



Office of the Director of
**Telecommunications
Regulation**

Expansion of Mobile Numbering Capacity

Decision Notice D5/00

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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 to the Decision Notice	5
3. Demand for Mobile Numbers	6
4. Taking account of Full Mobile Number Portability	7
4.1 Impact of Full Mobile Number Portability on Numbering Capacity	8
5. Expanding the Mobile Numbering Capacity	10
5.1 Implementing the proposed option (Phase 1)	12
5.2 Further number block allocations in the immediate future	13
6. Other measures to improve utilisation efficiency and to release numbers	14
Annex I Audit of use of existing numbering capacity	15
Annex II Demand for number blocks	17
Annex III Proposed option for expanding numbering capacity	18

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.

In response to this current position, the Director issued a Consultation Paper on 15th March – “Expansion of Mobile Numbering Capacity” (Doc. No. ODTR 00/20). In this paper, the Director described the results of an audit of the usage of existing numbering capacity, set out a model which described future demand and presented a proposal to ensure that sufficient mobile numbers would continue to be available.

Six organisations/individuals provided written responses to the consultation:-

- Richard Barry
- Esat Digifone
- Eircell
- Meridian Communications
- Meteor
- Mobile Net

In this Decision Notice, the outcome of the consultation is presented. Each section includes a summary of the views expressed by respondents and sets out the Director’s Decision(s) informed by the consultation, or alternatively where appropriate, the Director’s position.

The majority of the respondents, including the existing network operators, support the ODTR’s proposed demand model.

The existing two network operators in their responses did not demonstrate any support for the introduction of Full Mobile Number Portability (FMNP) but accept that any numbering capacity change should not close off the option of moving to FMNP. The other respondents support/expect the introduction of FMNP.

There was support/qualified support for the Director’s intention to adopt the Multiple NDC¹ approach in the event of a decision to provide FMNP but one respondent favours the Single NDC approach.

Three of the respondents, including the existing network operators, support the proposed option set out in the Consultation Paper for expanding the mobile numbering capacity. One respondent advocates the introduction of FMNP within four months in the interests

¹ NDC – National Destination Code

of consumer freedom and choice and to avoid the introduction of eight digit Mailbox Numbers. One respondent advocates changing to a single NDC “08” and introducing FMNP as a matter of urgency.

Both the existing network operators accepted that number utilisation efficiency is not optimal and have identified areas where improvements are needed.

2. Background to the Decision Notice

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 Plan² which should be read in conjunction with Decision Notice D2/98³ and the Status Report on the Irish Telephony Numbering Scheme in February 1999⁴.

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 from Eircell and Esat Digifone for primary allocations of number blocks 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.

In the Consultation Paper, the results of the audit were summarised and a demand model was set out. These are reproduced in Annex I and II respectively. The option proposed for expanding the number capacity is reproduced in Annex III. The Consultation Paper also took into account the potential impact of Full Mobile Number Portability (FMNP) but a detailed consideration of the case for introducing FMNP was not included and is therefore not within the scope of this Decision Notice.

Nine questions were included in the Consultation Paper and the answers provided by respondents will be referred to in the following sections.

² Irish Mobile and Personal Communications Numbering Plan – Document ODTR 98/05

³ Numbering in Ireland for The 21st Century – Document ODTR 98/22

⁴ Irish Telephony Numbering Scheme, Status Report-February 1999 – Document Number ODTR 99/04

3. Demand for Mobile Numbers

The majority of the respondents to the consultation, including the existing network operators, supported the ODTR's proposed demand model. Eircell indicated that the number requirements could, after five to six years, exceed this model and would be more comfortable working to a 300% penetration level after six years. Another respondent indicated that innovative UMTS based services could impact on the model within a timescale not greater than six years. Support for the demand model was qualified by the following similar comments:

