



Commission for
Communications Regulation

Consultation Paper

Geographic Number Allocations for Hybrid Fixed-Mobile Telecoms Services

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Please note that ComReg will publish all respondents submissions
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1 Executive Summary

ComReg has received enquiries about the possibility of introducing new ‘hybrid fixed-mobile’ services, known generically as “home-zone” services, to the Irish market. These are broadly similar to services that have already started to appear in other countries and their introduction here could increase overall competition in both the fixed and mobile markets. These home-zone services could also bring additional location flexibility for end-users as well as the convenience of fixed-mobile telecoms usage based on a common handset. Nevertheless, the introduction of home-zone services would involve changes to the numbering framework that must be considered with care. Specifically, the allocation and porting of geographic numbers, which up to now have been restricted to fixed-line and VoIP¹ operators would need to be extended to include mobile operators, albeit with certain safeguards related to geographic coverage. As these geographic numbers would be additional to a user’s mobile number (i.e. each handset would have two associated telephone numbers), ensuring tight management to avoid wastage would also be important.

The primary attractions of home-zone services for end-users are likely to be the application of lower rates for outgoing calls made from within the home-zone area. This means that the service provider must first establish when an outgoing call is made within the subscriber’s home-zone, so the application of effective user location techniques is of great importance. For business customers free calls might be offered within a user’s home-zone between all company mobiles and the possibility might also exist of discarding private PBX infrastructure in favour of a home-zone-based equivalent.

The user of the home-zone service would also be able to manage his/her mobile calls pattern to take advantage of the home-zone by monitoring an icon or label that notifies their presence in the home-zone. Other users are not misled about the source of home-zone calls as the user’s mobile CLI² is presented.

For incoming calls, home-zone services allow other users calling the home-zone subscriber to benefit from fixed-line rates by calling the user’s geographic number. In this scenario, a call to that number arriving at the interconnection point of the operator providing the home-zone service gets converted by the operator to a mobile call and delivered to the customer’s mobile handset, provided the customer is currently within his home-zone³. If the customer moves outside the home-zone, the call would be delivered to voicemail or (for additional payment by the called party), would be forwarded to the customer’s present location. An attractive feature of this set-up would be that within the home-zone, a customer’s mobile handset could be

¹ VoIP operators are considered to be operators offering connection at a fixed location, notwithstanding their opportunities to support nomadicity.

² It is in the mobile operator’s interest to have the mobile number displayed so return calls reflect mobile rates. In specific cases where it is clearly established that the end-user of the home-zone service also holds a specific geographic number for the area concerned, then the mobile operator may accept the latter for CLI purposes, based on a written agreement with the customer and under its own responsibility. This facility, which must be agreed with ComReg, may be important in a limited number of business cases, where the CLI recipient will not be disadvantaged by it.

³ Regardless of whether a subscriber is inside or outside of their home-zone it is expected that calls to their mobile number will continue to be delivered as normal mobile calls.

Geographic Number Allocation for hybrid fixed-mobile telecoms services used as a universal ‘untethered’ tool for receiving normal mobile calls, making outgoing mobile calls at special home-zone rates or receiving fixed-line calls.

Whilst home-zone services bring undoubted benefits for competition, ComReg needs to ensure that consumers continue to be afforded at least the same levels of protection as they currently enjoy. A key issue in this regard is consumer confidence in the pricing and general location information⁴ conveyed in a geographic number and ComReg would be reluctant to facilitate changes to the numbering regime that might undermine this confidence. It is especially important to ensure that opening of geographic numbers to mobile operators does not lead to a migration of their retail charges upwards towards regular mobile levels, even over time, as discussed herein.

Location information is an inherent feature of geographic numbers, used by consumers to select ‘local’ service providers, whose traceability and permanence is often assumed precisely because of the number type. Allocating geographic numbers to mobile operators should therefore be done in a way which maintains this degree of confidence, implying that a physical address within the relevant minimum numbering area (MNA) should be registered against each number. It may also be implied that the mobile operator should use location-based technology to ensure the geographic number is used only within the MNA or within any extension permitted by ComReg. As location positioning cannot be assured as certainly for a mobile handset as for a fixed-line handset ComReg is proposing a relaxation for mobile operators of the rule obliging use strictly within the MNA by permitting use also within directly adjacent MNAs. This will have no practical harmful effects and is in any case unlikely to be abused by mobile operators who have a financial incentive to keep home-zones as small as customers will accept.

Geographic Number Portability (GNP) would need to be a major cornerstone of any initiative to support home-zone service proposals, as a likely initial driver for customers of home-zone services would be a wish by consumers to port existing geographic numbers to mobile suppliers. GNP related to home-zone services would therefore be an important force for competition. The Universal Service Directive provides support for porting between fixed and mobile networks, although it does not actually mandate it. To operate GNP at a practical level in Ireland, mobile operators would need to be given access to the GNP database.

In addition to GNP, ComReg permits and encourages location portability of geographic numbers within an MNA⁵ and home-zone services in that context can be a huge benefit to users moving location locally but to a new Switch area, as they would no longer need to surrender their geographic number; porting to a mobile operator is likely to overcome location restrictions of the current fixed network services.

This document addresses the above issues and poses a series of related questions to which industry and consumers are invited to submit responses. The outcome will influence ComReg’s decisions in respect of home-zone services and geographic number allocation.

⁴ Geographic numbers are associated with specific areas, in principle. Call-forwarding can blur this association in some cases, but as there is a service charge for forwarding, its use is limited and does not affect the vast majority of calls.

⁵ ComReg 05/62 - Numbering Convention 11.2.1-4.

2 Introduction

Preliminary proposals and enquiries have been received by ComReg about the possibility of introducing new ‘hybrid fixed-mobile’ products to the Irish market. These products, which would incorporate elements of both fixed and mobile services, are becoming increasingly available in other countries⁶ and ComReg believes that their introduction here has the potential to increase overall competition in both the fixed and mobile markets. As such ComReg is, in principle, broadly supportive of such products and believes that their introduction could act as a stimulus for the more general development of innovative new services.

However, in order to successfully promote the introduction of these products, changes would be necessary to the existing regulatory framework. These changes relate to current numbering arrangements and specifically to extending the allocation and porting of geographic numbers to include mobile operators. Such a move, it is claimed, would allow operators to develop consumer propositions which could be positioned as potential substitutes for existing fixed line services. These propositions are expected to involve the application of a lower tariff for outgoing calls⁷ made within a defined home environment (‘home-zone’), while incoming calls made to the subscriber’s geographic number⁸ are expected to be charged at a fixed termination rate to allow for normal retail tariffing arrangements by originating operators for calls to ‘fixed’ numbers. For the end-user, the principal benefits that have been espoused for these services are the convenience of fixed and local mobility functionality within a single handset, at a price which it is claimed will compete with existing fixed services.

