



Porirua City



Submission from the Titahi Bay Amateur Radio Club Inc.
and the New Zealand Association of Radio Transmitters
Inc.
to
Porirua City

**Submission on publicly notified
Proposed Porirua District Plan**

20 November 2020

Titahi Bay Amateur Radio Club Inc.(TBARC) Branch 42 of NZART

Document: “List of Attachments”**“List of Attachments” from the Titahi Bay Amateur Radio Club (TBARC)
Submission on publicly notified Proposed Porirua District Plan****Request**

That the following “List of Attachments” in this document in the Table following, and the individual “Attachments”, be accepted and included as part of the total response to the Proposed Porirua District Plan from the Titahi Bay Amateur Radio Club (TBARC) and the New Zealand Association of Radio Transmitters (NZART).

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What decision are you seeking from Council?

What action would you like: Retain? Amend? Add? Delete?

TBARC and NZART request a decision from Council to **“Amend”** the provisions for “Yagi” aerials in the “Residential, Commercial and Industrial” Zones in “Amateur Radio Configuration”: “AR-S6 Yagi Aerials” by prescribing the same standards as the provisions already allowed for “Yagi” aerials the “Rural” Zones”.

Otherwise, we support the provisions for Amateur Radio in the Proposed Porirua District Plan.

It is fair to say that we were impressed with the thorough work that the Planner has done on this S.32 report. It is a comprehensive report.

Reasons:

This submission is being provided jointly by the Titahi Bay Amateur Radio Club Inc. (TBARC) Branch 42 of the New Zealand Association of Radio Transmitters Inc. (NZART) and supported by NZART itself. TBARC members living in Porirua City are directly affected. Our national body supports achieving consistent and reasonable provisions for radio amateurs in New Zealand to reasonably pursue their legitimate interests.

Radio Amateurs in Porirua City need to be able to communicate over medium to long distances, specifically for disaster relief and emergencies in the Pacific Islands. The short aerial dimensions proposed for Yagi aerials in the Residential Zones are beyond the laws of radio physics and are unworkable for this purpose. Our capabilities should not be constrained by the Zone that we live in.

Prepare for and Meet Communication Needs in Support of Disaster Relief

In particular, “Terms and Conditions 7.” in our GURL mandates that “In accordance with Article 25 of the International Radio Regulations, amateur operators are encouraged to prepare for, and meet the communications needs in support of disaster relief.”

Most of our Amateur Radio GURL “Terms and Conditions” are taken directly from the “International Radio Regulations” published by the International Telecommunications Union (ITU) in Geneva. This is the case for T&C 7 above. The NZ Government closely follows the ITU rules and regulations.

It is submitted that as a Local Government organisation, Porirua City cannot abrogate and unreasonably regulate amateur radio that is covered by national NZ and international laws. Using arbitrary rules that impose some physical restrictions and limit some of the dimensions of antennas and supports without a foundation in radio science and engineering is not acceptable. NZ and Porirua are not immune to “Disasters” – man-made or natural; on land.

Our Local Government planners are exhorted to keep in mind that amateur radio is a legitimate scientific endeavour and provider of services for the “public good”; and not set overly restrictive rules for Amateur Radio Configurations (ARCs). Amateur Radio is not a “hobby”.

Attachment A

Allowance for “Yagis” in the Residential Zone in the District Plan

Request

The request from the Titahi Bay Amateur Radio Club (TBARC) is that in the Proposed Porirua District Plan provisions for “Yagi” antennas they need to be to the same standards in the “Residential Commercial and Industrial” Zones as that already allowed in the “Rural” Zones. This “Attachment” is intended to be read in conjunction with “Attachment B: “Antennas (Aerials) Size Does Matter – Wavelength versus Frequency”.

The standard set in “AR-S6 Yagi Aerials” in the “Amateur Radio Configurations” section allows in Rural Zones “for element length to not exceed 14.9m; and the boom length to not exceed 13m”. These are sensible and practical dimensions for a reasonable Yagi “beam” antenna in the 6 metre band, and down through the most used 10, 15 and 20 metre “High Frequency” (HF) bands. These provisions are requested also for the Residential Zone. The improvement in the performance of a Yagi over a standard dipole is significant for radiocommunications over longer distances; and is measurable.

In the proposed Draft District Plan the Residential, Commercial and Industrial Zones etc. are severely restricted with the existing draft provision in “AR-S6 Yagi Aerials” that “the element length to not exceed 2m; and the boom length to not exceed 2m”. This limit on the maximum dimensions will only allow a Yagi to be constructed and used in the VHF bands of 2 metres and higher in frequency, and up into the UHF and microwave bands. These are “line of sight” bands for local communications, with the range limited by local topography. This is an unreasonable provision for the HF bands with no regard to radio science. It is also not reasonable for the provisions for the Residential and other zones to be more restrictive than the Rural Zone. Not every radio amateur can afford to, or needs to, live in a rural area.

TBARC accepts the other Rules for Residential Zones for the maximum height of support structures and their number; and the number of aerials as being reasonable.

The Need for Emergency Communications to the Pacific Islands

TBARC recognises that Porirua City has a high proportion of residents from the Pacific Islands; rightly renowned for their strong links to their families and traditions. Part of the “emergency preparedness” of our members is for some to have the capability to communicate reliably into the Pacific when disasters occur. The “High Frequency” bands are the key to long distance communications. The key enabler is a “gain” antenna like the yagi that can be readily “rotated” to focus the radio energy towards the island group in need. TBARC needs at least some its members in the “Residential Zone” to be able to meet this challenge and be equipped to respond. Few radio amateurs and households are located in the Rural Zone. The club members with the enhanced capability to purchase or construct yagis do this at their own expense and with the practical skills they have. This is at no cost to PCC.

Reliance on “commercial” telecommunications operators can be misplaced. On the Pacific islands structural standards are not consistent, disaster recovery skills are often not good and supply lines are erratic.

Who would have anticipated the COVID-19 pandemic? How is “global warming” going to affect the climate and survivability of the islands? How can PCC help enable alternative communications to the Pacific in major disasters?

[Disclosure: The author has worked and lived with his family "On Loan" to the Government of Western Samoa WSPO (1978/1980); and as a Senior Consultant to the Government of Tonga and TCC with many assignments and visits (1996/2006). He also has a medium sized tri-band Yagi beam – not located within Porirua City. It was installed and used in Western Samoa.]

Development of Yagi Antennas

This is a very basic description of "Yagi" and radio "beam" antenna fundamentals generally. Most antennas used in the Amateur Service are designed to equally receive and transmit.

The "Yagi" type of "beam" antenna has been the subject of intense design investigation and development over many decades. The term "Yagi" has become loosely used over time, sometimes for physical appearance, rather than the specific electrical characteristics of a truly "parasitic" array. The usual configuration is for one driven element, and relies completely on the mutual impedance(s) between or among the driven element and the other "parasitic" elements (typically a longer reflector (about 5%) and some shorter directors (about 5%) to function properly. The driven element is a half-wavelength long at the design frequency (a standard dipole). The elements are not connected together physically except at the "neutral" centre points to a boom. They are at a specific spacing to achieve maximum forward directivity and minimum energy to the rear and sides of the array. There is a direct relationship between the "wavelength" and its corresponding "frequency" and vice-versa; and therefore the lengths of the elements and boom. Modern design practice relies on computer based "Models" that include the specified antenna parameters and the external environment (ground conductivity, buildings, terrain, trees etc.)

For "beam" antennas the "front to back" power ratios and the "forward gain" are important. Increasing the gain is achieved by adding elements that increases the length of the boom. Even more gain can be achieved by creating multi – element arrays.

Please see more details in the companion Attachment B: "Antennas (Aerials) Size Does Matter – Wavelength versus Frequency".

