

Office of the Director of
**Telecommunications
Regulation**

Extending Choice...

Expanding the market for Fixed Wireless Access (FWA)

Consultation Paper

Document No. ODTR 00/47

JULY 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

1	Introduction.....	1
2	Structure of the paper	3
3	Consultation procedures and timetable.....	4
4	Current licensing of narrowband and broadband FWPMA in Ireland.....	5
5	Review of Spectrum – Additional FWA Licences and Expansion Spectrum.....	6
5.1	Narrowband FWA	6
5.2	Broadband FWA.....	6
6	General Principles of Licensing to be Applied to any proposed new FWA Licences.....	11
6.1	Standard Licence structure and terms	11
6.2	Licensing process	12
6.3	Existing FWA licensees.....	13
7	Future Development of FWA in the Irish Market.....	14
	APPENDIX A: Glossary.....	16
	APPENDIX B: Summary of Consultation Questions.....	17
	APPENDIX C: Spectrum Band Plan and Minimum Service Conditions applying to Narrow Band FWA licence type “D”:	19

FOREWORD

This 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, there have been further international developments in fixed wireless access technology and the nature of the services that are being proposed. In particular, there is an increasing interest in the delivery of broadband interactive services for both business and residential subscribers. This consultation seeks to review the emerging demand for fixed wireless access (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.

FWA provides a uniquely cost effective means to introduce the competitive narrowband and broadband telecommunication services that users are increasingly demanding. Please take this opportunity to influence the development of these services through your response to this consultation.

Etain Doyle

Director of Telecommunications Regulation

1 INTRODUCTION

The Director is currently in the process of licensing seven Fixed Wireless Access (FWA) services¹ in Ireland, three narrowband and four broadband, using the following frequency bands:

Broadband: “A” licences: 26 GHz (2 x 56 MHz each for four operators)

Narrowband: “B” licences: 2 GHz / 3.5 GHz (2 x 35 MHz each for two operators)

“C” licence: 2.4 GHz (60 MHz for one operator)

A fourth narrow band licence was also offered, using spectrum in the 10 GHz band, but no eligible applications were received.

Further background information on the current FWA licences may be found in documents ODTR 98/32 (Opening the market for fixed wireless access point to multipoint services, consultation paper) and ODTR98/61 (Response to the Consultation). Both documents are available on the ODTR web site at www.odtr.ie.

FWA provides a radio-based alternative to “hard-wired” access networks based on copper or fibre optic cables. By avoiding the need for expensive and disruptive excavation work associated with laying cables, FWA can provide significant cost advantages, particularly in less heavily populated areas. Rising demand for high speed access to the Internet and other interactive services has led to a number of international initiatives to promote the use of FWA, particularly for broadband applications. These initiatives include:

ITU-R² Joint Rapporteurs’ Group 8A/9B on Wireless Access System standards

CEPT³ activities on Multimedia Wireless Systems (MWS)

IEEE⁴ 802.16 Working Group on Broadband Wireless Access Standards

The purpose of this consultation document is to review the market requirement for FWA services in Ireland, in the light of recent developments: Specifically, the document addresses:

The re-advertising of the fourth narrowband FWPMA licence (the “D” licence);

¹ The current services are licensed as Fixed Wireless Point to Multipoint Access (FWPMA) systems. The generic term FWA is used in this document to reflect growing interest in alternative network topographies such as mesh networks.

² International Telecommunications Union, Radiocommunications Sector

³ Conference of European Postal and Telecommunications Administrations

⁴ Institution of Electrical and Electronics Engineers

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.

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

2 STRUCTURE OF THE PAPER

This paper is structured in a number of main sections and appendices as follows:

- Section 3 describes the consultation procedure and timetable for responses;
- Section 4 describes current licensing of broad and narrow band FWPMA resulting from the recent competition and award of licences;
- Section 5 presents options for further development of radio spectrum for FWA by issuing additional licences and providing for expansion spectrum;
- Section 6 sets out some general principles of licensing which it is proposed to apply to any new FWA licences;
- Section 7 examines some of the current and future issues surrounding FWA in the Irish Market;
- Appendix A presents a glossary of the acronyms used in the document;
- Appendix B presents a summary list of the questions raised;
- Appendix C describes the minimum service requirements for the re-advertised “D” licence.

