



Office of the Director of
**Telecommunications
Regulation**

Expansion of Mobile Numbering Capacity

Consultation paper

Document No. ODTR 00/20

15th March 2000

Oifig an Stiúirthóra Rialála Teileachumarsáide
Office of the Director of Telecommunications Regulation
Abbey Court, Irish Life Centre, Lower Abbey Street, Dublin 1.
Telephone +353-1-804 9600 *Fax* +353-1-804 9680
Web: www.odtr.ie

CONTENTS

	Page
1. Introduction	3
2. Background	4
3. Audit of use of existing numbering capacity	5
4. Demand for number blocks	7
5. Current Supply of number blocks	8
6. Full Mobile Number Portability	9
7. Impact of Full Number Portability on numbering capacity	10
8. Proposed option for expanding numbering capacity	12
9. Adjustment of maximum number length	15
10. Further number block allocations in the short term	16
11. Submitting comments	17

1. Introduction

Demand for mobile telephony in Ireland has increased rapidly over the past 4 years. Competition, reductions in the cost of mobile phones and the introduction of prepaid services have driven growth faster than originally expected when the current mobile numbering scheme was developed (1995). The consequential demands for number blocks from Eircell and Esat Digifone have been such that a critical position will soon be reached regarding capacity to meet the supply of future allocations.

It is now critical that mobile numbering capacity is expanded to meet demand. In this paper, the Director describes the results of an audit of the usage of existing numbering capacity, sets out a simple demand model that describes future demand and presents a proposal to ensure that sufficient mobile numbers continue to be available. Responses are invited from interested parties on this proposal and the underlying demand model.

The closing date for receipt of comments is Friday 31st March 2000. Please see section 11 for details on submitting comments on this paper.

2. Background

As part of her functions, the Director is responsible for the administration of the national telecommunications numbering resource under section 13 (1) of the European Communities (Interconnection in Telecommunications) Regulations, 1998 (SI No. 15 of 1998). This includes the national numbering resource for mobile and personal communications.

The allocation of number resources for mobile and personal communications is described in the Irish Mobile and Personal Communications Numbering Plan¹ which should be read in conjunction with Decision Notice D2/98² and the Status Report on the Irish Telephony Numbering Scheme in February 1999³.

A single numbering space was created for mobile communications in 1995 (the Mobile and Personal Numbering Space – hereafter referred to as the Numbering Space). This provides that the same Subscriber Number will not be allocated to more than one subscriber or network, even though different Access Codes are used. The purpose is to enable Subscriber and Mailbox Number portability between the mobile telephony networks.

Competition, reductions in the cost of mobile phones and the introduction of prepaid services have driven growth faster than originally expected. The consequential demands for primary allocations of number blocks from Eircell and Esat Digifone have been such that a critical position will soon be reached regarding capacity to meet the supply of future allocations.

In order to ensure that sufficient mobile numbers continue to be available, the Director arranged for a study to be carried out to:

- audit the use of existing capacity
- identify future demand for number blocks, and
- identify the most appropriate option to ensure sufficient capacity to meet future demands.

This Consultation Paper summarises the results of the audit, sets out a demand model and the corresponding impact on the number supply side, and presents the Director's proposal for expanding mobile numbering capacity. The Paper also takes account of the potential impact of Full Mobile Number Portability (FMNP).

¹ Irish Mobile and Personal Communications Numbering Plan – Document ODTR 98/05

² Numbering in Ireland for The 21st Century – Document ODTR 98/22

³ Irish Telephony Numbering Scheme, Status Report-February 1999 – Document Number ODTR 99/04

3. Audit of use of existing numbering capacity

The existing Numbering Space is a seven digit numbering space behind the Access Codes (currently 086, 087 and 088).

Number blocks commencing with digit 1 and digit 0 are not used to avoid conflicts with the use of:

- Short Codes (1X...)
- Non Geographic Numbers (1X...)
- Numbers commencing with National Prefix “0”
- Numbers commencing with International Prefix “00”

It is worth noting that any use of these blocks could also compromise the potential future development of Fixed-Mobile convergence and portability.

Primary allocations of paired 0.1 Million number blocks have been made to Digifone (D) and Eircell (E) by the ODTR in accordance with Table 1 below. For each number pair, the leading digit of the Subscriber Number (S) is incremented by 1 to obtain the Mailbox Number (M).

