SUBMISSION TO

THE RADIOCOMMUNICATIONS ENQUIRY

CONDUCTED

BY THE

PRODUCTIVITY COMMISSION

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INTRODUCTION

The Productivity Commission's Draft Report is a hefty document. At least it helps to give readers some impressions of the intentions behind the PC's (and the ACA's?) Findings and Recommendations.
Unfortunately, some of the material that might indicate a useful starting point to further effective investigation of in band interference, and the addition of costs from annual (or amortised Spectrum Licence purchase) band access, plus broadband unlawful interference is not correctly referenced. One such is Box 3.2 "The Efficient Level of Interference" gives Hazlett 2001 as a reference but the Reference List does not show this.

The attached documentation (with the Draft Report) showing submissions made indicate only 10 were received by the closing date (12th Oct 2001), and another 14 in the next week (ones that may have been delayed in the mail). It seems that further submissions were still being received even after the public hearings.

There is still a major problem with the "objects" of the Act.

The Productivity Commission (and The Australian Communications Authority ?)seem quite lost with first of the objects.
The Draft Finding 4.1 has it as "to maximise efficient allocation and use of spectrum". This is disastrously (and deliberately ?) incorrect !
It is to "maximise, ..., the overall public benefit derived from using radiofrequency spectrum"
Maximising allocation and maximising use will not maximise the overall public benefit. Several parts (and Findings) of the Draft Report show this.
It stems from the Productivity Commission (and the ACA ?) still being unable to understand the 'Public Benefit' concept. The Draft Report refers to "public goods and resources", apparently synonymous with goods and chattels (belongings of the Commonwealth and available for sale ?)
This seriously interferes with the Productivity Commission's assessment in a number of sections in the Draft Report.

KEY MESSAGES

The Productivity Commission (PC) tried to summarise its draft into Key Messages. I might shorten them slightly.

1 The potential for interference is the reason for government management of spectrum.

2 In line with the 1991 HORSCOTCI Report, the Radiocommunications Act 1992 made provision for "tradeability in spectrum resources for commercial users", at the same time "giving non-commercial users the option of remaining under the current system".

3 & 4 & 5 The ACA has been introducing and marketing spectrum licences. And now with the support of the PC, is determined to 'Spectrum Licence' much more of the spectrum.

6 Licensees, especially non-commercial users (and Broadcast Users ?),seek longer licence terms and "explicit presumption of renewal" as protection against arbitrary loss of frequencies into Spectrum Licences.

5 & 6 & 7 Unfortunately, 'public interest', 'public parks', 'efficiency of spectrum use' and 'exemptions and concessions for public and community services' start to get tangled up together. This is because the ACA and PC do not understand the "maximise the public benefit" part of the Act, (or in the 1991 HORSCOTCI report, "the provision for public and merit goods" and "the allocation of spectrum to the highest value uses".

To achieve this the ACA must learn how value each use of spectrum (or if the ACA can not learn how to do this it must be instructed how the community values each use of spectrum).

The comments in following sections will attempt to address some of these and other problems.

OBJECTIVES

I have long advocated that only the first of the *objects* of the *Radiocommunications Act 1992* (RCA) was required. This went into my submission to the inquiry into Apparatus Licence Fees in 1993. However, **the ACA (and the PC) have not managed to understand the "maximise, ...,the overall public benefit derived from using" part of this object.**

In the Draft report the PC discuss "criteria for determining eligibility for licence fee exemptions and concessions" (pg 233). They give quotes from submissions, such as "public purpose use of spectrum" (ATNF CSIRO) and "not-for-profit community and emergency services should be exempt from fees" (New South Wales Government).

In the chapter on the OBJECTS of the RCA, the ACA says "They enable the ACA to make decisions about spectrum use" (pg 72) but no mention is made of **maximise, ...,the overall public benefit derived from using.** While other submissions skirt around this public benefit assessment term, talking about public service and emergency and safety of life services, without any suggestion of assigning 'value' to them. One submission showed no understanding of this concept, "2KY is not able to give any meaning to the 'highest value to society'".