3 CONSULTATION PROCEDURES AND TIMETABLE

The consultation period will run from 14th July 2000 to 18th August 2000. **Written comments should be marked “Response to ODTR Fixed Wireless Access consultation paper” and submitted before 5.00 p.m. on Friday 18th August 2000, to:**

Sinead Devey
The Office of the Director of Telecommunications Regulation
Abbey Court
Irish Life Centre
Lower Abbey Street
Dublin 1

All comments are welcome, and should reference the relevant question numbers from this document (for convenience a summary list of the questions is at Appendix B).

The Director expects to publish a report on this consultation. If there are elements of any response that are commercially confidential, then it is essential that these be clearly identified and placed in a separate annex to the main document. They will then be treated in confidence.

The Director regrets that it will not be possible to enter into correspondence with those supplying comments.

4 CURRENT LICENSING OF NARROWBAND AND BROADBAND FWPMA IN IRELAND

In February 1999, following a public consultation, the Director launched a competition for eight new licences to provide FWA services in Ireland. The Director's objective in launching the competition was to facilitate increased competition and choice so that the Irish consumer would benefit from lower tariffs and the availability of high quality services.

Four licences were offered for broadband services and four for narrowband services. The broadband licences were intended to cater for the needs of medium to large users of telecommunications services, enabling services such as PABX connection, broadband Internet access, bandwidth-on-demand and fast file transfer. The narrowband licences were intended as alternatives to copper in the local loop, which at present connects the majority of residential and business customers to their local exchange, offering mainly basic telephony, Internet and ISDN connections, in both urban and rural areas.

The eight licences comprised radio spectrum in a number of different bands, namely:

Broadband: "A" licences: 26 GHz (2 x 56 MHz each for four operators)

Narrowband: "B" licences: 2 GHz / 3.5 GHz (2 x 35 MHz each for two operators)

"C" licence: 2.4 GHz (60 MHz for one operator)

"D" licence: 10 GHz (2 x 30 MHz for one operator)

In September 1999, the Director announced the top ranked companies for the "A", "B" and "C" licences following the competition. There was no eligible applicant for the "D" licence in the narrowband competition.

Subsequent legal challenges led to a delay in the award of the licences. Following the resolution of these issues a review of bids by Broadnet and Eircom for one of the Broadband "A" licences has been undertaken. Narrowband licences have been issued to Eircom and Irish Multichannel (the trading name of Princes Holdings Ltd). Broadband licences have been issued to Formus Communications Ireland and Esat Telecommunications. The remaining narrowband and broadband licences are expected to be issued shortly. All licences will be valid for ten years and are subject to review from time to time to take account of such matters as international developments, new technologies and market requirements. It is not envisaged to hold such a first review before 2003. No changes to existing licensed FWPMA service licences are proposed as a result of the current consultation.

5 REVIEW OF SPECTRUM – ADDITIONAL FWA LICENCES AND EXPANSION SPECTRUM

5.1 Narrowband FWA

The Director proposes to re-advertise the current “D” narrow band FWPMA licence (10.5 GHz band; providing 2 x 30 MHz of spectrum), for which no eligible application was received in the original competition, on the original terms. The spectrum band plan and the minimum service requirements for this licence are described in Appendix C. If the response to this consultation indicates that no demand exists for a fourth narrow band FWPMA licence, alternative uses of this spectrum may be considered.

Question 1. Is there a demand for further national narrowband FWA licences beyond the three already licensed?

Question 2. Is the market segmentation approach applied to the currently licensed FWA services (i.e. narrowband and broadband) still appropriate in the light of recent telecommunications market and technology developments?

Question 3. Do you have a view on the suitability of the 10.5 GHz band for FWA services?

Question 4. What type of FWA services do you envisage being offered in the 10.5 GHz band?

Question 5. Do you agree with the proposal to re-advertise the “D” licence on the original terms, as defined in Appendix C of this document? If you do not agree with the proposal, please provide supporting arguments and describe any alternative proposals you may have.

