



INTERNATIONAL AMATEUR RADIO UNION
REGION 3
TWELFTH REGIONAL CONFERENCE



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SAMPLE of SUBMISSION

LOCAL COUNCIL PROPOSAL
To REGULATE
Radio, Television, and Comms.

Around Australia, Local Government Authorities are becoming increasingly aware of Public criticism of the erection and operation of Mobile/Cell Phone Towers. Unfortunately, the amateur has been caught up in this and collectively with the commercial operators, now has to make submissions to the Councils that Amateur should not be restricted.

HILLS AMATEUR RADIO GROUP, INC.

Please address correspondence to:

**The Secretary,
Hills Amateur Radio Group, Inc.,
23 Cemy Place,
KEWDALE WA 6105**

Your Ref: PG-AMT-001

Ms Amanda Butterworth
Manager, Planning Service
Shire of Kalamunda
PO Box 42
KALAMUNDA WA 6926

12th November 2003

Dear Ms Butterworth,

Re: Proposals concerning Radio, Television and Communication Transmission Facilities/Masts.

1. Overview:

1.1 The Hills Amateur Radio Group Inc. (HARG) was established in 1982 and represents Amateur Radio enthusiasts in the Hills area as well as surrounding suburbs. We hold regular monthly meetings in Lesmurdie at the Paxhill Guides Hall. HARG members are licensed Radio Amateurs most of whom have held such qualifications for many years.

On the basis of our considerable knowledge of radio techniques, we consider that the author of the proposals reference PG-AMT-001 has little understanding of the nature of radio communications. We are concerned too that the author makes no clear distinction between Citizens' Band radio and licensed Radio Amateurs. HARG submits the following comments on your proposals concerning radio communications facilities in the Hills area.

1.2 This submission is supported by the Western Australian Division of the Wireless Institute of Australia, a member Division of the Federal Wireless Institute of Australia. The WIA works in close association with the Australian Communications Authority to formulate and oversee the governance of Amateur Radio. Also attached is a submission to the Council of City of Brisbane written by the Queensland Division of the WIA which contains important information pertinent to the understanding of our hobby. Please read it carefully.

1.3 Unlike many sports or other pastimes, neither Amateur Radio nor CB puts any call on Council finances. The ratepayer who is a radio enthusiast funds his own hobby and receives no subsidy or assistance from the Council. However, part of his rates is used to subsidize sports ovals, gymnastic facilities, libraries, and numerous other activities.

2. Mast Proliferation.

- 2.1 The Council expresses concern at the proliferation of radio and television communications services within its jurisdiction. The reality is that people want more radio-based services to provide them with a greater choice of entertainment and communications facilities. These include more TV channels, more FM radio services, more wireless telephones, more wireless computer links including area networks, and more rapid-response emergency services.
- 2.2 Most of these services now use VHF or UHF frequencies relying on line-of-sight propagation. Cellular telephones, for example, operate at about 800 MHz using low power. To provide comprehensive area coverage, especially in hilly terrain where line-of-sight may be very limited, a large network of cells is needed, each requiring its own comprehensive antenna system.
- 2.3 Other services may need a substantial network of repeaters to achieve adequate coverage. The higher the mast the greater its area of coverage is likely to be, thus the lower the permitted height the greater the number of cells or repeaters required. The Kalamunda Volunteer Fire Brigade recently spent much time and effort building a mobile Fire Control Unit because radio control and coordination of fire-fighting facilities was proving difficult from a fixed Headquarters location due to inadequate radio coverage.