Number blocks commencing with digits 2, 3, 6, 7, 8 or 9, are all allocated. The last allocation was made to Eircell on 3rd March last (paired block 61 XXXXX/ 71 XXXXX). Number blocks commencing with digits 4 or 5 have not been allocated.

Table 1 – Allocation of Number Blocks, March 2000

First Digit	Second Digit Allocation Status									
	X0	X1	X2	X3	X4	X5	X6	X7	X8	X9
0...	Not usable									
1...	Not usable									
2X...	E/S*	E/S	E/S	E/S	E/S	E/S	E/S	ES/	E/S	E/S
3X...	E/M*	E/M	E/M	E/M	E/M	E/M	E/M	E/M	E/M	E/M
4X...	?	?	?	?	?	?	?	?	?	?
5X...	?	?	?	?	?	?	?	?	?	?
6X...	D/S	E/S	E/S	E/S	E/S	E/S	E/S	E/S	E/S	E/S
7X...	D/M	E/M	E/M	E/M	E/M	E/M	E/M	E/M	E/M	E/M
8X...	D/S*	D/S	D/S	D/S	D/S	D/S	D/S	D/S	D/S	D/S*
9X...	D/M*	D/M	D/M	D/M	D/M	D/M	D/M	D/M	D/M	D/M*

Legend

- E Allocated to Eircell
- D Allocated to Esat Digifone
- A Available for allocation
- ? Awaiting Decision
- S Subscriber Number
- M Mailbox Number

* Sub-allocations of 0.01M have been made in these blocks to cater for facsimile, data, roaming and 999.

The result of the audit of the use of existing capacity in terms of 0.1 Million blocks (neglecting effect of sub-allocations) can be summarised in the following Table 2.

Table 2 – Audit of Number Blocks, February 2000		
Allocated to Eircell/Subscriber Numbers		18 blocks
Allocated to Eircell/Mailbox Numbers		18 blocks
Total number of Eircell subscribers	*1,206,372	
Eircell secondary allocation efficiency		67%
	*As at 27 th February, 2000	
Allocated to Digifone/Subscriber Numbers		11 blocks
Allocated to Digifone/Mailbox Numbers		11 blocks
Total number of Digifone postpaid subscribers	*634,480	
Digifone secondary allocation efficiency		58%
	*As at 25 th February, 2000	
The allocated blocks include sub-allocations of 0.01M for facsimile, data, roaming and 999		

Taking the population as 3.7 Million and the total subscribers as 1,840,852, the total mobile phone penetration is 50% and the overall block utilisation efficiency is 63% based on paired number allocations. A utilisation efficiency of 63% cannot be considered as optimal and it should be possible to significantly improve this figure.

Question 1	You are invited to comment on the current block utilisation efficiencies. In particular, you are invited to identify technical or operational limitations which may constrain the efficient use of numbers at present and suggest measures to overcome such limitations.
------------	--

4. Demand for number blocks

The prevailing consensus is that the development of mobile phone use in Ireland will follow a similar pattern to that already experienced in the first mover Scandinavian countries and penetration will continue to increase from the current 50% in the short to medium term.

The impact of prepaid products and the increasing use of mobile terminals for data and internet traffic together with the favourable economic outlook will contribute further buoyancy to mobile phone penetration. The launch of service by a third operator is also expected to stimulate the market.

Numbering capacity to cater for a significant increase in penetration will have to be available from a numbering scheme which is capable of supporting:

- Number portability
- Paired allocations
- Average utilisation efficiencies down to 63%.

In addition, there is a requirement to allocate number blocks to a third operator, after the third GSM license is awarded, and make adequate provision for future licensees, in particular for UMTS.

Further study is required with regard to the demands of UMTS on numbering. Numbering based on the current ITU Recommendation E.164 scheme will continue to be required, but new addressing schemes are currently being considered. Some dual band UMTS/GSM configurations may, for technical reasons, require dual numbering. The use of UMTS terminals for data transactions may drive penetration levels well above current expectations.

In the medium to long term, potential requirements for Fixed-Mobile convergence and portability may make further significant demands on the Numbering Space.

The following simple high demand model used in the study (Table 3) illustrates the potential requirement for mobile numbering capacity in the medium term.

Table 3 – High Demand Model for Number Blocks		
Population		4 million
Penetration including UMTS		200%
Average number allocations per terminal		3
Utilisation efficiency		63%
Numbers required	$4 \times 2 \times 3 / 0.63 =$	38.1 Million
Equivalent paired numbers		2 X 19.1 Million
The target timescale is medium term (4 to 8 years).		