5.2 Broadband FWA

The current broadband FWA licences are primarily focussed on meeting the requirements of medium to large business users. The level of interest shown in the original competition suggests there is a demand for further such licences to cater for the needs of this market sector. The Director is therefore minded to offer two further broadband licences (the “E” licences), on similar terms to the original four.

The Director is also cognisant of the need to reserve adequate spectrum for current FWPMA licensees to support future demand as their services expand.

In relation to broadband FWA the Director is therefore minded to:

- Issue two further licences;

- Allocate reserve expansion spectrum for existing and new FWPMA/FWA licensees, nonetheless recognising that it may be premature at this stage to assign additional spectrum to the existing licensees.

The Options

The Director has identified four options for the assignment of expansion spectrum for existing broadband FWA licensees and for the assignment of spectrum for the proposed two new “E” licences. These options, which take account of recent international developments, will be considered in depth in the preparation of the final report on FWA spectrum requirements. Respondents’ views on the proposed options will also be taken into consideration in the report.

In formulating these options the Director has taken into account:

- the availability of spectrum in the 26 GHz (24.5 – 26.5 GHz) and 28 GHz (27.5 – 29.5 GHz) fixed service bands;
- the need for an equitable apportionment of available spectrum between licensed operators;
- the rising demand for point to point microwave links in this frequency range, to cater for (inter alia) infrastructure requirements for mobile and FWA networks;
- the international allocation of spectrum in part of the 28 GHz frequency band for non-geostationary satellite services;
- the recent licensing of broadband FWA licences in the 28 GHz fixed service band in Europe, North America and elsewhere;

In deciding upon which option to adopt, the Director wishes to ensure an optimum balance between the requirements of FWA networks and point to point radio relay systems. Views on the proposed options are therefore invited from those with an interest in either of these applications.

The four options that the Director has identified are described below. Note that the diagrams are intended to illustrate only whether spectrum assignments lie in the 26 or 28 GHz frequency bands. Assignment of individual 2 x 56 MHz channels will be conducted by lottery after successful bidders have been identified.

Option 1

Two additional licences each comprising 2 x 56 MHz in the 26 GHz frequency band. Expansion spectrum reserved, subject to demonstrable need, for four existing licensees and two new licensees in the 28 GHz frequency band. This is the Director’s current preferred approach as it provides both existing and new licensees with identical spectrum. Availability of FWA spectrum in the 28 GHz band will also provide compatibility with broadband FWA services due to be licensed shortly in the UK, possibly facilitating co-ordination in border regions.

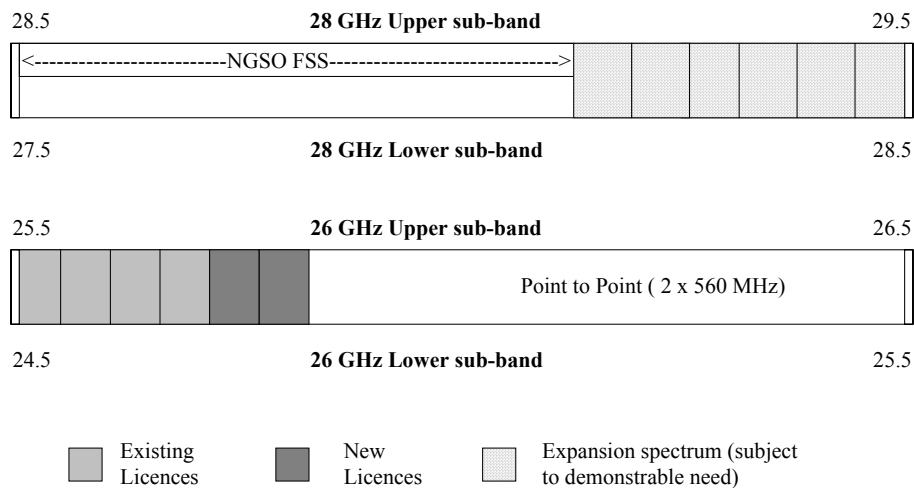


Figure 5.1. Broadband FWA spectrum packaging Option 1

Option 2

Two additional licences each comprising 2 x 56 MHz in the 28 GHz frequency band. Expansion spectrum reserved, subject to demonstrable need, for four existing licensees in the 26 GHz frequency band and for two new licensees in the 28 GHz band. Under this option, each operator is provided with initial and expansion spectrum, subject to demonstrable need, in a single frequency band (26 GHz for existing licensees, 28 GHz for new licensees). This option provides less spectrum in the 26 GHz band for point to point links, however this is offset by spectrum of equivalent bandwidth in the 28 GHz band.

