



Independent Review of Radio Spectrum Management- June 2001

Response from the FCS Mobile Radio Council

September 2001

1. Executive summary

The Mobile Radio Council of the Federation of Communication Services, representing companies within the PMR industry, welcomes the opportunity to contribute to the debate on how radio spectrum will be managed in the UK in the future. There are many innovative ideas proposed in the Independent Spectrum Review, which we have considered in this response. Our views have been developed by the PMR members within the FCS and by surveying others in the industry and PMR users.

While the proposals to move to a market-based spectrum management regime find some favour in the PMR industry and among its users, there are elements in addition to economic value such as social well being and business efficiency gains that contribute to the value of radio spectrum to the UK. The spectrum manager needs to balance each of these elements and continue to encourage spectrum efficiency.

In our view management of radio spectrum to promote innovation, without leading to a pricing mechanism that favours only the largest commercial companies, is the optimum aim.

We think that more micro-management of the PMR spectrum by the Radio Agency now and as it moves into OFCOM, elimination of hoarding by all parties and charging for spectrum at reasonable rates for all users would provide the greatest benefits to the PMR community. We encourage the Radio Agency to continue with its programme of administrative pricing and extend its application to all spectrum users.

Of the market based spectrum management techniques considered by the Review, spectrum trading, if the needs and concerns of small businesses were taken into account, would provide benefit and acceptance within the PMR sector. However the introduction of spectrum trading would need to be alongside a more proactive approach by OFCOM in ensuring that there is fair and open access to spectrum, no monopolies in market sectors or abuses of dominance. The Radio Investigation Service would have a continuing and important role as the final arbiter of radio interference disputes between traders.

We have not yet seen any evidence that auctions are effective in securing long term benefits for consumers and we consider that PMR spectrum is not suitable for auction.

2. Introduction

2.1 The Mobile Radio Council of the Federation of Communication Services, FCS, represents the interests of manufacturers, distributors, retailers and dealers who supply or hire PMR two way mobile radio products and services to a wide range of organisations in the business community. Information on the FCS and a directory of members may be seen on the FCS website, www.fcs.org.uk.

2.2 The Mobile Radio Council, MRC, is pleased to have the opportunity of expanding on its initial public response to the Independent Review submitted in August 2001. This paper includes the results of surveys among the PMR industry and user community, where individual businesses have contributed their own views on the proposals set out in the Review.

2.3 In the last five years the MRC has contributed to the many FCS responses to Government consultations on spectrum management issues and to Parliament during the passage of the Wireless Telephony Bill 1997. Our views on the principles of spectrum management have not altered:

- The Radiocommunications Agency should remain accountable to Parliament, an arm of Government and manage all UK radio spectrum, including Defence use.
- Efficient spectrum use is essential for all users.
- Administrative pricing is an accepted spectrum management tool and should be applied to all spectrum users including Defence, broadcasting and Government Departments.
- Auctions are only effective in exceptional circumstances.
- There is a need for greater access to spectrum for all mobile communications uses.
- Customers should have a choice of suppliers and services and not be restricted only to publicly supplied services.
- Spectrum management at the allocation and assignment level should be transparent and customer oriented.

2.4 The PMR sector is characterised by the supply of products and services by small businesses to large and small businesses and organisations using spectrum below 500MHz. A summary of the PMR industry and its market is given in Appendix 1

3 The Spectrum Review

3.1 The MRC welcomes the timely analysis contained within the Review and agrees that radio spectrum is an asset of large and growing importance to the UK. Access to radio spectrum is crucial to the success of the PMR industry and the businesses of its customers.

3.2 We agree that the regime for allocating spectrum in the UK has developed in stages in response to various factors and that across all users a more unifying approach should be sought. Administrative pricing that has been introduced as a spectrum management tool into the mobile communications sector is a facility that could and should be extended without delay to other users. Already the impact of administrative pricing has resulted in the return of some licences by PMR users.

3.3 There is a general need to speed up access to spectrum for those that want it and to encourage all users to use the spectrum more efficiently, releasing unwanted spectrum for others. We welcome the debate that the Review has initiated and offer our ideas on the questions posed in the Review and more generally as to how spectrum can be managed more effectively.

