



Office of the Director of  
**Telecommunications  
Regulation**

## **Extending Choice...**

### **Expanding the market for Fixed Wireless Access (FWA)**

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Response to the Consultation

**Document No.** ODTR 00/81

November 2000

**Oifig an Stiúirthóra Rialála Teileachumarsáide**

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## FOREWORD

I would like to thank all those who responded to the consultation on expanding the market for Fixed Wireless Access (FWA). My Office has received a total of 10 responses representing, among others, existing and potential licensees and equipment manufacturers. This has provided a broad range of constructive comments which have been taken into account in developing our further lines of action with regard to new FWA licences.

This paper highlights our position, arising from our review and taking account of our obligations under the Licensing Regulations<sup>1</sup>, in particular relating to the promotion of competition and the efficient utilisation of the radio spectrum.

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

Etain Doyle

Director of Telecommunications Regulation.

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<sup>1</sup> European Community (Telecommunications Licences) Regulations, 1998 S.I. No 96 of 1998 implementing in Ireland the EC Licensing Directive 97/13/EC.

## 1. EXECUTIVE SUMMARY

This paper is the ODTR's response to a consultation process based on the Consultation Paper *"Expanding the market for Fixed Wireless Access (FWA)"* (ODTR00/47 – July 2000). The consultation follows up the recent issuing of licences for narrowband and broadband Fixed Wireless Point to Multipoint Access (FWPMA) services. Since the original consultation on the introduction of FWPMA in 1998, there have been further international developments in Fixed Wireless Access (FWA) technology and the nature of the services that are being proposed<sup>2</sup>.

The purpose of the consultation was to review the emerging demand for FWA services in Ireland, to determine the extent to which the recently licensed services will satisfy future demand, and to ensure that there is sufficient radio spectrum to meet FWA requirements for the foreseeable future.

Specifically, the consultation document sought views on:

- The re-advertising of the fourth narrowband FWPMA licence (the "D" licence).
- The offering of two further national broadband FWA licences (the "E" licences).
- The allocation of reserve expansion spectrum for existing and new licensees.
- Whether the current approach to segmentation of the FWA market will remain appropriate in the light of market and technology developments.
- The likely future demand in Ireland for FWA access services and the form these services are likely to take.

Having considered the responses to the consultation, the Director has decided to proceed with a tender process including two additional broadband licences (to be designated "E" licences) and the re-advertising of the narrowband "D" licence. The tender process will be carried out as expeditiously as possible with a view to concluding with ranking of applicants by the 31<sup>st</sup> of March 2001.

Section 2 of this document includes a summary of the responses to individual questions and the Director's proposals for further FWA licensing in the light of the consultation. Section 3 outlines the general principles of licensing to be applied. Section 4 outlines the Director's position with regard to the future development of FWA services in Ireland. This paper 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.

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<sup>2</sup> During the original tender process, the specific term Fixed Wireless Point to Multipoint Access (FWPMA) was used as the Irish name for the, at that time, not fully standardised technology. In this paper, however, the generic – and now widely used – term Fixed Wireless Access (FWA) will be used. Notwithstanding this, all reference to "existing FWA licence holders" or just "existing licence holders" in this paper shall refer to those companies which received licences under the first FWPMA competition.

## 2. INTRODUCTION

The Director of Telecommunications Regulation (“the Director”) and her Office (“the ODTR”) are responsible for the regulation of the Irish telecommunications market in accordance with EU and National legislation. The ODTR is the National Regulatory Authority (“NRA”) for the purposes of that legislation.

In common with other European countries and in the context of international developments in fixed wireless access technology and the nature of the services proposed (in particular, in the delivery of broadband interactive services for both business and residential customers), the Director has consulted on the issue of expanding the market for fixed wireless access (FWA). It is expected that the introduction of new licences into the market and the provision of expansion spectrum for existing licensees may provide opportunities to develop a cost effective means of introducing the competitive narrowband and broadband telecommunications services that users are increasingly demanding.