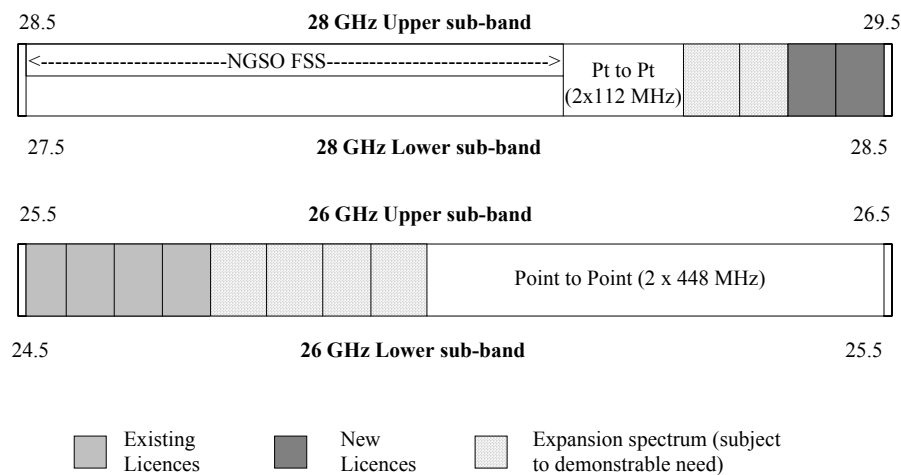


Figure 5.2. Broadband FWA spectrum packaging Option 2

Option 3

Two additional licences each comprising 2 x 56 MHz in the 26 GHz band; expansion spectrum for both existing and new licensees, subject to demonstrable need, in the 26 GHz band. This option further reduces the availability of spectrum for point to point links in the 26 GHz band, however this is again offset by spectrum of equivalent bandwidth in the 28 GHz band.

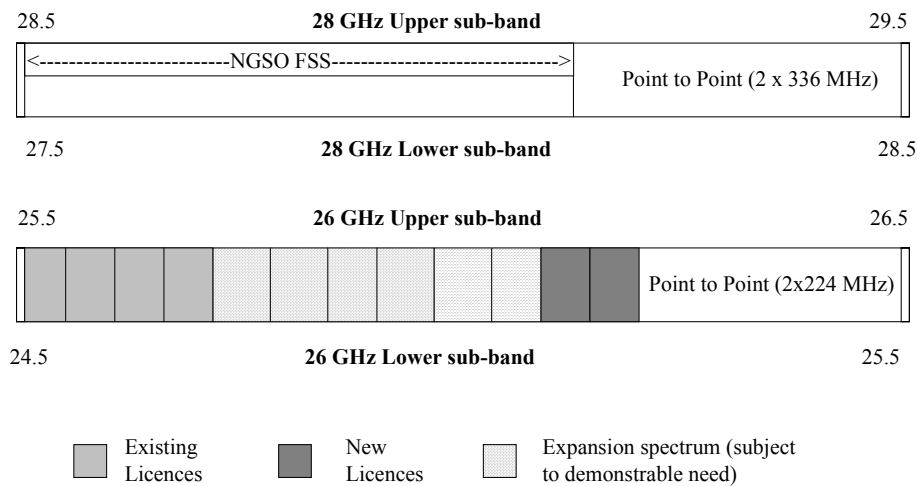


Figure 5.3. Broadband FWA spectrum packaging Option 3

Option 4

Two additional licences each comprising 2 x 56 MHz in the 28 GHz frequency band. Expansion spectrum reserved, subject to demonstrable need, for four existing licensees and two new licensees also in the 28 GHz band (27.5 – 29.5 GHz). This option maximises the availability of spectrum for point to point links in the 26 GHz band. Depending upon the future allocation of spectrum to non-geostationary satellite services in the 28 GHz band, part of the reserved expansion spectrum may under this option take the form of unpaired spectrum of comparable bandwidth to the paired expansion spectrum reserved for existing licensees. Current CEPT proposals, if adopted, may enable the entire expansion spectrum to be made available on a conventional, paired basis. Respondents are invited to comment on the merits of paired and unpaired expansion spectrum with regard to this option.

