



Spectrum Management Services Ltd.



Canvin Court
Somerton Business Park
Somerton
Somerset
TA11 6SB

Tel: 01458 273 789

Fax: 01458 273 883

**RESPONSE BY THE
TELECOMMUNICATIONS ADVISORY COMMITTEE
TO THE
CONSULTATION DOCUMENT ON
450 – 470 MHz BAND ALIGNMENT**

INTRODUCTION

This response is provided by CSS Spectrum Management Services Ltd., on behalf of the Telecommunications Advisory Committee (TAC).

TAC is Chaired by Mr. Mike Halliwell, of the Environment Agency.

TAC has been established for over 10 years and represents the interests of the United Kingdom Water Industry on a range of matters related to Mobile and Fixed Communications and Radio Scanning Telemetry.

The membership is drawn from representatives from the following Industry Groups:

- 10 Water Service Companies
- 15 Water Supply Companies
- Scottish Water
- Environment Agency
- Dept of Regional Development Water Service Northern Ireland

The Water Industry (WI) has been a major user of Private Business Radio systems. They operate a number of analogue trunked radio systems. In addition, increasing use is being made of Public Cellular, provided by the UK Service Providers on the GSM 900 and GSM 1800 systems.

The Water Industry is also a major user of licensed Radio Scanning Telemetry systems which are designed and assigned to the IR 2037, VNS 2111, RA375 (previously the MPT 1411 specification).

The Committee has provided input into the various stages of the Spectrum Review and the resulting Consultative Documents leading to the 1998 WT Act and the various Consultations which have followed in relation to Spectrum Pricing, Spectrum Trading Communications Bill etc.

Management and support for matters related to Water Industry mobile communications and Scanning Telemetry are provided by CSS Spectrum Management Services. This relationship provides the RF engineering and planning necessary to ensure that the most effective use is made of the radio spectrum. It also acts as a focus for the Industry and deals with engineering, licensing and financial matters related to RA, DTI and Oftel. CSS also act as the common point of contact for the equipment manufacturers and Service Providers.

The Water Industry has access to radio spectrum in VHF and UHF. This is managed on a National Licensing basis by CSS Spectrum Management Services who act as Spectrum Management Organisation for the UK Water Industry and all other non Utility Organisations using the UHF Licensed Scanning Telemetry Spectrum.

SCOPE OF THE CONSULTATION

The members of TAC have always recognised the need for effective use of the radio spectrum. This has already been demonstrated by the sharing of spectrum and radio systems over the past twelve years and the high packing density that has been adopted by the Industry in its use of Scanning Telemetry.

The members have recognised the potential benefits offered by the introduction of Spectrum Pricing and Recognised Spectrum Access and subject to reservations already sent to the RA, have broadly supported the Radiocommunications Agency with their development of the pricing options in a number of areas. These issues link directly with many of the drivers put forward by the RA for band realignment

SUMMARY

The Water Industry view is that this is a very large and complex proposal and although it has a number of benefits to future users it has a considerable cost and risks to the current users. In view of this and the proposed long term financial benefits which will ultimately accrue to the Government it is only fair and equitable that the costs to the current Users should be funded by the Government.

If this were a commercial Business Case it is very unlikely that an Organisation would support it.

One of the key deliverables of this project is the repackaging of the spectrum in order to make more effective use of it. The Spectrum Efficiency Fund was set up to enable spectrum efficiency to be improved. This project fits that criteria in so much that it provides long term benefits to the UK economy. It is therefore recommended that the User costs associated with this project should be met by the Spectrum

Efficiency Fund. It is estimated that at current rates the costs of Band realignment to the UK Water Industry will be in excess of £10 million.

This project should only proceed if the costs to Users Organisations are met from the Spectrum Efficiency Fund.

In view of the high risk associated with this project the Industry Working Group or a similar independent body should, in liaison with the RA or Ofcom, review the project in detail and verify the financial implications and the viability of the project on a true business basis.

The Water Industry is keen to support the Radiocommunications Agency via the Industry Working Group or in any other role that would be of value to the RA and Users of radio equipment in the 450-470 MHz Band.

This summary should be considered with the detail provided in the rest of this response document.

DETAILED WATER INDUSTRY RESPONSE TO 450-470 BAND REALIGNMENT CONSULTATION

The Industry makes use of the spectrum in this band for the following:

- Scanning Telemetry Systems

- Mobile PMR

- Hand Held PMR

- On site PMR

Many of the problems associated with the current non alignment with the rest of Europe have been overcome by investing in equipment to cancel the effects of continental interference. In many ways the Industry has already invested in equipment or systems to overcome or limit the problem.

Although the consultation highlights a number of advantages and opportunities for the future it does so on the basis that the current Users will bear the costs.

The WI has made very effective use of the spectrum by their firm management of the ST spectrum. This has resulted in communications to over 8500 sites being provided by 24 channels.

