



Office of the Director of
**Telecommunications
Regulation**

Opening the market for Terrestrial Trunked Radio (TETRA)

Response to the Consultation

Document No. ODTR 00/54

AUGUST 2000

Oifig an Stiúrthóra 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

Foreword	4
1. Introduction.....	5
2. TETRA Public Access Mobile Radio (PAMR) licensing proposals	5
3. Private TETRA systems.....	5
4. General principles of licensing to be applied	6
4.1 Fees.....	6
4.2 Licence duration	6
4.3 Coverage and roll out requirement.....	6
4.4 Equipment standards	6
5. TETRA PAMR Licensing process proposed.....	7
5.1 Competition context	7
5.2 Structure of the competition.....	7
5.3 Key decision criteria	8
Appendix A: Summary of responses to the consultation	9
A1 Is there a requirement for TETRA PAMR service in Ireland?.....	9
A2 Is the proposed 2 x 1.5 MHz allocation for a national TETRA PAMR network sufficient for initial network rollout?.....	9
A3 Is the proposed 2 x 0.5 MHz expansion spectrum likely to be sufficient for anticipated future PAMR market growth?	9
A4 Is there likely to be a demand for private TETRA services in Ireland?	9
A5 How much spectrum is likely to be required for private TETRA services?.....	10
A6 Should private TETRA spectrum be allocated on an exclusive or shared basis?.....	10
A7 Do you have any views on potential future uses for the frequency bands 872-876 and 917-921 MHz?.....	10
A8 What demand do you foresee for emergency services' digital trunked radio in the 380-400 MHz band?.....	11
A9 Should coverage and/or roll out obligations be included in the telecommunications service licence for PAMR services and should this be set at a lower level than for GSM?.....	11
A10 How might mast sharing best be promoted to minimise the need for new masts?	11
A11 Do you agree with the proposal to offer two national PAMR licences?.....	11
A12 Do you have a view on the reservation of one licence for organisations who do not currently hold a mobile telecommunications licence?.....	12
A13 Do you have a view on the proposed spectrum access fee and the possibility of rebates on it being tied to a rollout or coverage obligation?	12

A14 Is there likely to be a requirement for TETRA PMR operators to provide localised service to 3rd parties and should this be catered for in the licensing regime?..... 12

A15 Is there likely to be a requirement for roaming between TETRA PAMR and PMR services and should this be catered for in the licensing regime?..... 13

A16 Other issues raised by respondents..... 13

Appendix B – List of respondents..... 14

Foreword

I would like to thank all those who responded to the consultation on Terrestrial Trunked Radio (TETRA). My Office has received a total of 17 responses, representing among others, potential operators, end-users and equipment manufacturers. This has provided a broad range of constructive comment upon which we have developed our proposals.

This paper highlights our proposals for the introduction of TETRA services in Ireland, arising from our review of the responses to the consultation.

The proposals described in this paper are for guidance only and will be finalised in the tender documents to be released later this year.

Etain Doyle,
Director of Telecommunications Regulation

1. Introduction

TETRA (Terrestrial Trunked Radio) is a mobile communications service aimed at professional business users, which can deliver a broad range of voice and data services in both public and private networks. TETRA is being rolled out in a number of European countries and experience with similar technology in North America has shown there is a sizeable potential market for the functionality offered. The Director believes that the introduction of TETRA services in Ireland has the potential to create further choice and diversity for users of business mobile communications.

This paper is the ODTR's response to a consultation process based on a Consultation Paper (ODTR00/11 – 14th February 2000). The Consultation Paper sought views on a proposed framework for the licensing and introduction of TETRA services.

This paper is not a legal document and does not constitute legal, commercial, or technical advice. The Director is not bound by it. The response is without prejudice to the legal position of the Director or her rights and duties under relevant legislation and does not form part of any formal tender process.

The Director appreciates the range of responses received and has considered all the issues raised in preparing this paper. A short summary of the responses is provided at Appendix One. A list of the respondents is provided at Appendix Two.

2. TETRA Public Access Mobile Radio (PAMR) licensing proposals

Having considered the views expressed in the consultation process, it is proposed to offer initially one national TETRA PAMR licence, comprising 2 x 2 MHz of radio spectrum. The licence will be awarded by tender, using a comparative selection process. Tender documentation will be available shortly.

The principal reason for proceeding initially with a single licence is the uncertainty regarding the long-term spectrum requirement for a national TETRA PAMR service. This is also supported by the majority of the respondents. A review will therefore be conducted two years after licence issue to determine whether additional spectrum is required for TETRA PAMR services and how this should be apportioned. Depending upon the outcome of this review, further TETRA PAMR licences may be made available at that time.

