with them when they change suppliers. OFTEL is also committed as a matter of priority to introducing portability of Specially Tariffed Services numbers (ie those it is intended to brigade behind 08: currently freephone, local-rate, national-rate) and will use the mandate provided by the MMC report to bring this about at the earliest opportunity. The technical options are currently being reviewed with the industry.
- 8.4 There are three main issues on which OFTEL now wishes to consult, which are discussed in more detail later in this chapter. They are:
- the extent to which portability should be allowed for other types of number (ie in addition to 01/02 and specially tariffed services). OFTEL’s current thinking is that the

principle of number portability should also be pursued for other services – including mobile, personal numbering, paging and premium rate numbers – as discussed below.

- whether numbers being used for purposes inconsistent with the Numbering Scheme should be available for portability.
- whether portability should be allowed between service categories – sometimes referred to as “Full Portability” – by, for example, allowing the porting of a geographic number for a personal number-type application; or between certain categories but not others.

- 8.5 In considering these issues, OFTEL has sought to balance the desirability of further portability (which provides clear benefits for customers and for the development of effective competition) with the need to maintain sufficient clarity in numbering arrangements to avoid confusion, particularly in respect of the cost to the person making the call of calling a particular type of number.

Extending Portability

- 8.6 Starting from first principles, OFTEL believes that all telecoms customers should have freedom to keep any kind of number when they change supplier. This would imply that, in addition to the number types already identified as being within the frame for portability, all other numbers should be available for portability in due course. This also implies that the current arrangements whereby licensed operators can receive payment from customers for the use of golden numbers which they initially allocate will need to be reviewed.
- 8.7 OFTEL’s current view of relative priorities, and phasing of the introduction of more portability, is as follows:
- *Geographic number portability:* These services are developing now. New 02 numbers should be portable in exactly the same way as 01 numbers. OFTEL considers that portability of such numbers will be technically feasible using the established techniques for geographic number portability.
 - *Specially tariffed services:* Number portability for freephone, local- and national-

rate and other 08 services is now OFTEL's top portability priority.

- *Personal, mobile and paging numbers:* Discussions with the industry are already in train on the portability of mobile numbers, both between service providers on the same network and between different networks. OFTEL considers in principle that all mobile, personal and paging numbers should be available for portability as and when a technical solution is available and subject to further work on how any resultant costs should be shared. The treatment of existing personal, mobile and paging numbers which are not behind 07 at present is discussed in more detail below;

- *Content services:* Once an agreed solution for non-geographic number portability is in place, OFTEL will review whether that solution is applicable to numbers associated with premium rate and any other content services and whether any additional rules governing their portability need to be put in place.

- *Corporate numbers:* In the case of the proposed new corporate numbering range using 05 numbers, the number would be issued for use to a particular organisation who could then choose who supplied them with service.

8.8 *OFTEL would welcome views on this. Are there any numbers which OFTEL should not be extending portability to? Does the porting of certain types of number present any practical difficulties over and above those likely to be encountered with the scope of portability to which OFTEL is already committed? Do respondents agree with the proposed phasing for extending portability?*

Porting of “Inconsistent” Numbers

8.9 As described in earlier chapters, some operators are either using numbers for purposes other than those specified in the Numbering Scheme, or have not instituted measures to standardise number length. OFTEL intends to take action to rectify these general problems as part of its overall migration strategy to ensure the new National Numbering Scheme is effectively implemented. This situation raises the question of whether such numbers should, in the meantime, be available for portability. A similar issue arises where numbers are

scheduled for withdrawal at a future sunset date but may remain in use in their existing form until then. OFTEL believes that in these cases, portability should not be permitted to take place if

- porting such numbers would create significant technical problems or impose unreasonably high costs;
- such portability would create a barrier to the rationalisation of the Numbering scheme; or
- allowing the porting would create disproportionate confusion in the minds of calling customers.

8.10 OFTEL is currently consulting on proposals for detailed rules governing geographic number portability (the Number Portability “Functional Specification”). These propose that where an existing 5-digit local number is to be replaced in due course by a 6-digit number (for instance, 01xx xxxxx being replaced by 01xx 2xxxxx), the “portability” of such a number should be permitted. However, the rules include the caveat that such portability should only be permissible if the recipient operator agrees to withdraw and replace the 5-digit number with its 6-digit equivalent when the donor operator makes the general change. OFTEL believes this satisfies the conditions set out above.

8.11 OFTEL would welcome views on whether a similar approach should be taken to other numbers where a change in number length is planned by an operator or where the Numbering Scheme includes a requirement for such a change to be made.

8.12 Where numbers are being used with a type of service other than that envisaged in the Numbering Scheme, we believe that the porting of those numbers could exacerbate the problem of migration, in effect enshrining the misuse of the number. We propose, therefore, that in general numbers where use is inconsistent with the Numbering Scheme should only be available for portability if the recipient operator uses the appropriate code as a 7-digit number under the revised Scheme. For freephone numbers, because of the existence of 6- and 7-digit 0800 numbers and competitive alternative services in other ranges, OFTEL's proposal is that the interim portability solution is made available on

all freephone ranges. Full portability with allocations to end-users will only be available on 0800.

8.13 The specific proposals made in this document for further changes to the Numbering Scheme, including the migration of all mobile, personal and paging numbers to 07 numbers and of PRS or “added content” services to 09, would create further issues about whether numbers outside the specified range should be available for portability. One way forward, before complete migration was possible, would be for customers to “port” the replacement numbers when it is available. In other words, a customer of operator or service provider ‘X’, with the number 04XX 123456 could opt to change to operator or service provider ‘Y’, who could use the replacement code 07XXX and keep their number 123456. We would welcome views on whether portability of mobile numbers (or personal or paging) should be delayed until such time as new 07 numbers are available to replace existing numbers or whether, as with 5-digit local numbers, transitional arrangements should be put in place which allow existing mobile numbers to be “ported”, but on the understanding that the recipient operator or service provider replaces the number with its 07 equivalent.