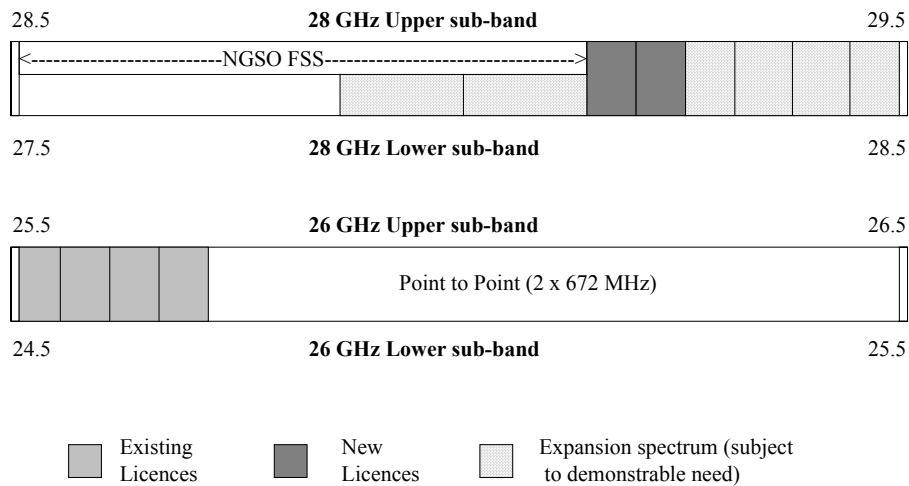


Figure 5.4 Broadband FWA spectrum packaging Option 4

Question 6. *Do you agree with the proposal to offer two further broadband FWA licences in the 26 / 28 GHz bands? Please provide supporting arguments if you do not agree.*

Question 7. *Do you have a preference for any of the four options outlined above? Please provide supporting arguments. It would be helpful if you would comment specifically on the following issues:*

- *The relative merits of the 26 GHz and 28 GHz bands for fixed wireless access and point to point links, for example with regard to hop length capability and equipment availability;*
- *The implications of paired or unpaired spectrum for future expansion of broadband FWA services*

Question 8. *Is there a need to provide for the possibility of allocating additional spectrum to the existing licensees at this time? If you think there is, please provide supporting arguments.*

6 GENERAL PRINCIPLES OF LICENSING TO BE APPLIED TO ANY PROPOSED NEW FWA LICENCES

6.1 Standard Licence structure and terms

The Director is minded to structure the two new broadband “E” licences in a manner and on terms similar to the existing broadband “A” licences. It is proposed to structure the narrowband “D” licence along the same lines as was proposed in the first FWPMAs competition in which no valid applications for this licence were received (see Appendix C).

6.1.1 Licence Type and Conditions

It is proposed that any new licensees be granted the right to use FWA technology to offer telecommunications services to the public.

Successful applicants will require two types of licence:

- A Telecommunications Licence issued in accordance with section 111 of the Postal and Telecommunications Services Act, 1983⁵, and
- A Wireless Telegraphy Licence issued in accordance with the Wireless Telegraphy Act, 1926 to 1988 (to be issued under Regulations).

The combined Licences will entitle the holder to provide FWA services⁶ to the public subject to certain minimum conditions and obligations, the same or similar to those provided for in existing licences, and any proposed by the applicants as part of the licence application procedure.

6.1.2 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 reallocated to other uses.

⁵ It is proposed that where licensees already hold a General Telecommunications Licence this licence will be amended to provide for the provision of FWA services. Where licensees do not already hold such a licence they will need to apply for such, which will specifically provide for the provision of FWA services.