Yagi Antenna Attributes and Construction

"Yagi" antennas (aerials) have been used for a long time. They are the most common type of "beam" antenna for television reception (and in some installations at TV transmitting sites.) They are valued for having the same characteristics valued by radio amateurs:

- Mechanical simplicity, allowing factory manufacture of elements and booms, brackets and hardware; design repeatability, strength and minimum
- High strength and minimum wind resistance
- "Low visibility" with suitable construction using tapered tubing of standard sizes
- Sufficiently wide band performance to receive a number of "wideband" TV channels; or a band of frequencies in an amateur band allocation
- Widely understood design parameters, including computer modelling
- Their design allows reciprocal performance on receive and transmit

They may be "horizontally" polarised or "vertically" polarised, depending on their mounting orientation and intended use. The radio wave polarisation is usually that of the physical mounting orientation.

Commercially made Yagis are available (usually factory manufactured kit sets, typically from the USA and Japan). They are precision made and low profile.

Home made antennas are also popular. They rely on the constructor's metal working skills and NZ sourced aluminium tubing, clamps and parts.

Note: The term "Antenna" is mostly used in the USA; and "Aerial" has a "British" origin in history. They can both receive and transmit. The terms are interchangeable.

The History of the Yagi-Uda Antenna

The use of the name “Yagi” is historical. This “parasitic” antenna design is more correctly called a “Yagi – Uda” array after its two inventors. During the 1930’s in Japan Shintaro Uda was a student of radio science of Professor Hidetsugu Yagi. They developed the mathematics of a “driven” element, “parasitically coupled” (that is, not physically connected) to “reflector” and “director” elements to create a new design. Many tests and measurements of performance were made with variable element lengths, spacing and element diameters etc. They published papers describing their results. Yagi acknowledged that Uda was indeed the inventor.

Radio Science Antenna Definitions

Webster’s Dictionary definition of “antenna” is “a usually metallic device (as a rod or wire) for radiating or receiving radio waves.” Kraus (an early radio scientist) was more technical: “antenna may be defined as the structure associated with the region of transition between a “guided” wave and a “free-space” wave, or vice-versa. This recognises that the antenna is part of a “system” with a transmission line connected at one end to the transmitter/receiver and at the other end to the driven element. To minimise losses all of the component parts need to be “matched” to a common impedance. “Natural” antenna impedances of 50 ohms and 75 ohms are typical and standard.

[Attribution: The historical and radio science information above has largely been extracted from the book “Antenna Physics: An Introduction” by the noted author Robert J Zavrel Jr, W7SX in Oregon; and published by the ARRL in USA. Robert has had varied career in radio operation and science, with degrees in Physics and he holds 7 patents. He has published more than 60 technical papers as at 2016. He has worked and consulted in 35 countries and 6 continents. More detailed technical information can be provided to PCC.]

Radio Science and Amateur Radio

The world community recognises Amateur Radio as a fundamental experimenter and developer of radio technology – and the licensing conditions and activities follow on from that (in order to encourage and support that fundamental recognition).

General Request

TBARC exhorts our Local Government planners to keep in mind that amateur radio is a legitimate scientific endeavour, a provider of services for the “public good” and with amenity values of its own; and to not set overly restrictive rules for Amateur Radio Configurations (ARCs).

Peter B LAKE BE (Hons) (Elect), [C.Eng, MIET (UK); CM ENZ – Retired]; Honorary Life Member NZART; Honorary Life Member TBARC Branch 42 NZART. Licenced Radio Amateur since 1958.

Attachment B

Antennas (Aerials) Size Does Matter – Wavelength versus Frequency

Request

The request from the Titahi Bay Amateur Radio Club (TBARC) is that in the Proposed Porirua District Plan it is recognised that in the radio science of antennas (aerials) that their size does matter. The “Wavelength” is directly related to the “Frequency”. In Standard “AR-S6 – Yagi Aerials – Residential Zones” a restriction is set in Residential Zones that any Element Length must not exceed 2 metres, and any Boom Length must not exceed 2 metres. This is very prescriptive and rules out any yagis in the bands with wavelengths greater than 2 metres – that is, from 6 metres and the most used High Frequency (HF) bands to 20 metres (and bands down to 160 metres where Yagis are seldom used).

This “Attachment B” is intended to be read in conjunction with “Attachment A: “Allowance for “Yagis” in the Residential Zone in the District Plan””.

Introduction

In the fundamental science of radio antennas (aerials) there is a direct relationship between the wavelength (the physical length) and the “resonant frequency” of operation where the optimum performance is achieved. The mathematical relationship is described below.

Most antennas used in the Amateur Service are designed to equally receive and transmit. They may be “horizontally” polarised or “vertically” polarised, depending on their mounting orientation and intended use. The radio wave polarisation is usually that of the physical mounting arrangement.

Fundamental Relationship: Speed of Signal Propagation, Wavelength and Frequency

The velocity of propagation of a radio signal wave is very high – in “free space” it is 299.7925 metres per microsecond (the speed of light). Only about 1/2 a second is needed to travel around the world. In practical radio science and engineering a value 300 metres per microsecond is used.

The mathematical relationship is (in free space): $\lambda = c/f$

λ (wavelength in metres) = c (speed of light 300 million metres/second) / f (Frequency in MHz (Mega Hertz))

Amateur Radio Bands in Popular Use

By way of example, the following table lists the bands commonly used for regular amateur radio communications. Note that the band names (in wavelengths) are their commonly used “names” and are not all precisely correct mathematically. The actual wavelength of the lowest frequency (longest wavelength) for each band is also listed for reference. The “half wavelength” is the dimension commonly used for “dipole” antennas as their total length. “Shortened” antennas are inefficient.

Frequency Range	Band Name	Lowest Frequency	Actual Wavelength	Half Wavelength
1.800 – 1.950 MHz	160 metres	1.800 MHz	166.67 metres	83.33 metres
3.500 – 3.900 MHz	80 metres	3.500 MHz	85.71 metres	42.86 metres
7.000 – 7.300 MHz	40 metres	7.000 MHz	42.86 metres	21.43 metres
14.000 – 14.300 MHz	20 metres	14.000 MHz	21.43 metres	10.71 metres
21.000 – 21.450 MHz	15 metres	21.000 MHz	14.28 metres	7.14 metres
28.000 – 29.700 MHz	10 metres	28.000 MHz	10.71 metres	5.36 metres
50.000 – 54.000 MHz	6 metres	50.000 MHz	6.00 metres	3.00 metres
144.000 – 148.000 MHz	2 metres	144.000 MHz	2.08 metres	1.04 metres
430 000 – 440.000 MHz	70 cm	430.000 MHz	69.76 cm	34.9 cm
1240 – 1300 MHz	23 cm	1240 MHz	24.2 cm	12.1 cm
2396 – 2450 MHz	12 cm	2396 MHz	12.5 cm	6.3 cm
3300 – 3410 MHz	9 cm	3300 MHz	9.09 cm	45.4 cm
10000 – 10500 MHz	3 cm	10000 MHz	3.00 cm	1.5 cm

There is a direct relationship between the “wavelength” and its corresponding “frequency”, and vice-versa.

The Amateur Radio General User Radio Licence (GURL) includes a “Schedule” in Clause 10 that lists the ranges of frequencies, and specific conditions of use. There are some 35 separate ranges (“bands”) prescribed for use by radio amateurs throughout the radio spectrum. These are from Low Frequencies (LF) through Medium Frequencies (MF), to High Frequencies (HF) (short wave), and Very High (VHF), Ultra High (UHF) and microwave and millimetric wave bands. Amateur satellite communications are permitted in some bands. The band designations are mostly historical, from the early days of radio. The characteristics of the radio waves in the entire spectrum change progressively – there are no abrupt transitions.

Comments on the Porirua City Council Draft District Plan – August 2020 – Section AR-S6 – Yagi Aerials – Residential Zones

It is noted that the restrictions in the Residential Zones for Yagi aerials are that “any Element Length must not exceed 2 metres, and any Boom Length must not exceed 2 metres”.