Porting Between Service Categories

8.14 OFTEL has hitherto taken the view that all portability should be confined to “like for like” purposes. The rationale for retaining such a rule is that it maintains the consistency of the Numbering Scheme and minimises customer confusion, in particular with respect to the tariffs they pay. The “like for like” rule could work as follows:

- *Geographic number portability:* A geographic number in the 01 range could be available for any other “geographic number” purpose. We already stipulate that, for example, the fact that a number currently deployed with a Centrex or DDI service does not mean that the number has to be used for the same service after porting. Also, a number could be “ported” from one geographic location to another (this is known as number mobility) provided the number “owner” paid for any

consequent difference in call costs, rather than the calling party.

- *“Find Me Anywhere” number portability:* OFTEL proposes that initially numbers may be ported within the services which it is proposed to bring behind the 07 digit. Portability between services is considered below. OFTEL seeks views on whether this distinction should in fact apply given the similarity between 07 services. OFTEL would also need to consider whether, if this range was divided between two discrete tariff bands as described in Chapter 7, porting between these bands would be permissible. Such portability need not be ruled out provided the calling party did not end up paying more for a call than that allowed by the tariff band for the original number.
- *Specially tariffed service and premium rate number portability:* Numbers such as 0800, where the charge is fixed (and where the charge in effect defines the service) would only be portable for that same fixed-rate service. 08 numbers could only be ported for similar specially tariffed service applications. Within premium rate services, numbers could only be ported for the same broad service/tariff category, in order to enable customers to retain meaningful selective call barring.

8.15 OFTEL believes that this approach would deliver an appropriate mix of flexibility and clarity for customers. However, OFTEL is aware of a demand for portability between service categories. For instance, some have argued that it should be possible to take existing geographic numbers and port these for use with personal number or mobile applications. Clearly, the demand for such services could increase over time as fixed and mobile services converge. Already it is possible to use 01 numbers for a mobile service provided the 01 tariffing rules are followed.

8.16 OFTEL does not believe that such portability will be generally feasible until geographic, non-geographic and “mobile” portability are in place. The industry is still working on the technical complexities of porting numbers within existing ranges, and further development work would be needed in addition to that currently in hand. Nevertheless, it seems appropriate in a general review of numbering

policy to consider whether portability between number categories should be permitted. It has already been noted that flexibility is a key requirement of future numbering arrangements and should be built into the new Scheme.

8.17 OFTEL considers that the main objection to inter-category portability is that the number may no longer inform the customer calling the number about the broad service type and tariff payable. At the extreme, complete flexibility to (for instance) port an 0800 number and deploy it with a premium service would result in extremely unwelcome surprises for calling customers. Also, changing a number which identifies a fixed or mobile phone to a “virtual” personal number would mean that networks would need some alternative means to address and bill that phone independently of the personal number. Some rules are therefore needed.

8.18 Nevertheless, in principle, it might be possible to accommodate the desire for “inter-service” portability if such services were offered on the basis that the calling customer pays a tariff which is broadly what they would expect to pay for a call to that type of number. If such a rule were adopted, OFTEL would need to work with the industry and consumer representatives to define the parameters within which any such flexibility was to be permitted.

8.19 *For the present, OFTEL would welcome views on whether the proposed approach of “like for like” (ie intra-service) portability is appropriate for going forward in the short term; whether OFTEL should rule out inter-service portability, or whether we should retain this as an option to be looked at in the medium term; and if so, whether, the proposed approach that the calling party should pay a tariff within a broadly expected range is correct.*

SUMMARY OF MAIN PROPOSALS AND QUESTIONS

Summary of Questions

Geographic Numbering

OFTEL would welcome views on the proposal that 02 *short codes* are used whenever an 01

Summary of Main Proposals

SERVICE	RANGE	START DATE FOR USE OF CODES FOR NEW NUMBERS	CODE CHANGE DATE FOR EXISTING NUMBERS	ASSOCIATED ISSUES
GEOGRAPHIC	01 and 02	1998	some from 2000	see table below
CORPORATE	05	not set	not applicable	principle of range tariffing & technical arrangements
FIND ME ANYWHERE	07			portability for 07 tariff bands migration method
Mobile	07	1997	2001	migration for mobile analogue numbers
Paging	07	1997	2001	separate paging range – 071
Personal Numbering	07 in use now	now	not applicable	
SPECIALLY TARIFFED SERVICES	08			portability for 08 <ul style="list-style-type: none"> inter operator 1997 full customer 1998/99 tariff ceiling on 08 of national rate
Freephone	08	1997	not applicable	
Local-rate	08	1997	not applicable	code for local-rate 0845 or 0811
National-rate	08	1997	not applicable	code for national-rate 0870 or 0880
PREMIUM-RATE	09	1997	1999	substructure portability
ACCESS CODES	1XXX and 1XXXX	1997	1999	Longer codes for services

Summary of Geographic Proposals

AREA CODES	CODE NOW	NEW RANGE	NEW CODE	CODE CHANGE DATE	ASSOCIATED ISSUES
London	0171 0181	02	020 020 or 022	2000 2000	one code or two
Cardiff	01222	02	0282	2000	extended area
Southampton	01703	02	0233	2000	extended area
Portsmouth	01705	02	0235	2000	extended area
Belfast	01232	02	0292	2000	extended area

also invites comments on the suggested factors to be taken into account in considering the case for “growing” the local dialling area. (Paragraph 7.11)

OFTEL would welcome comments on the proposed changes for Belfast, Cardiff, London, Portsmouth and Southampton. (Paragraph 7.21)

Corporate Numbering

OFTEL would welcome views on the principle of the introduction of a corporate numbering range and on the rules that might apply. (Paragraph 7.24)

Mobile, Paging and Personal Numbering Services

OFTEL invites comments on the proposals for:

- a single “Find Me Anywhere” range for all mobile, paging and personal numbering services;
- the use of 07 for this range;
- the use of 071 for a discrete paging range.