### 2.1 Background

In July 2000, the Office of the Director of Telecommunications Regulation (“ODTR”) launched a consultation paper “*Expanding the market for Fixed Wireless Access (FWA)*” (ODTR00/47). The paper looked at the issue under the following headings:

- Review of Spectrum -Additional FWA Licences and expansion spectrum
- General Principles of Licensing to be applied to any proposed new FWA licences
- Future Developments of FWA in the Irish Market

The consultation paper sought views on issues such as:

- The demand for further FWA licences
- The demand for additional spectrum for FWA.
- The approach to market segmentation (narrowband/broadband)
- The types of services offered
- Future trends

The responses received to the consultation paper have been of assistance to the Director in helping her to form a view on appropriate regulatory measures in relation to expanding the FWA market.

Ten organisations responded in writing to the consultation document, as listed below:

- Adaptive Broadband Corporation
- eircom plc.
- Esat Digifone Ltd.
- Esat Telecom / Ocean Communications Ltd.
- Etel
- FirstMark Communications Europe Ltd.
- Formus Communications Ireland Ltd.
- Princes Holdings Ltd.
- Priority Wireless B.V.
- Winstar Europe S.A.

The Director wishes to express her thanks to everyone who contributed to the consultation. With the exception of material marked as confidential, the written comments of respondents are available for inspection at the ODTR's office in Dublin.

## 2.2 Legislative Background

The licences will be awarded by the Director under the Postal and Telecommunications Services Act, 1983, as amended and the Wireless Telegraphy Acts, 1926 – 1988. The Licensee will be granted the right to use Fixed Wireless Access Technology (FWA) to offer telecommunications services to the public, for a period of 10 years.

Successful applicants will require two types of licence:

A Telecommunications Licence issued in accordance with section 111 of the Postal and Telecommunications Services Act, 1983, as amended, and

A Wireless Telegraphy Licence issued in accordance with regulations made under the Wireless Telegraphy Acts, 1926 to 1988.

The competition will be designed to ensure that licences are awarded according to objective, transparent, non-discriminatory and proportionate selection criteria, giving due weight to the need to facilitate the development of competition and to maximise benefits for users in accordance with the provisions of the European Communities (Telecommunications Licences) Regulations 1998 (SI no. 96 of 1998), which transposed into Irish law European Parliament and Council Directive 97/13/EC.

The combined Licences will entitle the holder(s) to provide FWA services to the public subject to certain conditions and obligations.

### 2.2.1 *The Director's Duties*

The Director's role is to encourage and secure effective competition in the interests of all users. In promoting economic efficiency and giving the maximum benefit to users, she must balance the needs of users for satisfactory communications with the need for a competitive market, whilst ensuring that Ireland is aligned with technical and regulatory developments elsewhere in the European Union.

## 2.3 Format of this Document

This document presents the outcome of the consultation. Specifically, this document:

- outlines the issues addressed by the consultation document;
- summarises the views provided by respondents;
- presents the Director's proposals on each of the issues highlighted in the consultation.

This report contains sections related to the questions raised in the consultation.

Each section is divided into three parts:

- A summary of the questions together with supporting context.
- A summary of the responses to the question.
- The Director's conclusions and planned next steps.

### **3. REVIEW OF SPECTRUM - ADDITIONAL FWA LICENCES AND EXPANSION SPECTRUM**

#### **3.1 Narrowband FWA**

##### *3.1.1 Summary of the Consultation Issues*

The consultation addressed the re-advertising of the original narrowband “D” FWPMA licence, the offering of two new broadband FWA licences and the reservation of expansion spectrum for licensees, to be made available on a demonstrable need basis. These proposals were based on a review of spectrum, which concluded that spectrum was available both for further licences and for expansion spectrum if required, and the outcome of the original FWPMA competition, which suggested that there was sufficient market demand to warrant further licences being made available.