Unfortunately, **the PC (and ACA) do not grasp the need to value <u>uses</u> of spectrum**.

Hence the second *object* is **<u>absolutely essential.</u>**
"(b) make adequate provision of the spectrum for use by public and community services;" leaves room for the establishment of a permanent (parliamentary ?) committee to instruct the ACA on how to value various "uses of radiofrequency spectrum", in order to assist the ACA to achieve the first *object*.

I tend to agree with the PC that the other *objects* are superfluous. There are sure to be separate international agreements that are required to be considered in any and every review of the Australian Radiofrequency Spectrum Plan (RCA Sect 32).

FINDINGS AND RECOMMENDATIONS

Some of the Findings and Recommendations need examination to try to determine the intent of the PC (or the ACA?).
Comment to indicate concern or to try to show more useful directions to pursue may follow.

Draft Finding 5.3
This finding is ambiguous. It probably indicates a desire from the ACA to not be bound by the consultation requirements of the RCA in relation to making changes to the Australian Radiofrequency Spectrum Plan (ARSP).
In recent years the ACA has made changes to this Plan without consulting some of the effected licensees, let alone consulting the community more widely.

Draft Finding 6.4 and Draft Recommendation 6.1
The HORSCOTCI report, introducing the RCA , wanted "tradeability in spectrum resources for commercial users", and "giving non-commercial users of spectrum the option of remaining under the current system".
Lack of tradeability (insufficient prospective buyers), and the non-commercial nature of many segments of the spectrum would seem to make Finding 6.4 and Recommendation 6.1 invalid. Or at least seriously missing the intent (objects?) of the RCA.
Alternatively, this may be an (?)underhand means to allow the ACA (with the help of the PC) to avoid the consultation requirements of the RCA in relation to the Plan (ARSP).

Draft Recommendation 6.4

Is this an indirect means of allowing the Government to remove the present media ownership restrictions? Without any comment on the merit of such, much more public comment may be warranted. Some may even consider a Senate Committee investigation would be required?

Draft Recommendation 6.5
Any licensee with a considerable investment, in radio equipment, baulks at the suggestion that the licence may not be there next year. Hence much support has been given for implied renewal of licences.
Unfortunately long term licences and agreements tend to be anti competitive (the digital TV broadcasting arrangements), and to encourage the retention of present technology. At present MP3 compressed digital audio files are transmitted over links (to significantly reduce bandwidth requirements and link licence fees), only to have the re-expanded audio transmitted in analogue (and wideband FM) format on broadcast frequencies where there is implied (?)permanent licence renewal, (and no pressure to modernise the technology?)

Draft Recommendations 6.7 and 6.8

If we keep in mind the HORSCOTCI report intent and RCA objects, these recommendations may not meet the commercial tradeability and non-commercial use intents.

Draft Recommendations on Interference
The interference section in the Draft report is the most under done in the document. The DCITA (June, 2001 review) taskforce review of the RCA noted several submissions expressing considerable concern about interference and interference management. However the ACA proudly proclaimed it leads the world in user self management of interference. The ACA continues to reduce its personnel commitments and expenditure on interference management, to the point where some spectrum users consider the ACA no longer capable of effective investigation and regulation of interference (especially the widespread unlawful interference).

The lack of input/involvement of alternate views in the interference Draft Recommendations shows.
Does automatic "device registration" lead to any interference problem from this device becoming an entirely civil matter between the "accredited person" and the service suffering interference? In this case there may be no role for, part for (or even any requirement for) the ACA. An application for "device registration" could be accepted and simply rubber stamped by say the clerk of court.
With no interference investigation capability and little or no interference management objectives in the ACA, (the self-regulatory environment), the Draft Recommendations about "cost recovery" become rather meaningless.
Further comments about interference management and its cost to the community at large are made in a later section.

