COMMENTS ON THE SUBMISSION FROM
SPECTRUM ENGINEERING AUSTRALIA (SEA)

FuturePace felt it necessary to support some of the comments made by Spectrum Engineering Australia (SEA) but also seeks to distance itself from some of the SEA proposals.

FuturePace considers that some of the criticism levelled at the ACA does not adequately reflect the impeccable record which the Authority has had on such important matters of public policy as auction design and conduct. These are major initiatives and the excellence and ease with which they have passed into the Australian communications environment must be applauded.
The notion that change is difficult to manage forms the basis for our further comments on the licensing issues aspect of the Inquiry into ACA administration.

Before becoming too critical of the ACA we should remember that they have been charged in the last few years with the implementation of a new and quite revolutionary approach to spectrum management and have been required to implement change management in an atmosphere of considerable negativity.

There are a number of factors militating against change, one of which is entrenched interests within industry, usually at the technician level, and the other is entrenched approaches within the ACA and its SMA precursor, much of this has been directed to opposition to spectrum licensing. FuturePace assumes that, given industry has embraced the spectrum licensing concept, and has put such effort into its implementation, that the concept is here to stay.

The fact is that spectrum licensing is revenue positive and administratively efficient and that, properly defined, it maximises flexibility for the licensee means that, instead of carping about details, Australian industry, and certainly the Australian Government and its agencies would be well placed in

promoting the Australian approach internationally. Much has changed since SEA was launched in 1987, and that includes spectrum management, that new approaches will develop is axiomatic and it is good for industry and the community that they do develop.

It should also be possible for this process to occur without acrimony.

There are a number of areas in which we are in complete agreement with the comments made by SEA. It should be said that the majority of those comments relate not to spectrum licensing but to apparatus licensing, and with some of those we have a high level of agreement. Our considered view is that some of the comments relating to spectrum licensing especially, at the technical level, indicate that SEA is, indeed, all at sea on spectrum licensing.

No Requirement for Licensing System Changes

We share the view of SEA that there is little point in changing to a system which looks remarkable like the current purposive license categories with different names.

There seems therefore, to be a high level of agreement about the continuation of the existing forms, apparatus, spectrum and class licensing.

Competitive Neutrality and the ACA

We endorse the view of SEA as to the inappropriateness of the competitive advantage which ACA operatives have over the Accredited Persons. We see this as essentially a transitional phase as the ACA works through its future operational directions, again change management is neither simple nor instant. Though we should add that our software is capable of auditing the auditor if they wish to outsource that function. But we agree that the time has come to level the playing field. We see no need for the development of independent business units within the ACA, there are over 40 people accredited by the ACA to undertake this work and the regulator should not participate directly in the industry it regulates, especially when it is clear there are difficulties in the regulator distancing itself from past practices and in applying appropriate levels of competitive neutrality.

Indemnification Issues

We do not share the view of SEA and its unidentified associate company as to the indemnity issue.

Apparatus Licensing

It should be noted that the registration details for apparatus licensing are more onerous than the details required for a spectrum license registration. We fully endorse the comments made by SEA about the inefficiency of apparatus licensing processes. These are time consuming and duplicative. A view shared by the HEC of Tasmania.

We also share the view that the ACA should not be able to operate at a lesser level of accountability than does each accredited person, and we also view with concern, not the fact that SEA were able to negotiate special terms and conditions relating to their contracts, but that those conditions were apparently not made available to all accredited persons. If the ACA is to operate as a regulator it cannot tip the playing field and pick winners. Certainly if it tries to do both simultaneously it must expect other accredited persons to be somewhat displeased at this clear evidence of favouritism. This is another example of why the ACA should be open to external review. Mates deals are not acceptable.

We believe that the processes which are in place for spectrum licensing are much more relevant to the 21st century than many apparatus licensing administrative processes which have been in place for some decades and are now moribund. FuturePace's business model is based on e-commerce and seeks to set in place on-line internet based services which will allow full and cost efficient application of our software tools. And at the moment that ACA is out of step with industry and not providing the necessary IT support to augment industry R&D. We have found the successive Spectrum Licensing Teams to be fully aware of the need for IT support and to be welcoming of our more efficient processes.

We fully support comments on the prepayment of Apparatus license fees which is in apparent contravention of the Act and flies in the face of logic.