In questions 1 - 5, respondents were asked for their views on:

- Whether there is a demand for further national narrowband FWA licences beyond the existing three
- Whether the market segmentation between narrowband and broadband services adopted in the original FWPMA competition is still appropriate in the light of market developments
- The suitability of the 10.5 GHz band for FWA services
- The type of FWA services envisaged in the 10.5 GHz band
- The proposal to re-advertise the original “D” licence on the original terms

##### *3.1.2 Views of Respondents*

There was broad support for the offering of a further narrowband licence. The majority of respondents supported in principle the re-advertisement of the “D” licence on the original terms, although some thought amendments to the original coverage or service requirements might be appropriate. A number of respondents noted that improvements in equipment availability since the original competition were likely to make this band more attractive than it was previously considered.

A few respondents, however, commented that: additional spectrum should be allocated to the “D” licence; there was some question whether market and technology have developed sufficiently in the past 12 months in order to make a re-advertisement on the original terms any more attractive; and combined frequency licences (e.g. 10 GHz combined with 3.5 / 26 / 28 GHz) should be considered. One respondent made the point that 2 x 30 MHz of spectrum was not sufficient, by itself, to allow for a viable business case and suggested that a combination licence or additional spectrum would make the proposal more attractive.

Regarding the segmentation between narrowband and broadband FWA services, most respondents indicated that this approach was becoming outmoded. Since the original

FWPMA competition, technological advances have led to increasing convergence between services offered over narrowband and broadband FWA networks (as defined in the original competition). Accordingly, it was becoming less appropriate to differentiate between FWA services in this way.

Respondents had no reservations regarding the suitability of the 10 GHz band for FWA from a spectrum engineering perspective. One respondent questioned the commercial availability of equipment for FWA services making use of this band, but others noted that equipment availability and choice of vendors had improved since the first tender in 1998. One respondent suggested that the 10 GHz band might be used for point to point links, should the need for FWA services in this band not be justified.

The majority felt that the 10 GHz band was suitable for a range of bandwidth-intensive services, although one respondent thought that the 10 GHz band would be used for traditional narrowband services (e.g. telephony and low-speed Internet access).

### *3.1.3 Position of the Director*

Having considered the responses, the Director is satisfied that there have been favourable technological developments and that there is demand for further narrowband FWA licences, so that the proposal to re-advertise the D licence under the original terms will lead to increased competition in the marketplace. The Director further points out that applicants who apply for a narrowband licence may also be eligible to apply for a broadband licence, raising the possibility of acquiring complementary narrowband and broadband licences. The Director recognises that additional spectrum may be required in the future in the 10.5 GHz band, depending upon market developments. Such a requirement, should it arise, will be considered in the light of other demands on the radio spectrum and will be subject to further public consultation.

