

THE WORLD BELOW

400 GHz

The Periodical Newsletter of the
WAIKATO VHF GROUP Inc.,
ZL1IS,
PO BOX 606,
Waikato Mail Centre
Hamilton 3240.



NZART
BRANCH 81

www.zl1is.info

MARCH 2017 ISSUE

WAIKATO VHF GROUP EXECUTIVE

President	Alan Wallace	ZL1AMW	07 843 8738
Vice President	Morris Beale	ZL1ANF	07 884 8416
Secretary	Gavin Petrie	ZL1GWP	07 843 0326
Treasurer	Ian Brown	ZL1TAT	07 847 3709
Projects	Tom Bevan	ZL1THG	07 864 5425
Committee	Phil King	ZL1PK	07 847 1320
Committee	David King	ZL1DGK	07 884 9590
Committee	Neill Ellis	ZL1TAJ	07 576 1999
Committee	Kevin Hampshire	ZL1KRH	07 544 5987
Editor	David King	ZL1DGK	07 884 9590

Annual General Meeting 2017

The Annual Meeting of the Waikato VHF Group will be held on
Sunday, 19th March, 2017 at 1:30pm at the
Anglican Church Lounge, corner Broadway & Hohaia Street, MATAMATA.
Click [HERE](#) to go to a map of the location.

Membership forms can be found at <http://www.zl1is.info/join.html>

Non Members and visitors most welcome.

Items from February 2017 Committee Meeting:-

Subs

Annual subscriptions are now due. Getting them paid before the AGM is always a favourite activity. See the AGM notice for info on where to find sub/membership forms.

Kaimai

Maintenance work will be happening at Kaimai. Painting, guy maintenance, leak repairs, roof maintenance and work on National System Antenna to improve performance.



Te Uku

Please refer to article from Ian (ZL1TAT) in the pages that follow.

FINANCIAL STATEMENT

of the WAKATC VHF GROUP Inc. for F.Y. Ended 31 December 2016

INCOME & EXPENDITURE ACCOUNT

<u>2015</u>		<u>2016</u>
	Income ...	
\$326	Subscriptions received	\$585
\$500	Donations received	\$920
\$187	Profit from Trading Table	\$248
\$28	Interest received	\$15
<hr/>		
\$1,570		\$1,768
	Expenses ...	
\$3,207	Depreciation	\$2,776
\$1	Repairs & Maintenance	\$5
\$226	Electricity	\$225
\$392	Radio Licence fees	\$924
\$291	Other expenses	\$166
<hr/>		
\$4,317		\$4,046
(\$3,347)	Excess Income / Expenditure	(\$2,278)

BALANCE SHEET

<u>2015</u>		<u>2016</u>
	Current Assets ...	
\$5,136	Bank Current Account	\$6,609
\$0	Bank Term Deposits	\$0
\$0	Cash on hand	\$0
\$170	Stock on hand	\$170
<hr/>		
\$5,306		\$6,779
	less Current Liabilities ...	
\$0	Subscriptions received in advance	\$25
\$0	Accounts Payable at Year End	\$0
<hr/>		
\$5,306	Working Capital	\$6,754
\$10,174	Fixed Assets	\$15,448
<hr/>		
\$23,480	Members Funds	\$21,202
<hr/>		
	Members Funds ...	
\$26,527	Balance at previous year end	\$21,480
(\$3,047)	Excess Income / Expenditure for Financial Year	(\$2,278)
<hr/>		
\$23,480		\$21,202
<hr/>		