Views would be welcome in particular on the principle of tariff bands within 07, on the levels at which any bands should be set and on whether bands should apply to existing 07 personal numbering codes or be limited to new allocations.

Comments are invited on the proposals to extend portability to all 07 services and on the scope and timing for a move to full portability between 07 services. (Paragraph 7.29)

Specially Tariffed Services

OFTEL invites comments on the:

- appropriate code ranges for local-rate and national-rate numbers;
- timing and method for migration of existing 6-digit numbers to the new 08 ranges;
- principle and level of a ceiling on the 08 range.

OFTEL also invites proposals on the use of 08 codes to facilitate Service Provider access. (Paragraph 7.36)

Premium rate services

OFTEL invites comments on the proposals for the use of 09, the substructure and the migration methods. (Paragraph 7.42)

Access Codes

OFTEL invites comments on the proposal to adopt Option 2 and in particular seeks views on whether 5- or 6-digit codes should be used and on the proposed migration period. (Paragraph 7.45)

Independent Service Providers (ISPs)

OFTEL would welcome comments on numbering for ISPs and in particular on the proposals for allowing direct access to the numbering resource outlined above. (Paragraph 7.54)

Portability

Are there any numbers which OFTEL should not be extending portability to? Does the porting of certain types of number present any practical difficulties over and above those likely to be encountered with the scope of portability to which OFTEL is already committed? Do respondents agree with the proposed phasing for extending portability? (Paragraph 8.8)

OFTEL would welcome views on whether the proposed approach of “like for like” (ie intra-service) portability is appropriate for going forward in the short term; whether OFTEL should rule out inter-service portability, or whether we should retain this as an option to be looked at in the medium term; and if so, whether, the proposed approach that the calling party should pay a tariff within a broadly expected range is correct. (Paragraph 8.18)

ANNEX A

The Numbering Advisory Group

This group is an advisory body set up under section 54(3) of the Telecommunications Act 1984.

Its function since it was formed in March 1996 has been to advise on numbering policy and implementation issues and to assist the Director General in his review of the structure of the UK Numbering Scheme, specified in the Numbering Conventions.

The Group's members were appointed by the Director General from nominations put forward by the telecommunications industry and user groups. Membership is for an initial period of one year and the present members are:

Sara-Jane Amey	Energis
John Boag	FEI
Michael Bryan-Brown	COLT
Richard Cox	Mandarin Technology
Philip Cullum	Consumers' Association
Michael Dixon	TMA
Richard Furey	Business Advisory Committee for Telecommunications
Emma Gilthorpe	Mercury Communications Ltd
Alan Hadden	Mercury Personal Communications Ltd
Tony Holmes	BT
Claire Milne	Antelope Consulting
Alistair McLeod	Independent Consultant
Noel Scanlon	TUA
Martin Sadler	Hewlett Packard Laboratories

Malcolm Taylor Telewest

Isobel Watt Scottish Telecom

The Group has also been assisted by occasional ad hoc working groups, and by independent experts, notably Steve Carter of Coopers & Lybrand.

The Groups Terms of Reference are:

- (a) consider the issues which arise in the Director General's review of the UK specified numbering scheme;
- (b) advise the Director General on the implications of numbering issues for consumers, operators and other interested parties;
- (c) advise the Director General on appropriate means of:
 - ensuring that an adequate supply of numbers exists to meet future demand;
 - making numbers available in ways that are most beneficial to consumers; and
 - ensuring that the development of network and service competition is not inhibited.
- (d) suggesting means of ensuring the most beneficial development of the National Numbering Scheme over the next 5–10 years and beyond.

When automation allowed callers to make trunk calls between different areas without the help of a human operator, it became necessary to simulate the place names by groups of digits, now known as area codes. Further development of telecommunications systems allowed callers to make international calls using a few digits to identify a country, followed by an area code and then the local number.

Although introduced primarily to allow callers to identify the party being called, numbers were found to have other uses. Telecommunications systems can examine a number of digits to work out how a call is to be routed through various switching centres. Where the charge for a call varies with the distance, area codes can be used in price lists to show the tariff for a call from one area to another.

When trunk service was first automated in the UK in the form of Subscriber Trunk Dialling (STD), existing place names for the geographic areas were abbreviated into meaningful letter/figure combinations to create a relatively friendly user-to-network interface. For example, Cambridge was given the code CA3 and the code LE2 was allocated to Leeds. However, because telecommunications systems recognised only the equivalent numerical information Cambridge was processed as the code 223 and Leeds as 532.

However, this policy of using letter/figure combinations proved to be very short sighted a few years later when International Direct Dialling became available, because there was not an international standard for the association between letters and numbers on dials and keypads. Many foreign countries do not use the English alphabet at all, and those that do have various other number/letter associations. The UK therefore moved to All Figure Numbering (AFN). The consequences of this course of events can be seen in the haphazard structure of codes in the UK Numbering Scheme.