3. Relocation of TV/Radio Towers.

- 3.1 The Council suggests that the television stations in the Bickley area could be relocated. The nature of television requires that the transmitter is in line-of-sight with the receiver. The very strong and undistorted signal required by the receiver necessitates the use of a high-gain directional receiving antenna.
- 3.2 Furthermore, the receiving antenna needs to be located in a clear area where it will not receive spurious reflected signals which, with the analogue systems currently in use, cause ghosting. Indoor antennas are not conducive to high quality reception. Households in the radio shadow of a hill may need very tall structures to receive an adequate signal. Does the Council propose to ban such structures or insist that neighbours give permission?
- 3.3 Were the TV transmitters not located in a group where they overlook the bulk of the Perth metropolitan area, they simply would not provide an adequate area of coverage. Separate or steerable directional receiving antennae would be needed to point at each transmitter location. A similar, though slightly less rigorous situation applies to good FM stereo reception where multi-path signals affect the ability of the receiver to properly decode the stereo signal.
- 3.4 Council suggests the relocation of existing broadcasting facilities to "remote locations." This may be geographically impossible, as indicated above, but were it possible, would the Council also ensure that an adequate buffer zone is placed around the new facility to prevent housing being built within this zone? If not, the exercise is pointless.
- 3.5 Has the Council sought discussions with the Federal Government regarding relocation of ABC facilities? Council suggests that fewer masts could accommodate more services through rationalisation. Structural strength considerations and mutual interference problems need to be carefully considered. Has the Council conducted a proper technical investigation into this matter with the parties involved?

4. Amateur Radio differs from CB.

- 4.1 Amateur radio is a hobby whose primary purpose is experimentation with all aspects of radio communication for the purpose of self-education. This may range from simple Morse transmission/reception through to colour television experiments, satellite communications including the construction of satellite transponders themselves, and state of the art digital communications.
- 4.2 All Amateurs are licensed by the Federal Government and must pass examinations as specified by the ACA. Amateurs are permitted to build and operate transmitting equipment which must comply with emission standards laid down by the Authority. The use of Amateur equipment for pecuniary gain is expressly forbidden. Essentially, the Amateur is licensed as an individual to experiment with radio-communications.
- 4.3 Amateur Radio is licensed within specified bands which extend across the whole radio-frequency spectrum from very low frequencies to above 24 Gigahertz, with permitted maximum transmitter power of 400 watts peak envelope power, or 120 watts continuous. Below 30 MHz, Amateur activities are also subject to the control of the International Telegraphic Union to which Australia is a signatory.
- 4.4 CB or Citizens' Band radio is entirely different. No Cb'er is permitted to construct any transmitting equipment. All radio communications equipment used must be type-approved by the ACA. It is low-powered and must not be tampered with in any way. CB equipment may, within certain guidelines, be used for commercial activities. CB'ers are not themselves licensed; they are permitted to use only approved "class-licensed" radio equipment.
- 4.5 CB is confined to a relatively few channels in two bands, one band at approximately 27.5 MHz and the other approximately 476 MHz. Maximum transmitter power is 12 watts. To achieve any reasonable range, an external antenna is essential.
- 4.6 Short-wave listening and radio scanning are popular hobbies. No transmitting is involved and no license is required, yet both benefit from external antennae.

5. Wireless Local Area Networks:

- 5.1 An entirely new unlicensed radio communications technology is emerging which is becoming increasingly popular. Wireless LANs are used to network together numerous computer systems using high-speed radio data links operating in the 2.4 GHz band.
- 5.2 They are very especially popular amongst the younger generation.
- 5.3 An external antenna system hugely improves the area of coverage and ever more of these systems will be used.

6. Antenna Types Differ:

- 6.1 The nature of radio communications requires that antennas of specific dimensions are required at different frequencies; the lower the frequency the longer the wavelength, thus the larger the antenna must be to achieve acceptable performance.

6.2 Ideally, a separate antenna is required for each operating band. While some compromise is possible, one antenna simply cannot accommodate widely differing frequency bands.

6.3 Antennas, of course, are essential to efficient radio communications whether they be Amateur, CB, or commercial.

7. Electromagnetic Radiation:

7.1 We believe that assessing the effect of electromagnetic radiation is not within the competence of the Council. The Australian Communications Authority (ACA) publishes guidelines on this topic. All transmitters, commercial or Amateur, must meet these standards.