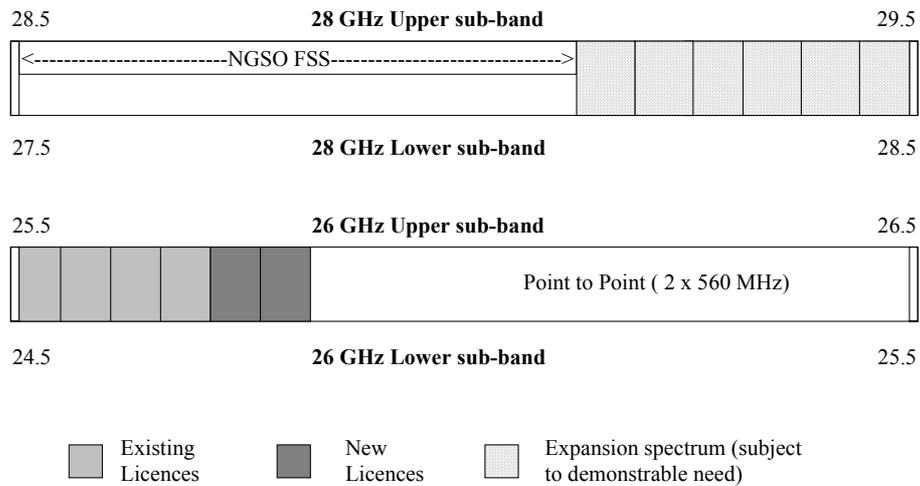
## **3.2 Broadband FWA**

### *3.2.1 Summary of consultation issues*

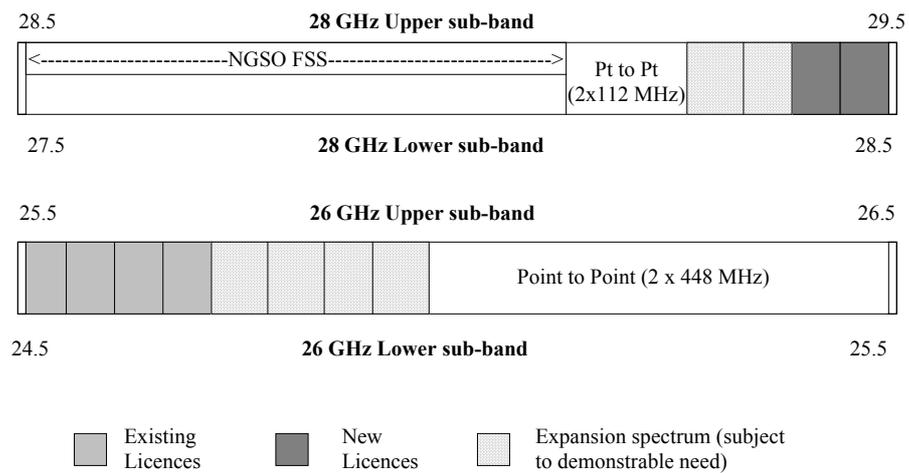
The consultation put forward four spectrum packaging options for the offering of two further broadband FWA licences. The options took account of international developments and the need to balance spectrum requirements for FWA services and point to point radio relay systems. The options are summarised below. Views were sought on:

- The proposal to offer two further licences
- The preferred spectrum packaging option
- Whether future provision should be made for expansion spectrum

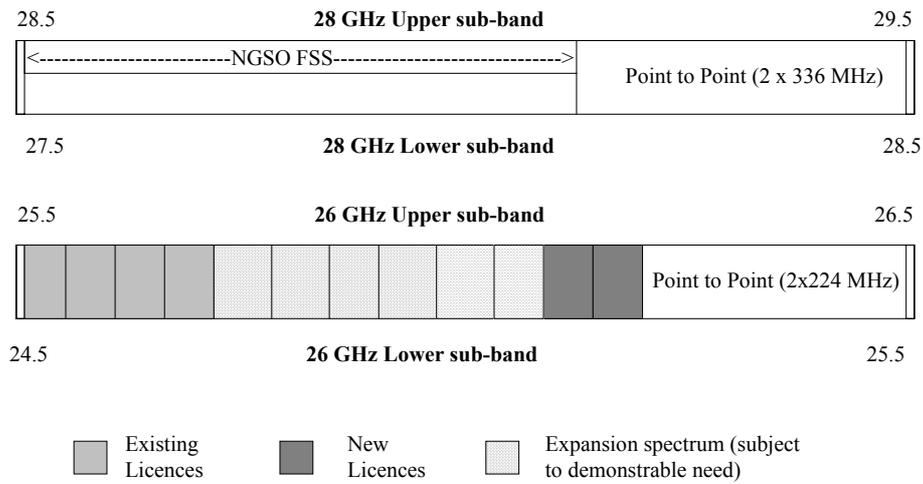
**Figure 3.1. Broadband FWA spectrum packaging Option 1**



