

14 May, 2007

Greetings fellow Amateurs,

Report on the Proposed General User Radio Licenses for Beacons, Repeaters, and Fixed Stations

The Council of NZART has released a Draft GURL for discussion at the Annual General Meeting at Palmerston North, Saturday 2nd June 2007. This document results from discussions between the radio regulatory enforcer, MED, and the two Council ALOs.

A GURL does not work for fixed stations. We need to have full protection for our valuable assets, as well as give full visibility of our services to other spectrum users. A combined GURL will add to confusion, and prevent progress.

This GURL and the comments with it need to be balanced out with the implications of accepting this proposal. The idea of having station owners able to choose to pay and stay licensed just confuses the discussion, and is not a solution that will work.

We feel strongly that the adoption of this GURL will place our assets in jeopardy. If allowed to become regulation it will, over time, render the assets inoperable. Such a legacy must be avoided. We cannot make a decision without presenting the full picture and both sides of the argument.

To help you to make an informed decision we have prepared a detailed report (attached). This report addresses the deficiencies, and presents an engineering evaluation of the subject, as well as the consequences of adopting the GURL, and the history showing why we are being asked to consider a GURL.

The solution to the fees issue is (and has been for some time,) to convince the political decision makers and regulators to give us back our spectrum rights and protection. We must not permit the GURL to proceed but rather campaign to have the politicians change the regulations.

Please read our submission, and then act. Do not be lulled into complacency by Para 5.3 of the Draft GURL, “but in actual operation it might be workable”. We believe the Draft GURL is unworkable and dangerous to the future of your assets. What a waste if you can’t enjoy them in the future. Reject the Draft GURL. Let’s pursue a better solution together.

On behalf of the Management Committee,
Wellington VHF Group Incorporated, Branch 74 NZART

Signed

Dick Greenbank ZL2TGQ
Secretary

WHAT TO DO NOW

1 Please distribute this letter and report to every Amateur you know.

2 Please attend the AGM of NZART at Palmerston North, Saturday 2nd June 2007, and have your say. The AGM is free. Or, instruct your Trustees and/or Delegate what to say.

3. Join with us in a future campaign to get Politicians to change the Regulations.

Report on the Proposed GURL for Beacons, Repeaters and Fixed Stations

This paper is created by the **Wellington VHF Group Inc.** for your close attention.

It is in response to a proposal from NZART Council and two ALOs, published in *NZART Headquarters-InfoLine* of 6 May 2007 Issue # 137 and available from the NZART website. A proposed GURL, and a second copy of the GURL with comments inserted by the ALOs are provided in that issue with a preamble about a meeting between the ALOs and the MED. This is also published in NZART's 2007 May Branch Circular.

A GURL is not an appropriate licencing system for fixed stations. Such stations have sensitive receivers, high gain antennas, and are located on high elevated sites. Such stations cannot tolerate even low levels of interference, and cannot be relocated or easily changed in frequency. (It is understood that even PRS repeaters have licences, although anyone can operate on them under the PRS GURL. We would have both operators and repeaters in one GURL.)

There are two main technical points that demonstrate this position, see Point 1 and Point 2, below. These are followed by further points, which contain other important and relevant issues.

Point 1: Interference from other stations

The proposed GURL will permit interference to our repeaters and links, and on our beacon frequencies, from licenced, legally-operating non-amateur stations. The calculations to show this are covered in Appendix 1, but a summary of these calculations is that under the law, low levels of signal interfering with us are allowed. With this GURL, we would not be able to insist that these are removed, even if they prevent the operation of our station. A transmitter, fully compliant with the Rules, can interfere with an amateur repeater at these distances:

Frequency	Distance
29.5 Mhz	144 km
146MHz	29 km
434 MHz	9.8 km

That we have been in operation for a number of years will not be recognised. With this GURL, we will simply have no rights over other stations and other services licensed in SMART.

To make matters worse, other spectrum users will not be required to engineer their systems to avoid intermodulation and other products from interfering with our stations. GURL are not in registered in SMART, which is the single, legal and authoritative register of spectrum usage in New Zealand. Our stations will be simply listed elsewhere in what is essentially a "club website", a non-authoritive listing.

Point 2: Interference to other stations

Our stations will be required to not interfere with other spectrum users, even if we have been in operation, legally, for many years. If it can be shown that we are causing a new station a problem, we will be required to cease operation. As in the *Point 1*, our emissions will not be known to the SMART system, so it is unlikely that new services will include us in any engineering work done for a site. When they find the problem, it will be an expensive surprise. We are not likely to be given any grace by the site owner or the MED. In other words, we will lose all first-use rights, as well as being an invisible hazard to other engineers.

This is quite different to the position today. Today our amateur installations are considered as valid as any non-amateur installation. New stations of other radio services must be engineered to ensure that we are not affected.

While it may be considered that these are unlikely situations, these exact situations have already occurred and currently require the new service to make changes to fit into the existing environment and to “work around us”. This is fair, and there are no surprises, thanks to the engineering work that is done. (There are some bad examples where the new service has forced the amateurs to make changes, but this reflects our status as non-paying guests at other peoples sites, as well as poor engineering by the other services.)