On the basis of the findings of this review, the Director may take such other measures as she considers appropriate, including without limitation, the amendment, suspension or revocation of the licence.

3. Private TETRA systems

The Director considers that efficient and effective use of the radio spectrum can be best achieved by means of a national PAMR network providing service to a wide

range of users. However, she recognises that in some instances specific needs may not be served fully by such a network and that there may therefore be a demand for private, self-provided TETRA systems in the future. In that case proposals for a licensing procedure for such private systems will be developed. It is anticipated that private systems will be licensed on a similar basis to current analogue trunked radio systems.

4. General principles of licensing to be applied

The TETRA PAMR licensee will require two types of licence: a mobile communications service licence according to Section 111 of the Postal and Telecommunications Services Act, 1983, as amended; and the relevant licences issued under the Wireless Telegraphy Acts, 1926 to 1988. Licensing will be subject to compliance with a minimum coverage / roll out requirement. Should more than one licence application be received which meets this criterion, licensees will be chosen by means of a comparative selection process.

4.1 Fees

The consent of the Minister for Finance is required on fees, and this will be sought at the appropriate time. Fees for the TETRA PAMR licences will be set out in the tender documentation.

4.2 Licence duration

Taking account of the comments received, the TETRA PAMR telecommunications service licence will be valid for a period of fifteen years, subject to the licence conditions, and shall then expire.

4.3 Coverage and roll out requirement

The Director proposes that applicants for the TETRA PAMR licence shall undertake to provide within two years of licence issue TETRA PAMR services over a geographic area comprising not less than 80% of the Irish Population. This commitment will be incorporated into the telecommunications service licence conditions. Applicants will be invited to underpin their commitment with performance guarantees. Further binding commitments relating to coverage, roll out and service quality will also be requested and will be detailed in the tender document.

4.4 Equipment standards

All network and terminal equipment deployed by a licensed TETRA PAMR service will be required to conform to the relevant TETRA technical standards defined by the European Telecommunications Standards Institute (ETSI), or other functionally equivalent publicly available standards for digital terrestrial trunked radio systems.

5. TETRA PAMR Licensing process proposed

5.1 Competition context

The Director will hold a competition for the single TETRA PAMR licence.

The competition will entail:

- Publication of details of the tender conditions and of the competition terms (the so-called tender document);
- An opportunity for potential applicants to pose written questions about the tender document and the competition before the submission of the applications. Answers to these questions will be made available to all parties who have purchased the tender document;
- Submission of applications to the ODTR by the date specified in the tender document;
- Evaluation by ODTR of applications meeting the minimum binding criteria in the tender document
- Award of a licence to the highest ranked application, subject to agreement on the licence conditions.

The full process is likely to extend over two to three months.

It is expected that the tender document pertaining to the TETRA PAMR licences will be released in August 2000.

The furthering of competition in the mobile communications market, the ability of the applicant to roll out a high quality national TETRA PAMR network and the offering of performance guarantees will be the key factors in determining the successful applicants.

5.2 Structure of the competition

The tender documents will describe the tender procedure and the application process. Furthermore, the tender documents will describe the required structure of the applications, provide guidance for preparing the applications and define the comparative selection criteria.

The tender documents will comprise a number of formal requirements that must be fulfilled in order to proceed to the comparative evaluation phase, namely:

- Non-participation in Multiple Applications
- Payment of a Financial Deposit
- Agreement to the conditions of the tender

- Fulfilment of Licence requirements
- Compliance with the specified application format
- Agreement to minimum service commitment (coverage / roll-out)

Only applications that fulfil the minimum requirements will be further evaluated. Details of the formal requirement will be provided in the tender document.

5.3 Key decision criteria

Eligible applications will be subjected to a comparative evaluation on the basis of evaluation criteria laid down in the tender document, namely:

- Promotion of Competition
- Performance Guarantees

Details of the evaluation criteria will be provided in the tender document.

Appendix A: Summary of responses to the consultation

Altogether, 17 responses were received. All respondents concurred that there is probably a market requirement for TETRA PAMR. A range of views was expressed in response to other issues raised in the consultation. A summary of the main views expressed in response to each question, along with the Director's response, is presented below:

A1 Is there a requirement for TETRA PAMR service in Ireland?

All respondents were of the view that there is likely to be a requirement for TETRA PAMR in Ireland, though opinions differed on the nature and extent of the requirement. In view of this consensus, the Director has decided to proceed with the introduction of TETRA services.

A2 Is the proposed 2 x 1.5 MHz allocation for a national TETRA PAMR network sufficient for initial network rollout?