- It is more prudent to be over-optimistic in planning number requirements for the next few years. Even if demand for numbers on this scale fails to materialise, it is no harm to have planned for it; it would be far worse if future demand levels were underestimated.
- To date all previous optimistic estimates for growth of services and subscribers have been exceeded. With the advent of UMTS and the creation of as yet unforeseen solutions for communications requirements, the numbering capacity going forward should be greater than even the most optimistic projections based on current knowledge of requirements.
- The high demand model is realistic, but it should be defined as the minimum target to be set by the ODTR. It is our opinion that the cost of overestimating the demand for number allocations is negligible compared with the economic cost to the nation if operators and consumers are required to make number changes and network modifications at some time in the future.

Two respondents raised issues concerning the average number of allocations (three) per terminal in the demand model. One suggested that two might be sufficient as the indications are that terminals will have an IP address for data. The other questioned the need for every subscriber to have a mailbox number, in particular prepaid subscribers.

Director's Position: Having taken account of the responses received, the Director is satisfied that the demand model presented is reasonable, and adequately provides for demand over the next six years (medium term). The average number allocations per terminal will be kept under review. The additional capacity provided as a result of the Mailbox Number change (from 3.2 Million to 6 Million Subscriber Numbers) should be adequate to meet demand for at least 18 months. An improvement in utilisation efficiency is expected and this will have the effect of further extending this period.

4. Taking account of 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 was not presented in the consultation paper but some of the potential drivers for the introduction of FMNP were set out, including:

- the European Commission's 1999 Communications Review
- the Draft Final Report on Number Portability for Mobile Networks prepared by the ETO⁵ for ECTRA⁶
- fixed network portability and convergence.

Taking account of the European Commission's position on number portability for mobile users, the Director considered it prudent that the scheme adopted to expand the mobile numbering capacity should take account of any future requirement to implement FMNP and the consequence of FMNP on numbering capacity. Respondents were asked if they agreed that the scheme adopted to expand the numbering capacity should take account of any future requirement to implement FMNP.

The existing two network operators in their responses did not demonstrate any support for the introduction of FMNP.

While Digifone agreed that the ODTR is correct to make sure that any numbering capacity change should not close off the option of moving to FMNP, they state that that is as far as any consideration of FMNP should go at this time. They argued that FMNP is not a numbering capacity issue but is an economic tool and the case for its deployment in the mobile market must be made on economic grounds rather than on number management grounds. They expressed the view that it is far from certain at this stage whether the Commission will proceed with its proposal to oblige Member States to implement FMNP. As a result, at this point in time, no legal basis exists for the introduction of FMNP in this country and no such basis is likely to exist in advance of 2003. Digifone concluded that until such time as a legal basis for FMNP exists (and it is not clear that this will happen), it is pointless for the ODTR to devote any time to how it might be implemented.

Eircell argue that the decision to increase numbering capacity should be taken independently of any debate on the introduction of FMNP. If FMNP is introduced, it should be for reasons such as increasing competition in the market and consumer benefits and not dictated by availability of numbers. A solution to the numbering capacity problem needs to be found that will provide sufficient numbering capacity in the event of the EU Commission not proceeding with FMNP. Under the solution proposed by the ODTR, Eircell expects that the mobile industry is likely to run out of numbers in 18 months time. Eircell does not expect any Directive on FMNP to be in place by that time,

⁵ European Telecommunications Office

⁶ European Committee for Telecommunications Regulatory Affairs

or even if it is, the implementation date will be more than 18 months away. They argue that a solution for expansion of numbers beyond the 18 month timeframe, without FMNP, needs to be implemented.

Three of the respondents support/expect the introduction of FMNP and two agreed that the expansion scheme adopted should take account of any future requirement to implement FMNP. Two of the respondents pointed out that the number capacity requirements to meet the expected demand could be provided for by implementing FMNP with the additional benefit of minimising the impact on existing subscribers.