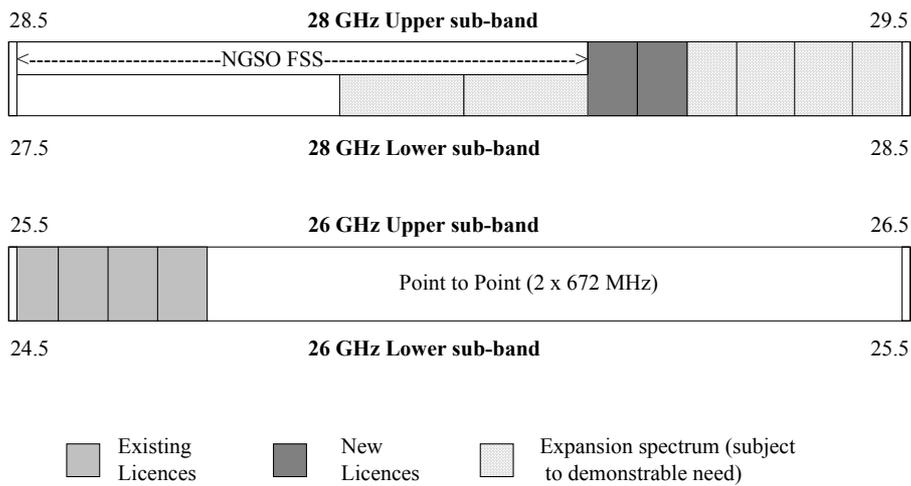
**Figure 3.2. Broadband FWA spectrum packaging Option 2**



**Figure 3.3. Broadband FWA spectrum packaging Option 3**



**Figure 3.4. Broadband FWA spectrum packaging Option 4**



### **3.2.2 Views of Respondents**

Respondents were divided on whether or not additional broadband FWA licences should be offered. Those not holding existing broadband FWA licences broadly welcomed the proposal to offer two additional licences, while existing holders of broadband FWA licences were generally opposed the issuing of more licences. Points made in support of additional licences included the following:

- Enhancement of competition in the local loop
- Cost effectiveness of FWA technology when compared with wired solutions
- Rapid deployment of services
- Expedited access to broadband services – this is vital as there is a growing market trends for broadband services
- Would support the development of Ireland as a European Hub for IT and broadband services

### **Spectrum Packaging Options**

The majority of respondents who expressed a view were in favour of options 1 or 2, with responses split evenly between these two options. Those supporting option 2 argued that there would be spectrum efficiency and environmental benefits from locating future expansion spectrum in the same band as a licensee's existing spectrum. Those favouring option 1 argued that this option ensured all operators would be licensed on equal terms. One respondent favoured option 3.

Two respondents suggested that a further option should be considered, under which initial and expansion spectrum for each licensee was located in adjacent blocks, claiming this would provide a better utilisation of the bands in question. For most practical purposes, the difference in physical qualities between the two bands were considered of minor importance, however it was generally agreed that the point to point hop length is somewhat greater in the 26 GHz band.

All respondents concurred that there was no immediate demonstrable demand for expansion spectrum, however, most felt this would be required in the future to facilitate market growth. The main argument supporting expansion spectrum was related to roll out difficulties in urban and metropolitan areas and the need for guard bands to facilitate inter-operator co-ordination. It was also confirmed that adequate spectrum should be retained for point to point applications at both 28 GHz and 26 GHz.

### **3.2.3 Position of the Director**

Having considered the responses and in particular the support from potential new market entrants for the offering of further broadband FWA licences, the Director has decided to proceed with the offering of two further broadband FWA licences. In deciding which spectrum packaging option to adopt, the Director has assessed the views of respondents on the four spectrum packaging options and has also taken into

consideration the implications for spectrum utilisation efficiency in the longer term, as well as the need to balance FWA and point-to-point link requirements. Another factor is the recent adoption of an ERC Decision addressing FWA services in the 28 GHz band.