Point 3:

The reality of the points above is that once a licensed, legal, and paying service on a site has trouble either from or to an amateur GURL station, we will have to leave the site, or at least leave the frequency. There are not unlimited frequencies available, and the engineering work as well as the actual change whatever it be, requires considerable work. (Note: The work in the recent National System change-over had the protection of licences.)

It is likely that amateur GURL stations will not be allowed to operate on sites owned or operated by responsible managers. The risk of having an unlicensed and unknown station, (unknown in SMART), causing trouble to a paying service or emergency service will simply not be tolerated.

To prove this point, already some site managers have advised that this will be the case, and these sites include many National System linking-stations.

Point 4:

The standard of engineering for a new amateur station, as presented in the proposed GURL, is lower than the existing standard. Only spectrum users within 1 km need to be considered, whereas currently this is 2 km, but in fact most engineers want to avoid any interference, so may go further.

As well as this direct loss, the proposed GURL outlines a sequence of steps towards getting a GURL station on-air that removes the current, nation-wide, ‘efficient use of the amateur spectrum’ approach. A new GURL station need only consider the (new and lower) standards of the local area, but take no heed of long term, efficient nation-wide frequency re-use considerations, considerations that have been engineered over past decades to ensure that we can have the number of repeaters and links that we currently enjoy.

Any available frequency can be used under the GURL at a site, no matter that it may prevent that frequency being reused at other sites for lower, local coverage repeaters. We have managed to meet most repeater demands with the current system, and still have a limited number of spares for the future. The new approach will simply destroy the careful plan, losing the value of years of careful co-ordination.

Point 5:

The proposal allows for station owners to choose to move to the proposed GURL, or to remain in SMART.

All technically-aware owners will have to choose to stay licensed, visible in SMART and protected, causing them to face an unfair burden of fees. They have lost any chance of fighting for their rights to have the fees removed in the future.

But this proposed GURL is only a medium-term problem/solution. The much larger problem will be caused by the unlicensed stations not being able to defend themselves from other services, and slowly having interference move from just the GURL stations to the edges of the licensed stations, as happened with the LIPDs in the 70cm band. (LIPD = Low Interference Potential Devices – also known as Short-Range Devices, SRDs.)

The interfering legal stations will slowly spread, and be able to claim first-use rights across more and more of the country, leaving the SMART-registered amateur stations to argue if it is a legal or illegal interferer, and questioning what should be done about it. And in times of enhanced propagation, these signals will

seriously interfere with legal stations.

We already know this as the “thin end of the wedge” situation, where letting a little problem into the band eventually leads to total loss. (A discussion on this subject is in Appendix 2, citing a real case that we have dealt with.) Note that currently, the first interferer noticed is shut down, before it becomes an established, nation-wide problem.

Point 6:

The proposed GURL only covers 10m, 2m and 70cm bands. In doing so, it covers 258 licences, and leaves out 61.

As a move to pacify most repeater owners, it lands the burden of license fees unfairly on a small number, and as already stated, removes the pressure to resolve the real issue of licence fees. But also to be moved from the 258 to join the 61 are the stations that are owned by those amateur repeater installation owners who value their assets more than the less-than-\$1-per-week that the current fees cost to remain protected by SMART and the MED. Some owners will happily move to the GURL and promote this solution, weakening the case for the remaining owners to find a solution to the fees issue.

Point 6.1: Please also note that most future growth will not be in the crowded 2m or 70cm bands, but in bands not covered by the GURL. This will act as a direct penalty on new developments in amateur radio, which is one of the primary reasons our hobby-interest exists. (The best example of this is new National System links that will be in higher bands to preserve frequency pairs for user-access.)

Point 7:

But there is a real sting in this tail (or tale). If the proposed GURL is later reversed, as it could be, ALL STATIONS COVERED BY THE GURL WILL HAVE TO BE RELICENSED, WITH THE ENGINEERING FEE AND NEW LICENCE FEE PAID. As if that is not bad enough, the chance that the GURL repeater can actually be licensed again is not very high, given that it no longer has first-in-time rights, and this time must be engineered around all other services that have arrived on the site since the station was originally installed! Even other existing amateur repeaters could prevent this, a new group could simply apply for the frequency before the GURL station owners moved to do so.

Point 8:

Where does the GURL take us? The proposed GURL will introduce a two-tier system for fixed stations, with an unfair load on some and remove the political pressure. The solution will allow “spectrum rot” to start, reversing many decades of hard work, time and money that has been spent keeping spectrum for our future.

The end result will be the loss of assets that have been built up over many, many years, and which have been built to be passed onto the future generations of radio amateurs. Our spectrum occupancy rights and our places on hill tops are irreplaceable, gained at times when spectrum and hill tops were not as highly valued as they are today.

Point 9:

The eventual loss of repeaters (even the STSPs) will be a major blow to services such as AREC, the flagship public service provided by amateur radio, and one of the major key reasons that radio amateurs enjoy the many rights and privileges that we do. Another key reason is technical training and skill building, much of which comes from the design and operation of these fixed stations that are being placed at risk. (Note: Marine Air Systems, 4RF, Survey Lab, are just some of the companies started and run by amateurs interested in repeaters and in VHF subjects. We use these success stories to promote the value of amateur radio.)