This is very prescriptive and rules out any Yagis in the bands with wavelengths greater than 2 metres – that is, the most used bands from 6 metres through to 160 metres. The most affected bands are the most popular High Frequency (HF) bands of 10, 15 and 20 metres. They are the bands with optimum propagation over medium and long distances (for example into the Pacific, the Americas, Europe and Africa).

All of our allocated bands are allowed to be used under the detailed regulations controlling Amateur Radio in NZ by way of a “General User Radio Licence” (GURL) Notice. This GURL is granted “for the transmission of radio waves by radio amateur operators in New Zealand, for the purpose of communications in the amateur radio service in accordance with the terms, conditions and restrictions of the notice.”

TBARC understands that the perception of “the effects on visual amenity” of different types of antennas is important; but subjective. The restrictions on length are arbitrary to us and appear to not recognise our needs under our GURL to “Prepare for and Meet Communications Needs for Disaster Relief”.

Amateur Radio also has “Amenity Values”. This is addressed in a separate Attachment.

We exhort our Local Government planners to keep in mind that amateur radio is a legitimate scientific endeavour, a provider of services for the “public good” and also has amenity values; and to not set overly restrictive rules for Amateur Radio Configurations (ARCs).

Peter B LAKE BE (Hons) (Elect), [C.Eng, MIET (UK); CM ENZ – Retired]; Honorary Life Member NZART; Honorary Life Member TBARC Branch 42 NZART. Licenced Radio Amateur since 1958

Attachment C**Responsibilities of Radio Amateurs to Prepare for and Meet Communications Needs for Disaster Relief****Request**

The request from the Titahi Bay Amateur Radio Club (TBARC) is that in the Proposed Porirua District Plan the responsibilities of Radio Amateurs includes the requirement in our GURL to “Prepare for and Meet Communications Needs for Disaster Relief” this requirement is acknowledged. This national requirement is identical to that in the International Radio Regulations. TBARC requests that we not be unreasonably impeded in fulfilling this requirement.

Introduction

Radio Amateurs (Amateur radio operators) in New Zealand are regulated pursuant to Regulation 9 of the “New Zealand Radiocommunications Regulations 2001” (“the Regulations”) made under section 116 (1)(b) of the Radiocommunications Act 1989, and acting under delegated authority from the Chief Executive of the Ministry of Business, Innovation and Enterprise (MBIE).

General User Radio Licence” (GURL)

The detailed regulation is by way of a “General User Radio Licence” (GURL) Notice. This is granted for the transmission of radio waves by radio amateur operators in New Zealand, for the purpose of communications in the amateur radio service in accordance with the terms, conditions and restrictions of the notice.

Persons must hold a General Amateur Operators Certificate of Competency and a callsign issued pursuant to the regulations to operate an amateur radio station within New Zealand. (Note: This Certificate is granted by way of passing a written examination (supervised by two qualified examiners and independently checked and reviewed). The NZ examination and the question bank are regularly reviewed, updated; and audited to meet international standards; especially those regulations in the European Union.)

A number of terms, conditions and restrictions clauses are defined in the GURL – 10 in total. Key amongst these is that national and international communication is permitted only between amateur stations, and is limited to matters of a personal nature, or for the purpose of self training, intercommunication and radio technology investigation, solely with a personal aim and without pecuniary interest. The passing of brief messages of a personal nature on behalf of other persons is also permitted, provided no fees or other consideration is requested or accepted.

The GURL includes a “Schedule” in Clause 10 of the ranges of frequencies, and specific conditions of use are prescribed. There are some 35 separate ranges of frequencies (“bands”) prescribed for use by radio amateurs throughout the radio spectrum; from Low Frequencies (LF) through the MF, HF (short wave), VHF, UHF and microwave bands. Amateur satellite communications are permitted in some bands.

Prepare for and Meet Communication Needs in Support of Disaster Relief

In particular, “Terms and Conditions 7.” in our GURL mandates that “In accordance with Article 25 of the International Radio Regulations, amateur operators are encouraged to prepare for, and meet the communications needs in support of disaster relief.”

Most of our Amateur Radio GURL “Terms and Conditions” are taken directly from the “International Radio Regulations” published by the International Telecommunications Union (ITU) in Geneva. This is the case for T&C 7 cited above. NZ closely follows ITU rules and regulations.

Radio waves do not observe international boundaries. They need be regulated internationally. The United Nations set up an organ to this – the International Telecommunications Union (ITU) in Geneva. The ITU sets the world wide standards and rules for radiocommunications and telecommunications; and to allocate scarce spectrum resources. NZ is a member state of the ITU and a signatory to the International Radio Regulations. They are reviewed at 4 – 5 yearly intervals at World Radiocommunication Conferences (WRCs). NZ participates fully in ITU activities. Other players include nearly every government world wide, their military forces, major telecommunications services and manufacturing companies, network operators, satellite services, Broadcasting, Maritime and Aeronautical services etc. Amateur radio organisations and individuals actively participate.

In NZ radio amateurs are members of the national Radio Spectrum Management (RSM) group-and have been included in delegations to key WRCs.

All users want more radio spectrum in our increasingly connected world. Commercial enterprises make billions of dollars selling radio/wireless services and facilities; and pay billions of dollars in spectrum auctions for access rights and licence fees. They are very competitive.

Despite this, the ITU and the WRCs recognise that that some spectrum needs to set aside for experimentation development, and public good (including emergency communications. By consensus agreements of all the participants, some spectrum is set aside at no cost. Part of this spectrum is allocated to amateur radio; recognised as an experimental body and a “service” provider. Many technology and other developments over the last 100 years have been made and championed by radio amateurs; from Marconi onwards. This is still the case – especially the integration of radio transceivers with computers.

Submission

It is submitted that as a Local Government organisation, PCC cannot abrogate and unreasonably regulate amateur radio that is covered by national NZ and international laws. Using arbitrary rules that impose some physical restrictions and limit some of the dimensions of antennas and supports without a foundation in radio science and engineering is not acceptable. NZ and Porirua are not immune to “Disasters” – man-made or natural; on land or in our coastal zones.

Our Local Government planners are exhorted to keep in mind that amateur radio is a legitimate scientific endeavour and provider of services for the “public good”; and not set overly restrictive rules for Amateur Radio Configurations (ARCs). We are not a “hobby”.

Peter B LAKE BE (Hons) (Elect), [C.Eng, MIET (UK); CM ENZ – Retired]; Honorary Life Member NZART; Honorary Life Member TBARC Branch 42 NZART. Licenced since 1958.

Attachment D**Amenity Values of Amateur Radio and Radio Amateurs****Request**

The request from the Titahi Bay Amateur Radio Club (TBARC) is that in the Proposed Porirua District Plan the Amenity Values of Amateur Radio and Radio Amateurs are recognised. Our “objective” values in Amateur Radio are different in nature to the “subjective” “Visual Amenity Values” – but we contend they are equally valid views.

Introduction

This document describes the “Amenity Values” that are inherent in the activities of licensed Radio Amateurs. TBARC emphasises that Radio Amateurs are “givers” and “providers” to their local communities; and to the nation of New Zealand. We should not be seen as only “takers” and “consumers”.

Porirua City appears to be making all its decisions concerning “Amateur Radio Configurations” on a single subjective assessment of the “loss of visual amenity”. There seems to be little weighting or offset given to the “amenity values” of Amateur Radio. Porirua City is requested to positively discuss options with TBARC and NZART for resolving practical outcomes of these differences for both parties.