ANNEX B

History of the UK Numbering Scheme

In the early days, before phones became commonplace, it was sufficient to have a few thousand numbers associated with a place name to identify an area. Whitehall 1212 was a well known example. Local numbers could be reused in other geographic areas providing a different place name was used.

ANNEX C

Numbering Capacity and Utilisation

For most areas with 01 numbers a four-digit code is followed by a six-digit local number, making ten digits in all. For example the code for Cardiff is 1222 followed by six-digit local numbers. Simple arithmetic suggests one million numbers should be available in each area. But this is not the case, as the table below shows:

AVAILABILITY OF NUMBERS IN A CODE AREA		
Total potential numbers in each 01XXX area code	1 000 000	100%
Cannot use local numbers beginning with 0 because 0 is the prefix for national dialling		-10%
Cannot use local numbers beginning with 1 because 1 is the first digit in a set of short access codes such as 100 (operator) and 192 (directory enquiries)		-10%
Telephone companies have built their networks using blocks of 10 000 numbers irrespective of demand in any part of an 01 code. These 10 000 number blocks are the 'currency unit' of number management. Also, some numbers in a block may be reserved in case a company with direct-dialling-in (DDI) needs extra numbers		-20%
A block of 100 000 numbers is usually set aside for future expansion from six to seven digit local dialling, using the initial digit of that block		-10%
Miscellaneous: Numbers that have been in use but then become spare are not reused straight away to reduce the risk of unwanted calls; local numbers beginning 99 need to be protected to avoid mistaken calls to the '999' service		-10%
Numbers available	400 000	40%

ANNEX D

Access Codes – Effect of Options Proposed in Chapter 6

Summary of 4-Digit Access Code Capacity and Availability

	NOW		OPTION 1 Likely Total Available	OPTION 2 Likely Total Available
	Total Available	Total Used/Reserved		
Common Service	280	190	190*	190*
Operator Routing	420	100	810*	700*
Inter Network Service		53	0	1000 (5-digit)#* 10 000 (6-digit)#*
Own Network Service	290	290	0	100 (5-digit)#* 1000 (6-digit)#*

* The figures given are for example purposes only. The actual quantity available in each category would be determined taking account of forecast demand and comments received as part of this consultation.

Each additional digit in an access code increases the capacity tenfold. So the 4-digit code 1734 would become 10 5-digit codes – 17340, 17341 ... 17349. By the same method 1000 5-digit Operator Service codes could become 10 000 if they were 6-digit and 100 5-digit Own Network Service codes could become 1000 if they were 6-digit.

ANNEX E

Meeting Number Demands in Belfast, Cardiff, Portsmouth & Southampton

Option 2 in Chapter 5 describes a way of extending the local dialling area when a new shorter code is used to provide more numbers in an area facing number shortages.

This annex shows how this could be implemented in:

Cardiff
Portsmouth
Southampton
Belfast

The examples are illustrative only. In each area, the approach proposed is evolutionary, in that an 02

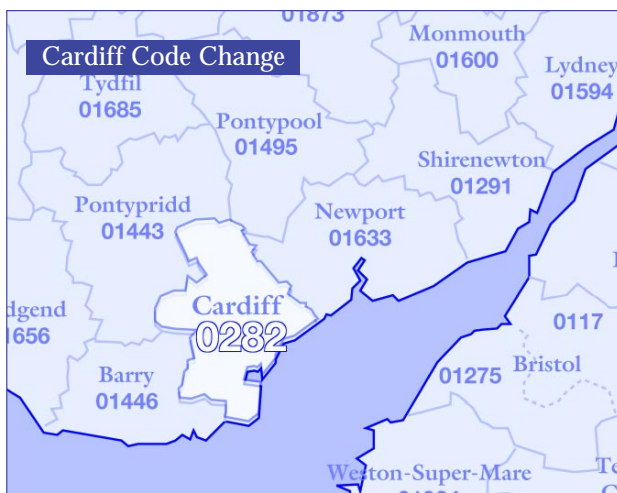
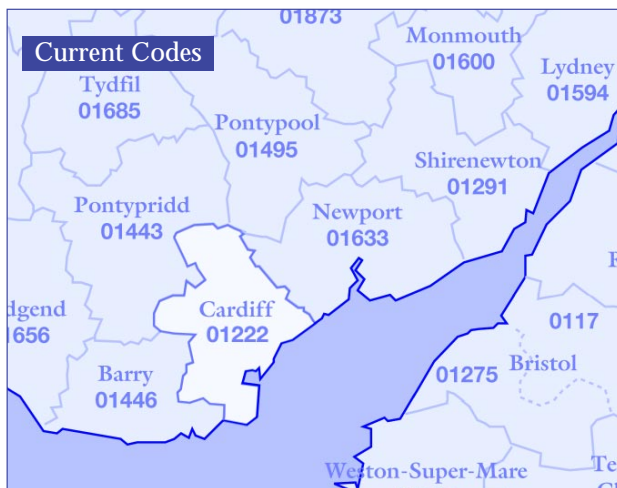
short code is initially used to provide urgently needed capacity. The optional decision to grow the area could be taken, as described in Chapter 7, at a later date.