3.4 As an outcome of this Review the MRC is seeking:

- A regime for more rapid access to spectrum for PMR services.
- Delivery of spectrum to customers in tune with their requirements and expectations; as a minimum customers demand competition and choice of technology and supplier.
- Opportunities for innovation and use of new technologies.
- Preservation of the interests of small business PMR providers.
- The recognition by Government and regulators that PMR is a valued contributor to the economy.

Neither a regime that only favours the largest commercial organisations nor a regime of only public telephony supply would be a desirable outcome.

4 Spectrum value

4.1 In setting a value for the radio spectrum we agree with the comment by Motorola in its response to the Review that the greatest value of radio spectrum lies in promoting its widest possible use and not the short-term gains from licensing charges. We do not believe that licence charges should be excessive and we agree with the proposals contained within the ERC Report 105 (*Review of PMR fees February 2001*) that "reasonable fees for PMR licences should finance the costs of the administrative work made in favour of the PMR sector, which should not deter the user from applying PMR technology, should prevent the hoarding of frequencies and should be fair in relation to fees for other services".

4.2 Economic studies by the MRC and Radio Agency put the annual value to the economy of PMR in the range of £1-2 billion, which is the opportunity cost of using PMR radio versus no radio service.

4.3 We welcome Professor Cave's expectation that proposals which are palatable to interested parties are put forward. The results of our surveys amongst users and the industry have shown that spectrum obtained for the current licence fee is valued but not undervalued. A move to introduce PMR digital technologies, which could provide even better spectrum efficiency, is long overdue and the MRC is working with the Radio Agency to speed up its introduction. Crucial to its success is the firm allocation of spectrum.

4.4 Value is not always measured in terms of economic efficiency. PMR customers use the service for its immediate communication, controlled costs and operation, group call and facility to operate at peak demand. The value of better employer responsibility for their staff and assets does not always have a monetary label. The Health and Safety at Work Act is stimulating greater adoption of PMR in the workplace.

- 4.5 The social benefits arising from the use of PMR include the peace of mind of teachers in the classroom, shop watch schemes to guard against shoplifters and guide and scout leaders being equipped with immediate access to communications in order to carry out their leadership and youth care role.
- 4.6 We believe that PMR can support UK Plc more effectively than it does now and that there is an untapped demand for PMR type services. This will be delivered by better spectrum usage as PMR responds to administrative pricing, the move to digital systems such as Tetra, Tetrapol and DIIS, evolution in analogue technology such as MPT 1327 trunking and better micro management by the Radio Agency. Overt moves to reduce PMR use by over pricing the radio spectrum would damage end user businesses for which there is no alternative. We look forward therefore to achieving the optimum balance of spectrum efficiency and end user value. The techniques of administrative pricing and spectrum trading will each form part of the equation.
- 4.7 In order to unlock the value of radio spectrum, moving to a spectrum market is but one option. Spectrum hoarding is often cited as a problem that the spectrum market will overcome. There are two sides to this issue. On the one hand it is quoted that PMR spectrum is hoarded by licensees, but there is little evidence that can be seen in the public domain. On the other hand, the Radio Agency has published the results of audits of spectrum use in the PMR bands. These show that 12% of spectrum in UHF1 is unallocated, 15% is unallocated in mid-band and 20% in UHF2. Unlocking this spectrum for PMR use by limiting the amount of spectrum set aside by the Agency to less than 5% is another alternative to increasing the value of spectrum available to the UK economy.

5 Spectrum trading

- 5.1 Spectrum trading could be used to redistribute spectrum to those who have a need and it could be introduced speedily. There are opportunities now in the PMR sector for spectrum trading where licensees with national channels that are lightly loaded in some geographic areas could trade or share the channels with acceptable or compatible users according to contractual agreements that included technical parameters and interference avoidance. The price may be lower for the user than the administrative price set by the Radio Agency. The benefit for the licensee would be better usage and income from the spectrum. For the spectrum seeker or user there would be more rapid access to a suitable channel. In this scenario the Radio Investigation Service would have a role as final arbiter in interference disputes. However the arrangement would be predicated on the compatibility of the parties involved and may not be a universal solution to spectrum access for all PMR users.
- 5.2 Spectrum trading could only be introduced if all parties could be assured that competition issues would be addressed and that monopoly suppliers would be avoided. Recently the monopoly supplier of public access Tetra services, Dolphin, has gone into receivership and is being offered for sale. Its customers have no comparable services to move to and would have to fully reequip if they moved to a PMR service, or indeed to GSM

5.3 Oftel has just released (26 September 2001) its Review of competition in the mobile market and by its actions is giving signals that just four or possibly five players constitute competition in the mobile market. The thousands of PMR companies are naturally nervous of an extension of this principle. If spectrum trading were introduced within the Communications Act, we would expect OFCOM to be proactive in ensuring a fair competitive market place.