Amateur Radio provides to the Community:

- Radiocommunications, Telecommunications and Information Technology (IT) expertise; distributed throughout the community
- A reliable system of communication is available during civil or environmental emergencies, distributed and independent of “commercial” networks (telephone land lines, cellular networks)
- Included are networks and stand alone equipment comprising FM simplex channels for direct point to point communications, stand alone FM local repeaters, networks of linked FM repeaters in NZ, beacons, packet radio digipeaters, packet radio links, automatic position reporting systems (APRS), VOIP simplex channels, Earth – Moon – Earth (EME) allocations, digital mode simplex channels (P25,Dstar,DMR) etc. These are all provided by individuals, local radio clubs, and groups of clubs – at their own expense of time, resources, site rents, energy to power equipment and personal funds. They design, construct, manage, maintain and licence the equipment and networks and pay subscriptions; and make the facilities available for use when required for public benefit at no cost. Much individual, collective and radio club experience has been built up.
- Competent communications for Search and Rescue (Land and sea). Amateur Radio Emergency Communications (AREC) volunteers offer their specialist skills free to the public in support of the Search and Rescue sector, Civil Defence and other emergency services 24 hours a day, 7 days a week. AREC works for and with the New Zealand Police, the Rescue Coordination Centre and other lead agencies such as NEMA and FENZ. AREC volunteers donate thousands of hours of their time every year in providing essential communications services. AREC has over 300 trained highly skilled experienced, technically competent communications experts covering the length and breadth of New Zealand.
- Independent communications in support of the NZ Police
- A widely dispersed source of experimental researchers (Radio science and other associated technological endeavours)
- Keeping New Zealand a significant player in international technology development
- Space technology – Radio amateurs are the only group outside of Governments, the Military, and large corporates that have operated satellite technology continuously since the 1970s. This more relevant with the successful satellite launches by Rocket Labs from their facility in Gisborne.

Amateur Radio provides to the Individual:

- Guidance and education towards qualifying for an amateur radio licence, to international standards
- Self education in technology, science and associated skill sets in electronics, construction and integration of components, assemblies and systems
- An entry into technical career paths that can lead to significant contributions to NZ business, services and the economy
- An interest that can be pursued throughout life regardless of situation
- A network of friendships and social contacts linked by a common interest in radio communications – local, national and international
- It is surprising how often a mutual interest can provide a breakthrough in social or business relationships

Clearly, Amateur Radio is not a “hobby” but a strongly science and technology based pursuit.

Note that “Radio Amateur” is a historical term for the spectrum users in the early days of radio/wireless; where spectrum was allocated for “non – commercial” use (that is “not for profit-seeking” business use). It did not assume that the term “amateur” implied any less competency than “commercial” users. Marconi was an “amateur” at the start of his experiments in wireless! Radio amateurs are licensed under international law and national law by our GURL; by way of examination.

We exhort our Local Government planners to keep in mind that amateur radio is a legitimate scientific endeavour, a provider of services for the “public good” and with amenity values; and to not set overly restrictive rules for Amateur Radio Configurations (ARCs).

Peter B LAKE BE (Hons) (Elect), [C.Eng, MIET (UK); CM ENZ – Retired]; Honorary Life Member NZART; Honorary Life Member TBARC Branch 42 NZART. Licenced Radio Amateur since 1958

Attachment E

Amateur Radio Community Service – Principle of Equivalence

Request

The request from the Titahi Bay Amateur Radio Club (TBARC) is that the values and benefits of Amateur Radio be recognised by Porirua City. Personal skills and costs can be seen as an offset against local authority costs through the Principle of Equivalence.

Introduction

Amateur Radio provides to the licenced operator a non-commercial, self-contained and versatile two-way point-to-point communication system; much of which is able to function without access to 'new normal'* taken-for-granted public Electronic Technology Complex (ETC) dependent systems (viz. when public electricity transmission grids and associated public communication networks fail).

* 'new normal' meaning heavily or wholly dependent on today's public ETC, i.e., the amalgam of public power grids and communication networks - upon which most of today's commercial, public service and government systems and processes depend.

Anatomy of Amateur Radio

There are two key elements of Amateur Radio; one being the PRACTICE of Amateur Radio, part of which involves the active use of (non-commercial) of reserved (non-public) electromagnetic spectrum bands: The other key element is being personally licensed PRACTITIONERS. Thus, Radio Amateurs are 'personally licensed individuals qualified to transmit for non-commercial purposes using specified band allocations (Please see the table in "Attachment B"). Amateur Radio is much more than, as some individuals might have it, "just a hobby". For many Radio Amateurs it is a complex technical skills lifetime of learning and a practice-based avocation; along with unselfish volunteerism. They contribute time, resources, energy and often considerable personal funds for the benefit of wider communities and as a humanitarian service rather than for personal financial gain.

Principle of Equivalence

In the context of Volunteer Community Service value, the comparative monetary cost/community value of volunteer Amateur Radio may be illustrated with a back-to-back comparison of **Amateur Radio** Club/Branch costs and their contributions over a given period of time against equivalent **paid local authority emergency communications** systems (the principle of equivalence). The latter local authorities are unlikely to have the loose-knit Amateur Radio know-how and resilience available when something unexpected - 'suddenly out of the blue' - occurs. To manage risks, persons must first have understood and acknowledged them. Radio Amateurs, drawn from many walks of life, offer a widely scattered, skilled, ready-equipped, trained and useable resource in and around their communities. They are unlikely to all be "knocked out"; even in a very extreme long-term catastrophe.

The more structured and regulated societies become the less likely they are to recover from widespread long-term catastrophe and disarray. Short-sighted authoritarian arrangements which focus on replays of past experiences, ignoring or downplaying taken-for-granted-new ETC-age risks, are naïve and unwise. Loose-knit and resilient Amateur Radio networks are in recent times proven world-wide, more than ever, to be vital and versatile "when all else has failed" communication resource; available to aid stricken authorities, communities and nations.

Philip J SLATER Licensed Radio Amateur (ZL2OWL) – DIP MKTG, DIP ENG, communications specialist, researcher, writer and author (incl. *EXTREME BLACKOUT, Exposing Our Modern-Day Vulnerability to Complex Electronic Technology Disruption*).

Attachment F

Amateur Radio – “Self Regulation”

Request

The request from the Titahi Bay Amateur Radio Club (TBARC) is that in the Proposed Porirua District Plan acknowledgment is made of Amateur Radio having a long history of “Self Regulating”. This includes not only our own GURL regulations, but the regulations for Electromagnetic Compatibility (EMC) and Electromagnetic Radiation (EMR) for “Health and Safety”.

Introduction

Since its inception in the 1920's Amateur Radio has had a long history and tradition of “self regulating”. This applies principally to the Radio Regulations, especially with ongoing changes in the Regulations due to technology and world wide regulatory developments. Almost no few cases have ever been reported or prosecuted for unlicensed operators/operations over many decades in New Zealand. Any such operations found are promptly reported to the Regulator for action; or directly addressed by licenced operators.

Amateur Radio “General User Radio Licence” (GURL)

A number of terms, conditions and restrictions clauses are defined in the GURL – 10 in total. Key amongst these is that national and international communication is permitted only between amateur stations, and is limited to matters of a personal nature, or for the purpose of self training, intercommunication and radio technology investigation, solely with a personal aim and without pecuniary interest. The passing of brief messages of a personal nature on behalf of other persons is also permitted, provided no fees or other consideration is requested or accepted.

The GURL includes a “Schedule” in Clause 10 of the ranges of frequencies, and specific conditions of use are prescribed. There are some 35 separate ranges of frequencies (“bands”) prescribed for use by radio amateurs throughout the radio spectrum; from Low Frequencies (LF) through the MF, HF (short wave), VHF, UHF and microwave bands. Amateur satellite communications are permitted in some bands. Radio amateurs in NZ carefully follow these conditions. Any deviation will result in the loss of their licence.

EMC and EMR

In recent years regulations now also include requirements for:

Electromagnetic Compatibility (EMC)

Coordination is required to avoid interference to and from other radio spectrum users in the same bands, adjacent bands and harmonically related bands. This is especially important at “shared” sites, and at repeater sites. NZART has an established “Engineering Licensing Group” (ELG) for this purpose. The group members are qualified and approved by Radio Spectrum Management (RSM) of the Ministry of Business, Innovation and Employment (MBIE). Other major spectrum users have similar counterparts.

Electromagnetic Radiation (EMR)

Human safety must also be considered followed for protection from radiated radio energy by standards. Maximum exposure rules are set in NZ Standard 21772.1.1999 “Radiofrequency fields – Maximum exposure levels 3kHz to 300 GHz”. NZ radio amateurs have been subject to this standard for some decades.