⁶ 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.

It is proposed that any new licences will be awarded for a term of 10 years, as is provided for in the existing licenses.

The Director will reserve 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 own expense.

In any event it is proposed that the Director reserves the right to terminate these licences ten years after first issue. This would enable any necessary re-planning.

6.1.3 Coverage and roll out requirements

It is proposed that 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.

6.1.4 Equipment standards

The Director favours light handed regulation and thus would prefer, within the limits imposed by European law⁷, to remain neutral on the technologies which 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.

6.2 Licensing process

The Director proposes to award any new licences through the same type of process as was used to award the existing narrowband and broadband licences – a form of comparative selection procedure.

⁷ In particular, equipment must be compliant with the requirements of the Radio and Telecommunications Terminal Equipment Directive (RTTE Directive 1999/5/EC)

6.3 Existing FWA licensees

Four broadband “A” licences and three narrowband licences (two “B” licences and one “C” licence) will have been issued by the time of any new FWA licence competition. It is proposed to exclude “A” licence holders from any competition for further broadband licences – the “E” licences; similarly it is proposed to exclude existing narrowband licensees from applying for the “D” licence.

The Director is guided in this regard by the need to ensure effective competition between operators competing in the relevant markets. In particular the Director is of the view that this approach is an objectively justified and proportionate way of achieving the objective of maximising benefits for users and facilitating the development of competition.

Question 9. Do you agree with the general principles of licensing which it is proposed to apply to any new FWA licences, as set out in this document? If you do not agree, please provide supporting arguments and describe any alternative proposals you may have.

7 FUTURE DEVELOPMENT OF FWA IN THE IRISH MARKET

Availability of “mass market” broadband services is likely to be an important factor in facilitating the growth of electronic commerce, information and entertainment services. The Director is particularly keen to ensure that the benefits of broadband access are available in all regions and across all sectors of society. Broadband FWA has the potential to make a significant contribution to achieving this objective.

The Director wishes to ensure that FWA services continue to deliver competitive, high quality telecommunication services as the market for these services evolves. It will therefore be important to ensure that sufficient radio spectrum is available to FWA operators to enable them to deliver services of comparable quality, bandwidth and capacity to those delivered over wire line networks. This raises a number of specific issues, namely:

- How existing licensed FWA services can evolve to meet growing demand for broadband services;
- The extent to which additional wireless services, specifically geared towards broadband, interactive services, will be required and the approach that should be taken to introducing these services to Ireland;
- Whether the current segmentation of the FWA market into narrow-band and broadband services will remain appropriate in the longer term;
- The extent of differentiation between the business and residential markets.

Question 10. Do you believe there will be a long term requirement for basic telephony services, or do you think that all existing narrow band fixed services will eventually need to evolve to cater for broadband requirements? Please indicate approximate timescales over which such changes are anticipated.

Question 11. If you think existing narrowband FWA services will need to evolve to cater for broadband requirements, please comment on the implications for future spectrum requirements.

Question 12. Do you think existing broadband FWA services should cater for residential as well as business users?

Question 13. Do you think different provisions should be made for FWA spectrum in urban and rural areas?

To date, FWA services have been licensed with the requirement to provide services on a national basis. It is possible that there are other market requirements which are not provided for by a national licence structure.

Question 14. Are there other market requirements which are not provided for by a national licence structure? If you think there are, please describe the nature of the requirements, say why they cannot be met within a national structure and provide supporting arguments.

APPENDIX A: GLOSSARY

BFWA	Broadband Fixed Wireless Access
CEPT	European Conference of Postal and Telecommunications Administrations, regional planning and regulatory body for telecommunications and radio communications services
ERC	European Radiocommunications Committee, a constituent body of CEPT, responsible for frequency management at a European level
ERC Decision	Measures approved by the ERC on significant harmonisation matters in the radiocommunications regulatory field, within the context of long term ERC strategy and policy. Administrations that formally endorse an ERC Decision are committed to implementing its terms.
ETSI	European Telecommunications Standards Institute, regional standards body responsible for development of harmonised telecommunications and radio communications standards at a European level.
FWA	Fixed Wireless Access
FWPMA	Fixed Wireless Point to Multipoint Access
Telecommunications Acts	The Postal and Telecommunications Services Act, 1983, as amended, and the Telecommunications (Miscellaneous Provisions) Act 1996.
WT Acts	The Wireless Telegraphy Acts, 1926 to 1988

APPENDIX B: SUMMARY OF CONSULTATION QUESTIONS

The following specific questions have been raised in this consultation document. The supporting arguments giving rise to each question can be found at the sections referenced below.