Question 2	You are invited to comment on the above simple high demand model as a basis for the proposal for expanding mobile numbering capacity. Do you consider a target penetration of 200% within a 4 to 8 year timeframe realistic? If not, what would be a realistic penetration and timeframe?
------------	---

5 . Current Supply of number blocks

Taking into account that:

- number blocks commencing with digit 1 and digit 0 are not used and
- either leading digit 4 or 5 must be reserved as an escape digit for migration to 8 digit numbering,

the usable capacity of the existing seven digit Numbering Space is 3.5 Million paired numbers (total 7 Million).

The proposal in this paper requires both leading digits 4 and 5 to be reserved for migration to 8 digit numbering. It will be possible however to use up to three paired 0.1 Million seven digit blocks with leading digits 4 and 5 in the short term. In this case, the usable capacity is up to **3.3 Million** paired seven digit numbers.

Taking the population as 3.7 Million, and the utilisation efficiency as 63%, the existing numbering space will provide for a total mobile phone penetration of **56%** based on a usable capacity of 3.3 Million paired numbers.

Taking account of the likely demand scenario set out above and the fact that mobile phone penetration has already reached 50%, the current seven digit scheme is no longer adequate.

A critical position will soon be reached regarding capacity for the supply of future allocations and a planned expansion of the numbering space needs to be agreed as a matter of urgency.

6. Full Mobile Number Portability

The current scheme provides for Subscriber Mobile Number Portability (SMNP) but not for Full Mobile Number Portability (FMNP). A detailed consideration of FMNP is outside the scope of this consultation paper. However, the scheme adopted to expand the mobile numbering capacity should take account of any future requirement to implement FMNP and the consequences of FMNP on numbering capacity.

The European Commission in its 1999 Communications Review, proposes “*to extend the availability of operator number portability to mobile users, but not at this stage to require operator number portability between fixed and mobile networks*”. Given current developments, FMNP is likely to be required in the relatively near future.

It is also useful to note that in the Draft Final Report on Number Portability for Mobile Networks prepared by the ETO⁴ for ECTRA⁵, partial number portability solutions are discouraged – “*MNP means that the customer can retain the whole mobile number. Solutions where a customer can move from a donor network operator to a recipient network operator keeping only part of the mobile number, usually the subscriber number (SN), and changing the National Destination Code (NDC) have to be discouraged. These solutions contradict the basic principles of number portability and heavily counteract the advantages and benefits of its introduction.*”

It is generally agreed that fixed and mobile telephony services will converge in the future. The absence of FMNP between mobile networks is likely to become increasingly anomalous, given that portability will be available between fixed networks by the end of 2000.

Taking account of the European Commission position on number portability for mobile users, the Director considers it prudent that the scheme adopted to expand the mobile numbering capacity should take account of:

- any future requirement to implement FMNP
- the consequence of FMNP on numbering capacity.

Question 3	Do you agree that the scheme adopted to expand the numbering capacity should take account of any future requirement to implement FMNP, including the consequences of FMNP on numbering capacity? If you disagree, in the event of a future requirement (statutory or otherwise) to implement FMNP, how will implementation be best effected?
------------	--

⁴ European Telecommunications Office

⁵ European Committee for Telecommunications Regulatory Affairs

7. Impact of Full Mobile Number Portability on numbering capacity

The current scheme provides for Subscriber Mobile Number Portability between the mobile telephony networks even though different Access Codes are used. This provides that the same Subscriber Number within the existing seven digit Numbering Space will not be allocated to more than one subscriber or network. As a consequence, the total numbering capacity is determined by the usable capacity of the seven digit Numbering Space. Allocating additional Access Codes to existing operators will not increase the numbering capacity of the current scheme.

In the event of a decision to provide FMNP, the implementation method adopted will have a significant impact on mobile numbering capacity, and in particular, on the approach adopted to expand available capacity.

The approach proposed in principle in Decision Notice D2/98⁶ and D1/99⁷ provides for a single NDC (084) to access the existing Numbering Space, currently seven digits. This approach would require:

- changing the existing Access Codes to NDC 084 and
- changing Subscriber/Mailbox Numbers from seven to eight digits to provide adequate capacity.