CARDIFF AND SOUTH EAST WALES

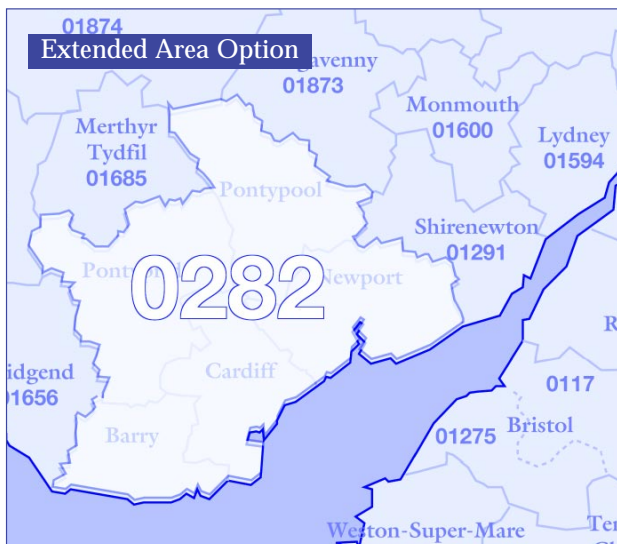
Cardiff area 0282

*01 Telephone numbers allocated: 683,000
population: 807,000*

Cardiff has been identified as requiring a significant increase in capacity by the year 2000. As part of the change to 7-digit, this option considers the steps necessary to extend a single area code throughout South East Wales, as the capacity provided by the new short code could be sufficient to allow this. 6-digit local numbers in Cardiff (01222) would become 7-digit local numbers with the code 0282 in the year 2000.



Subject to local consultation, additional areas such as Newport (01633), Barry (01446), Pontypridd (01443), and Pontypool (01495) could be included from the year 2002. The resulting code area would look like:



The number plan for the area code could be segmented:

- 0282 9XX XXXX Existing Cardiff numbers
- 0282 8XX XXXX Reserved for Cardiff expansion
- 0282 7XX XXXX Reserved for Cardiff expansion
- 0282 6XX XXXX Spare
- 0282 5XX XXXX Reserved for Barry & spare
- 0282 4XX XXXX Reserved for Newport & spare
- 0282 3XX XXXX Reserved for Pontypool & spare
- 0282 2XX XXXX Reserved for Pontypridd & spare
- 0282 0X, 1X Unusable for local numbers

Method

Stage 1, Changing the Code

1998 To give businesses time to prepare, commence parallel running of existing Cardiff numbers with 0282 92X XXXX to 0282 98X XXXX equivalents. Utilise capacity behind 90X and 91X as 7-digit numbers. This capacity would be available for local dialling from other Cardiff numbers.

2000 All existing 01 numbers in the Cardiff area change to 0282 9XX XXXX. Changed Number Announcements placed on all previous 01 numbers

Stage 2, Growing the Area (optional)

2002 Introduce parallel running with 0282 YXX XXXX equivalent numbers in adjacent areas, with appropriate arrangements for “trapping” mis-dialled calls.

2003 All existing 01 numbers in the adjacent areas change to 0282 YXX XXXX. Changed Number Announcements placed on all previous 01 numbers

Comment

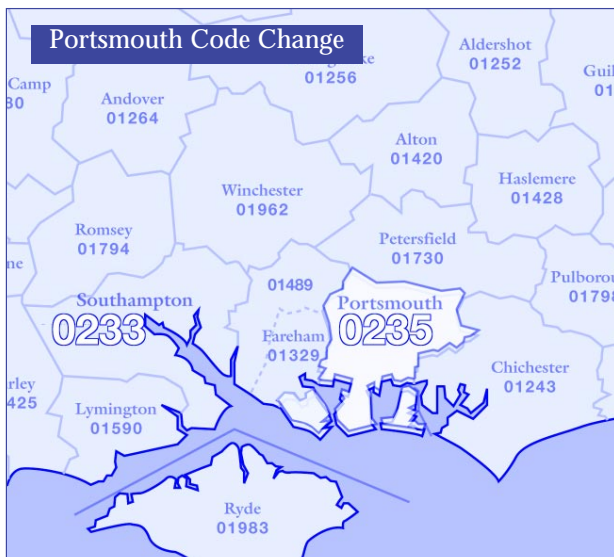
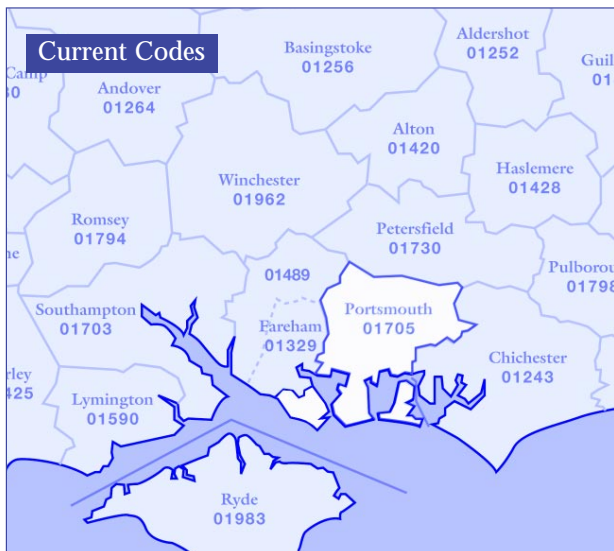
Cardiff and the surrounding areas would have their numbering capacity extended to nearly 8 million. The optional stage 2 could take place at any time – not necessarily 2002.

PORTSMOUTH, SOUTHAMPTON & SOLENT AREA

Portsmouth area 0235

*01 Telephone numbers allocated: 480,000
population: 566,000*

The first stage would be to change the Portsmouth 01705 code to 0235 in 2000.