Although such benefits are typically to be welcomed, before any changes can be considered, it is important to also weigh up the risks and disadvantages. In particular, ComReg believes that issues may arise that need to be fully explored and considered in relation to tariff and service transparency and the future coherency of the numbering scheme. Therefore, having regard to Regulation 19 of the **Framework Regulations**, as well as the implications for (*inter alia*) number allocation, portability and competition, ComReg now seeks the views of industry and consumers in this Consultation, before proceeding further.

⁶ e.g. <http://www.btfusionorder.bt.com/about.aspx>; <http://www.o2.com/services/genion.asp>; <http://www.vodafone.de/special/zuhause.html>

⁷ Compared to regular mobile retail call origination rates.

⁸ This assumes the proposals to extend geographic number allocation / porting to mobile operators are facilitated.

3 Description of Possible Hybrid Fixed-Mobile Service

There are various possible approaches and strategies that operators can adopt when seeking to provide hybrid fixed-mobile services. These approaches may involve targeting certain market segments, developing particular tariff packages, or establishing partnerships between fixed and mobile operators. Regardless of what commercial approach is adopted, the common feature of such services has typically been that geographic numbers, which up to now have been designated for use at a fixed termination point, would potentially become available as an address to reach a nomadically-enabled customer anywhere within a specific MNA⁹, whether on a fixed or mobile or VoIP network¹⁰. This conveys a significant degree of flexibility to the home-zone service user within an MNA, that greatly exceeds what is possible with cordless telephones.

The following sections give a brief overview of how a hybrid fixed-mobile service could operate in practice. These descriptions are intended to assist industry and consumers' understanding of how such a service might be applied in Ireland. ComReg has been approached separately by both fixed-line and mobile operators regarding the provision of services that incorporate elements of both fixed and mobile services.

3.1 Outgoing Calls

It is expected that the primary attraction of a home-zone service for end-users will be the application of lower rates⁷ for outgoing calls made from within the home-zone area. Hence, in order to apply the appropriate tariff, the service provider will need to establish when an outgoing call is made within the subscriber's home-zone. ComReg understands that this could be achieved by using the Cell-ID of the local cell, although more advanced technologies are available or emerging that can give better location accuracy (See Appendix B). The caller is advised of when he/she is inside the home-zone by the appearance of a suitable icon or label on the mobile handset. For the party receiving the call, all outbound calls from the home-zone service subscriber (whether originated inside or outside the home-zone) will normally² display that customer's usual mobile CLI and hence properly present themselves as originating from a mobile service.

Note: An important factor is that where the outgoing call is to the emergency services, passing of the normal location information is unaffected by this proposal.

3.2 Incoming Calls

For incoming calls, a home-zone service offers the possibility that calling end-users could benefit from reduced rates⁷ for calls made to the home-zone service subscriber, while the customer is within its home-zone. In this scenario, a call to the customer's geographic number arriving at the interconnection point of the operator providing the

⁹ A Minimum Numbering Area (MNA) is a precise geographic zone within which a geographic number may be used. See Appendix D.

¹⁰ The extension of geographic numbers to VoIP operators has already been decided in ComReg 04/103.

Geographic Number Allocation for hybrid fixed-mobile telecoms services home-zone service would be converted by the operator to a mobile call and delivered to the customer's mobile handset, always provided the customer was located within his home-zone¹¹. In the absence of the customer from his home-zone, the call would be delivered to voicemail or, for additional payment by the called party, could be forwarded to the customer's present location. An attractive feature of this set-up is that within the home-zone, a customer's mobile handset could be used as a universal tool for receiving normal mobile calls, making outgoing mobile calls at special home-zone rates or for receiving fixed-line calls.

3.3 Possible Additional Features

For business customers, operators might also set up additional features to those outlined above. For example, in addition to free/low-cost rates for calls made within the company's home-zone, a mobile operator might offer a business customer basic centralised VPN functionality amongst all company mobiles, along with the potential to discard private PBX infrastructure. Thus, as well as being accessible on a common hand-set via a mobile or a geographic number, employees – while in the home-zone¹² - could also be reachable (typically for free) through a short internal extension number.

¹¹ Regardless of whether a subscriber is inside or outside of their home-zone it is expected that calls to their mobile number will continue to be delivered as a normal mobile call.

¹² Some operators might extend this short extension number concept to employees of the company even after they move outside the home-zone.

4 Consumer Transparency Issues

Whilst the facilitating of new services can bring undoubted benefits for competition, as noted earlier ComReg needs to balance these benefits against the potential risks and disadvantages that might arise from the extension of the allocation and porting of geographic numbers to include mobile operators. Foremost amongst ComReg's thoughts in this respect is the need to ensure that consumers are afforded at least the same level of protection as they currently enjoy. A key issue in this regard is consumer confidence in the information conveyed in a geographic number and ComReg would be reluctant to facilitate any changes to the numbering regime if it were to mean that this confidence would be diminished in any way.

4.1 Call Pricing Information:

From a consumer perspective, possibly the most significant transparency issue that home-zone services raise is that of price indication. At present, telephone callers rely on dialled numbers to indicate the call pricing regime and overall ComReg believes this has worked well, with consumers having established a relatively good understanding of the pricing hierarchy within Ireland over a long period of time. This confidence in the call pricing regime is probably highest in relation to geographic calls – where the absence of opportunities for call scams helps to reinforce this confidence. ComReg also notes that the geographic indication is relied on by subscribers to implement selective call barring, for example allowing local calls only or allowing calls to geographic numbers within Ireland but not to mobile numbers. ComReg would be anxious to maintain this consumer confidence in the call regime for geographic numbers in any home-zone service that might be facilitated.

A critical expectation in ComReg's view is that home-zone services must not become a mechanism that facilitates the introduction of mobile-level prices for calls to geographic numbers, whether overtly or (especially) in any non-transparent fashion. The allocation of geographic numbers for use with home-zone services must therefore be dependent on a convincing framework being established which assures this protection.

One approach considered by ComReg to facilitating home-zone services, while simultaneously safeguarding the existing price indication regime was by strengthening the "conditions of use for numbers" in the National Numbering Conventions to restrict the maximum level of termination rates – which have a knock-on effect on retail calling rates. This would be effective to a degree against abuse of termination rates for home-zone services, but its impact would also be felt by fixed-line operators and so could be considered disproportionate. Furthermore, ComReg has until now avoided use of its numbering powers to directly control wholesale rates and is reluctant to take steps in that direction.

Perhaps a more appropriate approach to ensuring the necessary protection of consumers would be to rely on obligations pursuant to market analysis and ComReg proposes to adopt this approach (see Section 9 below). An outcome of this could be that mobile operators could be required to apply termination charges to their geographic numbers that do not exceed those which are charged by fixed network operators in a similar situation, with *eircom* charges being taken as the most obvious reference value for this purpose. ComReg accepts that tying the maximum

Geographic Number Allocation for hybrid fixed-mobile telecoms services permissible rates to *eircom* in this manner is not desirable – and might even be contentious - but (ComReg) would be against extending availability of geographic numbers unless the necessary protective framework that assures consumer confidence can be devised.