NZART has developed protection calculations and assessment forms for this standard, to ensure our compliance is consistent. As a general rule the need is to protect people in the “Near field” of a radiating antenna when transmitting. Important parameters are human proximity to the antenna; the frequency used; and the transmit power output (less feed line losses) and any gain or loss in the antenna radiation pattern.

Proposed Porirua District Plan

The EMR Standard is now also included in Amateur Radio Configuration "AR-S2" in the Proposed Porirua District Plan. TBARC members, and licensed radio amateurs generally, have no problems in complying with this standard. It is already a part of our regulatory environment.

We also of course comply with Amateur Radio Configuration "AR-S1" in the Proposed Porirua Draft District Plan that requires the ARC to be owned and operated by a licenced amateur radio operator. These are reasonable provisions.

Peter B LAKE BE (Hons) (Elect), [C.Eng, MIET (UK); CM ENZ – Retired]; Honorary Life Member NZART; Honorary Life Member TBARC Branch 42 NZART. Licenced since 1958.

Attachment G

Amateur Radio Emergency Communications (AREC) in 2020

Request

The request from the Titahi Bay Amateur Radio Club (TBARC) is that in the Proposed Porirua District Plan the following information in this Attachment about AREC is acknowledged and accepted, and used to inform decision making. AREC has changed substantially in recent years – with new and updated management, funding, organisation and capability.

TBARC also requests that in the “Section 32 Evaluation Report Part 2 – Amateur Radio 1” in “Section 5” “Resource Management Issues Analysis” that the wording in “Section 5.1 Background” in paragraph 2 that “amateur radio in emergencies is “not sufficiently technologically advanced”” be reviewed and updated.

“Emergency precautions and exercises were always unnecessary – until the day they became necessary”

Amateur Radio Emergency Communications (AREC) – Critical Issues

Funding and Reporting

AREC is funded by the NZ Government via the Ministry of Transport (MOT) and NZ Search and Rescue (NZSAR) Council to provide a range of “Search and Rescue Services” under a Service Level Agreement (SLA).

AREC reports to the Search and Rescue (SAR) Coordinating Authorities of the New Zealand Police and RCCNZ to deliver these services to the NZ SAR Sector.

AREC works in partnership with the other SAR sector partners, in particular LandSAR, Coastguard and the coordinating authorities to provide the services.

High Frequency (HF) Radio Services

As part of the services delivered, AREC provides HF radio communications to/from the SAR Field team during searches. This is an essential communications service required not only to ensure a successful communication link between the SAR Base Incident Management Team (IMT) and the Field Search Teams; but also to ensure communications are available for Health and Safety reasons. HF bands/channels are used where other forms of communication are not available – such as distance and terrain.

The HF communications services use the international “Search and Rescue” frequencies (5680 and 3023 KHz) for communications. These frequencies require HF antenna systems that will work at those frequencies. The design of these HF antennas is such that a sufficient elevation of the antenna above the ground is required to ensure that the radio and hence the communications can work efficiently. The primary design used is a dipole that needs to be a minimum of 11 metres above ground or an HF Yagi beam antenna of sufficient size and height to be able to tune to those frequencies.

Without the ability for these antenna systems to be used and erected to provide these essential communications for search and rescue, it puts the volunteer SAR teams at risk when other forms of communications fail.

The SAR Sector partners rely on AREC being able to provide the HF communications as the final backup for ensuring critical communications are provided to reduce the risks to the field teams and ensure their health and safety.

Amateur Radio Emergency Communications



AREC



Introduction to AREC

AREC was founded in 1932 after the Napier earthquake to train radio operators in providing reliable message handling over the length of the country for any type of emergency. Since then, essential communications have been provided for thousands of emergency events ranging from search and rescue to natural disasters to civil emergencies. AREC is the public service arm of the New Zealand Association of Radio Transmitters (NZART). It was formed by members who are individually licensed amateur radio operators required to meet the licence standards set by Radio Spectrum Management; part of the Ministry of Business, Innovation and Employment. AREC is a national volunteer “not-for-profit” registered charitable organisation providing radio and technology communications services all over New Zealand. Our highly competent, experienced volunteers establish and deliver communications wherever and whenever a search or emergency event may be. AREC is an associate member of LandSAR New Zealand and a member of the New Zealand Search and Rescue (NZSAR) Consultative Committee. AREC receives funding and provides Search and Rescue services under a service level agreement with NZSAR, New Zealand Police and Maritime New Zealand.

History of AREC

The Amateur Radio Emergency Communications organisation is a network of amateur radio operators throughout New Zealand, who provide communication services to emergency services at incidents.

AREC was founded amid the disastrous Napier earthquake of 1931, in which Amateur Radio operators assisted the Post & Telegraph Department with communications between Napier and Wellington. The mode of transmission was Morse code.

After that traumatic event, it was seen that there was a need for the establishment of a more co-ordinated approach to disaster communications.

Consequently a group was established under the parent umbrella of the New Zealand Association of Radio Transmitters. This group was then called the ARES, the Amateur Radio Emergency Service, later to be renamed the Amateur Radio Emergency Corps, AREC. Recently AREC has again had a name change to Amateur Radio Emergency Communications.

AREC provides voluntary radio communications for many sports and public events across New Zealand.

Over the following years AREC was expanded throughout New Zealand with the establishment of “Sections” of the parent group, formed along para-military lines with an Officer in Charge and Deputy, followed by Area Officers and then Section Leaders, and last but not least, the Members. This group plays a very important role of supplying specialised communications where required. Further evolution has been driven by increased service level requirements, health & safety and modern technical competencies. The result is the organisational structure we have today.

The People in AREC

The word "Amateur" in AREC recognises that nearly all members of the organization are unpaid volunteers. Our professional volunteers offer their specialist skills free to the public in support of the Search and Rescue sector, Civil Defence and other emergency services 24 hours a day, 7 days a week. We work for and with the New Zealand Police, the Rescue Coordination Centre and other lead agencies such as NEMA and FENZ. Our volunteers donate thousands of hours of their time every year in providing essential communications services. We have over 300 trained highly skilled experienced, technically competent communications experts covering the length and breadth of New Zealand. In most areas AREC provides the communications equipment and operators at the Search Headquarters, support for setting up the equipment, and the training for the Search Teams who communicate back to the Search Headquarters.

As well as communicating between the search teams and the search headquarters, AREC may also be required to provide communications back to a "town base" if the search is in a very remote area. Communications to air (helicopters) support is also sometimes required. In most parts of the country High Frequency radio communications is required. The use of VHF handheld equipment in conjunction with portable repeater equipment is becoming more common. AREC carries out thousands of voluntary hours of support across New Zealand providing emergency radio infrastructure, technical advice and trained competent radio operators

AREC Organisation

The AREC Advisory Board is the governance body of the organisation, chaired by the President of NZART with independent Directors appointed. NZART appoints the "AREC National Director" (also a member of the Board) who is charged with managing the organisation to deliver the agreed annual business plan and the achievement of the AREC strategy. The National Director is supported by a small team of contracted national support employees. The volunteers are supported by 10 volunteer District Managers and either volunteer Group or Section Leaders as necessary across the country based on volunteer numbers and activity volumes.

AREC Vision

The AREC vision is:

"To be the preferred provider of Emergency Communications to New Zealand Emergency Services"

AREC Purpose/Mission

"We are skilled Volunteers providing essential Radio & Technology Communications services in support of:

- New Zealand Search & Rescue (SAR) Sector
- Civil Emergency (NEMA & CD)
- Public Events Safety"

AREC Objectives

AREC's primary objectives are to:

1. Work closely with the SAR coordinating authorities (Police & RCCNZ) in assisting with technical information, policy, and development of technology related to SAR
2. Respond to SAR operations by the provision of highly trained, technically competent and experienced communications volunteers.
3. Provide education, training and assessment in the establishment and operation of essential radio and technology communications.
4. To provide trained, competent personnel to deliver advice and to support communications capability utilising AREC and emergency service provider assets.
5. Support civil emergency events in collaboration with Civil Defence, and other emergency services in New Zealand by the provision of experienced radio communications volunteers.