1. Is there a demand for further national narrow band FWA licences beyond the three already licensed?
2. Is the market segmentation approach applied to the currently licensed FWA services (i.e. narrow band and broad band) still appropriate in the light of recent telecommunications market and technology developments?
3. Do you have a view on the suitability of the 10 GHz band for FWA services?
4. What type of FWA services do you envisage being offered in the 10 GHz band?
5. Do you agree with the proposal to re-advertise the “D” licence on the original terms, as defined in Appendix C of this document? If you do not agree with the proposal, please provide supporting arguments and describe any alternative proposals you may have.
6. Do you agree with the proposal to offer two further broadband FWA licences in the 26 / 28 GHz bands? Please provide supporting arguments if you do not agree.
7. Do you have a preference for any of the four options outlined in section 5.2.2 of this document? Please provide supporting arguments. It would be helpful if you would comment specifically on the following issues:
 - *The relative merits of the 26 GHz and 28 GHz bands for fixed wireless access and point to point links, for example with regard to hop length capability and equipment availability*
 - *The implications of paired or unpaired spectrum for future expansion of broadband FWA services*
8. Is there a need to provide for the possibility of allocating additional spectrum to the existing licensees at this time? If you think there is, please provide supporting arguments.
9. Do you agree with the general principles of licensing which it is proposed to apply to any new FWA licences, as set out in this document? If you do not agree, please provide supporting arguments and describe any alternative proposals you may have.
10. Do you believe there will be a long term requirement for basic telephony services, or do you think that all existing narrow band fixed services will eventually need to evolve to cater for broadband requirements? Please indicate approximate timescales over which such changes are anticipated.

11. If you think existing narrowband FWA services will need to evolve to cater for broadband requirements, please comment on the implications for future spectrum requirements.
12. Do you think existing broadband FWA services should cater for residential as well as business users?
13. Do you think different provisions should be made for FWA spectrum in urban and rural areas?
14. Are there other market requirements which are not provided for by a national licence structure? If you think there are, please describe the nature of the requirements, say why they cannot be met within a national structure and provide supporting arguments.

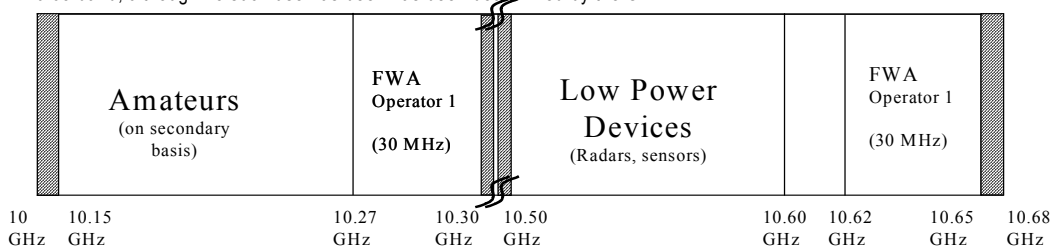
APPENDIX C: SPECTRUM BAND PLAN AND MINIMUM SERVICE CONDITIONS APPLYING TO NARROW BAND FWA LICENCE TYPE “D”:

10.5 GHz Band - D licence

2x30 MHz of spectrum for 1 operator

Note1: Due to the possibility of operators using different technologies, the allocation of guard bands will have to be addressed with successful Applicants. It should be noted that the guard bands will have to be accommodated from within the operator's allocated spectrum.

Note 2: Applicants should note that it is possible that there is unauthorised use of low powered devices in the 10.60 - 10.68 band, although no such use has been determined by the ODTR.



The following minimum roll-out requirements shall apply:

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