In considering why retail charges for calls to geographic numbers might migrate upwards towards regular mobile figures, it should be noted that mobile operators might expect the perceived responsibility for potential high termination charges to fall on the originating fixed-line operator. Alternatively, it might be expected that the true cost of individual calls could be missed by the caller, who instinctively trusts that geographic calls will be cheap. In that respect, ComReg considers that any extra cost beyond fixed-line termination costs should be recovered from the end-user of the home-zone service. However, in order to obtain as wide a range of views as possible on this important topic, ComReg is asking for industry viewpoints on the mechanisms involved. Viewpoints on these matters will be passed to the market review team (see Section 9 below) at the appropriate time.

Q. 1. Do you agree with ComReg’s assessment that there is a risk of inappropriately high termination charges developing in a home-zone service context, which could have detrimental knock-on effects on retail charges for the (calling) consumer? Please comment.

Q. 2. Do you agree that, in principle, the termination charges used by fixed network operators are also appropriate for mobile operators providing home-zone services and that *eircom*’s figures may be used as the formal reference (benchmark) for this purpose? Please comment on your reasons for agreeing or disagreeing.

Q. 3. If you agree with this assessment, do you also agree that specific requirements are needed to restrict such termination charges to (those) acceptable levels? Please comment.

Q. 4. Do you have views on the market-based approach being taken by ComReg to protect against excessive termination charges, (i.e. market-based obligations and remedies, rather than use of numbering powers)? (Please refer also to Section 9 below before answering and please add your comments). If you do not agree, please describe the alternative(s) you prefer.

4.2 Geographic Location Information:

In addition to call price indication, some telephone callers rely on the dialled geographic number to indicate the geographic location of the called party. A common example would be sourcing local tradesmen or services through the Golden Pages directories. In particular, geographic numbers convey not just location but a sense of permanence and traceability with perceived possibilities for redress. The same level of comfort is not generally accepted from mobile numbers and this is in part because a caller does not assume that the called party is and/or will continue to be traceable by way of a billing address that can be easily accessed.

In order to preserve the existing location indication regime, it would be necessary to strengthen the “conditions of use for numbers” in the National Numbering Conventions to ensure that each working geographic number continues to serve a real geographic address that lies within the relevant MNA. Appendix C addresses this point.

Identifying the location of callers would be an important facet of home-zone services and it could be required that geographic numbers would only be allocated to mobile operators who are able to guarantee that their numbers are operated solely within the relevant MNAs. This would place the same obligations on mobile operators as those required of fixed-line operators. Against such a strict location obligation is the need to serve the interests of mobile consumers whose registered addresses lie too close to MNA boundaries for normal location technologies to distinguish accurately which MNA they are in when at home. ComReg considers that there are strong reasons for not altering the rules for fixed-line operators and also that totally removing the obligation for mobile operators to restrict geographic number usage to the general MNA area could also prove contentious. However, ComReg also considers that a lesser relaxation of the geographic requirement for mobile operators to the extent that the numbers may not be used¹³ outside the registered address MNA *or any adjacent MNA* will not cause harm, will not impede reverse porting (i.e. mobile to fixed network), and will fully meet the needs of end-user of home-zone services. Furthermore, as this approach makes full allowance for all present location capabilities, there could be no legitimate reason why mobile operators would need to breach the specified geographic boundaries – it would be easily within their reach to define practical home-zones that their location technologies can guarantee for all users within each user’s extended MNA¹⁴ area.

Appendix B contains a brief discussion of location based technology.

Q. 5. Do you agree with ComReg that:

(a) to ensure proper management of the home-zone/geographic number relationship, including support for number portability processes, all customers of home-zone services should be registered in respect of name and address, which must lie within the MNA to which the geographic number applies?

(b) the boundaries of home-zones (within which calls to the geographic numbers must terminate) could be permitted (from a regulatory perspective) to extend up to the boundaries of the registered home MNA plus any adjacent MNAs – but not beyond?

Q. 6. How do you suggest that ComReg can – in the least intrusive manner – reliably ensure that mobile operators granted geographic numbers are capable of controlling their user’s home-zone positioning and that they subsequently do so in practice?

Please comment on these proposals/questions.

¹³ This refers strictly to operational moment-by-moment **use** of a hand-set and is without prejudice to the obligation that only users whose registered address lies in the relevant MNA (i.e. excluding any adjacent MNAs) may be granted a number for that MNA.

¹⁴ ComReg notes that some extended-MNA home-zones might cross STD boundaries but does not consider this will cause problems in practice.

4.3 Calling Line Identification (CLI)

In addition to pricing and geographic information, telephone numbers also convey information as to identity of the calling party. CLI presentation informs the called party of the caller's identity, even before the call is accepted, provided the caller or network hasn't blocked it. In the case of geographic numbers it also informs about the geographic area from which the call is originated, which in some circumstances can be important (i.e. it may assist with affording/rejecting priority for the call compared to other tasks and it assists with more rapidly identifying callers). CLI arises as an issue in two contexts so far as home-zone services are concerned:

- Where a mobile operator providing home-zones services is originating calls from the customer subscribing to the home-zone service, in all normal² circumstances the CLI transmitted to any interconnected operator should be the regular mobile number of that customer, rather than the geographic number; and
- Where a fixed-line operator is forwarding geographic calls to a mobile operator to terminate (see 3 above) the CLI sent forward into the mobile network and seen by the customer should not change from the original fixed-line CLI (e.g. to any fixed/mobile gateway-type CLI).

Q.7. Do you agree with ComReg's comments regarding CLI in Section 4.3 above? Do you agree with the wording used in Appendix C for this? Please comment on your reasons for agreeing or disagreeing.

5 Allocation of Geographic Numbers

5.1 Allocation of Geographic Numbers to non-Fixed Line Operators

As stated earlier, ComReg is reluctant to introduce any changes that might erode the existing well tested relationships between geographic numbers and indication of price and location, which are currently safeguarded in legislation¹⁵ and in the National Numbering Conventions. The scope of any proposed amendments to current number allocation rules to facilitate home-zone services should therefore be carefully circumscribed to avoid such erosions. ComReg therefore proposes that in the case of geographic numbers assigned to mobile operators, the equivalent of the regular fixed termination point (i.e. the "*physical point at which a user is provided with access ...*") should be defined as the mobile subscriber's registered address. This would be without prejudice to the operator's right to permit day-to-day use anywhere within the MNA areas designated.

¹⁵ The **Universal Service Regulations** define a geographic number in terms of its relationship to a physical network termination point.