SCHEDULE OF FIXED ASSETS & DEPRECIATION

ASSET	Original Cost <small>plus Addns / Disposals at Cost</small>	BV at 31.12.15	+ Addns	- Deprec 15 %	Book Value at 31.12.15
Tairua '6975 Repeater	2,731.26	0.00		XFD to Branch 95 in 2011	
Waikato North '5475 Rpx & Link	11,220.88	5,564.05		334.70	4,730.23
Maungakawa '6675 Rpx & Link	7,421.51	3,754.20		569.13	3,225.07
Te Weran '6675 Rpx & Links	7,589.58	3,091.67		463.75	2,627.92
Kaimai Repeaters Site facilities	6,317.50	1,134.44		170.17	964.27
Kaimai '540 Data Repeater	2,460.45	40.24		8.94	39.30
Kaimai '485 N.S. 11 S. Repeater	2,829.20	401.78		60.27	341.51
Kaimai 12cm Beacon	449.20	10.69		1.60	9.09
Hamilton 2m/70/25cm Beacons	315.22	31.64		4.75	26.89
Hamilton '9975 Nat. Syst Rpx.	4,362.73	333.19		49.98	283.21
Te Uku '6675 Rpx, Links + IRLP	14,310.20	3,550.15		532.52	3,017.63
Oto '485 Digipeater	450.89	182.62		27.39	155.23
TK705D 2m Transceiver	225.20	32.00		4.80	27.20
<hr/>					
TOTALS:	60,091.09	\$18,173.80	\$0.00	\$2,726.05	\$15,447.75
	Less Accumulated Depreciation	45,269.19			
	Equals Book Value at 31.12.15	\$15,447.35			


I. W. Brown (Treasurer)


G. W. Polnie (Secretary)


A. J. Wallace (President)

**REPORT
TO THE MEMBERS OF
WAIKATO VHF GROUP INCORPORATED**

I have reviewed the financial statements of the Waikato VHF Group Incorporated. The financial statements provide information about the past financial performance and financial position of Waikato VHF Group Incorporated as at 31 December 2016. This information is stated in accordance with the accounting policies set out separately.

The Committee's Responsibilities

The Committee are responsible for the preparation of financial statements which fairly reflect the financial position of the Group as at 31 December 2016, and the results of its operations for the year ended 31 December 2016.

My Responsibilities

It is my responsibility to express an independent opinion on the financial statements presented by the group and report my opinion to you.

Basis of Opinion

A review includes examining, on a test basis, evidence relevant to the amounts and disclosures in the financial statements. It also includes assessing:

- The significant estimates and judgments made by the Group in the preparation of the financial statements, and
- Whether the accounting policies are appropriate to the group's circumstances consistently applied and adequately disclosed.

I conducted my review in accordance with the Tax Administration (Financial Statements) Order 2014 in New Zealand, which sets out minimum standards for preparation. I planned and performed my review so as to obtain all the information and explanations which I considered necessary in order to provide me with sufficient evidence to give reasonable assurance that the financial statements are free from material misstatements, whether caused by fraud or error. In forming my opinion I also evaluated the overall adequacy of the presentation of information in the financial statements.

Unqualified Opinion

In my opinion the financial statements fairly reflect the financial position of the Group as at 31 December 2016.

My review was completed on 26 January 2017.



M Y JAENSCH

TAURANGA

WAIKATO VHF GROUP Inc.
TREASURER'S REPORT
FOR FINANCIAL YEAR ENDED 31 DECEMBER 2016

Our **WaiPlently network** offering the most extensive coverage of any 2-metre repeater network in New Zealand, is complimented by **National System** coverage available through our repeaters at Hamilton and at Kaimai which also facilitates national access from other repeaters at Rangitoto, Taupo, Rotorua, Mt Edgecumbe and Mercury Bay. A **Data repeater** at Kaimai, **Digipeater** at Rangitoto plus **DMR repeater** at Hamilton along with **four beacons** on 2m, 70cm, 23cm and 12cm round out facilities operated by the Waikato VHF Group. When links between repeater sites are included, this accounts for 21 transmitters to be re-licenced annually with the Radio Spectrum Management division of the Ministry of Business, Innovation and Employment. Last year, I commented that ministry had embarked on a 'Review of Licence Fees Framework' and that our group along with other clubs and individuals from the amateur radio fraternity had made submissions opposing their suggested increase in amateur 'OA1' radio licence fees of up to 400%. Results of that review were originally scheduled to be implemented on 1 July 2016, however at the time of writing this report (February 2017), we await that announcement "during the first half of 2017".