As pointed out earlier, a detailed consideration of FMNP was not presented in the consultation paper. Therefore, a decision by the Director on the introduction of FMNP is not within the scope of this Decision Notice. However, it is likely that the Director will proceed by way of public consultation before deciding on FMNP and considers that this should be held before any decision is made to change Subscriber Numbers from seven to eight digits.

Finally, taking account of the responses received, the Director has decided that:

Decision 1: Any scheme adopted to expand the mobile numbering capacity must not prejudice the introduction of FMNP in the future.

4.1 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. 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 D2/98⁷ and D1/99⁸ provides for a single NDC (084) to access the existing Numbering Space, currently seven digits. This approach (referred to hereafter as the **Single NDC** 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.

⁷ Numbering in Ireland for The 21st Century – Document ODTR 98/22

⁸ Introducing Number portability in Ireland – Document ODTR 99/24

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 implemented 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.

In the Consultation Paper, the Director indicated her intention 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. Respondents were asked if they agreed with this proposal.

The existing two network operators in their responses provided qualified support for adopting the Multiple NDC approach in preference to the Single NDC approach, without supporting the introduction of FMNP. Digifone advocated that the ODTR must push ahead with (in their opinion) the only viable option, i.e., a move from seven to eight digit Subscriber Numbers. Eircell advocated that decisions on expanding the numbering capacity should be made independently of any future FMNP decisions.

One respondent favoured the Single NDC approach using Access Code “08” rather than “084”.

Two other respondents agreed with the Director’s proposal to adopt the Multiple NDC approach. One of these argued that if FMNP was introduced promptly (4 months after Decision Notice issued) it should not be necessary to introduce eight digit Mailbox Numbers.

The ODTR has recently had a significant involvement in the preparatory work for the introduction of Non-Geographic and Geographic Number Portability and appreciates the complexities and the scope of effort required. Furthermore, the ODTR does not believe it is feasible to effectively introduce FMNP in sufficient time to release additional numbering capacity.

Taking account of the responses received, the Director has decided that:

<p>Decision 2: The Multiple NDC approach will be adopted in the event of a decision to provide FMNP in place of SMNP, and any scheme to expand the mobile numbering capacity will proceed on this basis.</p>

5. Expanding the Mobile Numbering Capacity

In the Consultation Paper, the Director set out her proposed option for expanding 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.

In summary, seven digit Subscriber Numbers would be retained for the present but Mailbox Numbers would be changed to eight digits. This will provide for a total of 6 Million Subscriber Numbers.

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 Numbers would have to be initiated. 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.

The full text of the Director's proposed option is included in Annex III.

Three of the respondents, including the existing network operators, supported the Director's proposed option. Two other respondents advocated the early introduction of FMNP to avoid any number changes. One of these respondents proposed an alternative solution based on a Single NDC approach.

The existing two network operators in a joint position paper included in their responses advocated that the ODTR should adopt a Decision Notice incorporating a two-phased number change as follows:

- (a) Phase 1: move to eight digit Mailbox Numbers, in order to free up additional seven digit Subscriber Numbers;
- (b) Phase 2: change all seven digit Subscriber Numbers to eight digits.

They further argued that while the immediate implementation of Phase 1 would solve the short-term numbering capacity problem, this would only provide capacity, in their opinion, for about 18 months. The same period of time would, in their opinion, be also needed to complete all necessary system and network changes to facilitate a move to Phase 2. They believe that the only option with regard to phase 2 is to move to 8-digit Subscriber Numbers and urged the ODTR to include a decision to this effect in the Decision Notice.

Another respondent supported the Director's proposed option for expanding numbering capacity but with the option for subscriber's to use a fixed network number in preference to a mobile network number to access mobile network mailboxes.

One respondent advocated the introduction of FMNP within four months in the interests of consumer freedom and choice and to avoid the introduction of eight digit Mailbox numbers.

One respondent advocated changing to a Single NDC "08" and introducing FMNP as a matter of urgency.