Five respondents thought that the proposed 2 x 1.5 MHz would be sufficient for initial rollout, while seven thought that more spectrum would be needed. Of these, four thought that 2 x 2 MHz would be needed at start up and two thought that least 2 x 3 MHz would be needed. Based on these responses, the Director proposes to make available initially 2 x 2 MHz for a national TETRA PAMR licence and to review the spectrum requirement and the scope for further PAMR licences when the service is established.

A3 Is the proposed 2 x 0.5 MHz expansion spectrum likely to be sufficient for anticipated future PAMR market growth?

Seven respondents thought that the proposed 2 x 0.5 MHz would not be sufficient for future PAMR growth. Specific alternatives suggested included 2 x 3 MHz from day one), expansion spectrum equal to start-up spectrum) and either 2 x 3.6 or 2 x 4.3 MHz, depending on network configuration). Only three respondents thought that 2 x 0.5 MHz would be sufficient, although one of these also felt that provision should be made for more spectrum a later date should it be needed. In view of the responses, the Director proposes that a decision on the longer term apportionment of TETRA PAMR spectrum beyond the initial 2 x 2 MHz should be subject to the outcome of a review of spectrum requirements, to be held when the TETRA PAMR service is established.

A4 Is there likely to be a demand for private TETRA services in Ireland?

All respondents thought there may be a demand for private TETRA, however six respondents thought that this requirement would be better served by means of a

shared access PAMR network. Only 3 respondents were unequivocal in their support for private civil TETRA. The Director believes that, in general, efficient and effective use of the spectrum will be best achieved by the means of a national PAMR network available to all potential users. However, she also acknowledges that there may be specific locations or applications which may not be readily served by a PAMR network and that private systems may in the future provide a useful complement to PAMR services in such instances. Proposals will therefore be developed in due course for the licensing of private, self-provided TETRA systems where a requirement for these can be demonstrated

A5 How much spectrum is likely to be required for private TETRA services?

A range of views was expressed. Three respondents thought that the proposed 2 x 0.75 MHz would be sufficient for private TETRA. Two respondents thought that at least 2 x 1 MHz would be needed, but one of these expressed a preference for private needs to be served by PAMR. One respondent thought at least as much spectrum should be available for private TETRA as for PAMR, while another felt it was too early to make a proper estimate. One respondent thought that no spectrum should be made available for private TETRA, rather it should all be used for PAMR. On balance, and allowing for the anticipated availability of TETRA PAMR services, the Director is of the view that the proposed 2 x 0.75 MHz will be sufficient for future private TETRA needs. A review of this decision may be carried out as part of the proposed review of TETRA spectrum requirements, to be held when the TETRA PAMR service is established.

A6 Should private TETRA spectrum be allocated on an exclusive or shared basis?

Six respondents thought that channels should be exclusive. Of these, two pointed out that the TETRA standard is not designed to be used on a shared channel basis. Two respondents thought that sharing would improve spectrum efficiency and two others supported sharing, but on a network rather than radio spectrum basis. The Director accepts the arguments put forward regarding the possible technical difficulties involved in sharing of TETRA channels in the same geographic area and will take these into account in developing future licensing proposals for private TETRA systems.

A7 Do you have any views on potential future uses for the frequency bands 872-876 and 917-921 MHz?

In general, respondents supported the future use of this band for TETRA services, particularly local or on-site services or high-speed data service. Two respondents referred to the possible deployment of future "third generation" TETRA services in the band. The Director proposes to postpone any decision on the future use of this band until there is greater clarity about how the market for TETRA services is likely to develop.

A8 What demand do you foresee for emergency services' digital trunked radio in the 380-400 MHz band?

There was general support for the use of this band for the emergency services. Six respondents thought there may be scope for various degrees of infrastructure sharing between emergency services and civil TETRA networks. The Director acknowledges that there may be scope for sharing of masts and other infrastructure facilities where this does not compromise the logical separation of the two TETRA networks and does not discriminate unduly against other non-TETRA networks which may similarly benefit from such arrangements. Further consideration will be given to this matter, in conjunction with emergency services representatives and other Government Departments.

A9 Should coverage and/or roll out obligations be included in the telecommunications service licence for PAMR services and should this be set at a lower level than for GSM?

Six respondents supported the inclusion of rollout obligations, although it was generally felt that these should be less onerous than those for GSM. Four respondents preferred to leave coverage and rollout to market forces, although generally accepting that some minimal obligations might be required.

The Director proposes to include a minimum coverage and roll out criterion in the TETRA PAMR licence conditions. Details of these conditions will be included in the tender documentation.

A10 How might mast sharing best be promoted to minimise the need for new masts?

There was broad support for mast sharing from all respondents, although one respondent suggested that if the use of existing sites was mandated network planning constraints might lead to more base stations being needed by an individual network. Six respondents supported licensing conditions or incentives to encourage mast sharing. One respondent was concerned that new entrants may be disadvantaged if existing site owners were to charge excessive prices for access.