5.4 While the MRC acknowledges that spectrum trading is a tenet of Government policy, there is caution among the PMR community as to how its application would generally affect them. Our response to the consultation document issued in 1998 is included in Appendix 2. When spectrum trading is introduced we would seek to work with Government to overcome the PMR community concerns, competition issues and to determine methods to retain access to spectrum and PMR services for small business.

6 Spectrum auctions

6.1 The stated aim of spectrum auctions to secure the long-term benefit for UK consumers and the national economy does not appear to have been achieved. The spectrum auctions for the five 3G licences in April 2000 may appear to have been a success for the Treasury, but in reality they have triggered major financial problems for the operators and the industry causing a massive crash in the telecoms sector, with consequential impact on operator growth, economic development and job creation in telecoms. This has had a knock on effect on the global economy. We agree with the conclusion in the submission from Gerald David OBE that the dangers that arise from the euphoria generated by the recent auctions could be extremely damaging to the radio industry. At the other extreme the broadband auction left spectrum unused. These examples do not provide evidence that auctions would lead to efficient spectrum use.

6.2 As we said in our initial public response we do not consider that auctions are suitable for the PMR sector, or indeed sectors where there is an incumbent operator. In an auction a large player always has an advantage over a small player. Game theory suggests that a large buyer will always bid just above what a small player can afford and is able to do this because a larger company can borrow money more cheaply. Auctioning an existing PMR block of spectrum would introduce unreasonably difficult problems due to the diverse nature of the PMR market and technology and adjacent channel interference. Auctions are irreversible and once the regime were in place it would be difficult to change should they prove unsuitable.

7 Views from the PMR industry and customers

7.1 On behalf of the MRC the FCS has conducted a selected survey among PMR users in a wide range of end user economic sectors and their suppliers to seek responses to the questions posed by the Independent Review.

7.2 90% of respondents said that the current PMR licence fee is good value.

7.3 30% said that would be prepared to pay more for their access to PMR spectrum and on average they would be prepared to pay up to 25% more.

7.4 If the price of access to pmr spectrum were too high, 60% said they would move to a public system, but reluctantly.

7.5 The vast majority of survey respondents said that they would lose essential features were they to move to a public system including:

- instant contact with all personnel for efficiency and safety of staff,
- loss of reliable coverage,
- the low cost of PMR and the known costs,
- priority for their calls,
- privacy,
- group calls,
- control of service by the user.

Many quoted that coverage of public systems was poor in the areas PMR users require them. Public systems fail and cannot satisfy mission critical demands.

7.6 When asked about payment of licence fee by alternative methods, the majority prefer to retain the link to the number of terminals, although 25% considered area of coverage a possibility and there was some support for a mixture of methods.

7.7 When asked about the introduction of a publicly available on line database of spectrum usage, over 75% of respondents did not welcome the proposal, citing confidentiality, privacy and security for their own business and their radio systems. The few that acknowledged that the database would be acceptable also cautioned that only the very briefest of details should be included so as not to jeopardise the security of user

8 The transition from today's spectrum management regime to a market based regime.

8.1 While we have reservations about proposals to move to a purely economic approach to spectrum management, we can identify issues for the PMR community that would have to be addressed in the intervening 10-15 year period to a market based spectrum economy identified by Professor Cave in our meeting with him.

8.2 Administrative pricing scenarios for all spectrum user categories should be developed immediately.

8.3 Spectrum trading. While end user sectors such as the utilities and transport with unshared spectrum would welcome the freedom of spectrum trading, smaller users are expressing caution and concern that this may result in their access to spectrum being denied.

8.4 Hoarding of spectrum as an asset, rather than bringing it into use, is a real risk to maximising value to users. In the past few years we have seen the clearing of spectrum at 169MHz for the pan European ERMES system, that never came into being, All existing spectrum users were moved from the spectrum, which then lay unused for 10 years. DSRR is another example where spectrum was sterilised for years and not accessible for real users.