The ODTR does not believe it is feasible to effectively introduce FMNP in sufficient time to release additional numbering capacity. As stated earlier however, it is likely that the Director will proceed by way of public consultation before deciding on FMNP and considers that this should be held before any decision is made to change Subscriber Numbers from seven to eight digits.

The Director, having noted the support for moving to eight digit Mailbox Numbers in order to free up additional seven digit Subscriber Numbers (Phase 1), and the scope of effort required by the existing network operators, has decided that:

Decision 3: All existing Mailbox Numbers will be changed from seven digits to eight digits by prefixing with digit "5" after the adjustments to accommodate 13 digit maximum number length are completed.

The Director has also noted the strong support from the existing network operators for changing all seven digit Subscriber Numbers to eight digits (Phase 2) and the outline scope of effort required.

With regard to the existing network operator's assessment that 18 months would be needed to complete all necessary system and network changes to facilitate a move to eight digit Subscriber Numbers, the Director is not convinced that such a long period would be required. The Director does not intend to make a Decision at this time requiring all existing Subscriber Numbers to be changed from seven digits to eight digits by prefixing with the digit "4". However, taking account of the existing network operators outline assessments of preparatory work, the Director has decided that:

Decision 4: The existing network operators will carry out preparatory work such that in the event of a Decision by the Director to require Subscriber Numbers to be changed from seven to eight digits, the outstanding work can be completed before the 6 Million available Subscriber Number capacity is exhausted.

5.1 Implementing the proposed option (Phase 1)

In the consultation paper, an indicative sequence of actions was set out for implementing the proposed option to expand the numbering capacity and respondents were invited to comment and provide optimal timescales.

Detailed responses were provided by the existing two network operators and summarised in their joint position paper. Both urged an early Decision Notice from the Director.

They proposed that the move to eight digit Mailbox Numbers (Phase 1) should be implemented as follows:

Implementation of Phase 1		
Action	Timescale	
Issue of Decision Notice	April 2000	
Preparatory work to establish parallel running of existing seven digit and new eight digit Mailbox Numbers	Completion end May approx.	
Parallel running period	Original Subscribers	+ 6 months
	Ported Subscribers (7XX XXXX)	+ 6 months
	Ported Subscribers (3XX XXXX) (9XX XXXX)	Completion by mid-June (See comment below)
Recorded announcement	+ 2 months	
Allocation of 086 3XX XXXX and 087 9XX XXXX Subscriber Numbers	To commence in mid June	

The ODTR has noted that Subscribers who will be allocated Subscriber Numbers from the ranges 086 3XX XXXX and 087 9XX XXXX will not be able to port these numbers to the other existing mobile network operator until the recorded announcements have been removed. Taking account of Eircell's comment in their response to Question 8:

“Eircell's information however shows that very few customers migrate to another network within the first six months of taking out an account”

the impact of this restriction should be small and could be ameliorated by the use of subscriber-specific changed number announcements.

The Director is prepared to commence the allocation of Subscriber Number blocks from the ranges 086 3XX XXXX and 087 9XX XXXX as soon as may be required (subject to the Directors Position on utilisation efficiency). Furthermore, the Director is prepared to allocate blocks in the optimum sequence such that the first blocks allocated correspond to those with the minimum number of embedded ported subscribers. It should be possible to provide parallel running followed by recorded announcements for the Mailbox Numbers of ported Subscribers in the 0.1 Million blocks not yet re-allocated for Subscriber Numbers.

Director's position: The Director is prepared to commence the allocation of paired number blocks from the ranges 086 3XX XXXX/53XX XXXX and 087 9XX XXXX/59XX XXXX as soon as may be required in an optimum sequence to be agreed with the existing network operators. These allocations will be subject to the Director's position on utilisation efficiency.