Spectrum Licensing

We agree that it should be a requirement to delete details from the register where a device is no longer operating. We would also ask that this be extended to the apparatus licensing regime where deletions can be the result of an ACA audit process rather than the active intervention of a licensee or AP.

FuturePace disagrees with the statements that registration details are inadequate under spectrum licensing, our experience is that the data set is more than adequate for us to manage coordination requirements. Nor do we agree that certification is "ineffective and quite unnecessary". The strength of the Australian system is the developing excellence of the national database which allows us to move from the practices of two or three decades ago into modern management and practices which streamline spectrum management and the associated data requirements with fast turnaround and low cost

automated processes. We strongly support the initiatives the ACA has taken in the establishment of a national database.

The benefits of certification are only apparent when a licensee is using the services of informed operators who can enable their clients to take full advantage of the creative capacity built into a well designed technical framework. Industry deserves better than people who read the least amount possible, plug in the numbers given in the framework and bung devices in the register without even defining the occupied bandwidth properly. At that grade of service we agree certification is less meaningful than at the grade of service provided by FuturePace.

Similarly an operator who advises against registration of certain devices will eventually be doing his client a major disservice in terms of later interference management. In our view these are risk management factors best discussed between client and AP. There are no hard and fast rules and we, and our clients, prefer the flexibility.

The spectrum licensing regime allows for maximum automation, licensee creativity and flexibility through out the life of the licence. These are qualities which major carriers have so far supported in their comments to this Inquiry. The accreditation system is very flexible and no accredited person is obliged to work on spectrum licensing if he or she does not wish to acquire the skills base to achieve optimum returns for their clients. But to suggest that the system be dumbed down to the level of 1987 operability is fatuous and not in the wider interests of the industry.

It is not true to say that the ACA does not offer services in spectrum licensing, if fact we would like their staff to have more experience with the preparation of Interference Impact Certificates, their spectrum planning engineers might then not design frameworks with process and presumptions based on FACs. What the ACA do not offer is cost effective services for spectrum licensing, given the high level of industry automation. We believe that the need for certification and data entry is a fact of life across all licensing systems. Other countries are beginning to copy the Australian concept of a fully maintained national database.

Dealing with the points on Page 18 of the SEA submission seriatim:

- ***The exemption from registrations for devices for which there is no demonstrably valid frequency management reason for registration***

This provision already exists

- ***The recording of more specific technical details of those devices that do need to be registered and the requirement for the deletion of redundant records***

The present technical details have been carefully selected by an industry based consultation process to create an efficient balance between data necessary for reasonably accurate coordination and the cost of gathering and recording that data. We agree that there should be a requirement to remove redundant records.

- ***The re-specification of the precision of detail that is required for registration commensurate with what is reasonably necessary, obtainable and able to be recorded.***

In most cases the accuracy requirements for device details are much as for apparatus licensing.

- ***The simplification of core conditions and the abandoning of the device boundary construct.***

FuturePace draws to notice that the device boundary serves a purpose, where it does not, for example in the 28 GHz framework, it has already been abandoned.

Clearly in this case the purpose of the device boundary has not been understood (see Appendix A regarding use and operation of the device boundary). It is not meant to replicate the service area of a base, and among a number of other objectives, it allows for creative management of a site and allows a licensee to take advantage of terrain shielding in keeping emissions levels within their spectrum space. FuturePace developed its own tools for device boundary management, other AP's were given free software by the ACA which enabled them to undertake this task.

- ***Simplification of the form of the spectrum license***

We have no difficulty with understanding a 20 page document, given the issues and the costs associated with the spectrum purchase, it is reasonable for the detail to be spelled out, the costs of legal advice to interpret such matters are in our view a legitimate element of being in the business of license interpretation and implementation.

- ***Removal of the need for certification of core conditions etc***

Licensees appreciate the expertise and the liability benefits where accredited persons provide a full warranty for their work, we consider the proposal to be some what self serving and not meritorious. Whatever licensees do, the regulator (and adjacent licensees) have a need to know what is being licensed in order to manage interference.