Draft Recommendations 9.1, 9.2, 9.3, 9.4, and 9.5
These Recommendations talk of "combinatorial auctions", "costs imposed by different categories of users", and "opportunity costs". Then go on to ask for a more transparent and flexible model for calculating Spectrum Access Tax and suggest "shadow pricing" may be a "suitable technique".
I can only wonder where these strange new terms have come from ! Suddenly when the possibility of raising revenue (tax) has appeared a new group of **economic theorists** (coming from some different world not connected with reality) has entered the discussion.
Reading Chapter 9 helps to make some sense of these strange (and contrasting) terms. Unfortunately in the rush to recover costs and raise revenue, the objective of "maximise ..... the overall public benefit derived from using the radiofrequency spectrum" is lost. **This objective does not equate to maximising the revenue raised !**

To quote from page 198 where it is given that "the licence guarantees against excessive interference", I believe that if the regulator (the ACA?) is not prepared to back this guarantee then they should not be able to charge licence fees !

A formula for a more continuous variation of fees and Spectrum Access Tax, including a term allowing the value of the different uses of spectrum (non-commercial, emergency service etc.) to be included, was proposed to the (Inquiry

into the Apparatus Licence System" a decade ago. The then SMA did not understand the objective then and the ACA (and PC) don't seem to now.

More can be found in the chapter on charges.

Draft Recommendations 10.2, 10.3, and 10.4
These recommendations provide the most direct evidence that the objective, "maximise ..... the overall public benefit derived from using the radiofrequency spectrum" has eluded the PC (and the ACA).
In order to achieve this objective it is essential to value the various uses of spectrum.
Here the term **value** means to **determine or assign value to the public benefit derived** from each of the various uses of spectrum.
These values are not the tax obtainable from selling a spectrum or apparatus licence !
If we say a class licence returns no tax, so has zero value, we would not have class licences.

These values then guide the allocation process, and determine the various incentives (including fees and charges) used to encourage more efficient spectrum use.
That the PC and the ACA want to push this process off to some separate section, department or organisation, (as per these 3 recommendations) is the most direct evidence **they do not understand the objective let alone how to achieve the objective !**

Draft Recommendation 11.1
The trend to a smaller and smaller regulatory authority is likely to continue. This will include more and more delegation of various powers and duties. **The most important part of this will be to ensure even handed and efficient application of these delegated powers and duties**. This requires they be delegated in a fashion that ensures competition in the provision of these services, i.e. **they cannot be delegated to a single (monopoly) person or organisation.**

SPECTRUM LICENCES

These licence certainly allow large commercial users to be more flexible in their use of infrastructure and technical specifications.
There are risks that the technology adopted may be more secure rather than more bandwidth or communication efficient. The last decade has seen major increases in our ability to digitize and compress both audio and video. We must expect better technology to become available.

In some instances we have 'locked into' a standard early on and may regret it later (the present Digital TV standards?). The large overhang of older equipment in the community makes adoption of more efficient technology very hard. This is shown very forcefully in the broadcast industry.
Studio audio is digitised, MP3 compressed, and transmitted over a link to the transmitter site. By this they save considerably on the bandwidth needed for the link. Then the audio is re-expanded and broadcast as wideband FM. Obviously present VHF FM broadcasts waste large amounts of spectrum !

The reason for spectrum licences (to generate and encourage short term tradeability amongst commercial users) must be remembered.

The lack of a secondary market in spectrum licences is not a reason to rush into issuing (and/or selling) more spectrum licences.

Perhaps the present approach to spectrum licencing has just given more security of licence tenure (similar to the recommended 10 year term in the Report of the Radiocommunications Review, June 2001, for apparatus licences). Such security may please many (especially big commercial) users, but leads to less trading and/or tradeability.
The June 2001 review did address the question of artificially stimulating a secondary market in order to improve trading and tradeability. At that stage they had no response from the PC (or the ACCC).

More community wide discussion of the reason for spectrum licences for commercial users **would help the PC and ACA learn how to get the best result for the community from having spectrum licences.**
It is important not to have such clarification of objectives overrun by large commercial users.
Until we have this clarification, **it is important to observe the HORSCOTCI recommendation of "giving non-commercial users the option of remaining under the current system".**

INTERFERENCE

From the June 2001 review we had "Submissions expressed a great deal of concern about interference..".