8.5 Squatters rights. "Squatters" are those who are licensees now and who might be affected in a move to a spectrum market. There could be either windfall gains or

losses. If spectrum were auctioned above the heads of squatters, their rights to continue their business or receive compensation would need careful examination. Discrimination against small businesses should be avoided.

8.6 Transparency of access rights is essential.

8.7 Monopolies arising by spectrum takeover. There is concern that Competition Authority action on complaints is always too slow and hitherto, in telecoms, the outcome has always favoured large companies because the time delay in resolving concerns leaves smaller companies without resources. The spectrum market will only succeed if OFCOM, as the Competition Authority is proactive in setting a competitive environment and not reactive, relying only on complaints.

8.8 In all aspects PMR is quite different from the two biggest civil users of radio spectrum, broadcasting and mobile telephony. The standardised technology of the latter two and the small number of operators (four mobile telephony operators) means that they are possibly amenable to auctioning and spectrum trading because they represent a simple scenario. PMR and its many technologies (Analogue FM, MPT 1327, TETRA, Tetrapol, IR2008) and thousands of operators, both large and small, creates complex frequency assignment, co-channel and interference issues that would not be satisfactorily dealt with in an auction or wholly spectrum trading environment

9 Other issues for the PMR sector

9.1 Moves to introduce more deregulated services may reduce the income from spectrum use, putting more pressure on licensed users to deliver a surplus for the Treasury.

9.2 International standards play a crucial role in delivering economies of scale to the UK market, and permit manufacturers to recover years of investment in developing new products. The UK has also thrived by being the first to introduce new technologies and standards, which have later been adopted worldwide.

9.3 The communications market is very differentiated and cannot be totally supplied with public service offerings. For example Tetra usage in the UK is limited for a variety of factors. Tetra is in demand by private users, but aside for the emergency service allocation to BT Airwave, Government policy has been only to provide the single monopoly public supplier, Dolphin, with all available spectrum in the band of 410-430 MHz. Dolphin is now in administration and up for sale. There is now even more demand for Private tetra spectrum from disaffected ex Dolphin customers. Understanding the balance of private and public spectrum requirements is fundamental to maximising national benefit of an internationally agreed technology.

10 Conclusions

10.1 PMR users seek a government approach that does not stifle innovation by creating a pricing structure, which favors only the largest commercial companies. The PMR sector seeks stability in order to develop. There is however a need for more innovative spectrum management at the micro level and for the Radio Agency to have a more commercial approach to management.

10.1 Charging for spectrum at reasonable rates for all users would be the most acceptable option for the PMR sector.

10.2 Balancing economic return and social and business efficiency will maximise the value of radio spectrum to UK Plc.

10.3 The role of OFCOM

As the spectrum manager, OFCOM should manage all UK spectrum: PMR users have indicated that they would prefer the Radio Agency to continue to manage PMR spectrum, rather than a third party.

As the competition authority OFCOM should be proactive in ensuring that there is fair and open access to spectrum, that there are not monopolies in market sectors or abuses of dominance. OFCOM will need to be more proactive than Oftel is currently.

6 Answers to specific questions

In the following section we have given answers to the questions where we have a particular view.

i-ii *Economic gains*

MRC would suggest that the economic gains equation includes the added social and business efficiency parameters.

iii-iv *Economic principles*

The opportunity cost appears to be a measure of a user moving to or being forced to adopt the next best solution to a problem because the desired solution is not available. The cost to the user would be perhaps a reduced cost of communications service, but increased cost to his business in seeking to make up for the shortfall in lost facilities, such as those reported by a forced move from a PMR system to a public system in the FCS survey. We caution therefore not to focus only on opportunity cost in setting spectrum prices. A balance of spectrum value with social and business efficiency parameters would provide the most appropriate measure of valuation to the UK economy. Were spectrum prices increased to a value that they became significant in the overall business plan for a particular service, this could cause a cessation of use.

In our own calculations of the economic benefit of PMR, our approach has been to look at the added value of PMR to a customer compared to having no radio system.