In the latter respect, ComReg has in the past facilitated local nomadic operation for VoIP users¹⁶ of geographic numbers and is strongly supportive of technology neutrality and convergence. ComReg's approach in this present document is broadly in line with decisions made for geographic numbers in the VoIP context in ComReg 04/103¹⁷, though proposals made herein permit an extended MNA region of operation to allow for the practical difficulties of dealing with consumers in MNA border regions using mobile positioning capabilities.

5.2 Long-term availability of Geographic Numbers

The introduction of home-zone services would necessitate the allocation, for the first time, of geographic numbers to mobile operators¹⁸. That in turn would involve some minor changes to the National Numbering Conventions. Apart from other issues discussed herein, ComReg is also concerned (as previously in the case of ComReg 04/103¹⁷ – see previous para) - that the allocation of number blocks for the proposed inter-platform services would put additional strains on the national geographic numbering resource, which might prove to be an issue in the longer term.

ComReg provisionally considers that on balance the benefits of home-zone services easily outweigh the disadvantages and is in favour of allocating geographic numbers to mobile operators. However, it is seeking industry and consumer viewpoints before coming to any definitive conclusions on the matter.

Q. 8. Do you agree with ComReg that geographic numbers should be allocated to mobile network operators which have a need for this for new convergence services?

Q. 9. Do you agree that fixed line operators might come to arrangements for mobile termination of calls to geographic numbers, as described in Section 3 above? If you foresee alternative scenarios for mobile termination of calls to geographic numbers, by fixed-line operators, please describe these.

Please comment on these proposals/questions.

¹⁶ See ComReg 04/103 Section 4.11.3

¹⁷ ComReg 04/103: VoIP services in Ireland – Numbering and related issues

¹⁸ ComReg can imagine that it may also only be a matter of time before applications arise which similarly suggest the desirability of permitting the allocation of mobile numbers to fixed-line operators for mobile-like scenarios, along with corresponding portability rights and obligations.

6 Number Portability

As well as the allocation of geographic numbers to mobile operators, this Consultation also considers the extension of Geographic Number Portability (GNP) to include mobile operators. For such operators the availability of GNP is likely to be critical to the commercial attractiveness of any home-zone service offerings as it would allow them to market a seamless migration to a ‘mobile-only’ solution to the existing bulk of fixed-line customers. From a consumer perspective the attractions of such a solution may be equally appealing, not least for consumers who may already be considering moving to a mobile-only solution, but who – for business or personal reasons – are reluctant to give up their ‘normal’ geographic number. In both cases, the avoidance of the cost and inconvenience of a number change are of huge importance.

6.1 Legislative basis for Number Portability

The manner in which numbers are allocated and used, impacts on number portability requirements and potential requirements. Regulation 26 (1) of the **Universal Service Regulations** provides the basic NP obligation, requiring that subscribers can port their geographic and/or mobile numbers when moving from fixed to fixed networks or mobile to mobile networks but does not mandate any porting between those two types of networks. Currently ComReg also does not require fixed or mobile operators to support porting across these two different network types.

However, Recital 40 of the **Universal Service Directive** supports the application of provisions by Member States for porting numbers between fixed and mobile networks and “Number Portability in conformity with the Universal Service Regulations” is an explicit condition that may be attached as a Right of Use of Numbers under the **Authorisation Regulations**. ComReg would be referring to this Recital and condition in any initiative to facilitate the extension of GNP portability to include mobile operators. Recital 41 adds that the impact of number portability is considerably strengthened when there is transparent tariff information. National Regulatory Authorities are required, where feasible, to facilitate appropriate tariff transparency as part of the implementation of number portability; ComReg’s efforts to maintain the geographic number-tariff linkage throughout this document support the aims of Recital 41.

6.2 Implementation of Number Portability

From an implementation perspective, the most obvious porting solution is for ported geographic numbers to continue to be included in the GNP database, regardless of whether the number-block holder is a fixed or mobile network. This means that such mobile networks would be directly interworking with both fixed and mobile porting databases and would be using the corresponding porting processes.

6.3 Beneficial Impact on Location Portability

GNP discussions throughout this document refer principally to inter-operator portability. However, the separate issue of in-operator location portability (i.e. moving an existing number from location A to location B) should also be considered. The National Numbering Conventions permit operators to move geographic numbers within an MNA and ComReg is supportive of this, as it is normally done to facilitate mobility of customers (i.e. house and/or business location changes, where the number-holder needs to retain its number(s)). In practice, the vast majority of customer lines (especially for SMEs and residential premises) can only be moved with the agreement of *eircom*, whether they are *eircom*'s own lines or those in use (e.g. through wholesale line rental) by Other Authorised Operators (OAOs). *eircom* is generally not supportive¹⁹ of location portability for moves that involve transfer to a different switch – even in the same MNA, though exceptions may be made for very large customers. Clearly this is of huge concern to affected consumers, especially to business customers moving office and who are about to lose long-standing and valued numbers. ComReg notes that the extension of geographic numbers to mobile operators would overcome this hurdle. Whole-MNA location portability for users would be achieved quite automatically by customers porting to a mobile operator.

6.4 Opinion

Overall ComReg believes an extension of Geographic Number Portability (GNP) to include the concept of porting geographic numbers to and from mobile networks is desirable and is a valuable step along the road to technology neutrality and fixed-mobile convergence. It also provides additional opportunities and greater flexibility for consumers. Any decision to implement this would need a relatively minor change to the National Numbering Conventions. It would however involve a detailed review and update of the GNP processes, which would need to be factored into the relevant work programmes.

Q. 10. Do you agree with ComReg that GNP should be extended to mobile network operators which have a need for this for new convergence services and specifically for home-zone type services?

Q. 11. Do you agree that such extension would be of great significance to (a limited group of) consumers moving location to a new switch area within an MNA, by averting the need to give up their well-established geographic numbers (i.e. through the automatic location portability that would exist in a mobile operator's home-zone area)?

Please comment on your reasons for agreeing or disagreeing with the above suggestions.

¹⁹ The reasons for this reluctance are unclear but probably relate to administrative difficulties as much as technical inconvenience. ComReg does not consider there is any discrimination against competing operators in this regard.

7 Technology Neutrality and Promoting Competition

To a degree, many aspects of telecommunications services tend to be focused on specific network types and are related to the characteristics of those networks, so that geographic numbers for example – because of their physical location dependence – have always been closely associated in the past with fixed networks. With the publication of ComReg 04/103¹⁷, Irish geographic number usage was opened up to VoIP, though with maintenance of the permanent restriction to individual MNAs. The proposed services now being sought open the opportunity for mobile networks to also avail of geographic numbers, as the proposals all envisage usage of those numbers within the MNAs²⁰ concerned or within extended MNA regions that allow for mobile positioning limitations. If these changes are found acceptable by ComReg, having taken due account of responses to the present consultation, then the adoption of such changes would, in addition to facilitating fixed-mobile convergence also aid technology neutrality.