The Director will encourage licensees to make use of existing masts wherever possible.

A11 Do you agree with the proposal to offer two national PAMR licences?

Six respondents supported the licensing of only one network. One respondent suggested that two licences should be available but only one should be awarded initially, the second to follow later if there was sufficient demand. Two respondents thought there might be scope for more than two PAMR licences. Having considered the arguments, and in particular the level of support for the single licence option, the Director has decided to proceed initially with the offer of a single, national PAMR licence. A further licence may be offered at a later stage, depending upon spectrum

availability and the extent to which demand for PAMR services is being met by TETRA and other mobile communication platforms such as GSM.

A12 Do you have a view on the reservation of one licence for organisations who do not currently hold a mobile telecommunications licence?

Five respondents favoured the reservation of a licence and one thought that, whilst licences should be open to all bidders, the award criteria should be weighted towards those who would treat TETRA as a business in its own right, ready to compete with other mobile technologies. Four respondents were against the reservation of a licence. Having considered the arguments and taking into account the requirement under the EU Licensing Directive to give due weight to the need to facilitate the development of competition, the Director proposes that the initial single TETRA PAMR licence will be available to all applicants, but that the furtherance of competition in the mobile communications market will form a significant element of the comparative evaluation process.

A13 Do you have a view on the proposed spectrum access fee and the possibility of rebates on it being tied to a rollout or coverage obligation?

Six respondents thought that the proposed fee might be too high. Two respondents supported the principle of rebates and one was opposed. The Director recognises the more limited scope of the TETRA PAMR market relative to other public mobile communication services and that this should be reflected in the spectrum access fee. The Director is also keen that the benefits of TETRA PAMR should be made widely available at the earliest opportunity. This objective will be supported by the inclusion of minimum coverage and rollout provisions in the TETRA PAMR licences and the inclusion of financial guarantees among the competition selection criteria. The Director therefore proposes to apply a spectrum access fee of IR£500,000 at the time of licence issue.

A14 Is there likely to be a requirement for TETRA PMR operators to provide localised service to 3rd parties and should this be catered for in the licensing regime?

Five respondents thought that this requirement might arise. Of these, two thought that the PAMR market opportunity might be reduced as a result. One respondent favoured the roll out of a joint emergency services / civil TETRA network. Three respondents were against the provision of third party services by private operators and one was concerned that any such offerings should be fully transparent to eliminate the possibility of cross-subsidy. The Director is not convinced that such a provision would be beneficial in the short term, although the situation may be reviewed in the future, depending upon the extent to which demand for PAMR services is being met by TETRA PAMR and other public mobile communications services.

A15 Is there likely to be a requirement for roaming between TETRA PAMR and PMR services and should this be catered for in the licensing regime?

All but one of the respondents felt that roaming may be required and in general would be desirable. One respondent thought that roaming should only be allowed from PMR to PAMR and not the other way round. 2 respondents raised concerns about lack of compatibility between different manufacturers' TETRA equipment and one emphasised the importance of emergency call handling when roaming.

Taking account of the responses, the Director acknowledges that benefits may arise from private TETRA licensees' terminals roam onto the TETRA PAMR network, and will consider the incorporation of such a provision into any future private TETRA licensing procedure that may be adopted.

A16 Other issues raised by respondents

A16.1 Direct Mode Operation (DMO)

One respondent thought that DMO should be permitted so that terminals can be used out of network range and terminals close to each other do not need to tie up the network. The Director is minded to permit DMO operation, subject to the future availability of harmonised European radio channels for this purpose.

A16.2 Electromagnetic Compatibility

One respondent expressed concern about potential interference between TETRA terminals and medical devices such as external pacemakers, citing research suggesting that the 17 Hz TDMA frame rate used by TETRA may present a greater risk than other mobile equipment. This may have potential implications in particular for users in the health care sector. Users are advised to refer to Device Bulletin DB 1999/02, "Emergency service radios and mobile data terminals: compatibility problems with medical devices", issued by the UK Medical Devices Agency, for advice on how to minimise the risk of adverse interference to medical equipment.

Appendix B – List of respondents

The 17 respondents to the consultation were:

An Garda Síochána
Cellcom Ireland Ltd
Crown Castle International
Department of the Environment and Local Government
Dolphin Telecom plc
Emergency Services Liaison Group
Eircell Ltd
Esat Digifone Ltd
ESB
Infocell
Institution of Engineers of Ireland
Light Rail Project Office
Modern Networks Ltd
Motorola Ltd
Ocean Communications Ltd
Siemens Ltd
Sigma Wireless Communications Ltd