While this approach (referred to hereafter as the **Single NDC** approach) provides an elegant solution, two number changes would be required. The first change would have to be as soon as possible to provide extra capacity. In the event of a decision to provide FMNP, the second change would then have to be implemented. The Single NDC approach would provide for up to 40 Million eight digit Subscriber Numbers and 40 Million eight digit Mailbox Numbers.

An alternative approach for implementing FMNP is to retain the existing Access Codes (referred to hereafter as the **Multiple NDC** approach). A consequence of adopting this approach would be that no Access Code number changes would be required. In addition, in the event of FMNP implementation, the existing relationship between network operator and Access Code would no longer be supported and the numbering capacity would quadruple (based on four Access Codes).

Adopting the Multiple NDC approach would permit a low impact number change to be implemented⁸ to provide sufficient numbering capacity until FMNP is implemented, after which capacity would quadruple. In the event that FMNP was not proceeded with, a migration from seven to eight digit Subscriber Numbers would be required to increase numbering capacity.

The Multiple NDC approach would provide for 6 Million seven digit Subscriber Numbers and 6 million eight digit Mailbox Numbers initially, i.e., a doubling of capacity. In the event of FMNP being implemented, 24 Million seven digit Subscriber Numbers and 24 million eight digit Mailbox Numbers would be available, using four Access Codes (08X). The capacity can be further increased by using additional Access Codes (post FMNP) or by changing seven digit

⁶ Numbering in Ireland for The 21st Century – Document ODTR 98/22

⁷ Introducing Number portability in Ireland – Document ODTR 99/24

⁸ The proposal is to retain the seven digit Subscriber Numbers for the present and to change the Mailbox Numbers to eight digits.

Subscriber Numbers to eight digits. Changing to eight digits would provide for 40 Million paired numbers pre FMNP or 160 Million paired numbers post FMNP.

Having considered both the Single NDC and Multiple NDC approaches to implementing FMNP, the Director proposes to adopt the Multiple NDC approach in the event of a decision to provide FMNP in place of SMNP, and to proceed with expanding the mobile numbering capacity on that basis.

Question 4	Do you agree with the Director's proposal to adopt the Multiple NDC approach in the event of a decision to provide FMNP in place of SMNP, and to proceed with expanding the mobile numbering capacity on that basis? If not, what alternative do you suggest and why?
------------	---

8. Proposed option for expanding numbering capacity

The Director proposes the following option as a means of expanding the mobile numbering capacity based on the Multiple NDC approach. Due regard was had by the Director to minimising the impact of number changes on mobile phone users when opting for this proposal.

The seven digit Subscriber Numbers would be retained for the present. The Mailbox Numbers would be changed to eight digits by prefixing with digit “ 5” after the adjustments to accommodate 13 digit maximum number length (refer to section 9). This will release three primary number blocks commencing with digits 3, 7 and 9 respectively for expanding the seven digit Subscriber Number capacity from up to 3.3 Million to 6 Million.

If demand forecasts indicate that seven digit Subscriber Number capacity will be exhausted before FMNP is introduced (or in the event of a decision not to introduce FMNP), changeover to eight digit Subscriber Numbering will have to be initiated by prefixing seven digit Subscriber Numbers with digit “4”. This will result in an expansion of Subscriber Number capacity from 6 Million to 40 Million.

In the event of a decision to introduce FMNP in place of SMNP, the Subscriber Number capacity would quadruple from 6 Million to 24 Million (or from 40 Million to 160 Million), but the existing relationship between network operator and Access Code would no longer be supported. Further Subscriber Number capacity can also be provided by using additional Access Codes.

Based on the simple high demand model set out in section 4 (2 X 19.1 Million), this proposed expansion option should meet the medium term capacity requirements (4 to 8 years).

In summary, the indicative sequence of actions to expand the numbering capacity by implementing this proposed option could be as follows:

- Decision Notice issued by ODTR
 - Adjustment of networks and support systems to accommodate 13 digit maximum number length completed
 - Phased programme to change Mailbox Numbers from 7 to 8 digits
 - Mailbox Number changes completed
 - 6 Million (i.e. an additional 3 Million) paired numbers (7/8 digits) available for allocation⁹
 - FMNP in operation
 - 24 Million paired numbers (7/8 digits) available for allocation
- OR**
- SMNP in operation/exhaustion of seven digit Subscriber Number capacity forecast
 - Phased programme to change Subscriber Numbers from 7 to 8 digits
 - Subscriber Number changes completed
 - 40 Million paired numbers (8/8 digits) available for allocation

A survey of this proposed option is set out in Table 4

⁹ Possible use in the short term of up to three paired 0.1 M seven digit blocks with leading digits 4/5 not included.