Technology neutrality, which ComReg strongly supports, is discussed more fully within the legal and RIA contexts below, in Sections 10 and 11, respectively.

ComReg is also aware of the similarity of the end result for the consumer as far as nomadicity is concerned (if range is excluded), with the use of DECT and similar wireless terminations on purely fixed-line services.

8 Emerging Services

While fixed and mobile telephony are well developed services, there are other emerging services which may have to be integrated into the existing call services regime in the future. These include VoIP and Next Generation Network (NGN) based services. While interworking of fixed-line and mobile numbers at this stage will set precedents that might present unforeseen difficulties at some stage in the future, ComReg does not consider that these potential difficulties of themselves are a reason to not support the emergence of home-zone services now.

9 Market Review

Mobile operators (excluding Hutchison 3G Ireland) currently have an obligation to charge cost-oriented prices to other operators who wish to terminate calls on their networks. These mobile termination rates (MTRs) are substantially higher than the equivalent charges raised by a fixed line operator for terminating a call. If a mobile operator was to charge its MTR or any rate that significantly exceeds fixed termination rates for terminating a geographic number on its mobile network then, either the originating operator would incur a loss, or the principle of retail tariff transparency would be undermined. While the issue of what is the appropriate

²⁰ The whole point of a geographic number is that it relates to a specific geographic zone. The actual zone boundaries are amended from time to time, following consultation, within the scope of national number changes.

Geographic Number Allocation for hybrid fixed-mobile telecoms services wholesale price for terminating a call to a geographic number on a mobile network is of importance, it is outside the scope of this paper. ComReg considers this issue could be addressed in the context of obligations imposed as a result of a finding of significant market power (SMP) in the relevant wholesale market.

Q. 12. Do you have comments concerning technology neutrality, promotion of competition or emerging services? If so, please elaborate as necessary.

Note: Comments concerning Section 9 are addressed within Q. 4 above.

Q. 13. Do you agree with the wording used in Appendix C for amendments to the National Numbering Conventions, regarding home-zone services?

Q. 14. Do you have general comments on the topic of home-zone services or on other sections of this document? If so, please elaborate as necessary.

10 Legal Basis

10.1 Policy Objectives

In exercising its functions in relation to the electronic communications sector, ComReg is required to have regard to its statutory objectives as set out in Section 12 of the Communications Act 2002. These objectives require ComReg:

- To promote competition;
- To contribute to the development of the internal market; and
- To promote the interests of end-users within the Community.

In working towards these objectives, the Act also provides guidance as to the measures ComReg is required to take to meet these objectives. In the context of the proposals currently under review, only a subset of the full list of measures is relevant²¹. These have been taken from Section 12 of the Act which states:

‘In relation to the objectives referred ...the Commission shall take all reasonable measures which are aimed at achieving those objectives, including- :

(a) in so far as the promotion of competition is concerned:

- (i) ensuring that users, including disabled users, derive maximum benefit in terms of choice, price and quality;*
- (ii) ensuring that there is no distortion or restriction of competition in the electronic communications sector;*
- (iii) encouraging efficient investment in infrastructure and promoting innovation, and;*
- (iv) encouraging efficient use and ensuring the effective management of radio frequencies and numbering resources.*

(b) in so far as promotion of the interests of users within the Community is concerned:

- (v) promoting the provision of clear information, in particular requiring transparency of tariffs and conditions for using publicly available electronic communications services.*

In addition to these objectives, ComReg is also required to have regard to the principle of technological neutrality as outlined in Section 12(6) of the Communications Act 2002. This requires that ComReg take *‘the utmost account of the desirability that the exercise of its functions aimed at achieving the objectives ... does not result in discrimination in favour of or against particular types of technology for the transmission of electronic communication services’*.

10.2 Number Allocation

Regulation 22(1) of the **Framework Regulations** states that *“The national numbering scheme shall be administered by the Regulator”*, while Regulation 22(3) states that

²¹ See Section 12(2) of the Communications Act 2002 for full listing.

“The Regulator shall grant rights of use for numbers and number ranges for all publicly available electronic communications services in a manner that gives fair and equitable treatment to all undertakings...”

ComReg, as the Regulator, is responsible for managing the National Numbering Scheme and publishes the National Numbering Conventions (currently ComReg 05/62) which set out the framework for management and use of numbering resources.

The conditions of use for geographic numbers are set out in section 11.2.1 of the National Numbering Conventions.

10.3 Geographic Number

The definition of “geographic number” which is central to this consultation is set out in Regulation 2(2) of the **Universal Service Regulations**, as is the related definition of “network termination point”. They are as follows:

***Geographic number** means a number from the national numbering scheme where part of its digit structure contains geographic significance used for routing calls to the physical location of the network termination point; and*

***Network termination point** means the physical point at which a subscriber is provided with access to a public communications network; in the case of networks involving switching or routing, the network termination point is identified by means of a specific network address, which may be linked to a subscriber number or name.*

10.4 Number Portability

The manner in which numbers are allocated and used impacts on number portability requirements and potential requirements. Regulation 26 (1) of the **Universal Service Regulations** requires that:

An undertaking providing a publicly available telephone service, including a mobile service, shall ensure that a subscriber to such service can, upon request, retain his or her number independently of the undertaking providing the service-

- a) *in the case of geographic numbers, at a specific location, and*
- b) *in the case of non-geographic numbers, at any location.*

This paragraph does not apply to the porting of numbers between mobile networks and those providing services at a fixed location.

The above provisions derive from Article 30(1) of the **Universal Service Directive**. While these provisions are explicit in that they do not extend to the porting of numbers between networks providing services at a fixed location and mobile networks, Recital 40 of the **Universal Service Directive** nevertheless supports the application of provisions by Member States for porting numbers between networks providing services at a fixed location and mobile networks. Furthermore, Regulation 14(1) with Schedule C3 of the Authorisation Regulations authorise ComReg to attach specific number portability requirements to rights of use for numbers. Recital

41 adds that the impact of number portability is considerably strengthened when there is transparent tariff information. National Regulatory Authorities are required, where feasible, to facilitate appropriate tariff transparency as part of the implementation of number portability.

10.5 Public Consultations

The allocation of geographic numbers for mobile terminated calls and the other consequential inter-network allocation requests that will follow are likely to have some impact on the voice market.

Article 19 of the **Framework Regulations** requires that where the Regulator intends to take a measure in accordance with the **Framework Regulations** or the Specific Regulations which have a significant impact on a market for electronic communications networks or services²², it shall first consult on it, after which the measure may be adopted with or without amendment. Although ComReg has not yet concluded that measures²³ are essential, it believes these should be considered in the interests of (*inter alia*) technology neutral number allocation, portability and competition. ComReg is therefore minded to seek the views of industry and consumers before proceeding further.