Taking these factors into account, the Director has decided that **option 2** provides the preferable overall solution. Locating initial and expansion spectrum assignments within the same frequency band provides benefits to operators and may enable a reduction in inter-operator co-ordination requirements in the longer term, resulting in a more efficient spectrum utilisation. The Director recognises, however that there are differences in the radio propagation characteristics in the 28 GHz band, principally relating to rain attenuation, which may result in a reduction in the maximum base station coverage area relative to 26 GHz. The Director proposes to take this into account in the minimum coverage requirement for 28 GHz licences, which will be set at 60% of the licensee's specified coverage area, rather than the 80% figure applied to the 26 GHz band.

The Director is satisfied that expansion spectrum may be required in the longer term to satisfy demand growth for broadband FWA services.

### 3.3 Conclusions

Taking account of the responses to the consultation, and consistent with her obligations under the Licensing Regulations, the Director will proceed with the re-advertising of the "D" licence and the offering of two further broadband "E" licences. The Director believes this approach will further enhance competition in the fixed telecommunications market and expedite the rollout of broadband services in Ireland.

To ensure consistency with existing licensees, the 10.5 GHz narrowband FWPMA licence (the "D" licence) will be re-advertised under the original terms of the FWPMA tender process. Two broadband licences ("E" licence) will be advertised in accordance with spectrum packaging option 2. These licences will be also be on similar terms to the original broadband "A" licences, however the area coverage requirement will be amended to 60%, reflecting the more limited coverage capability at 28 GHz relative to 26 GHz.

Expansion spectrum of up to 2 x 56 MHz per licensee will be reserved and will be made available on the basis of demonstrable need. Licensees should note that this spectrum may be re-allocated in the future to other radiocommunication services, or for further FWA licences, if the demonstrable need criterion is not met.

The Director also intends to ensure that spectrum is retained for point to point applications at both 28 GHz and 26 GHz.

## **4. GENERAL PRINCIPLES OF LICENSING.**

### **4.1 Summary of the consultation topic:**

The consultation paper set out the Directors proposals in relation to the licence procedure, structure, types and conditions.

One question (question 9 of the consultation document) related to this area and requested views on the general principles of licensing proposed.

### **4.2 Views of respondents**

There was broad support among respondents for the proposed general principles of licensing. Only one respondent raised objections, in relation to coverage obligations.

### **4.3 Position of the Director**

Having considered the responses the Director has concluded that, to ensure consistency between all licensed FWA operators, the general principles of licensing described in the consultation document will be adopted.

### **4.4 Conclusions**

The following general principles of licensing will be applied to the forthcoming competition:

#### ***4.4.1 Standard licence structure and terms***

In the consultation document, it was proposed to structure the two new "E" licences in a manner and on terms similar to the existing broadband "A" licences. Likewise, it was proposed to structure the narrowband "D" licence along the same lines as proposed in the FWPMA competition, in which no eligible application for this licence was received. Only one respondent had substantial objections to this proposal. Having regard to a need to ensure consistency between all licensed operators, the Director has decided to proceed as proposed.

#### ***4.4.2 Licence type and conditions***

All new licence holders will be granted the right to use FWA technology to offer telecommunications services to the public.

Successful applicants will require two types of licences:

- A General Telecommunications Licence issued in accordance with section 111 of the Postal and Telecommunications Services Act, 1983<sup>3</sup>, and
- A Wireless Telegraphy Licence issued in accordance with regulations under the Wireless Telegraphy Act, 1926 to 1988.

The combined licences will entitle the holder to provide telecommunications services<sup>4</sup> to the public using FWA, subject to certain minimum conditions and obligations. These conditions and obligations will be identical or similar to those provided for in existing licences, and as proposed by the applicants as part of the licence application procedure.

#### *4.4.3 Licence duration*

The Director must balance the need for security of tenure for those investing in the provision of FWA services with the need to ensure that spectrum not properly utilised can be withdrawn and made available to other FWA service providers, or re-allocated to other uses.