Table 4 – Multiple NDC Option - Survey										
1st/2nd Digit	Second/Third Digit Allocation Status									
	(X)X0	(X)X1	(X)X2	(X)X3	(X)X4	(X)X5	(X)X6	(X)X7	(X)X8	(X)X9
0../1..	Not usable									
2X...	E/S#	E/S	E/S	E/S	E/S	E/S	E/S	ES/	E/S	E/S
	Existing Subscriber Number range. 42X reserved for prefixing 2X... Subscriber Numbers.									
52X...	E/M*	E/M	E/M	E/M	E/M	E/M	E/M	E/M	E/M	E/M
	Previously 3X...									
3X...	A/S	A/S	A/S	A/S	A/S	A/S	A/S	A/S	A/S	A/S
	New Subscriber Number range Previously Mailbox. Released by replacing 3X... with 52X... 43X reserved for prefixing 3X... Subscriber Numbers.									
53X...	A/M	A/M	A/M	A/M	A/M	A/M	A/M	A/M	A/M	A/M
	New Mailbox Number range.									
4...	Currently spare. Available to prefix seven digit Subscriber Numbers.									
5...	Currently spare. Available to prefix seven digit Mailbox Numbers.									
6X...	D/S	E/S	E/S	E/S	E/S	E/S	E/S	E/S	E/S	E/S
	Existing Subscriber Number range 46X reserved for prefixing 6X... Subscriber Numbers.									
56X...	D/M	E/M	E/M	E/M	E/M	E/M	E/M	E/M	E/M	E/M
	Previously 7X...									
7X...	A/S	A/S	A/S	A/S	A/S	A/S	A/S	A/S	A/S	A/S
	New Subscriber Number range Previously Mailbox. Released by replacing 7X... with 56X... 47X reserved for prefixing 7X... Subscriber Numbers.									
57X...	A/M	A/M	A/M	A/M	A/M	A/M	A/M	A/M	A/M	A/M
	New Mailbox Number range.									
8X...	D/S*	D/S	D/S	D/S	D/S	D/S	D/S	D/S	D/S	D/S*
	Existing Subscriber Number range 48X reserved for prefixing 8X... Subscriber Numbers.									
58X...	D/M*	D/M	D/M	D/M	D/M	D/M	D/M	D/M	D/M	D/M*
	Previously 9x...									
9X...	A/S	A/S	A/S	A/S	A/S	A/S	A/S	A/S	A/S	A/S
	New Subscriber Number range Previously Mailbox. Released by replacing 9X... with 58X... 49X reserved for prefixing 9X... Subscriber Numbers.									
59X...	A/M	A/M	A/M	A/M	A/M	A/M	A/M	A/M	A/M	A/M
	New Mailbox Number range.									
Legend										
E Allocated to Eircell D Allocated to Esat Digifone A Available for allocation										
S Subscriber Number										
M Mailbox Number										
* Sub-allocations of 0.01M in these blocks to cater for facsimile, data, roaming and 999.										
Capacity										
Paired numbers currently allocated – 2 X 3M										
Additional paired numbers immediately available – up to 2 X 0.3M										
Additional paired numbers available after Mailbox Number change – 2 X 3M										
Total paired numbers available after introduction of FMNP – 2 X 24M										
OR										
Total paired numbers available after Subscriber Number change – 2 X 40 M										

Question 5	Do you agree with the Director's proposed option for expanding numbering capacity? If you disagree, what is your alternative proposal and the indicative sequence of actions? What optimal timescales could apply?
Question 6	You are invited to comment on the indicative sequence of actions to expand the numbering capacity in accordance with the proposed option. What optimal timescales could apply?

9. Adjustment of maximum number length

The current numbering plan for Ireland has a variable number length with a maximum number length of 12 digits made up of:

the Country Code (CC)	353
the National Destination Code (NDC)	e.g. 88
the Subscriber Number (SN)	e.g. 2XX XXXX

National Significant Number = CC+NDC+SN = 12 digits maximum.