Comments on Section 1.4 Key Drivers for the adoption of the project

- 1.4.1 The adoption of harmonised 10 MHz transmit/receive spacing would open up the market for manufactures. The introduction of digital technology may provide faster call set-up but it is not likely to provide significantly faster data throughput than that already achieved by some existing systems unless the channel bandwidth is increased. This would of course reduce the number of channels available. Direct interface to IT systems at computer system speeds, i.e. 10Mbit/sec are not practical at these relatively low (UHF) frequencies.

- 1.4.2 There is considerable advantage in being able to re-plan the band and to design allocations which group technologies in similar blocks of spectrum
- 1.4.3 This view is supported
- 1.4.4 This identifies spectrum for public safety users and compliance with CEPT. This provides no benefit to existing Users who are being asked to bear the cost.
- 1.4.5 This is an opportunity for the military to be able to procure and use commercially available off the shelf equipment, while releasing spectrum which is now subject to spectrum pricing.
- 1.4.6 Continental interference has been a problem for a number of years on the South and East coasts. Many of those organisations affected have invested considerable sums in the evaluation, and procurement of nulling and interference cancellation systems. The process has been further refined by the choice of specific aerial type, polarisation and careful arrangement of channel distribution.
- 1.4.7 It would be advantageous if the process delivered PMR spectrum which was also in line with the European approach. However the comments in the Governments Response to the Review of Spectrum Management (October 2002) reflects on the UK requirements as follows:

Recommendation 4.6

Any proposals for harmonisation within Europe of licensing procedures should be subject to a clear demonstration of the benefits this would bring to the single European market. Otherwise, the UK should retain autonomy over the manner in which it assigns spectrum to particular users, which will need to take account of the balance of supply and demand for particular frequencies and the state of competition in the relevant markets.

- 1.4.8 The Industry welcomes the opportunity to consider Band Realignment, but as we live and operate in a commercial world there must be clearly defined benefits resulting from financial expenditure of any type. Without financial support there is very little direct benefit to current users.
- 1.50 The anticipated move of the Police from their current spectrum on to the Airwave system is a real window of opportunity to enable band reversal to proceed. However there is real concern within the Water Industry that as the Police in Scotland will be moving some 12 months later than the forces in England and Wales there is considerable risk of interference between Northern Ireland, the North of England and Scotland. In view of this the band re-alignment process in relation to the Water Industry Scanning Telemetry should not start until all of the existing Police systems are permanently closed down.
- 1.60 The risks of not re-planning the band are accepted, however the risks associated with the project are not discussed.

PROPOSED APPROACH

- 2.1 The approach that the RA has adopted by having close liaison with Industry Working Groups and the various consultative committees that the RA support, is fully supported. However this relationship will need to be put on a more formal footing to ensure that all aspects of this proposal are reviewed and investigated before a final decision is made to take this project forward.
- 2.2 The proposed methodology of the proposed band plan and migration is accepted, however it is essential that a mechanism is in place to ensure that the each step of the process only moves forward when it is confirmed that the spectrum into which organisations will be moving has been cleared.
- 2.3 The development of the modelling and re-planning tool is fully supported. A function of such a tool is to be able to deal with shared sites where it may be necessary for some users to move weeks, months or years before other users. This will necessitate additional sites and aerials being installed during this partial transition stage. This issue could put the project at risk and at this stage has been recognised but has not been addressed from the practical viewpoint, especially in view of the line being taken by the Planners Authorities in relation to new aerials.
- 2.4 Although the experience gained by the RA during the 1980s will be of value, at that time they were dealing with only two well disciplined organisations with less commercial constraints than will be the case for this project. Now that we have a market driven economy, failure of communications will translate into financial loss, which could lead to litigation if one or more parties, including the RA fail to plan and co-ordinate or migrate according to the plan.
The Water Industry has managed a similar process to this as the National PMR Cellular plan was put into it final configuration. This required a number of different organisations to move parts of their systems onto alternative frequencies. The Water Industry through their support organisation, CSS Spectrum Management Services, would be happy to share this experience with the RA/Ofcom.

BENEFITS

The benefits detailed in section 3 are fully supported and will be of long term benefit to potential users, manufactures and the economy. Unfortunately under the present proposal this will occur only by the current users funding the necessary changes.

The introduction of new Public safety services will be of benefit to the public sector but will be funded by the current users.

Although continental interference should be reduced, this is a somewhat hollow benefit to those who have funded the installation of interference cancellation systems.

One assumes that there will now be a requirement for the RA/Ofcom to co-ordinate more closely with their European counter-parts and this may introduce power limitations and complicate or at least slow down the licensing process.

Fundamental to this approach must be the total support of the Republic of Ireland, both during the realignment process and once the project has been completed.