Industry Development

FuturePace considers some of the views expressed on page 16 about the ACA approach to accreditation to be most unfortunate. Certainly ACA documents at the time refer to a fledgling industry and the need to provide it

with an appropriate environment in which skills could develop to meet industry needs. In our experience this has amounted to provision of a data set and a couple of maps. For the rest the ACA has said that it would expect AP's to provide their own tools and the ACA would not provide assistance.

Those accredited persons providing a high grade of advice and technical acuity to their clients are all entitled to be somewhat offended at the thought that certification serves no purpose. Device registration for spectrum licensing is no different philosophically than registering microwave links. It is both self serving and mean spirited to recommend the demise of an aspect of the industry in which SEA may see themselves as less competitive, while advocating the retention of a similar process for their own core business.

We have great difficulty with comments relating to the cost of checking out of band emission levels. These are simply not reflective of the business reality. FuturePace notes that this may refer to a particular situation at 28GHz where because much of the equipment is new, virtually experimental, testing equipment may not be readily available. However the ACA laboratory, which provided an excellent service to industry had equipment to conduct tests at 28GHz that time and we have always found their service and skills level to be excellent, and very cost effective.

Barbara Phi
Director
FuturePace Solutions
27 October 2001

Appendix A

Device Boundary

The concept of a device boundary [1] [2] where a calculated area represents the space deemed to be used by in-band emissions from a device, has been used to provide certainty of access to spectrum for licensees and, given the two-dimensional nature of a licence geographic area, to manage levels of in-band emission spilling into adjacent licences in an equitable manner.

We have already stated in our main submission that '*licensees manage in-band (co-channel) interference, by knowing, under the licence conditions, the maximum level allowed to be radiated from a specified site in an adjacent area. Licensees then determine on a risk assessment basis, how far their receivers must be set back from the area boundary in order to cope with that allowed maximum level'*.

The mechanism by which licensees ascertain the '*maximum level allowed to be radiated'* is via the device boundary. The device boundary must fit within the geographic area of a licence and, in a broad manner, takes account of available terrain shielding, enabling licensees to use higher levels of emission than otherwise possible. The device boundary also serves a number of other important purposes.

There are a number of techniques used throughout the world that seek to emulate the operation of the device boundary, however, no other method offers more flexibility, certainty or equity. In addition, the major computing complexity (the calculation of the effective antenna height table) has already been solved and is provided in software by the ACA as a freebie when purchasing the RadDEM data set for about $300. It is not unnecessarily complex and is actually rather simple in application.

A device boundary provides the optimal balance between operational flexibility and certainty for setting in-band emission limits for a spectrum licence because:

- it specifies an exact and direct procedure to determine a limit for the maximum radiated power of a transmitter (based on the effective antenna height and distance from the boundary) that can not be challenged by an adjacent licensee;
- the direct nature of the limit means that licensees can work closer to the geographic boundary of the licence than otherwise because no reliability margins are required to ensure an actual specified field strength;
- licensees can accurately plan for transmitters operated by adjacent spectrum licensees (or adjacent apparatus licensees) across the area boundary at any time in the future;
- it allows licensees to take advantage of terrain shielding in a broad manner on an area basis (related to an average of radial profiles) to contain emissions within their licence. An average is necessary because geographic area is measured in two dimensions, and although not ideal

because it needs to take account of all orientations, it provides a solution that is equitable for licensees (apparatus or spectrum) operating devices on opposite sides of an area boundary;

- it may or may not be based on actual propagation models depending on the outcome required (it may or may not be designed to emulate the 'service area' of a particular service)
- it can be designed (via the resolution of the calculation) to keep base stations sufficiently back from the area boundary such that subscriber transmitters are also indirectly kept within the boundary;
- it may be designed to allow licensees to place their receivers as close as is practical to both sides of the geographic area boundary
- it minimises the size of emission buffer zones along boundaries by providing protection only to either low or high receivers via the definition of effective antenna height and transmitter deployment constraints, respectively;
- it provides a simple facility for establishing agreements between licensees for sharing spectrum space across area boundaries by varying a single parameter to expand or contract the device boundary to provide more or less in-band protection respectively.

[1] Whittaker M. J. *'Establishing an Interference Management Framework for Spectrum Licensing in Australia'* IEEE Communications Magazine, April 1998

[2] Whittaker M.J. '*Australia's Airwaves for Sale'* Mobile Asia-Pacific, Vol. 7 No. 1 February/March 1999