For mobile telephony, the number length is currently the maximum 12 digits as shown in the example above. The introduction of eight digit mobile Subscriber or Mailbox Numbers will increase the maximum number length to 13 digits. This is within the maximum limit of 15 digits set by the ITU in Recommendation E164.

It will be necessary for operators to adjust the maximum number length from 12 to 13 digits in the digit analysis in their switches and support systems such as billing. They will also have to advise operators for whom they terminate traffic or with whom they have roaming agreements. This work will take some weeks to organise and implement.

This adjustment may result in an increase in the post-dialling period for some incoming international calls with 12 digit numbers.

Question 7	You are invited to indicate the scope of effort required to adjust the maximum number length and the timescales.
------------	--

10. Further number block allocations in the short term

Seven digit number blocks commencing with digits 2, 3, 6, 7, 8 or 9, are currently all allocated. The last allocation was made to Eircell on 3rd March last (paired blocks 61 XXXXX/71 XXXXX).

Assuming the adoption of the approach set out in this consultation paper, the following seven digit paired 0.1 Million number blocks will be available for allocation:

40 XXXXX/50 XXXXX

41 XXXXX/51 XXXXX

It is also possible to allocate the following seven digit paired 0.1 Million number blocks but the numerical relationship between each paired Mailbox and Subscriber Number will be different:

45 XXXXX/54 XXXXX

No other seven digit number blocks commencing with digits 4 or 5 can be allocated.

As stated in section 3, the overall block utilisation efficiency of 63% cannot be considered as optimal. Even moderate improvements in efficiency would provide significant additional numbering capacity in the short term (See Question 1 and 9).

A review and adjustment of the current quarantine periods which must expire before a number is reallocated to a new subscriber, could also release some numbering capacity (Question 9).

Under the proposed option set out in section 8, the next number blocks to be allocated are likely to be as set out in Table 5. Subscriber Numbers are seven digit and Mailbox Numbers are eight digit.

Table 5 – Further Allocations	
Allocated to:	Paired Number Blocks (Subscriber Numbers/Mailbox Numbers)
To Digifone	(086) 30 XXXXX/530 XXXXX, 31 XXXXX/531 XXXXX etc
To Eircell	(087) 90 XXXXX/590 XXXXX, 91 XXXXX/591 XXXXX etc
To 3 rd Licensee	(085) 70 XXXXX/570 XXXXX, 71 XXXXX/571 XXXXX etc

The necessary network and support system adjustments to accommodate 13 digit maximum number length **must** be completed before secondary allocations are made from the number blocks in Table 5.

When a subscriber who has been allocated a paired number from the number blocks in Table 5 decides to port their Subscriber Number to an alternative operator (Digifone or Eircell), the Access Code will change. The Subscriber Number will then conflict with the “old” Mailbox Number if the Mailbox Number changes have not been completed.

When a subscriber who has been allocated a paired number from the number blocks in Table 5 decides to port their Subscriber Number to the 3rd Licensee, the Access Code will change and no Subscriber Number conflict will occur.

Question 8	You are invited to comment on the proposed ODTR approach, in the short term, to provide for further number block allocations.
Question 9	You are invited to indicate what other measures can be used, in the short term, to release numbers.

11. Submitting comments

The consultation period will run from Wednesday 15th March to Friday 31st March during which period the Director welcomes written comments on the issues raised in this paper. Having analysed and considered the comments received, it is the intention of the Director to issue a Decision Notice in April. The ODTR will publish the names of all respondents and may summarise the responses received as part of its report on the consultation.

All comments are welcome, but it would make the task of analysing responses easier if comments were referenced to the relevant question numbers from this document. Unless marked confidential, the ODTR will make copies of the responses available for public inspection at its offices.

All responses pursuant to this consultation should be clearly marked "Reference: Submission re ODTR 00/20" and sent by post, facsimile or e-mail to:

Peter Murphy
Office of the Director of Telecommunications Regulation
Irish Life Centre
Abbey Street
Dublin 1
Ireland

Ph: 01 804 9600 Fax: 01 804 9680 Email: murphyp@odtr.ie

To arrive on or before 17.00, local time on Friday, 31st March 2000.

Apart from acknowledging responses, the Director regrets that she will be unable to enter into correspondence with persons contributing comments on this consultation paper.

Office of the Director of Telecommunications Regulation
15th March 2000.

This consultation paper does not constitute legal, commercial or technical advice. The Director is not bound by it. The consultation is without prejudice to the legal position of the Director or her rights and duties under legislation.