Radio licence fees remain our largest expenditure item, and any increase can't be absorbed. Revenue to pay those fees is derived entirely from membership subscriptions plus donations, and



both have been trending downward. One of our life members prompted a one-off \$500 donation last year which boosted revenue, otherwise we'd not have covered our operating expenses. The graph (right) shows membership declining from a peak of 50 in 2007 to 24 paid subscriptions last year. **The Waikato VHF Group seeks more members!**

The WaiPlently network was option 4 proposed in 2009 to replace coverage from Te Aroha where our group had operated repeaters for 36 years, after proposed site rental would have exceeded our annual income by a significant margin. That network encompasses four repeaters with inter-site links plus IRLP access (temporarily disrupted after equipment was stolen from Te Uku site in December). Lower usage last year was evidenced by reduced electricity consumption, however if all amateurs using those repeaters paid a subscription to support our group, we'd cover current costs. Gaining more members is far more palatable than raising subscriptions (substantially if higher licence fees eventuate) or closing down some of those facilities. Remember, **it costs only 7c per day through an individual subscription to support the Waikato VHF Group.**

We appreciate and acknowledge **donations received in 2016** from ZLs 1BPB, 1GWP, 1KL, 1KIP, 1KM, 1KRH, 1PO, 1RAB, 1RWR, 1THG, 1TKG, 3DM, 3GR and 1FW, plus Whitianga Coastguard. Also, numerous individual's time given freely plus other resources are unseen benefits helping to keep our facilities running and available. We also acknowledge the Lion Foundation's assistance in part funding establishment of Maungakawa '5575 in 2012. Thank you all!

Our independently reviewed **Financial Statement** (next page) summarises the Waikato VHF Group's financial position at the end of 2016, with our reviewer's report following.

Quarterly newsletters (in colour) are emailed to members for whom we hold a current email address (where no email address is recorded, a black and white version is posted). Your details can be advised via our membership application/update form (on our web site at www.ZL1IS.info). Remember, annual **subscriptions fall due on 1 January each year**, and if you haven't contributed before, how about also considering a licence sponsorship? Thanks for your support.

Ian Brown ZL1TAT
Treasurer (since 1986)

* * * * *

SURVEY for you to respond to please

The **survey form** provided here is for members and others to complete indicating support for various facilities the Waikato VHF Group Incorporated operates throughout this area. If you've monitored any of our four beacons, then it/they obviously provide a service useful to you. Do you use data via our Kaimai '540 repeater, or APRS through the Rangitoto AX25 repeater?

Is access to the National System important to you, for if it is, then the N.S. node we operate at Kaimai plus at least one of its five directly dependent repeaters across the Bay of Plenty and Waikato will be used? Want to connect with the world-wide network of over 500 repeaters across 63 countries accessible through a DMR-MARC Digital Mobile Radio (mode) Motorola Amateur Radio Club repeater including one we support in Hamilton will be important to you? While core equipment in that network is Motorola, radios from a range of other manufacturers can also be used to communicate on it.

Then there's our WaiPlenty network of four 2-metre repeaters covering the wider Waikato and western Bay of Plenty, all linked together and having Internet Repeater Linking Project (IRLP) access via node 6549. Infrastructure at various sites across this network can be viewed on our web page at <http://www.zl1is.info/sites.html>

Because all these facilities cost money to operate and maintain, your committee wishes to find out where our spending is most appreciated. Your feedback, both by completing this survey, and adding comments or suggestions you wish to make will be gratefully received. Please scan and email this completed form with your comments to branch.81@nzart.org.nz or post your return to PO Box 606 Waikato Mail Centre, or why not bring it along to our AGM at Matamata on Sunday 19 March 2017 ?