7.2 While there is much emotive discussion about EMR, there is no factual evidence that the levels of EMR permitted by Australian Standards are harmful. The reader is referred to the following website:

[http://aca.gov.au/stds compliance/electromagnetic radiation/licensee book/appendixa.htm](http://aca.gov.au/stds%20compliance/electromagnetic%20radiation/licensee%20book/appendixa.htm)

8. Interference Issues:

8.1 The resolution of interference issues is also not within the Council's competence. The ACA has the necessary expertise and specialised equipment to locate interference; the Council does not. ACA's experience shows that interference complaints are more frequently the result of poorly designed and constructed domestic equipment than any fault of the transmitted radio signal.

8.2 Alleged interference by Radio Amateurs is sometimes contentious, but rarely ever the fault of the radio amateur. An Amateur transmission must conform to standards of spectral purity and stability as determined by the ACA. Unfortunately, most interference complaints result from sub-standard domestic entertainment equipment behaving as a radio receiver due to poor design. This includes some hands-free telephones. Your attention is particularly directed to comments on interference contained in the submission to the Brisbane City Council.

8.3 Australia has not enforced proper Electromagnetic Compatibility standards as has much of Europe and North America, resulting in the continued importing of poorly designed equipment unable to reject unwanted signals. As mentioned earlier, the Council has neither the jurisdiction nor competence to resolve radio interference complaints.

8.4 Amateurs have an excellent record of cooperation with neighbours to resolve interference problems. Unfortunately, there have been instances where despite the Amateur station being given a clean bill of health by the ACA, malicious attempts by neighbours to close down the station have continued.

9. Masts and Towers:

9.1 HARG has no objection to limiting the height of Amateur Radio antennae to 15 metres where such masts are in close proximity to other properties but, for the reasons outlined previously, cannot agree to the restriction of just one slim-line type of mast. Where masts are erected on large, well-screened premises and cannot cause any offence to neighbours, the proposed restrictions are in any case unnecessary.

9.2 The very essence of our hobby is experimentation on many different frequencies with different modes of operation, requiring a variety of antennae. A satellite tracking antenna is an entirely different proposition from a half-wave eighty-metre dipole which is a length of wire! However, we accept that some compromise on an individual basis may be necessary in the interests of neighborly relations. Would any objections or restrictions to a slim mast also apply to the erection of a flag-pole, for example?

9.3 The visual impact of an antenna system is very dependent upon individual circumstances. An Amateur station on a well hidden 5 acre block is quite different from a multiplicity of masts and wires strung about a 500 square metre block where adjacent houses almost touch each other.

9.4 Camouflaging masts or towers is problematical. The visibility of a structure depends upon the aspect of the viewer and the nature of the background. A blue-painted tower, for example, may blend in nicely with the sky on a sunlit day; the same structure against a grey, cloudy, back-drop will be highly visible. Very large commercial structures will be highly visible under any circumstances.

9.5 Prescribed anti-collision lighting, fixed or strobed, is required on tall structures for the safety of air navigation and is governed by Federal regulation. Steel masts and towers are usually galvanised to protect against corrosion. Painting may be unwise since it could mask corrosion or developing cracks. The radiating elements of an antenna system usually cannot be painted because the paint may affect the radio characteristics of that element.

10. Notification of Residents:

10.1 Notification of residents within a specified radius of a proposed Amateur or CB transmitting site is, we feel, quite impracticable and could prove costly for the Council and its rate-payers. A commercial proposal might differ. A two-kilometre radius equates to approximately 12,566,000 square metres. A 500 metre radius encloses about 785,000 square metres. Simple mathematics indicates that such areas could contain a huge number of individual houses.

