Submission to Ofcom

Spectrum Trading Consultation

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1.0 About FuturePace Solutions

Spectrum Management International Pty Limited, trading as FuturePace Solutions, is a private company operating since 1997 and headquartered in Canberra, Australia. Michael Whittaker, a FuturePace Director, was principally responsible for designing the Australian 500MHz, 800MHz, 1.8GHz, 3.4GHz and 28/31 GHz spectrum licensing technical frameworks.

FuturePace is, consistent with the stated Australian government objectives for industry self-management of spectrum, developing innovative on-line business practices for spectrum management including the on-line integration of licensing with EMR human exposure risk management at radiocommunications sites in a commercial alliance (Site Management Alliance) with EMC Technologies, Australia and Bailey Dixon Lawyers and Consultants (see www.SiteManager.net.au).

FuturePace thanks Ofcom for referring the consultation paper to us and we appreciate the opportunity to comment.

2.0 Ofcom's Spectrum Management Objectives

Ofcom seeks to:

- not fetter its ability to make appropriate decisions in any future amendment to a licence condition, where it will be required to act in accordance with its statutory duties;
- use the market to ensure optimal use of the radio spectrum where there is high demand, while observing that a poorly designed trading system could impede the effective management of the spectrum;
- minimise transaction costs of acquiring spectrum;
- maintain high quality interference management; and
- maximise transparency and accountability.

3.0 Ofcom's Plan for Efficient Industry-led Technical Change

Ofcom plans to introduce licence trading together with their vetting of industry requests for changes in spectrum:

- configuration (frequency band, geographic area and Tx location;) and
- use (business, technology and type of service).

To support efficient industry-led technical change Ofcom is to require industry to:

- Act independently and initiate the purchase of licences to support a proposed business plan;
- Negotiate with a potentially large number of licensees to obtain access to the necessary bandwidth in a specific geographic area; and
- Make application to Ofcom for a change of use/configuration which may be refused;
- Ofcom will publish application acceptance guidelines but Ofcom will give no guarantees as to the success of any particular application.

4.0 Ofcom's Interference Management Framework for Industry

In managing interference under spectrum trading, Ofcom is to:

- use regulations to define rights of use (transmission rights and guidance on levels of interference, including rules for guard bands) and responsibilities for existing licences;
- establish a professional and rapid vetting system for requests for change of configuration and/or use that are made on a case-by-case basis by licensees;
- issue clear guidance on the circumstances in which it would in principle permit requests for change of use or reconfiguration by licensees and the criteria it would expect to use in assessing such requests; and
- permit changes of use only where issues of international coordination do not arise.

A request for change of configuration/use includes:

- The licensee submits to Ofcom a request for a licence variation along with a technical study. Ofcom will specify the type of information to be provided and require the study to be of a specified standard so that it can make the necessary technical assessment of the proposals;
- The study would demonstrate that the change is consistent with the right(s) the licensee holds;
- The change should not cause interference to other users in excess of guidance levels of interference;
- Ofcom will assess the application on the facts of the study as well as its standard of excellence. Ofcom may request additional system modelling, propagation studies or field monitoring;
- After approving a change request, Ofcom may require site clearance by other regulatory authorities and may notify frequency and area-adjacent licensees providing them with an opportunity to make representations to Ofcom. This proposal is similar to the filing notice system in the USA; and
- Where the change request is not granted Ofcom will make clear the grounds on which it has refused the request.

5.0 Candid Response

While the initial drive for spectrum trading in the UK is economically based, the product definition eventually has to be designed by engineers.

The consultation paper is heavy on intentions but light on technical detail. The document certainly speaks clearly of one potentially very involved, potentially expensive and tired Regulator.

Ofcom's statement that "Existing restrictions on use or reconfiguration will be made as flexible as possible, but will not be removed completely" begs the question of "who will decide what is 'possible'". Even if Ofcom is to provide in-

principle policy guidance, the success of spectrum trading depends critically on both the flexibility and the spectrum efficiency inherent in this guidance. No clear information has been provided by Ofcom as to the level of flexibility or efficiency they envisage, nor how it is to be achieved.

6.0 More Unanswered Questions

There are many unanswered questions in the consultancy document and we need to ask some of our own:

- While Ofcom will endeavour to refuse approvals where technical assessments are demonstrably inaccurate but the licensee will need to satisfy itself of the accuracy of its assessment of the interference implications of its proposed change of use, then what value added will Ofcom be supplying?
- Who will be paying the cost for this value added and what is its purpose?
- How will Ofcom be able to satisfactorily check that an interference study is acceptable, noting that much research and development investment is necessary to assess interference between dissimilar services and at an accuracy that extracts maximum utility from the spectrum[1]. Does Ofcom intend to mirror every coordination software package developed by industry so that it can provide an effective vetting service?
- How will Ofcom be able to make the grounds on which it has refused a request available if those grounds are technically complex if it does not have access to its own interference assessment packages?
- While the protection of other users is the key criterion for assessing an interference study, does Ofcom not also intend to place a cap on any inherent increase in the use of spectrum space in a change of use request?