The Portsmouth area would have had its numbering capacity extended from 800,000 to nearly 8 million numbers, which could allow for the inclusion of

adjacent areas across the expanded region 2 years later. Subject to local consultation, additional areas such as Chichester (01243), Petersfield (01730) and Fareham East (01329) could be included from the year 2002. The resulting code area would look like:



The resulting number plan could look like:

- 0235 9XX XXXX Existing Portsmouth numbers
- 0235 8XX XXXX Reserved for Portsmouth expansion
- 0235 7XX XXXX Reserved for Portsmouth expansion
- 0235 6XX XXXX Spare
- 0235 5XX XXXX Reserved for Chichester & spare
- 0235 4XX XXXX Reserved for Petersfield & spare
- 0235 3XX XXXX Reserved for Fareham East & spare
- 0235 2XX XXXX Spare
- 0235 0X, 1X Unusable for local numbers

Method & timescales

Stage 1, Changing the Code

1998 To give businesses time to prepare, commence parallel running of existing Portsmouth numbers with 0235 90X XXXX to

0235 99X XXXX equivalents. Utilise 0235 90X and 91X as 7-digit numbers. This capacity would be available for local dialling from other Portsmouth numbers.

2000 All existing 01 numbers in the Portsmouth 01705 area change to 0235 9XX XXXX. Changed Number Announcements placed on all previous 01 numbers.

Stage 2, Growing the Area (option)

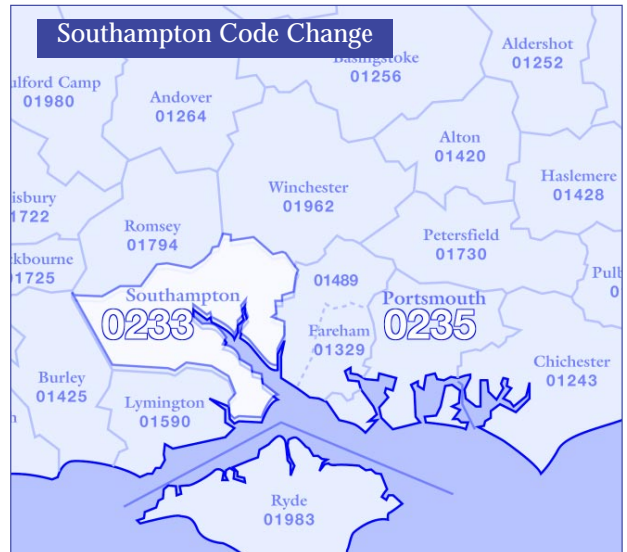
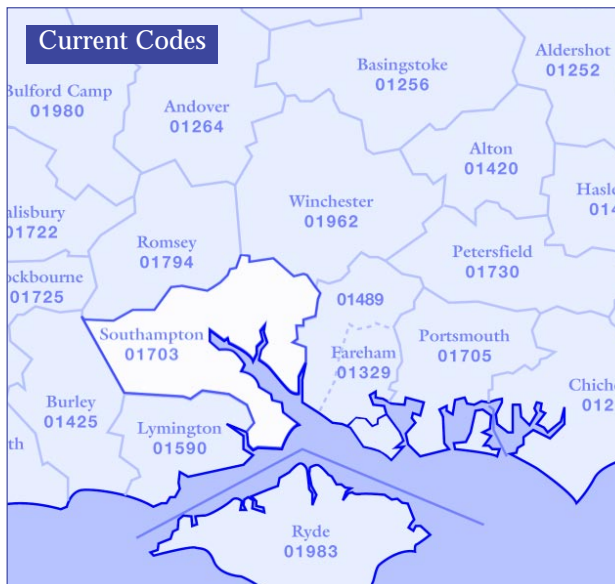
2002 Introduce parallel running with 0235 YXX XXXX equivalent numbers in adjacent areas, with appropriate arrangements for “trapping” non-dialled calls.

2003 All existing 01 numbers in the adjacent areas change to 0235 YXX XXXX. Changed Number Announcements placed on all previous 01 numbers.

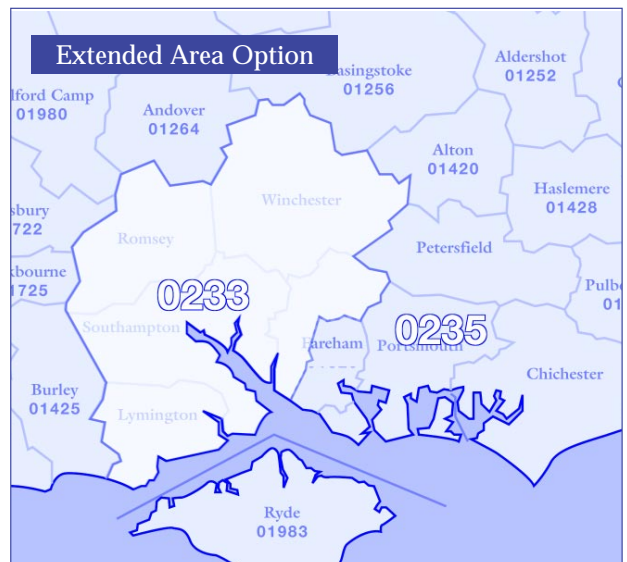
Southampton area 0233

*01 Telephone numbers allocated: 370,000
population: 640,000*

The first stage would be to change the Southampton 01703 code to 0233 in 2000.