From the PC's Draft there is "Access to radiofrequency spectrum is regulated in all countries, primarily to manage interference between users" (pg 3).

And again from pg 198, in the section on charges and taxes, when the ACA grants a licence, "the licence guarantees against excessive interference".

It might be expected the ACA would be:

assessing the value of various uses of spectrum, in order to efficiently allocate and hence maximise the public benefit of use of spectrum,

assessing (and disseminating information about) new and more efficient communication technologies

managing interference

In this light, the bulk of the ACA day to day activities might be interference management.

However the June 2001 review recommended "Industry self management of interference and planning be promoted further..."

The ACA numbers (pg 173 of the Draft Report) for investigated complaints of interference are miniscule.

These numbers suggest either :

essentially there is no interference happening,

there is significant interference occurring, but it is not reported to the ACA.

The reality is the second.

The usual practice for HF service licensees wishing to communicate with work units or mobiles within 50 to 500 km of any city (including small cities like Mt Isa), is to set up a remote (out of town), receive site with a land or radio link into town. **This is done because the excessive interference in town prevents reception**.

The links are set up at considerable cost to the user in equipment and maintenance, and usually require additional spectrum for the link frequencies. These costs and spectrum allocation inefficiencies come as a considerable decrease in the overall public benefit derived from this use of spectrum.

Being a bit sarcastic I might say who in Sydney, Canberra or Melbourne (the places the PC held public hearings) wants to communicate out of town? Or
Use a mobile phone ! Even though half the area (not main roads, but area) within 500 km of Brisbane does not have mobile phone access.
Let's go into a city. I have recently been working for a company using a data and voice supported despatch system in Toowoomba. Built in to their system in the vehicle communication consoles, is the instruction "unable to contact the system, move the vehicle and try again". A quick look around these areas with other receivers shows the reason for communication loss to be excessive interference (even though the system is on 460+ Mhz). The most common (and strongest) is generally unlawful interference.
When the system has specific items built in for 'I am in danger' or call police or ambulance, the potential for a disastrous loss of communication is there.

I don't want special efforts to investigate these particular problems. What is needed is a spectrum management system that works.
In the mining industry it took the Inquest into the Moura deaths to firmly establish that the mines inspectors had significant responsibility in the deaths because they had failed to ensure the management system (specifically in relation to safety) worked.

The possibility of communication loss related tragedy (say in the air line industry) is very real. If this occurred because of a failure to legislate, develope and manage an appropriate interference management system it would be a disaster. At present the implied responsibility is with the licence provider (the regulator).

In the Draft report there are short inserts about increasing the number of customers (Box 2.7) and the related problems of "the efficient level of interference" (Box 3.2) This produces a simplified cost versus benefit assessment of in band lawful interference from increasing the number of users. To these costs must be added a flat increase in costs from licence fees (or amortised spectrum licence purchase cost), and the effect of the existing level of unlawful interference. The unlawful interference cost moves the cost curve left, because even with only 1 user , there is already a considerable cost of the unlawful interference.
Both of these changes will significantly reduce (or even say in the case of the lower HF frequencies, completely remove), the window where benefits exceed costs.

Hence interference management is crucial !

CHARGES

At present charges include Administrative charges, Spectrum Maintenance Component, and Spectrum Access Tax. As noted above they reduce the overall public benefit derived from using the radiofrequency spectrum.

The ACA has had a very basic approach to calculation of SAT and SMC (Box 9.3). The formula calculates a $value of SAT+SMC. To this is added an administrative charge (to cover paperwork costs of licence issue).
If these are shortened to charges ($c) and taxes, including the Spectrum Maintenance Component, ($t), then licence fees can be calculated.

In my response to the "Inquiry into the Apparatus Licence System", 1993, I proposed adding simple assigned relative value for each purpose for which the licence is used, to the equation.
In that submission simple assigned relative values for various uses of spectrum were proposed.
The overall charge was calculated by applying the value as a multiplier to either or both of $c and $t.