IMPLICATIONS

The Band Alignment Survey questionnaire went through various stages, ultimately focussing on the financial information required by the statisticians and did not necessarily reflect the views of the Industry Working Group.

The resulting table 1 does not reflect the actual situation. It would have more value if it reflected the numbers of items of equipment involved. A PMR system could have 10 mobiles or 1000 mobiles. A Scanning Telemetry User could have 10 units or as with one organisation 4700 units. To scope this project it is necessary to know how many thousand units require modification or replacement.

Under the section which reflect the effects on the Industry it should be noted that not only is there a cost to replacing equipment but also in the planning of the process, the down time for the equipment or plant, the cost of having a person on site to monitor and control the process or water quality and the cost of physically changing the equipment. On top of this there is the potential cost to an organisation if the process fails part of the way through, for example if the spectrum is not clear of previous users, or has interference on it. This forms part of a risk analysis for the user organisation.

Although this process may provide the opportunity to introduce digital addressing and set up, the data throughput will be limited by the bandwidth. If there is a requirement to provide higher data rates this will have to be traded against the higher bandwidth required and the resulting reduction in the number of available channels.

COST BENEFIT PROFILE

The cost benefit profile in table 1 (page 19 of 24) illustrates that the realignment process will generate £55-82 million but that the £165 million of financial benefit is generated by the release of the 6MHz of spectrum. It would appear that this spectrum would be released even if the project did not go ahead.

RESPONSES FROM INDUSTRY MEMBERS

We have circulated our own questionnaire to the WI Users of Scanning Telemetry, in order to collect some meaningful costs and to produce a general assessment of the perceived risk.

Costs

At the current time the Water Industry has in excess of 8500 Scanning Base Stations and Outstations. The estimated cost per item includes the equipment costs, the labour to make the changes and the planning/engineering costs. The estimated cost reduces as the number of sites being re-aligned increases. A relatively smaller user estimates a figure 4 times higher than that of a larger user.

Due to commercial confidentiality we are not in a position to provide any detail on these figures.

The estimated costs at today's values is in excess of £10 million.

This assumes the ready availability of the correct type of equipment.

This level of expenditure would undoubtedly require the Water Companies to make a submission to Ofwat for the additional funds required to meet this large expenditure.

They will also have to justify the reason for the expenditure and the return it will make to the Industry or their customers.

Risk

The level of risk was posed in the questionnaire; the level ranged from none to Extremely High.

The majority of the reposes put their interpretation of the Business Risk as:

Extremely High.

Loss of Telemetry Communications

The question was also posed as to what would be the effect of the operation of the business if there was to be a problem during the realignment project which resulted in a loss of their telemetry system.

Responses such as:

Catastrophic, Significant were used.

Benefits from Realignment

Three questions were posed in relation to the benefit to the Organisation of Band realignment and what financial value would result from realignment to their organisation All the responses were either **none** or **negligible**.

Need for parking channels

A number of members have considered the use of parking channel as a vehicle to move to digital technology, while some of the responses did not feel that they would be required.

Would you be prepared to move into parking channel as part of the realignment process?

The majority of members were not prepared to move into parking channels as this would require two changes.

Do you feel that your supplier can provide modification kits or new equipment?

There were mixed views on this question, some were confident other were not.

Do you have enough in house resource to manage the process?

The majority advised that they had, however the timescales before and during realignment may have an effect on this.

CONCLUSIONS

It is clear that this project has a number of benefits for a range of different Organisations, including the Treasury. It is also a very high risk technical project for individual license holders.

This is due to the fact that a large number of Organisations are going to have to change or modify their systems in a co-ordinated manner and will require a level of technical expertise and knowledge which many of them no longer have in house and will have to buy in from third parties. Any one of them failing to move as required or on to the wrong frequencies could cause problems to other users a considerable distance away.

International co-ordination and support, especially in relation to the Republic of Ireland is vital to the success of this project.

The difficulties of potential interference to users on shared sites moving at different times cannot be underestimated and must be clearly identified and quantified when considering the future of this project.

In view of the financial benefits from this project to the UK economy it is felt that the cost associated with the realignment should be met by the Government through the Spectrum Efficiency Fund or similar mechanism. It is not equitable that the current users of the spectrum should be expected to fund this process, especially as there is so little short term benefit to their Organisations.

In view of the cost and technical complexities of this project it is suggested that further investigation should be undertaken before a final decision is made. The Industry Working Group should provide more input into this process and into the core data being used in the Software planning tool. It is considered that for this project to be a success it is essential that it is supported by the current users and not being forced upon them.

SUPPORT

The Water Industry would be very willing to continue to support the RA/Ofcom through the Industry Working Group and also to provide any additional information or representation in the future development of this project.

David Tripp C.Eng. MIEE.
Managing Director
Chairman of Water Industry Spectrum Management Group