If, for example customers were moved from a PMR service to a public system the customer would not have the freedom of choice they have now nor the essential tailored service that is engineered for them by the supply industry.

v-vii *Legislative basis for spectrum management*

In order that the UK has efficient spectrum management and to avoid any duplication of policy, we suggest that OFCOM should take over the complete role and function of

the Radio Agency with the added role of managing all UK spectrum, including that of the military and Home Office.

The PMR industry, and users who responded to the FCS survey, have indicated a preference for apparatus licensing, which is the current mechanism. In order to move towards any other system, we suggest that consultation on a series of scenarios would need to be the first step and notice taken of the views of those affected before coming to a conclusion.

viii-xiv *Regulatory framework for spectrum management*

There is no doubt that UK should keep in line with other EU states in the development of its spectrum management policy so that the international dimension of the PMR market is maintained. This applies to the application of technology standards to bands as well as the pace of introduction of liberalising spectrum management techniques.

There is some very limited scope for national autonomy in very specific bands with localised use e.g. Band 1.

With respect to the national dimension, maintenance of the current Agency staff as the operation of spectrum management moves to OFCOM will maintain the effectiveness and smooth running of the transition. We would also expect OFCOM to have a more proactive approach to maintaining competition, preventing the abuses of dominance and ensuring monopolies do not develop.

PMR users and their suppliers, who responded to the FCS survey, were very cautious about proposals to offer an on line database containing spectrum utilisation details citing a loss of privacy for their business and its transactions. Such a database would need to be designed to offer the minimum of details consistent with overcoming these concerns, while improving spectrum management opportunities.

PMR users and suppliers offered little support for an intermediary buying rights to manage their frequency band.

xv-xvi *Spectrum use*

Application of the principles of spectrum pricing, particularly administrative pricing to all users would be an equitable incentive to all spectrum users. If however Government were seeking to generate incomes to OFCOM over and above the administrative costs of spectrum management for a specific use, the non-marketed element would necessarily be at lower cost. We would recommend much more analysis of the possible scenarios for the widespread application of administrative pricing before a decision was made on this.

xvii-xxix *Non-marketed uses*

The principles of spectrum pricing applied to the PMR sector should be extended to all other users. Broadcasting in particular is a marketed product and has an alternative method of delivery to consumers such as cable. Applying spectrum management

techniques to the broadcast sector would stimulate a Review of spectrum use and evaluation of alternatives.

xxx-xxii Spectrum Auctions

The MRC has not yet seen auctions as being effective - our views are itemised in section 6.

xxxiii-xxxviii Spectrum Trading

Spectrum trading could be introduced immediately and have some benefits for the PMR market, although the needs and concerns of small business will have to be addressed. We have set out our views in section 5

The PMR sector

PMR

PMR (as defined by the European Radio Committee in its report 105- February 2001) is the term that covers self provided, self used or closed user group mobile radio systems. PAMR, public access mobile radio, is a PMR radio system with a private operator providing the service to a closed user group or a number of closed user groups.

PMR industry

The PMR industry comprises about 1000 companies, the majority of which are SMEs with an average of 20 employees. Ten major manufacturers distribute product via main distributors, specialist dealers and retailers ensuring a diversity of suppliers in any locality and across the UK. Hire specialists, installation companies and aerial site operators also contribute to the industry. Recent changes in the industry structure include new European based suppliers entering the UK market, outsourcing by end users to service companies and growth in service provision. Hire services have expanded significantly in the last two years.

PMR market

PMR is in use across the UK economy in a wide range of organisations and businesses from large-scale systems in the emergency services, utilities, transport, government, oil refineries, construction sites to local or onsite systems for taxis, buses, couriers, skip hire and veterinary practices. PMR systems typically have a 5-10 year life cycle.

Customers use and rely on PMR to satisfy business efficiency needs and employee or client health and safety requirements. The relevance of PMR to employee safety practices is growing significantly. The unique qualities of PMR valued by the user community are:

- The customer determines and is assured of coverage;
- The customer sets the quality of service, security and reliability standards;
- Control of both the system and services rests with the user;
- The system is tailored to the user's specific requirements;
- Immediate communications and group call;
- Costs are predictable (generally lower than mobile telephony).

In order to determine the best option for their own core business requirements, customers need and expect to have a choice between self-provided and third party provided systems and services, where the services are exchangeable.