With regard to the 3rd mobile licensee, the Director proposes to initially allocate paired number blocks from the ranges 085 7XX XXXX/57XX XXXX as soon as may be required.

5.2 Further number block allocations in the immediate future

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 61X XXXX/71X XXXX).

Three further paired seven digit blocks were identified in the consultation paper as potentially available for allocation, namely:

40X XXXX/50X XXXX
41X XXXX/51X XXXX
45X XXXX/54X XXXX

In response to a question in the Consultation Paper to comment on the above potential allocations, the two responses received (from the existing network operators) favoured the first two allocations but did not agree with allocation of paired blocks 45X XXXX/54X XXXX where the numerical relationship between each paired Mailbox and Subscriber Number is non-standard. The Director agrees with this conclusion and has decided that:

Decision 5 – In the interim period before the allocation of number blocks from the ranges 086 3XX XXXX/53XX XXXX and 087 9XX XXXX/59XX XXXX, the Director will allocate the paired blocks 40X XXXX/50X XXXX⁹ and 41X XXXX/51X XXXX as soon as may be required.

⁹ Paired block 40X XXXX/50X XXXX has been conditionally allocated to Digifone.

6. Other Measures to improve utilisation efficiency and to release numbers

In the audit of use of existing numbering capacity, the overall block utilisation efficiency was found to be 63%. This was not considered to be optimal and respondents were invited to identify technical or operational limitations which may constrain the efficient use of numbers at present and suggest measures to overcome such limitations. Respondents were also asked to indicate what other measures could be used, in the short term, to release numbers.

Both the existing network operators in their responses accepted that efficiency levels are not optimal and have identified areas where improvements are needed. In particular Digifone intends to review the processes for post-paid customers and Eircell has a project in progress to overcome capacity restrictions on Home Location Registers (HLRs).

One respondent proposed that the secondary allocation of numbers to prepaid subscribers should only take place as part of the activation process after the phone is purchased, to avoid having large quantities of numbers tied up in the inventory pipeline.

Two of the respondents pointed out that the number capacity requirements to meet the expected demand could be provided by implementing FMNP with the additional benefit of minimising the impact on existing subscribers.

One respondent argued that there was a need to change the focus of the overall numbering strategy as wireless demand is growing at a far faster rate than fixed. The NDC Code allocations are heavily weighted toward fixed line services. More NDC Codes should be allocated to the wireless segment. Another respondent felt that a large amount of numbering space is wasted in the geographic numbers through the use of a large number of NDCs and short Subscriber Numbers.

One respondent supported Director's proposed option for expanding numbering capacity but with the option for subscribers to use a fixed network number in preference to a mobile network number to access mobile network mailboxes. This would reduce the demand for Mailbox Numbers.

Director's Position: The Director has concluded that the existing overall block utilisation efficiency of 63% is not optimal and must be improved. She recognises that the necessary logistical processes and channels to deliver products into the market as well as customer churn negatively impact on utilisation efficiencies. She welcomes the initiatives by the existing network operators that are intended to improve the position. She has set a target of 80% for overall utilisation efficiency and will monitor progress towards this target when considering applications for additional paired number blocks.

The Director has noted the other measures proposed by respondents.

Annex I

Audit of use of existing numbering capacity¹⁰

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.										

¹⁰ Extract from Consultation Paper – Expansion of Mobile Numbering capacity – Document ODTR 00/20

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 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.

Annex II

Demand for number blocks¹¹

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 3G.

Further study is required with regard to the demands of 3G 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 3G/2G configurations may, for technical reasons, require dual numbering. The use of 3G 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 3G		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).		

¹¹ Extract from Consultation Paper – Expansion of Mobile Numbering capacity – Document ODTR 00/20

Annex III

Proposed option for expanding numbering capacity¹²

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 allocation¹³
- 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 the following Table.

¹² Extract from Consultation Paper – Expansion of Mobile Numbering capacity – Document ODTR 00/20

¹³ 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	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										