6. Provide and maintain suitable radio and communications technology equipment and infrastructure to enable our volunteers to provide a highly capable and responsive emergency service.
7. To provide expert advice as required to support the provision of communications infrastructure for emergency service deployment as requested and agreed.
8. Assist public/community event safety by providing experienced radio communications volunteers

AREC Values

Values	Key Message Concepts	Value to Stakeholders
Voluntary Service	We do not charge for our radio and technology communications services	Trained, competent professional volunteers providing search and rescue support to coordinating authorities. Our motivation is altruism and the desire to give something back to our wider communities
Technical Excellence	Our members strive to achieve the highest engineering and operational standards	Our people are drawn from every walk of life and profession giving a breadth of experience aligned to unique technical depth, training, and experience.
Safety Conscious	We continuously identify and evaluate risks and hazards before and during all activities taking steps to prevent potential harm	Keeping ourselves, our partners, and the public as safe as possible.
Prepared & Responsive	Proactively maintain our equipment and ourselves ready to respond rapidly when called upon	We respond quickly, with appropriate resource and equipment to meet any situation
Respectful, Collaborative, Friendly	We are collaborative and respectful and treat others in a friendly manner that we would expect to be treated.	We are easy to work with and maintain healthy relationships in a spirit of cooperation

Don ROBERTSON AREC National Director; Advanced Management Diploma, Fellow Institute IT Professionals (FITP), Chartered IT Professional (CITP).
 Director Robertson Logic Limited, Member TBARC Branch 42 NZART

Attachment H

Brief History of Early Emergency Communications in NZ

Request

The request from the Titahi Bay Amateur Radio Club (TBARC) is that in developing the Proposed Porirua District Plan the historical values and benefits of Amateur Radio are recognised. Club and personal skills have contributed to early emergency communications responses in NZ.

Introduction

Licensed radio amateurs have served New Zealand, from the very early days of "Radio". Until the early 1930's such involvement was largely accidental. Such an early example in 1912 was the Wellington youngsters who picked up a distress call from a ship at the Harbour entrance and passed it on to the authorities. Other incidents were around the Auckland and Northland coast lines, and in the Pacific. Help was given in 1928 to track aviator Charles Kingsford-Smith in "Southern Cross" with the first flight across the Pacific.

Napier Earthquake 1931

The devastating Napier Earthquake (3 February 1931) affected Napier, Hastings and Hawkes Bay. It killed 258 people and thousands were injured. All normal communications through the P&T overhead telegraph and telephone long distance "toll" pole lines were lost to Dannevirke and south, to Taupo in the west and north to Gisborne. In Napier the new 3 –story CPO building survived including the telephone exchange; but then caught fire and burned down. The very first reports were from merchant and Navy ships in the port of Napier, to Wellington. Hawkes Bay radio amateurs resurrected damaged amateur radio equipment (including antennas) and quickly established wireless telegraphy (Morse code) links via further afield radio amateurs (including Rotorua, Palmerston North and Wellington) and out of and into affected areas. Amateur radio links plugged gaps, serving the communication needs of civil agencies, until local and military authorities were able to muster resources, repair damaged public networks, and take over.

Emergency Communications for Public Good

Since those early days amateur radio (Morse telegraphy, voice telephony and, latterly, data communications) have evolved in keeping with (and sometimes leading) changing times. Recent examples of New Zealand amateur radio contributions to public safety include earthquakes, fires and wild weather around NZ and the Pacific.

Present and Future

So far as present and future viability is concerned, new widespread public risks (associated with the rapid advancement of electronic technologies) have emerged. Many are not well recognised or covered by current Government emergency service arrangements. The value of the licensed volunteer amateur radio operators as backstops, need to be recognised. They are widely dispersed and live in their communities. They are ready and willing to assist authorities to deal with old and new shortcomings (e.g., widespread collapse of public power grids and network operator communication networks). The risks increase by the day.

When all else fails amateur radio communications can still work.

Philip J SLATER Licensed Radio Amateur (ZL2OWL) – DIP MKTG, DIP ENG, communications specialist, researcher, writer and author (incl. *EXTREME BLACKOUT, Exposing Our Modern-Day Vulnerability to Complex Electronic Technology Disruption*).

Attachment I

History of TBARC with PCC and its Predecessor Makara County Council

Request

The request from the Titahi Bay Amateur Radio Club (TBARC) is that in the context of the Proposed Porirua District Plan, that the long and mutual history and relationships of the two parties is recognised. In the context of any discussions over matters of difference our objective will still be to reach a mutually agreeable solution.

Introduction

This document records the history of the Titahi Bay Amateur Radio Club (TBARC) and the Porirua City Council (PCC); and its predecessor the Makara County Council.

TBARC is known as "Branch 42" of the New Zealand Association of Radio transmitters (NZART). The Club was formed in late 1946 with a core of radio amateur members who were New Zealand Broadcasting Service (NZBS) employees at the Titahi Bay transmitting station, workshops and operational base (It was established in the 1930's). Many were returned servicemen with interests and skills in radio technology and communications. Initially meetings were held in staff quarters at the station and then at homes of members. The Branch was in recess for a period from late 1949 and then reformed as the population grew rapidly by the late 1950's. It has been continuously active since then – for almost 60 years. Meetings were held for a brief period at the Porirua School.

TBARC is the focal point for our area's local amateur radio support of the community. The "Titahi Bay" name is historical, from the location of the club formation. Our geographical "catchment area" traditionally comprises all of Porirua City, Tawa and northern parts of Johnsonville. Other clubs cover the Kapiti coast, Wellington, the Hutt Valley and Upper Hutt; along with the Wellington VHF Group as a special interest group. At 2 November 2020 the Club had 32 members. Our membership has been stable over a long period of time. Like many clubs and volunteer organisations it is a challenge to maintain active memberships and find new recruits..

Makara County Council – Porirua City Council

By 1962/63 Local Authorities were being encouraged to set up Civil Defence organisations. TBARC had a keen interest in Amateur Radio Emergency Communications from the outset in 1946, and this enabled us to be given access to the vacant "loft" at the Tireti Hall, owned at that time by the Makara County Council. The loft, accessed by ladder provided space for meetings to be held and emergency gear to be stored. A short time later the Makara County was amalgamated into the newly formed Porirua City. A stairway was installed to provide better access.

In 1996 TBARC was relocated by Porirua City to the ground floor of the Tireti Hall, into the space vacated by the Titahi Bay Public Library. Subsequently TBARC embarked on a multi-year programme to refurbish, repaint and fit out the space for meetings, education and training, examinations and equipment storage.

These improvements enabled the installation of operational amateur radio transceivers for regular HF communications around NZ and the world, on nets, access to our local VHF repeater and other regional repeaters and the UHF "National System". We are "ready to go" with emergency preparedness. We also use some of the space to store emergency equipment, maintain a technical library, and hold technical spare parts and components.

TBARC has been demonstrably viable over a long period of time. The early years since formation in late 1946 were influenced by the founders, mostly returned servicemen, and the post-war environment. The turning point was in 1962 when our value was recognised by the Makara County Council, the original owners of Tireti Hall; later transferred to the Porirua City Council. We have been continuous, long term occupants and users of part of the Tireti Hall since then. This stable base for our operations has been pivotal to our viability and survival.

Our “parent” organisation NZART, formed in 1926, is a strong supporter of its Branches/Clubs and a source of stable leadership. It is part of the world-wide organisation, the International Amateur Radio Union (IARU) and a Member of “Region 3” that covers the Asia – Pacific area.

In June 2020 a formal lease for our part of the Tireti Hall was signed after an Expression of Interest (EOI) process in early 2019 was successful.