For some users self-provision is the only option, e.g. the public safety "blue light services", and the "orange light services"-utilities, public transport, airlines, local authorities. On-site services for lone workers, security guards, shop watch and many others with immediate communication requirements have no alternatives to the press to talk facilities of PMR.

PMR is essential in times of emergency and peak demand. This has been illustrated emphatically during the events after the 11 September 2001 terrorist attack on New York. All

flights at UK airports to the USA were cancelled and other flights disrupted. Passengers seeking information or to reassure their families flooded the public telephony networks, which became overloaded. The airports and airlines were able to continue to manage and control the situation by using their own PMR systems. Without their own systems operational control would have been lost.

The PMR market has the potential to grow and the drivers for growth are:

- Employer obligations to support their staff;
- Increasing need for emergency contact with staff at all times;
- Emergency alerts where users cannot wait the 10 seconds to set up a phone call and then find that the line is busy or the called party is on voice mail;
- Business efficiency, where delivering a better service to customers in competitive end user markets is aided by instant communications;
- Delivering data for e-commerce;
- Business community aspirations- what the Defence users and emergency services have today the business community demands tomorrow;

PMR into the Future

A collaborative programme to establish a forward strategy for the PMR sector has been launched by the FCS Mobile Radio Council and the Radio Agency Private Business Systems unit.

The project:

- Sets out a clearer definition of user requirements and growth potential
- Has initiated the Digital PMR project for the rapid introduction of digital PMR systems
- Sets out a forward spectrum requirement in the Agency Spectrum Strategy document
- Irons out remaining licensing issues
- Has set up a research programme for the introduction of private and public system roaming and co-operation
- Includes further economic analysis of PMR in the UK.

Appendix 2

Response by the FCS Mobile Radio Council to the Radio Agency consultation document,

Managing spectrum through the market

March 1999

Mobile Radio Council

The Mobile Radio Council, MRC, of the Federation of Communication Services represents the interests of 200 organisations and businesses, who provide pmr, pamr, sth, cbs and paging products and services to a million customers. Many companies are small and medium sized enterprises.

The MRC has consulted its members on *Managing Spectrum through the Market* and this reply is based on the views of our members and assesses the basic principles of spectrum trading rather than responding in detail to the questions posed.

Issues

Concerns of small business

There is real concern among small businesses that supply mobile radio services that the moves towards market trading will limit their ability to access radio spectrum in future.

The Government's focus on auctioning spectrum for UMTS, thereby increasing its own revenue and the perceived value of all radio spectrum, could result in restricted access for SMEs who do not have comparable resources to compete in the spectrum market. The MRC cautions the Government to take the utmost care to prevent any link between auctions and the value of spectrum to small business.

If market trading of spectrum is to move forward according to Government intention, then, we believe, it can only do so once a comprehensive study on how the needs of SMEs can be safeguarded is completed. The Mobile Radio Council would be prepared to participate in such a study.

Current arrangements

The consultation document makes reference to the limitations in the current licensing arrangements. The Mobile Radio Council does not wish to see moves to introduce spectrum trading as an alternative to the Agency working to improve its procedures within the current regime.

The Common Base Station, CBS, sector is an example. There is already a market in CBS licences. The Agency allows licences to be transferred between operators who sell and buy cbs businesses on an individual basis. This process could be regularised and made more open without having to resort to spectrum trading.

The problems of spectrum hoarding that are often cited by the Agency can be resolved. By a process of negotiation between the FCS CBS Group and the Agency over many years a regime that includes minimum channel loading criteria and channel monitoring has been developed for CBS licences. Licensees are aware that non-compliance with the criteria may result in loss of the licence.

The mobile radio community believes that there is much that the Agency can do to improve its own efficiency:

- ◆ Greater transparency in licence allocation, compiling a national register of licences, as the FCC have in USA. Oftel publishes the Telecommunications Act licences

- ◆ Measures to show how well the Agency is using spectrum and ensuring that all available spectrum is being used.

Recommendations

- i. The Agency should improve its efficiency and service to customers before it contemplates introducing spectrum trading, by greater transparency in spectrum and licence allocation and developing objective measures of RA efficiency in bringing all spectrum into use
- ii. Initiate a thorough study of how the interests of small businesses as licensees e.g. sth, cbs can be safeguarded if spectrum trading is to be introduced.