10.6 Technology neutrality and promoting competition

The **Act of 2002** includes policy objectives and regulatory principles that are pertinent to this consultation:

- Under sub-section 12(6) of the Act, ComReg is required to take utmost account of the desirability that the exercise of its functions related to *subsection (1)(a)* does not result in discrimination in favour of or against particular types of technology;
- Under sub-section 12(2)(a) of the Act, dealing with promotion of competition, ComReg is required to ensure that:
 - users, including disabled users, derive maximum benefit in terms of choice, price and quality;
 - there is no distortion or restriction of competition in the electronic communications sector;
 - Encouraging efficient investment in infrastructure and promoting innovation.

²² Except in cases falling within Regulations 20(8) of the Framework Directive.

²³ The 'measures' would be new arrangements providing for geographic numbers for mobile operators.

11 Regulatory Impact Assessment (RIA)

Before deciding what changes (if any) should be made to the existing regulatory regime, ComReg believes it useful to undertake an assessment of the likely effects of the proposed changes under review. Such an assessment can help to ascertain whether the proposed changes are likely to have the desired effect, or if there are any side-effects or hidden costs associated which may limit the gains envisaged.

11.1 Policy Context and Background

One of ComReg's key tasks in regulating the telecommunications sector in Ireland is to manage the National Numbering Scheme. In undertaking this task, ComReg is required to ensure that there is always an adequate supply of numbers to support the demands of new and existing customers and service providers and by implication, to make appropriate number types available for relevant new services. At the same time, ComReg needs to balance this responsibility with the need to conserve this finite national resource. ComReg regularly audits the usage of existing numbers and ensures that efficient allocation processes are in place, so as to limit the risk of implementing costly number changes.

In addition to number allocation, ComReg is also responsible for the protection of certain end-user rights including the right of subscribers to retain their telephone number independently of the undertaking providing the service. This ability to 'port' telephone numbers when changing providers is seen as reducing a significant barrier to switching. Since the introduction of geographic number portability²⁴ in 2000 and mobile number portability in July 2003, over 50,000 and 475,000 telephone numbers have been ported respectively²⁵. ComReg believes that the introduction of number portability has reduced switching costs for end-users and contributed to increases in overall market competition.

To date separate processes for the allocation and porting of telephone numbers have applied in respect of both fixed and mobile operators²⁶, each of which has had its own dedicated range (geographic fixed range and 08X mobile range, respectively). The proposals discussed in this Consultation consider the scope for extending the allocation and porting of geographic numbers to include mobile operators. Such a move has the potential to increase overall competition in both the fixed and mobile markets, whilst it may also act as a stimulus for the introduction of innovative new hybrid services more generally. However, the use of geographic numbers by mobile operators also introduces the possibility that they might seek to set mobile-like termination rates for calls to geographic numbers. If such action were undertaken, the originating operator would either have to suffer a loss, or (more likely) the higher wholesale costs would have to be passed on to consumers. If higher retail charges were introduced for calls to certain geographic numbers, then potentially this could undermine consumer confidence in the call pricing regime for all geographic calls. Such a scenario is one ComReg would be very anxious to avoid.

²⁴ In the case of geographic numbers, porting of numbers is only possible within existing Minimum Numbering Areas.

²⁵ Figures as at Q4 2005. Sources: ComReg, Key Data Report March 2006; European Commission, 11th Implementation Report 2005.

²⁶ i.e. geographic numbers for fixed operators; non-geographic (mobile) numbers for mobile operators

11.2 Policy Objectives

In exercising its functions in relation to the electronic communications sector, ComReg is required to have regard to its statutory objectives as set out in the Communication Act 2002 (see Section 10.1 above).

The sometimes conflicting nature of these objectives means that, in some instances, trade-offs in policy decisions may be unavoidable. For example, the goal of encouraging competition (by allowing innovation in pricing and disassociating tariffs from the numbering plan) could be considered at odds with the goal of protecting consumers (by ensuring that the numbering plan conveys accurate information to them regarding pricing). When faced with such situations, ComReg needs to weigh up the different policy options, before choosing the option which it believes will strike the appropriate balance between encouraging efficient investment in infrastructure and promoting competition in the marketplace to the ultimate benefit of consumers. In addition ComReg needs to be mindful of other issues - such as the need to protect against upward pressure on fixed-line rates, the implications for tariff transparency, the desirability of adopting a technology neutral approach and the need to be proportionate in its actions.

11.3 Policy Options

In the context of the current proposals, ComReg has identified four principal policy options that it could potentially choose to adopt. These include:

- Option #1: Maintain the existing regulatory regime ('No change')
- Option #2: Extend the allocation and porting of geographic numbers to include mobile operators and encourage the commercial negotiation of termination rates ('Market-based only')
- Option #3: Extend the allocation and porting of geographic numbers to include mobile operators and address the issue of safeguards for termination rates within the relevant wholesale Market Review ('Market Review approach')
- Option #4: Extend the allocation and porting of geographic numbers to include mobile operators and address the issue of safeguards for termination rates by attaching conditions on the use of geographic numbers in the National Numbering Conventions. ('Conditions of use approach').

Having regard to the objectives and principles outlined above, ComReg is currently of the view that Option #3 ('Market Review approach') as outlined in the table below represents the most appropriate means of contributing to the achievement its overall objectives. This, however, is a provisional view, developed in advance of the necessary Market Review and analysis mentioned earlier herein and therefore could be altered significantly by the outcome of such work.

11.4 Cost, Benefits and Other Impacts of Policy Options

The table below seeks to outline the principal costs, benefits and other impacts of each of the policy options identified.

Option	Costs / Disadvantages	Benefits / Advantages	Other Impacts
1. 'No change'	<ul style="list-style-type: none"> ▶ No explicit costs 	<ul style="list-style-type: none"> ▶ No explicit benefits 	<ul style="list-style-type: none"> ▶ Although there are no explicit costs or benefits from adopting the 'no change' option, arguably there is an opportunity cost to consumers in terms of the opportunity foregone of potentially availing of a service that may better meet their needs.
2. 'Market-based approach'	<ul style="list-style-type: none"> ▶ Possibility that home-zone service providers could set termination rates for calls to geographic numbers at a level which forces originating operators to increase their retail prices. ▶ Some additional demand on the geographic numbering resource, although overall this is expected to be low (>100k nationwide p.a.) ▶ Introduces extra complexity into the GNP process. 	<ul style="list-style-type: none"> ▶ Facilitation of home-zone service offerings should increase competition between fixed and mobile providers. ▶ Technology neutral approach ▶ Least interventionist of all the positive approaches. 	<ul style="list-style-type: none"> ▶ Need to ensure that any concerns regarding tariff transparency raised by the proposed service are addressed. In the absence of such assurances, ComReg does not consider this to be an acceptable option.