[1] It is not simply enough to ensure that no interference occurs. In a marketing based system, the industry, often unlike a Regulator, must extract maximum utility from the spectrum. This means cutting pass margins as fine as possible. This is a complex process.

- In relation to the detail of licensee rights, how does Ofcom intend to deal with spectrum space that is presently unoccupied and located between these existing rights?
- How will Ofcom assess where to draw the line between the rights of two licensees to transmit which are simultaneously undergoing a change of configuration?
- What does a licensee do, after paying a premium to purchase a large number of licences to obtain access to the necessary bandwidth in a specific geographic area and Ofcom refuses to allow change of configuration/use?

7.0 The FuturePace Solution

We see two interference management options for Ofcom:

1. define the spectrum size and utility fully up front; or
2. define the size and utility by a slow and costly process of accretion where the final rights of a licensee are never exactly made clear.

The benefits of full upfront definition of the traded product can not be understated. The objective for efficient industry-led technical change is to maximise flexibility and certainty with minimum negotiation. The proposal in the consultation document has very large inherent negotiation costs and the outcome of negotiation is never certain.

Our Australian experience demonstrates clearly to us that spectrum trading is possible:

- where change of use and reconfiguration can operate, essentially without the Regulator's involvement (Software Defined Radios and Broadcasting available since 1997 in spectrum licences);
- where change of use can literally happen, over-night;
- with full upfront definition of the interference environment;

- with full upfront definition of possible flexibility;
- without an interference free-for-all (very clear who must 'give-way' in a case of interference making negotiated settlement optional);
- with a centralised online device data base to create both a technical basis and a clear chain of liability for the out-sourced management of in-band and out-of-band interference;
- where use of traditional coordination methods do not lead to non-reciprocal spectrum access for dissimilar equipment;
- with minimum negotiation;
- without filing notices;
- where the framework for spectrum sharing and leasing is in-built; and
- where spectrum is truly self-managed by industry.

The details of how such a spectrum management system is designed can be found at www.futurepace.com.au (see "**Spectrum Trading**".)

Just as it is not helpful for a competition Regulator to create competition directly through market intervention but endeavor to create a competition framework in which industry-led competition can flourish, a spectrum Regulator must also endeavor to create an interference management framework in which industry-led spectrum management can flourish. There is no need for Ofcom's overriding statutory duties to preclude the obvious benefits of a decentralised and more industry self-managed approach.

The important UK spectrum trading will come from change of configuration and use in providing for the introduction of new equipment. In this respect the present proposals for the future management of UK spectrum retain a very central and unnecessarily costly role for the regulator. Perhaps there is a need to distinguish, both for the regulator and for the UK Government, between "trading" a licence and change of configuration/use, otherwise Government will be presented with numerous successful "trades" which are worth very little because they represent an administrative process. One of the

difficulties of the present policy environment is that the concept of spectrum trading, essentially an economic concept, has replaced that of spectrum licensing, which is an engineering issue.

The fact remains that spectrum is an increasingly valued and valuable national resource and many countries are seeking, quite properly to achieve a sensible return to their communities for the use of radio spectrum. We believe that both the demand and the return will be a factor on future management of the radio spectrum.

The design of transmission/interference rights is an engineering issue, definitely not a marketing issue. If the physics is not right ab initio, then the economic value will not be realised. This is not to say that poorly defined spectrum has not already been sold, even in Australia we would regard the 2GHz spectrum licenses as poorly defined. But when implementing a business plan, upon which access to the correct amount of spectrum (and known interference environment) critically depends, there must be full confidence, not guidelines, that spectrum access will be achieved otherwise the resulting ROI will be disappointing, both for the purchaser and for the community, since inefficient industry frequently results in higher prices for the community.

Poor definition of spectrum products means that in the long term no-one wins, even though a licensee may 'win' at a spectrum auction.

FuturePace believes that industry is entitled to regulatory and policy certainty through the life of their licence within the constraint that Ofcom would have a number of overriding statutory duties, and that, with the move, as in Australia to private spectrum managers, these are the essential building blocks of both the policy and science of future spectrum management.

8.0 Conclusion

FuturePace is concerned that the approach currently under consideration will result in significant unnecessary expense and loss of opportunity for the development and evolution of public policy in the UK. It also seems that industry, given many of the UK participants already operate successfully under the Australian system, is well able to deal with a greater level of spectrum self-management. The policy and technical tools exist to operate such a system and the savings to Government are considerable in the context of smaller Government and greater industry involvement and assumption of responsibility.

We appreciate the opportunity to offer these preliminary comments and will watch the evolution of this process with considerable interest.