The Southampton area would have had its numbering capacity extended from 800,000 to nearly 8 million numbers, which could allow for the inclusion of adjacent areas across the expanded region 2 years later. Subject to local consultation, additional areas such as Romsey (01794), Lymington (01590), Fareham West (01489) and Winchester (01962) could be included from the year 2002. The resulting code area would look like:



By the year 2000, the Southampton area could have its numbering capacity extended from 800,000 to nearly 8 million numbers, which could allow for the inclusion of adjacent areas across the expanded

region 2 years later. By the year 2000, the resulting number plan could look like:

0233 9XX XXXX	Existing Southampton numbers
0233 8XX XXXX	Reserved for Southampton expansion
0233 7XX XXXX	Reserved for Southampton expansion
0233 6XX XXXX	Spare
0233 5XX XXXX	Reserved for Romsey & spare
0233 4XX XXXX	Reserved for Lympington & spare
0233 3XX XXXX	Reserved for Fareham West & spare
0233 2XX XXXX	Reserved for Winchester & spare
0233 0X, 1X	Unusable for local numbers

Method

Stage 1, Changing the Code

1998 To give businesses time to prepare, commence parallel running of existing Southampton numbers with 0233 91X XXXX to 0233 99X XXXX equivalents. Utilise 0233 85 and 91 as 7-digit numbers. (Numbers beginning 90 are already utilised.) This capacity would be available for local dialling from other Southampton numbers.

2000 All existing 01 numbers in the Southampton area change to 0233 85X XXXX or 0233 9XX XXXX. Changed Number Announcements placed on all previous 01 numbers.

Stage 2, Growing the Area (option)

2002 Introduce parallel running with 0233 YXX XXXX equivalent numbers in adjacent areas, with appropriate arrangements for “trapping” non-dialled calls.

2003 All existing 01 numbers in the adjacent areas change to 0233 YXX XXXX. Changed Number Announcements placed on all previous 01 numbers.

Combining Southampton and Portsmouth

An option to combine the Southampton and Portsmouth areas into a single code – including the two Fareham areas – has not been included because it is technically difficult to achieve with 7-digit numbering in the timescales required and may not provide sufficient numbers for a long-term solution. It would only be practical using 8-digit local numbers, as in the Northern Ireland (029) example below.

BELFAST AND REMAINDER OF NORTHERN IRELAND

Belfast has been identified as requiring a significant increase in capacity by the year 2000. The options possible in Northern Ireland vary from a conventional expansion of only Belfast to 7-digit local numbering to a single area code with 7-digit local numbering for the whole Province. Whereas the expansion of Belfast is straightforward, the introduction of a single code for Northern Ireland is complicated by the existing structure of 19 area codes.

Option 1 Increase capacity in Belfast

Belfast 0292

*01 Telephone numbers allocated: 392,000
population: 411,000*

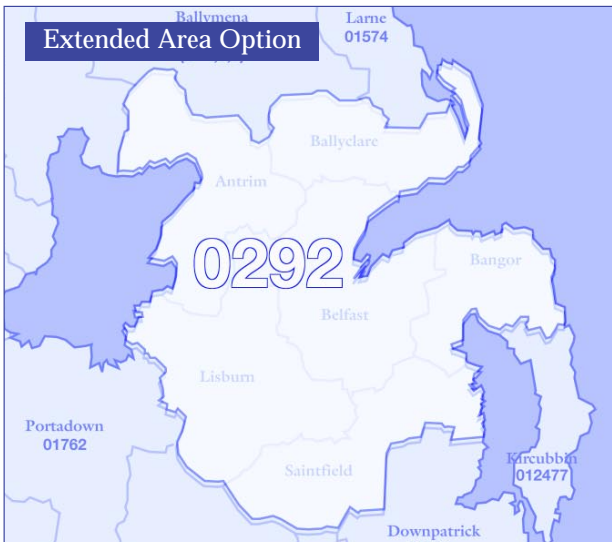
Belfast has been identified as requiring a significant increase in capacity by the year 2000. 6-digit local numbers in Belfast (01232) could become 7-digit local numbers with the code 0292 in the year 2000.





0292 9XX XXXX	Existing Belfast numbers
0292 8XX XXXX	Reserved for Belfast expansion
0292 7XX XXXX	Reserved for Belfast expansion
0292 6XX XXXX	Reserved for Saintfield & spare
0292 5XX XXXX	Reserved for Bangor & spare
0292 4XX XXXX	Reserved for Lisburn, & spare
0292 3XX XXXX	Reserved for Antrim & spare
0292 2XX XXXX	Reserved for Ballyclare & spare
0292 0X, 1X	Unusable for local numbers

Subject to local consultation, additional areas such as Bangor (01247), Saintfield (01238), Lisburn (01846), Antrim (01849) and Ballyclare (01960) could be included from the year 2002. The resulting code area would look like:



Method & Timescale

See earlier examples for Cardiff, Southampton and Portsmouth. Parallel running of Belfast numbers would start in 1998 with a code change in 2000. Integration of surrounding areas could commence, as an option subject to local consultation, in 2002, and be completed by 2003.