It is emphasised that TBARC is essentially member funded. Funds are a limited resource. Our licence conditions are such that radio amateurs and the “Amateur Service” are “non pecuniary” and we cannot charge for any services provided. Other sources of income are few.

Civil Defence

By 1962/63 Local Authorities were being encouraged to set up Civil Defence organisations. TBARC had a keen interest in Amateur Radio Emergency Communications from the outset in 1946, and this enabled us to be given access to the vacant “loft” at the Tireti Hall, owned at that time by the Makara County Council. The loft, accessed by ladder provided space for meetings to be held and emergency gear to be stored. A short time later the Makara County was amalgamated into the newly formed Porirua City Council.

Relationships

TBARC has had along relationship with PCC that we value – more than 55 years. This has been of value to both parties. TBARC has no desire to degrade this relationship and seeks to work constructively to resolve any differences of opinion about clauses in the Proposed Porirua District Plan.

One issue that we see as being detrimental is to be able to communicate in some of our duly licenced High Frequency (HF) bands over medium to long distances from Residential Zones. These clauses and provisions are contained in the Amateur Radio Configurations (ARCs). “AR-S6 Yagi Aerials” in Residential Zones. In the Proposed Porirua District Plan they specifically severely restrict our capabilities with the “maximum 2m long element and boom” dimension limits. Such “electrically short” Yagis are unusable from the 6 metre band down through the higher frequency HF bands to 20 metres.

TBARC wishes to discuss this issue with PCC to reach a mutually agreeable solution in due course.

Ken Pattle ZL2TKY Immediate Past President TBARC Branch 42 NZART

Attachment J

Television Reception Yagi Antennas

Request

The Request from the Titahi Bay Amateur Radio Club (TBARC) in the context of the Proposed Porirua District Plan, is that the following history of TV reception in the Wellington Region be noted as an example of “what might have been” had a different Council regulatory environment been in force at that time.

Introduction

“Yagi” antennas (aerials) have been used for a long time as the most common type of antenna for television reception (and in some installations at transmitting sites.) They are valued for having the many of the same characteristics valued by radio amateurs:

- Mechanical simplicity, allowing factory manufacture of elements and booms, brackets and hardware; design repeatability, strength and minimum wind resistance
- Sufficiently wide band performance to receive one or a number of “wideband” TV channels
- Widely understood design parameters, including computer modelling
- Their design allows reciprocal performance on receive and transmit
- They can be “horizontally” or “vertically” polarised, depending on their mounting orientation; to meet the adjacent channel coverage protection zones set by the TV network plans
- They can be readily attached to buildings by simple support structures

A Case Study from the Inception of TV1, Channel 1

This an example of what would have occurred in 1960 had the Porirua City Council (PCC) had a planning rule at that time of banning “Yagi aerials with Element lengths greater than 2m and Boom lengths of more than 2m” in Residential zones. (We realise that this was not the reality at that time, as few “DP type “rules” existed).

Analogue TV coverage in parts of the Porirua area was first provided over 53 years ago, from 1960 to 2013 from Mt Kaukau in Wellington. Digital TV transmission was started with “Freeview” coverage from Baxters Knob in Porirua after 2013. In 1960 WNTV1 was set up to transmit analogue TV from Mt Kaukau on Channel 1 to Wellington City and the region.. Everyone within the coverage zone (including Porirua) who wanted to receive WNTV1 had to have a Channel 1 TV aerial. Because of the transmission frequency (50MHz) of the TV signal, the aerial had to have elements which were each 3 metres long; that of “half wave” dipoles. Channel 1 was the lowest frequency available and had the best coverage in hilly terrain. Subsequently many “TV Repeaters” were installed on higher frequency channels to overcome the hilly terrain causing “shadows” to reception. If the rules in the current Proposed Plan had been put in place over that period, no-one would have been able to receive WNTV1, because an aerial with the limits of 2m long elements would have been quite ineffective on that channel. So would the planners at that time have adapted their “Rule” to allow TV aerials with 3m long elements? And if they would (because 2m elements were unusable) for just entertainment reasons, why would they not do the same thing for an experimental science amateur radio application?

Amateur Radio and our “6 Metre” Band

As a subsidiary note, prior to the coming of the WNTV1 transmissions in 1960 (and in other major cities), the spectrum of 50 – 54 MHz (the amateur “6 metre” band) was allocated to the Amateur Service. The Ministry at the time withdrew this allocation, as it was clear that amateur transmissions on the edge of and within the TV1 channel would cause unacceptable interference to local TV receivers. We accepted that. With the advent of digital TV operating in UHF frequency allocations, we have subsequently had this allocation returned to us. It is now aligned and matches the international allocation. In NZ we are now using this returned allocation for direct transmissions of voice and digital modes around NZ to establish range and coverage with modern technology, establish repeaters and investigate long distance propagation in NZ and internationally.

Ken Pattle ZL2TKY Past Chairman TBARC Branch 42 NZART

Attachment K

Value of Amateur Radio Skills in Science and Business

Request

The request from the Titahi Bay Amateur Radio Club (TBARC) is that Porirua City recognises the attached personal statement of the career of Dr Murray Milner ZL2LB as part of our total response to the Proposed Porirua District Plan. This statement is an example of a career that is typical of other licenced radio amateurs in New Zealand, since the first licences were issued in January 1923. Similar significant contributions have been made to the NZ economy and its development by other licensed amateurs at all levels of skill and endeavour. Murray is a Member of TBARC Branch 42 of NZART.

“Value of Amateur Radio Skills in Science and Business”

Dr Murray Milner ZL2LB - My career based on a foundation of amateur radio.

I gained my amateur radio license at age 15 when a student at Shirley Boys High School. This commenced a career in information and communication technology starting with a student bursary from the New Zealand Post Office to undertake an Electrical Engineering Degree at Canterbury University. In 1980 I was awarded a PhD in Electrical Engineering from the same university, with part of my thesis focused on the improving the performance of Cassegrainian antennas (the so-called "dish" antennas).

My first job with the New Zealand Post Office was to assist with the implementation of the first microwave radio system down the West Coast of the South Island to improve telephone communication for West Coasters. Then I was transferred to the Wellington Radio Section in the Engineer-in-Chief's Office in Wellington with the immediate goal to refurbish the Warkworth Satellite Earth Station (including a 30m diameter Cassegrainian antenna). Over the following decade I led the implementation of a new 32m diameter satellite earth station at Warkworth and two 18m satellite earth stations at Wellington and Rangiora.

During the 1980s, I was also awarded a Confederation of British Industry Scholarship to work with Marconi Communication Systems Ltd, which was named after the "father" of radio communication (Guglielmo Marconi) and gave me the opportunity to work in the Marconi Research Laboratories. This was followed a couple of years later by the award of a Harkness Fellowship which enabled me to undertake post doctoral research at Carnegie-Mellon and Stanford Universities over a two year period. My research involved the engineering, economics and public policy issues associated with the introduction of a domestic telecommunications satellite capability for New Zealand. All of this work was supported by the foundations in radio communication derived from my early introduction to amateur radio.

During the 1990s, my career within the then corporatised Telecom New Zealand progressed through a range of positions from Manager of Advanced Technology, General Manager Fundamental Planning; General Manager Network through to General Manager Development. Throughout this decade my knowledge and experience expanded to encompass a wide variety of technologies used by Telecom, but radio remained a core interest. I was the editor of the only global standard on second generation cellular mobile technologies early in the decade. In 1992, I participated as part of the New Zealand delegation at the World Administrative Radio Conference held in Spain, an outcome of which was the allocation of spectrum for the emerging third generation cellular mobile technology. Throughout the decade, I was highly involved in the development of Telecom's cellular mobile technology alongside a wide range of other emerging technologies. This led to my appointment as Chief Technology Officer in 2000, a position that I held until my resignation in late 2005.

Since 2005, I have run my own consulting business in Information and Communication Technology (ICT). This has involved working with a wide range of corporate and government clients both within New Zealand and around the globe. Some highlights include the following governance appointments:

- Director of Crown Fibre Holdings from 2009 through to 2019,
- Chair of the National Health IT Board from 2010 through to 2016,
- Chair of the Whole of Government Radio Network from 2015 through to 2019.