Point 10:

The negotiation and discussion process has been seriously lacking regarding this proposed GURL, including the failure to remove the licence fees for repeaters beacons and links. The comments infer that FMTAG has been fully consulted - it has not. We have explicitly asked FMTAG if they had seen or discussed the GURL, and the answer is no.

Point 11:

The comments accompanying the proposed GURL do not help us to make an informed decision.. The comments relating to site agreements, technical operation, spectrum planning, and the impacts on groups like FMTAG and site owners we think are wrong.. Only the comments on the changes to the NZART website issues have any technical basis.

THE ROLE OF NZART IN THIS

A previous ALO negotiated with the NZPO for no licence fees for our fixed stations in return for all frequency co-ordination being done by NZART, who delegated this to Officers with the skills and experience to complete the task, and provide recommendations to Council to approve. In general Council made the decisions recommended, and things have gone well. We can be proud of the story to here.

A decision concerning the matter of fees for fixed stations was recently made at a political level and NZART was asked to pursue this at a political level by the ALO. They left it for the ALO to resolve, which we now know cannot be easily done. The ALO was fired about this time.

New ALOs were appointed, and the proposed GURL has now been presented as a solution to the fees issue. This shows that the original matter of fees is not the real issue. The message now is that the MED is willing to forgo fees if they are able to, while still meeting government policy. The choice of staying in SMART was an after-thought and will only confuse the issue..

Point 12:

NZART Council was instructed by members to fix the licence fees issue. Things have gone down the track of removing our licences. We think that they should now pursue the correct, and often-suggested, route of approaching the political decision makers, not the policy implementers.

Appendix 1: Calculations showing that a compliant transmitter can interfere with an Amateur Repeater

A compliant transmitter can interfere with an Amateur Repeater, at a distance of:

144 km at 29.5 MHz

80 km at 52.8 MHz
29 km at 146 MHz
9.8 km at 434 MHz

ASSUMPTIONS

1. Compliant transmitter out-of-band output level -50 dBW e.i.r.p.

The compliance level varies with different radio services. However, the default compliance level specified in Section 34A(2) of the Radiocommunications Act 1989 is:

“Where no power floor is specified....., the power floor is -50 dBW e.i.r.p.”

This level is applied to the licences of high power services such as radio and TV broadcast transmitters. -50 dBW e.i.r.p. equals -20 dBm e.i.r.p.

2. Free Space propagation between co-polar “compliant” and “victim” (Amateur repeater) antennas. The Free Space spreading between isotropic antennas is given by:

$(-22 + 20 \log_{10} \text{Wavelength} - 20 \log_{10} \text{Spacing}) \text{ dBi}$

3. Amateur Repeater antenna system gain +8 dBi. This is the typical peak gain of a four-dipole co-linear, minus system losses. However, some Amateur repeaters have a peak antenna system gain of +13 dBi (Belmont 710).

4. Repeater receiver sensitivity of -117 dBm (0.32 uV in 50 ohms).

CALCULATIONS

Compliant transmitter output -20 dBm e.i.r.p.

Free Space spreading -105 dBi (14,125 Wavelengths)

Victim antenna system gain +8 dBi

Victim receiver input -117 dBm

Frequency Wavelength 14,125 Wavelengths

29.5 MHz 10.17 m 144 km

52.8 MHz 5.68 m 80 km

146 MHz 2.05 m 29 km

434 MHz 691 mm 9.8 km

Appendix 2: The need for country-wide protection

The use of Channel 39 was negotiated in return for the loss of other spectrum. Channel 39 is a very valuable ***spectrum right***, which for other services could be worth many millions of dollars.

The MED has tried to get amateurs to accept broadcasters using Ch39 in remote regions, in order to slowly work the amateurs out. We have responded by licensing Ch39 stations near every major urban area that a broadcaster may desire. We have undertaken a project to supply professional grade TV modulators on Ch39 to any branch that has a licence and a plan to use the unit. This is leadership and understanding being used to positively protect our amateur spectrum.

In one area, a broadcaster tried to test our rights by engineering a transmitter that is very close to our licence, and would cause our users interference and have our station cause interference to their viewers. We responded vigorously and the broadcaster was forced to re-engineer the antennas, power levels and other calculations.

Why is this important? If the broadcaster had won, we would not be able to use Ch 39 in that area. This would allow a broadcaster to apply for a licence to use Ch 39 nearby, and obtain a licence and to show that

it cannot be used by us. This would stop Ch 39 being used by amateurs in further regions, as we might interfere with viewers of the licensed, remote transmitter. Eventually, we would have broadcasters in frequency above us, below us and around us, limiting our use of Ch 39 and forcing us to abandon this exciting and interesting spectrum and technology.

This is a real case example and this case has been fought hard over recent years.

Your enquiries are welcome at E:mail zl2wa@clear.net.nz, or at;

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