10.2 People change their address quite often and Amateurs and CB'ers are no different. The Hills is a preferred area for Amateurs because of its geographical nature but to notify a large number of people of the establishment of a new Amateur or CB station is neither practical nor necessary. The permitted transmitter power is such that the field strength beyond a few tens of metres should not disturb even the most susceptible of domestic equipment, and no mast 15 metres high is likely to be visible beyond a few houses away. A database of licensed Amateurs' addresses is kept by the ACA and is freely accessible to any interested person.

10.3 What of short-wave listeners or Wireless LAN enthusiasts who wish to erect external antennae? What of large flag-poles? A mast is a mast, regardless of its purpose. To avoid any hint of discrimination, will the Council require all proposed masts to be notified to all residents within a specified area?

11. Conclusion:

HARG understands that the Council has concerns about the visual impact of the proliferation of radio antennae. However:

- 11.1 We suggest that the demand for ever-increasing use of wireless services by residents will not diminish. In fact, it is more likely to increase exponentially !
- 11.2 Concerns over EMR are groundless and in any case, are not within the Council's competence to assess anyway.
- 11.3 Interference issues are a matter for the ACA, and not for local authorities to engage in.
- 11.4 Relocation of major television and radio services is impractical, but if achieved, must incorporate a buffer zone.
- 11.5 Any restriction on Amateur antennae should depend upon individual circumstances, and should take cognizance of the amateur's needs.
- 11.6 Notification of residents within specified radii of Amateur or CB installations is neither necessary nor practical. Nothing would be gained, and there is no health hazard attached to any radio service emissions at the power and frequency levels we are considering.
- 11.7 The history of the development of radio communications services in Australia and elsewhere **IS** the history of the Amateur Radio Service. Without pioneer Radio Amateurs conducting their experiments (as we still do), there would be no radio communications as we know them today
 - (i) no television
 - (ii) no mobile phones, neither analogue, GSM or G3, anywhere. Full stop.
 - (iii) no Royal Flying Doctor Service outback radio service
 - (iv) hence no point in having a Flying Doctor (because he can't be contacted)
 - (v) no broadcast radio, neither MW (like the ABC 720 nor VHF like 92.4MHz FM)
 - (vi) no radio-location services. Imagine how ships at sea or aircraft would cope.
 - (vii) no GPS location services
 - (viii) no emergency services communications
no Police, Fire, Ambulance, Mountain Rescue, State Emergency Communications etc,
 - (ix) no data traffic (such as GSM phones, office LAN's, weather faxes etc)

These and many many others are all services we take for granted, and all come directly from the results of experiments undertaken by radio amateurs, operating from the "shack" in their homes. It is easy to consider that the experimenting "has all been done", but such an attitude would only demonstrate complete and total ignorance.

As an example, radio amateurs have a plan to establish a repeater station on the Moon by 2010 ... as it is, we talk to the astronauts on the Space Shuttle so often we just take it for granted. No challenge in that anymore. Radio amateurs have more than 40 satellites circulating in current orbit, and one launched in 1974 has just come back to life. Even the might of NASA has not been able to achieve such an incredible feat.

When making your assessments, please recognise that radio amateurs have a role to play, and we make the outcomes of our experiments available to the commercial world at no charge. Without radio amateurs, you lower the overall level of technical expertise in the community, reduce the level of engineering and electronics skills among our young people by failing to encourage them, and make the community a poorer place.

The Wireless Institute of Australia, in concert with the ACA, is concluding the development of a new licensing regime that will include a new Entry Level License. This will encourage many more young people (of any age) to enter the ranks of the Amateur Service. As has been noted previously, the Kalamunda Shire should therefore be prepared to accept (and even encourage) an increase in the number of towers. It has clearly been shown that Radio Amateurs are good for the community, so the development of a positive attitude towards us is in the best interests of the Kalamunda Shire.

Yours faithfully,

Phillip Bussanich, VK6SO
Honorary Secretary
Hills Amateur Radio Group, Inc.