Option	Costs / Disadvantages	Benefits / Advantages	Other Impacts
3. 'Market Review approach'	<ul style="list-style-type: none"> ▶ Possibility that non-SMP home-zone service providers could set termination rates for calls to geographic numbers at a level which forces originating operator to increase their retail prices. ▶ Dependent on the completion of the relevant wholesale Market Reviews. ▶ Some additional demand on the geographic numbering resource, although overall this is expected to be low (< 100k nationwide p.a.) ▶ Introduces extra complexity into the GNP process. 	<ul style="list-style-type: none"> ▶ Facilitation of home-zone service offerings should increase competition between fixed and mobile providers. ▶ Technology neutral approach. ▶ Safeguards against SMP home-zone service providers potentially exploiting their dominance in the market for call termination. 	<ul style="list-style-type: none"> ▶ Need to ensure that any concerns regarding tariff transparency raised by the proposed service are adequately addressed.
4. 'Conditions of use approach'	<ul style="list-style-type: none"> ▶ Most interventionist approach. ▶ Some additional demand on the geographic numbering resource, although overall this is expected to be low (< 100k nationwide p.a.) ▶ Introduces extra complexity into the GNP process ▶ Unattractive to use numbering powers for wholesale price control purposes. 	<ul style="list-style-type: none"> ▶ Facilitation of home-zone service offerings should increase competition between fixed and mobile providers. ▶ Technology neutral approach. ▶ Safeguards against all home-zone service providers potentially exploiting their dominance in the market for call termination. ▶ Implementation of regime would be relatively straightforward – could facilitate fast market entry. 	<ul style="list-style-type: none"> ▶ Comprehensively addresses concerns regarding tariff transparency

12 Submitting Comments

All comments are welcome, however it would make the task of analysing responses easier if comments were referenced to the relevant question numbers from this document.

The consultation period runs from 04, August 2006 to 15, September 2006 during which the Commission welcomes written comments on any of the issues raised in this paper.

Having analysed and considered the comments received, ComReg will review the situation regarding Geographic Number Allocation to mobile operators and publish a report in November on the consultation, which will *inter alia* summarise the responses to the consultation.

In order to promote further openness and transparency ComReg will publish all respondents' submissions to this consultation, subject to the provisions of ComReg's guidelines on the treatment of confidential information – ComReg 05/24. We would request that electronic submissions be submitted in an-unprotected format so that they can be appended into the ComReg submissions document for publishing electronically.

Please note

ComReg appreciates that some of the issues raised in this paper may require respondents to provide confidential information if their comments are to be meaningful.

As it is ComReg's policy to make all responses available on its web-site and for inspection generally, respondents to consultations are requested to clearly identify confidential material and place confidential material in a separate annex to their response

Such Information will be treated subject to the provisions of ComReg's guidelines on the treatment of confidential information – ComReg 05/24

Appendix A – Legislation

Legislation referred to in this consultation document is as follows:

Act of 2002: Means the Communications Regulation Act, 2002.

Authorisation Regulations: Means the European Communities (Electronic Communications Networks and Services)(Authorisation) Regulations 2003; S.I. No. 306 of 2003.

Framework Regulations: Means the European Communities (Electronic Communications Networks and Services)(Framework) Regulations 2003; S.I. No. 307 of 2003.

Universal Service Regulations: Means the European Communities (Electronic Communications Networks and Services)(Universal Service and Users' Rights) Regulations 2003; S.I. No. 308 of 2003.

Universal Service Directive: Means Directive 2002/22/EC of the European Parliament and of the Council of March 2002 on universal service and users' rights relating to electronic communications networks and services.

Appendix B – Location Based Technology

Mobile operators will probably wish to use the Cell-ID of the local cell, to identify when a call falls within an end-user's home-zone, which means the dimensions of individual home-zones will vary depending on cell size²⁷, signal strength, etc. A number of home-zone services based on Cell-ID technology have been rolled out in several other European countries with some success and it seems clear this could be repeated in Ireland.

However, many more accurate positioning technologies are possible, which would offer better commercial advantage (e.g. less cannibalisation of 'regular' mobile revenues). For example Angle of Arrival (AOA) and/or Time of Arrival (TOA) are network-based approaches of using the cellular signals to estimate the handset location more accurately than Cell-ID. A handset-based TOA approach – involving modified handsets is known as Enhanced Observed Time Difference (E-OTD) and this is more accurate as it involves the handset closely in the positioning calculations. GPS is an obvious approach to positioning and network-based approaches have been developed, known as assisted GPS (A-GPS), which overcome the normal slow acquiring of the handset that would be characteristic of basic GPS. A New network entity called the Gateway Mobile Location Centre (GMLC) has been standardized for GSM networks to provide for the location management function.

In the event that ComReg extends geographic number facilities to mobile operators, their conditions of allocation are likely to relate the permissible boundaries of home-zones to the MNA for which the relevant geographic number is designated. It may also include adjacent MNAs to allow for practical detection of MNA boundaries for customers living alongside MNA borders. In any case, the mobile operator will be expected to guarantee that users granted geographic numbers can only use them within the permitted MNA or extended MNA boundary, as decided.

Regulation 22(2) of the Universal Service Regulations imposes an obligation on mobile operators to make caller location information available to authorities handling emergencies to the extent technically feasible²⁸ and the same technology can be used for home-zone purposes.

²⁷ The cell size in turn is likely to vary according to population density (i.e. large disparity between very rural and metropolitan areas, for example).

²⁸ The European Commission considers that the provision of caller location information is technically feasible. It states "This is demonstrated by the fact that the facility is already available in a majority of Member States" [Viviane Reding 4/4/2006].

Appendix C – Revision of National Numbering Conventions

Note: deleted or new text is shown by cross-through or italics+underlining, respectively, below.

Annex 6: Designations for Numbers

New explanatory paragraph at start of Section A6.1 Geographic Numbers:
‘Normal’ usage of geographic numbers has been for fixed-line networks, in which consumers and originating operators have developed certain historical perceptions regarding their retail and termination costs, respectively. Granting of geographic number rights of use has been extended to mobile operators in the expectation that this will not result in violation of such legitimate expectations.