The last of these appointments provided leadership for the approval of a budget for the implementation of the Next Generation Critical Communications initiative which is currently being implemented to deliver a transformational improvement in wireless communications for the New Zealand Police, Fire and Emergency New Zealand, Wellington Free Ambulance and St John Ambulance. Once fully implemented these services will have seamless access to broadband communications wherever they are providing critical services for New Zealanders throughout the country, using advanced Public Protection and Disaster Recovery features of the cellular mobile system combined with communications features offered by the next generation of Low Earth Orbit satellite systems.

Many aspects of this advanced technology being introduced for the provision of these Critical Communication services are also being explored by radio amateurs around the world today, including in New Zealand. Aspects of these advanced technologies are being progressively integrated into the portfolio of capabilities being provided for the delivery of public services by the Amateur Radio Emergency Communications groups throughout New Zealand, including those in Porirua.”

Dr Murray Milner ZL2LB, Member of TBARC Branch 42

ATTACHED RMA FORM 5 (4 pages)

TO ACCOMPANY OTHER TITAHU BAY AMATEUR RADIO CLUB

PORIRUA CITY PROPOSED PORIRUA DISTRICT PLAN

SUBMISSION DOCUMENTS, PREVIOUSLY LODGED

(YESTERDAY 19 November 2020)

Friday 20 November 2020

Porirua City Council
20 NOV 2020
Customer Service

RMA FORM 5



Submission on publicly notified Proposed Porirua District Plan

Clause 6 of the First Schedule, Resource Management Act 1991

To: Porirua City Council

1. Submitter details:

Please associate with rest of Titahi Bay Amateur Radio Club PDP submission dated 20 November 2020 - thank you.

Full Name	<i>Last</i> LAKE	<i>First</i> Peter Brian	
Company/Organisation <i>if applicable</i>	Titahi Bay Amateur Radio Club Inc. (TBARC) and New Zealand Association of Radio Transmitters (NZART)		
Contact Person Alternative CONTACT/COPY ALL Correspondence to: <i>if different</i>	Secretary Branch 42 NZART Titahi Bay Amateur Radio Club Inc. Bruce Officer Email: b42nzart@gmail.com Postal Mail: 30 Peterhouse Street TAWA 5028		
Email Address for Service	peter.lake@xtra.co.nz		
Address	12 Brasenose Place, Tawa		
	<i>City</i> Wellington	<i>Postcode</i> 5028	
Address for Service <i>if different</i>	<i>Postal Address</i> Additional Address to copy all correspondence etc. to : AS ABOVE – Secretary plus Peter LAKE	<i>Courier Address</i>	
Phone Peter LAKE	<i>Mobile</i> NA	<i>Home</i> (04) 232 4386 First choice	<i>Work</i> NA

2. This is a **submission** on the **Proposed District Plan** for Porirua.

3. I could NA I could not **Not gain** gain an advantage in trade competition through this submission.
(Please tick relevant box)

If **you could** gain an advantage in trade competition through this submission please complete point four below:

4. I am I am not
 directly affected by an effect of the subject matter of the submission that:
 (a) adversely affects the environment; and
 (b) does not relate to trade competition or the effects of trade competition.
(Please tick relevant box if applicable)

Note:

If you are a person who could gain an advantage in trade competition through the submission, your right to make a submission may be limited by clause 6(4) of Part 1 of Schedule 1 of the Resource Management Act 1991.

5. I wish **YES – BE HEARD**
 To be heard in support of my submission
(Please tick relevant box)

6. I will **YES** I will not
 Consider presenting a joint case with other submitters, who make a similar submission, at a hearing.
(Please tick relevant box)

Please complete section below (insert additional boxes per provision you are submitting on):

The specific provision of the proposal that my submission relates to:

This submission specifically relates to the provisions in the Proposed Porirua District Plan 2020 contained in the “Section 32 Evaluation Report Part 2 – Amateur Radio – 1”; and the provisions for “Yagi” aerials in “Amateur Radio Configuration”: “AR-S6 Yagi Aerials.”

Do you: Support? Oppose? Amend?

TBARC and NZART specifically request to “**Amend**” the provisions for “Yagi” aerials in the “Residential, Commercial and Industrial” Zones to match the provisions already allowed in the “Rural” Zones”.

<p>What decision are you seeking from Council? What action would you like: Retain? Amend? Add? Delete?</p>
<p>TBARC and NZART request a decision from Council to “Amend” the provisions for “Yagi” aerials in the “Residential, Commercial and Industrial” Zones in “Amateur Radio Configuration”: “AR-S6 Yagi Aerials” by prescribing the same standards as the provisions already allowed for “Yagi” aerials the “Rural” Zones”.</p> <p>Otherwise, we support the provisions for Amateur Radio in the Proposed Porirua District Plan.</p> <p>It is fair to say that we were impressed with the thorough work that the Planner has done on this S.32 report. It is a comprehensive report.</p>
<p>Reasons:</p>
<p>This submission is being provided jointly by the Titahi Bay Amateur Radio Club Inc. (TBARC) Branch 42 of the New Zealand Association of Radio Transmitters Inc. (NZART) and supported by NZART itself. TBARC members living in Porirua City are directly affected. Our national body supports achieving consistent and reasonable provisions for radio amateurs in New Zealand to reasonably pursue their legitimate interests.</p> <p>Radio Amateurs in Porirua City need to be able to communicate over medium to long distances, specifically for disaster relief and emergencies in the Pacific Islands. The short aerial dimensions proposed for Yagi aerials in the Residential Zones are beyond the laws of radio physics and are unworkable for this purpose. Our capabilities should not be constrained by the Zone that we live in.</p> <p>Prepare for and Meet Communication Needs in Support of Disaster Relief In particular, “Terms and Conditions 7.” in our GURL mandates that “In accordance with Article 25 of the International Radio Regulations, amateur operators are encouraged to prepare for, and meet the communications needs in support of disaster relief.”</p> <p>Most of our Amateur Radio GURL “Terms and Conditions” are taken directly from the “International Radio Regulations” published by the International Telecommunications Union (ITU) in Geneva. This is the case for T&C 7 above. The NZ Government closely follows the ITU rules and regulations.</p> <p>It is submitted that as a Local Government organisation, Porirua City cannot abrogate and unreasonably regulate amateur radio that is covered by national NZ and international laws. Using arbitrary rules that impose some physical restrictions and limit some of the dimensions of antennas and supports without a foundation in radio science and engineering is not acceptable. NZ and Porirua are not immune to “Disasters” – man-made or natural; on land.</p> <p>Our Local Government planners are exhorted to keep in mind that amateur radio is a legitimate scientific endeavour and provider of services for the “public good”; and not set overly restrictive rules for Amateur Radio Configurations (ARCs). Amateur Radio is not a “hobby”.</p>

More specific details and technical and regulatory reasons are provided and listed in the "Index Sheet" and the "Attachments" as advised below and attached as separate subject specific documents.

Additional Request: Attached Documents

TBARC and NZART request that the "Index Sheet" and the "Attachments" listed in it are to be considered and treated by Porirua City as an integral part of the total TBARC and NZART Submission.

Document: "List of Attachments"

"List of Attachments to Titahi Bay Amateur Radio Club (TBARC) Response to the Porirua City Council (PCC) Draft District Plan"

This further Information comprises the "List of Attachments" and the eleven (11) "Attachments" labelled "A" to "K".

Please return this form no later than **5pm on Friday 20 November 2020** to:

- Proposed District Plan, Environment and City Planning, Porirua City Council, PO Box 50-218, PORIRUA CITY or
- email dpreview@pcc.govt.nz

Signature of submitter
(or person authorised to sign
on behalf of submitter):

Phil Slater
Ken Pattle
Peter Lake

Date:

20 November 2020

A signature is not required if you make your submission by electronic means