Taking account of these considerations and the comments received, any new licences will be awarded for a period of 10 years subject to the licence conditions and shall then expire.

In accordance with the terms of existing FWPMA licences and the Director's duty to manage the radio spectrum efficiently and effectively, all licences – existing and prospective – may be reviewed periodically.<sup>5</sup> It is expected that the first review will not take place before 2003 and will be subject to a public consultation.

The Director reserves the right, with due notice, to migrate services to new spectrum allocations in order to comply with spectrum allocation decisions reached through the World Radio Conferences (WRCs) of the International Telecommunication Union (ITU), or through the Decisions made by the European Radiocommunications Committee (ERC) of the Conference of European Postal and Telecommunications Administrations (CEPT). Such migration shall be carried out entirely at the licensee's

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<sup>3</sup> Where licensees already hold a General Telecommunications Licence the licensee will be designated by the Director to be a person to whom Part 5 applies (covering FWA/FWPMA). Where licensees do not already hold such a licence, they will need to apply for one. If successful in the FWA competition these licensees will be designated as licensees to whom Part 5 applies. The Director Proposes to amend Part 5 of the General Telecommunications Licence in order to facilitate this licensing process according with her duties to efficiently manage radio spectrum and support competition in the market. Any amendment will not affect the rights of existing FWA/FWPMA licensees. The process will be conducted in accordance with the procedure set out in the Licensing Regulations.

<sup>4</sup> The distribution of Licensed Programme Services as provided for in the Wireless Telegraphy (Programme Services Distribution) Regulations, 1999 (SI No. 73 of 1999) will be excluded from the scope in respect of which FWA services may be granted.

<sup>5</sup> Part 5 of the General Telecommunications Licence will be amended accordingly

own expense.

#### 4.4.4 Coverage and roll out requirements

Coverage and roll out requirements will be consistent with the existing FWPMA licences, i.e.:

- Within one year of the Licence being granted, at least one base station must be in commercial operation;
- Within two years of the Licence being granted, at least one base station must be in commercial operation in a minimum of ten counties;
- Within three years of the Licence being granted, at least one base station must be in commercial operation in a minimum of fifteen counties.

The above coverage and roll out obligations will be regarded as minimum requirements.

#### 4.4.5 Equipment standards

The Director favours light-handed regulation and thus would prefer, within the limits imposed by European law<sup>6</sup>, to remain neutral on the technologies that might be deployed to provide FWA services.

The Director wishes to make it clear that, regardless of the standards deployed, any ‘guard’ spectrum required to facilitate co-existence between operators using adjacent frequency channels must be included within the operators’ assignments and will not be provided as additional spectrum.

### 4.5 Licensing process

#### 4.5.1 The tender process

The Director will hold two separate competitions, one for the two broadband licences (E-licences), and one for the narrowband D-licence. In both cases, a comparative selection (“beauty contest”) methodology will be adopted comprising, *inter alia*,

- A detailed tender document (November)
- An opportunity for applicants to pose written questions to the ODTR (November)
- Deadline for submission of applications (December)
- Evaluation of the applications (January and February, 2001)
- The announcement of rankings (March 2001).

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<sup>6</sup> In particular, equipment must be compliant with the requirements of the Radio and Telecommunications Terminal Equipment Directive (RTTE Directive 1999/5/EC)

Andersen Management International will assist the ODTR with the evaluation of the applications.

#### *4.5.2 The comparative selection process*

The Director's decision to award the new FWA licences on the basis of a comparative selection process means that any new FWA licences will be awarded through the same type of generic process as was used to award the existing narrowband and broadband licences.

The Director will subject the applications received to a two-stage evaluation process to select the successful Applicants. In the first stage there will be an assessment to determine whether each application fulfils formal and binding requirements which will be specified in the tender documents. Only applications that fulfil the formal and binding requirements will be deemed eligible to participate in the process.