Section 11: Conditions of use for numbers

Conventions 11.2.1-3a, 11.2.1-3b and 11.2.1-3c, to replace existing convention 11.2.1-3:

11.2.1-3a: Calls to geographic numbers are usually routed to a fixed destination *or a mobile end-user registered* in a discrete geographical area. Calls may also be forwarded to other destinations provided that:

- a) the caller is only required to pay the billing operator’s standard tariff for the original Irish geographic destination; and
- b) they are forwarded in a manner which does not restrict the ability to implement operator Number Portability;

11.2.1-3b: *Calls to mobile end-users registered in a specific MNA shall be treated as unavailable when the user (i.e. the SIM card) is not present in the MNA or one of its adjoining MNAs;*

Amendment to convention 11.2.1-6:

11.2.1.6: Geographic numbers ~~may only be used~~ *may only be allocated to entities whose registered address is located within their designated geographic numbering areas. They and may only be allocated to operationally used by entities currently located within those areas or by mobile users in adjoining MNA areas.*

~~This means that, for PSTN purposes, calls to the number concerned must be fully terminated within that geographic area unless they clearly exit the fixed network PSTN within the area (i.e. logical termination on a gateway to some other network).~~

Note: Call forwarding is not considered to be a violation of this Convention nor is genuine and short-term nomadic operation, for example in the case of VoIP services.

Amendment to convention 11.7-6:

11.7.6: Number Portability occurs between different fixed networks²⁹ and between different mobile networks. ~~but not~~ *It can also occur – for geographic numbers – between fixed and mobile networks. For fixed networks it currently applies to*

²⁹ VoIP services are considered in principle to be services offered at a fixed location (i.e. the contracted place of service). Terminals connected elsewhere in nomadic use do not change this; they are regarded as being temporarily not at that fixed location.

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geographic numbers, Freephone numbers, shared cost numbers, Premium Rate Numbers, Personal numbers, Universal Access numbers, IP-based numbers (portability deferred at present) and Internet access numbers³⁰ based on 189X;

³⁰ Internet access numbers are portable between networks insofar as ISPs can move between network operators. Because of the traffic volumes involved and likely need for new interconnection paths between networks, Internet access number portability will be subject to special processes and timescales.

Appendix D – Glossary

Cell-ID:	An identifier for the mobile network cell that is currently serving a particular handset. <i>Note: The handset may be in communication with more than one cell at any moment but it uses its own and/or the network capabilities to determine which is providing it with the best signal.</i>
DECT:	Digital Enhanced Cordless Telecommunications.
Geographic Number:	A telephone number that is designated by ComReg for use within a specific geographic area (the MNA). These are the usual telephone numbers used by subscribers of fixed-line networks.
ICON:	A graphic symbol (for example on a web page or shown in a software application) that informs the viewer of the status of some activity or product. In the context of this paper, an icon might be a visual presentation that in one state informs of the “within home-zone” status and after the user moves away, advises of an “outside home-zone” status.
Label:	In the context of this paper, a label is a simple text equivalent of an icon (e.g. “In home-zone” or “Outside home-zone”).
MNA:	A Minimum Numbering Area is a precise geographic zone – as defined in maps contained in document ComReg 03/147 (or its replacement from time to time) - within which a geographic number may be used.
Nomadic use:	Nomadcity is the capacity of a telephone user to
PBX:	A Private Branch (telephone) Exchange
Portability & GNP	Number portability is a facility that allows a consumer to retain his/her telephone number when changing telecoms provider. Geographic Number Portability (GNP) describes the process used for this when the number concerned is a geographic number.
Termination & MTR:	Termination describes the service offered to the called party by the final network operator in an end-to-end call. The “Termination Rate” is the charge (on other operators) for performing that service and the term “Mobile Termination Rate” (MTR) implies a mobile operator is involved.
VoIP:	Voice over IP. This term has become established as a description of Internet Protocol (IP) telephony that is based on the use of IP network routing and signalling rather than traditional fixed network time division multiplex (TDM) switching and signalling.
VPN:	A Virtual Private Network is a facility that enables a network administrator to use specific technologies (such as encryption or tunnelling) to segment communications between the VPN users away from other communications that may be running on the same physical network. This forms a virtual network that is private to those users on the physical network.

Appendix E – List of Consultation Questions

- Q. 1. Do you agree with ComReg’s assessment that there is a risk of inappropriately high termination charges developing in a home-zone service context, which could have detrimental knock-on effects on retail charges for the (calling) consumer? Please comment. 8
- Q. 2. Do you agree that, in principle, the termination charges used by fixed network operators are also appropriate for mobile operators providing home-zone services and that *eircom*’s figures may be used as the formal reference (benchmark) for this purpose? Please comment on your reasons for agreeing or disagreeing. 8
- Q. 3. If you agree with this assessment, do you also agree that specific requirements are needed to restrict such termination charges to (those) acceptable levels? Please comment. 8
- Q. 4. Do you have views on the market-based approach being taken by ComReg to protect against excessive termination charges, (i.e. market-based obligations and remedies, rather than use of numbering powers)? (Please refer also to Section 9 below before answering and please add your comments). If you do not agree, please describe the alternative(s) you prefer. 8
- Q. 5. Do you agree with ComReg that: 9
- (a) to ensure proper management of the home-zone/geographic number relationship, including support for number portability processes, all customers of home-zone services should be registered in respect of name and address, which must lie within the MNA to which the geographic number applies? 9
- (b) the boundaries of home-zones (within which calls to the geographic numbers must terminate) could be permitted (from a regulatory perspective) to extend up to the boundaries of the registered home MNA plus any adjacent MNAs – but not beyond? 9
- Q. 6. How do you suggest that ComReg can – in the least intrusive manner – reliably ensure that mobile operators granted geographic numbers are capable of controlling their user’s home-zone positioning and that they subsequently do so in practice? 9
- Please comment on these proposals/questions. 9
- Q. 7. Do you agree with ComReg’s comments regarding CLI in Section 4.3 above? Do you agree with the wording used in Appendix C for this? Please comment on your reasons for agreeing or disagreeing. 10
- Q. 8. Do you agree with ComReg that geographic numbers should be allocated to mobile network operators which have a need for this for new convergence services? 11
- Q. 9. Do you agree that fixed line operators might come to arrangements for mobile termination of calls to geographic numbers, as described in Section 3 above? If you foresee alternative scenarios for mobile termination of calls to geographic numbers, by fixed-line operators, please describe these. 11
- Please comment on these proposals/questions. 11
- Q. 10. Do you agree with ComReg that GNP should be extended to mobile network operators which have a need for this for new convergence services and specifically for home-zone type services? 13

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Q. 11. Do you agree that such extension would be of great significance to (a limited group of) consumers moving location to a new switch area within an MNA, by averting the need to give up their well-established geographic numbers (i.e. through the automatic location portability that would exist in a mobile operator's home-zone area)?..... 13

Please comment on your reasons for agreeing or disagreeing with the above suggestions..... 13

Q. 12. Do you have comments concerning technology neutrality, promotion of competition or emerging services? If so, please elaborate as necessary. *Note: Comments concerning Section 9 are addressed within Q. 4 above.*..... 15

Q. 13. Do you agree with the wording used in Appendix C for amendments to the National Numbering Conventions, regarding home-zone services?..... 15

Q. 14. Do you have general comments on the topic of home-zone services or on other sections of this document? If so, please elaborate as necessary..... 15