By applying these simple assigned relative values to both licence charges, tax **and to spectrum allocations**, it is possible to "maximise ..... the public benefit derived from use of spectrum". It is similar to calculating the matching between parts of a radio circuit to maximise the power transfer.

The part that the PC and the ACA have not understood and still do not understand, is how to value the public benefit derived from various uses of spectrum (or how to value the purposes for which licensees use spectrum).

NON-COMMERCIAL USERS

In the Draft report 41% of frequency assignments are shown to be for non-commercial users.
How to allocate frequencies, encourage more efficient use of spectrum and charge for this spectrum use, is a major problem for the ACA (and the PC?)
Sorting out **how to value the public benefit derived from various uses of spectrum** is an essential part of this frequency allocation process.

Such value is of paramount concern in preparing and the consultation processes for modifying the Australian Radiofrequency Spectrum Plan.
Similarly this valuation process helps to determine which spectrum users may need encouragement to more efficiently use spectrum or as recommended in the June 2001 report, where the ACA may need to provide "technical assistance" to non commercial users (a major recommendation in section 9 of that report).

These "value" of use assessments also provide the obvious means of deciding which non-commercial, public or community users should have financial assistance through reduced taxes or even administrative charges (see also the CHARGES chapter above).

Obviously **this is directly contrary to the PC Draft Recommendations 10.2, 10.3 and 10.4.**
To effectively allocate frequencies, encourage efficient spectrum use and appropriately charge (or NOT charge) these non-commercial, public and community users, the ACA **MUST** understand why they have to **value the public benefit derived from various uses of spectrum** and how to determine or assign these values.

To farm this out to a separate section, division or department would be a major disaster !

However this approach does support Draft recommendation 10.1. But the ACA **MUST** understand why they have to **value the public benefit derived from broadcast uses of spectrum** and how to determine or assign these values.
It is important to understand that this value for a broadcast licence is NOT the turnover of the broadcaster, nor their profit, nor the fees or charges paid to the ACA (or government) for the broadcast licence.

To carry out this process and involve/consult the community will not be easy.
Considering the comment of 2KY quoted on pg 73 of the Draft Report, it may be hard for some to grasp that I (and some others?) see some broadcasts as being of negative public benefit.
Hence having **the community involved in the value determining process is essential !**

OTHER

1 Objects

While the PC and ACA and parts of the community have failed to grasp the first object of the RCA, it is essential to keep the second object.

2 Competition

It is very important to en sure that rights, functions or authority of the ACA that are delegated out are not given to single organisations.
Obviously some of the frequency assignor roles have been delegated already. There are several independent assignors , so there is competition.

However there some areas where there may not be competition !
One of these is the standard setting/device registration area. If only Standards Australia can set these standards this is anti-competitive.

Another is the area of examining competency and issuing certificates. In the area of testing competency of marine operators there seems to be competition, but for setting exams and testing for competency for amateur operators, so far only one organisation is involved, which is anti-competitive.

3 Other Countries

It is a little hard to work out exactly what is happening in the Appendix C.3 on Licence Fees.
It seems that Canada raises revenue from its spectrum licences, but for other licences bases fees "loosely on a cost recovery mechanism" (pg C9).
Other countries all seem to aim for a revenue of 100% of costs, even with "incentive pricing".
The odd one out is Australia which raises considerable revenue by charging well above cost on almost all its licences ! As noted in the sections on interference and charges, this probably reduces the number of licensees or users and reduces the public benefit derived !

Some countries also use "public benefit" assessment in their frequency allocation process.

4 Accelerated Reform

In the Draft report, the chapter on the Productivity commissions role talks of accelerated reform. In this section Box 3.3 outlines a government role which includes defining property rights, allocating spectrum, and classifying and coordinating other rights, uses and services.
Interference management seems to have been reduced to "interference dispute resolution" as part of mandating spectrum rights.
The call under Requests for Information (pg LXX) for "further information on the value of civil action in managing interference disputes" needs urgent further action.
The outlined government roles make it likely that **in future civil action will be the main method of managing interference** !