If there are more eligible applications than licences, a comparative evaluation process will be conducted for the selection of the successful Applicants. If there are the same number of eligible applications as there are licences available, these will be evaluated accordingly and licences may be awarded. If there are no eligible applications, no licences will be awarded. In any event the Director reserves the right not to award licences.

If a comparative evaluation process is held, each eligible application will be evaluated according to the criteria to be set out in the tender documents.

Where licences are awarded, whether by comparative evaluation or not, the Director may incorporate conditions into the licences based on the proposals contained in the applications submitted.

Applicants invited to take up a licence will be liable for the administrative costs of the process.

#### *4.5.3 The key criteria*

In order to maximise the transparency of the tender, the Director intends to publish key evaluation criteria in the tender documents.

## **5. FUTURE DEVELOPMENTS OF FWA IN THE IRISH MARKET**

### **5.1 Summary of the Consultation Topic**

In this section the Director requested views on the future development of FWA. Specifically, information on the following issues:

- The long term requirement for basic telephony services (Question 10)
- The implications for spectrum requirements if existing narrowband services will need to evolve to cater for broadband requirements (Question 11)
- Whether existing broadband FWA services should cater for residential as well as business users (Question 12)?
- Whether different spectrum provisions should apply in urban and rural areas (Question 13)
- Whether there are market requirement that are not provided for by a national licence structure (Question 14)

### **5.2 Views of Respondents**

Respondents generally held the view that, whilst demand for narrowband services such as telephony would persist in the long term, future FWA services and technologies will be focused on data rather than voice. Demand for high bandwidth services was expected to increase markedly over the coming years, requiring more spectrum to be made available for both broadband and narrowband FWA licensees.

There was a clear consensus among respondents was that FWA services will for some time remain focused on business users, principally SMEs. Respondents generally pointed to the high cost of FWA equipment as the main factor preventing take-up of FWA services among residential users.

A majority of respondents expressed the view that urban areas require a higher allocation of spectrum than needed for the rural areas. Some respondents suggested that additional requirements on the local or regional level could most conveniently be met by using the 10/26/28 GHz bands as overlay to a national layout, based on the 3.5 GHz band. One respondent suggested further industry discussions to address spectrum requirements in different areas. Respondents who favoured a uniform spectrum allocation throughout the country suggested that any local or regional deviations from this pattern should be decided among the operators without involving the Director.

Two respondents suggested that the new FWA licences be offered on a regional basis, allowing the licensees to concentrate on highly densely populated metropolitan areas.

### **5.3 Position of the Director**

Whilst the Director agrees with respondents that services are converging, she also recognises that there are substantial difference in the spectrum available in the various FWA frequency bands which are likely to have a bearing on the range of services that

can be delivered. The Director therefore proposes to retain for licensing purposes the current distinction between narrowband and broadband FWA licences. In so doing, the Director wants to reassure those interested in pursuing a 10.5 GHz licence that there will be no restriction placed on this licence in terms of the services that may be offered.

Whilst the Director is keen to encourage the roll out of competitive FWA services to as wide a cross section of the community as possible, the Director recognises the current constraints in terms of equipment cost and does not propose to mandate the provision of FWA services to residential subscribers at this stage. However licensees are encouraged to seek opportunities to develop a residential customer base where this is feasible.

The Director is of the view that the timely provision of competitive telecommunications services to a wide cross section of the community is best served currently by a national licensing regime. This approach also serves to ensure consistency with existing FWA licensees who are obliged to provide services on a national basis. Having considered the comments received, the Director does not believe there is currently a case for offering regional FWA licences.

#### 5.4 Conclusions

The Director will proceed with the re-advertising of a single national narrowband (“D”) licence and two national broadband (“E”) licences, but will not place any constraints on the types of service that may be delivered under each licence. All operators will be encouraged to provide a wide range of high quality services as part of the competition process.