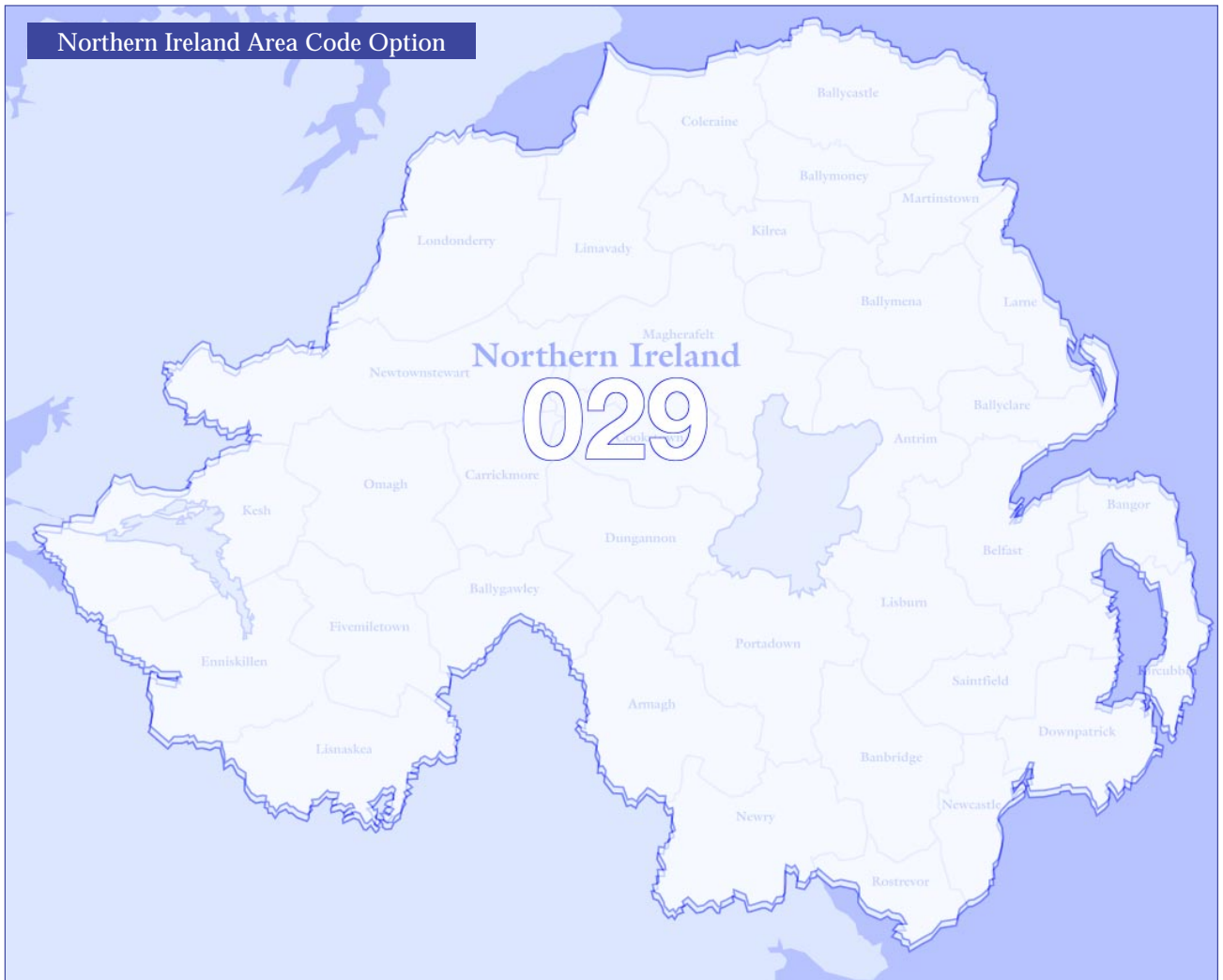
Option 2 Single code for Northern Ireland 029

*01 Telephone numbers allocated: 711,000
population: 1,578,000*

In numerical terms, there is the potential in Option 1 for accommodation of all numbers in Northern Ireland into a 7-digit scheme. As much of the existing capacity is in 5-digit mixed areas, it might be possible to integrate some of these in a second stage, by 2002, though extensive number changes could be required in certain areas to achieve a 7-digit scheme across the Province.

Many of these difficulties could be overcome by a single stage change, by 2000 in an 8-digit local number scheme, with numbers in the range 029 XXXX XXXX.

The resulting number plan could look like:



ANNEX F

Meeting Number Demand in London

Changing London 0171 and 0181 numbers from 7- to 8-digit local numbers is not as straightforward as 6- to 7-digit changes (like Reading). For 6- to 7-digit changes 100,000 contiguous unused numbers are normally available (in Reading this was the 01734 9XXXXX range which allowed the change to 0118 9XX XXXX). To carry out a change in the same way for London (a 7- to 8-digit change) it would be necessary to have 1,000,000 such numbers such as 0171 2XX XXXX. Neither 0171 nor 0181 have this available capacity.

So a different approach is needed in London. The preferred solution is described below but it contains the option of either returning London to a single code or keeping two codes for London. Both options would involve a code change and 8-digit local numbers.

London 0171 and 0181 numbers would add a digit – a 7 to the front of the current 0171 numbers and 8 in front of the 0181 number.

So under option 1 with a single code – 020 – for London, 0171 634 8700 would change to 020 7634 8700 and 0181 670 6000 would change to 020 8670 6000. Under option 2 with a two codes – 020 and 022 – for London, 0171 634 8700 would change to 020 7634 8700 and 0181 670 6000 would change to 022 8670 6000. (021 not used because of possible confusion with the old Birmingham code.)

The details of the proposed change – including parallel running and local dialling arrangements – will be finalised between OFTEL, the telephone companies and user groups by the end of 1996. However, from experience of previous code changes, it seems clear that businesses who have new numbers shortly before the code change – perhaps because they are moving to a new address or because they are introducing a new service – will not want to start to use the new numbers only to have to change them again in a few months. OFTEL will therefore wish to ensure that numbers in the new 020 (and 022) ranges will be available before 2000 for those who want them. OFTEL will also ensure that arrangements are put in place to allow users of equipment like automatic diallers and alarms to modify their equipment.

2000

All 0171 XXX XXXX numbers change to 020 7XXX XXXX

All 0181 XXX XXXX numbers change to 020 8XXX XXXX (or 022)

Changed Number Announcements are put on all 0171 and 0181 numbers.

New 020 70/71 and 020 80/81 capacity becomes available.

Local dialling within new London Code on the new 8-digit numbers and Changed Number Announcements on old 7-digit numbers.