Waikato VHF Group Inc.
SUPPORT for FACILITIES SURVEY
 February 2017

Beacons:

Vote your Support

		Ref.	✓
B1 B2 B3	Hamilton Beacons:		
	ZL1VHW 2m 144.260 MHz	1	<input type="checkbox"/>
	ZL1VHW 70cm 432.260 MHz	2	<input type="checkbox"/>
	ZL1VHW 23cm 1296.260 MHz	3	<input type="checkbox"/>
B4	Kaimai (Takaurunga) Beacon:		
	ZL1VHW 12cm	4	<input type="checkbox"/>

Stand-alone Repeaters:

R1 R2	Kaimai (Takaurunga) Repeaters:		
	2m Data '540 145.400 MHz	5	<input type="checkbox"/>
	Note 1 70cm (N.S. ULS) 434.850 MHz	6	<input type="checkbox"/>
R3 L1 R4	Hamilton Repeaters:		
	70cm N.S. 439.975 MHz	7	<input type="checkbox"/>
	70cm Link - Kaimai	8	<input type="checkbox"/>
Hamilton DMR MARC 439.725MHz			
	Rangitoto Repeaters:		
	2m AX25 Digi 144.650 MHz	9	<input type="checkbox"/>

WaiPlenty Network:

WPR1 WPL1a	Maungakawa Repeater & Link:		
	2m 145.575 MHz	10	<input type="checkbox"/>
	Note 2 70cm link facing Te Uku	11	<input type="checkbox"/>
WPR2 WPL1b WPL2a WPL2b WPL3a	Te Uku Repeater & Links:		
	2m 145.675 MHz (Note 3)	12	<input type="checkbox"/>
	Note 2 70cm link facing Maungakawa	13	<input type="checkbox"/>
	70cm (IRLP) link facing HN		
IRLP access (IRLP node 6549)			
Note 2 70cm link facing Te Weraiti (Note 3)			
WPR3 WPL3b WPL4a	Te Weraiti Repeater & Links:		
	2m 146.950 MHz	14	<input type="checkbox"/>
	Note 2 70cm link facing Te Uku	15	<input type="checkbox"/>
	Note 2 70cm link facing Waihi North		
WPR4 WPL4b	Waihi North Repeater & Link:		
	2m 145.475 MHz	16	<input type="checkbox"/>
	Note 2 70cm link facing Te Weraiti	17	<input type="checkbox"/>

	TOTAL	
4	8	9
Beacons	Repeaters	Link Terminals
		21

Annual licence fees \$1073.31, plus maintenance and operating costs.

- Notes:** 1. The following six repeaters are dependent on Kaimai '485 for connection into the National System
 Hamilton '9975, Rangitoto '9925, Taupo '9825, Rotorua '9925, Edgecumbe '9975, Mercury Bay '4800
 2. Links have a terminal each end, so are listed 'a' and 'b'.

3. Te Uku '5675 repeater plus link terminal facing Te Weraiti were stolen just after Christmas 2016. Desire these back on air?

Refer to map at: <http://www.nzart.org.nz/info/repeaters/national-system/>

EQUIPMENT STOLEN FROM TE UKU SITE

Between Christmas 2016 and the New Year 2017, the Te Uku radio site was broken into and a substantial quantity of radio equipment (approximately \$80,000 to replace) removed from racks. Sadly for us, that included our '5675 repeater plus associated terminal linking with Te Weraiti. Operators of the wind farm also found twelve of their hand-held radios and a multi-outlet charger stolen from their nearby workshop. Police were promptly informed, and the radio site owner (Chorus) has engaged a Private Investigator to assist their investigations. At the time of writing this note, none of that equipment has been recovered, although some "good lines of inquiry are being followed". The best outcome for the Waikato VHF Group will be to see our equipment recovered, or we'll face finding funds for its eventual replacement, costing in the order of \$6,000. Removal of this equipment from Te Uku disrupted our WaiPlenty network, as that site is a central hub with both the repeater and three associated links coming together there. Not a particularly good start to our new year.

{As this has resulted in Maungakawa being isolated, work is underway to see if that gear can be moved to Te Uku to restore the central hub - Editor}

2 Meter Yagi Antenna with Gamma Match

How to build a 2 meter yagi antenna with a gamma match. Simple and easy to make using parts from an old TV antenna. You'll love this small high gain 4 element yagi beam antenna.

If you don't have an old TV antenna then you'll need some 10mm aluminium tubing for the elements and the gamma match and a 25mm square aluminium tube for the boom. Add some small aluminium strap for the gamma match, a piece of angle aluminium for the feed-point connector and an SO-239 connector and you've practically got it made.

Making the Gamma Match

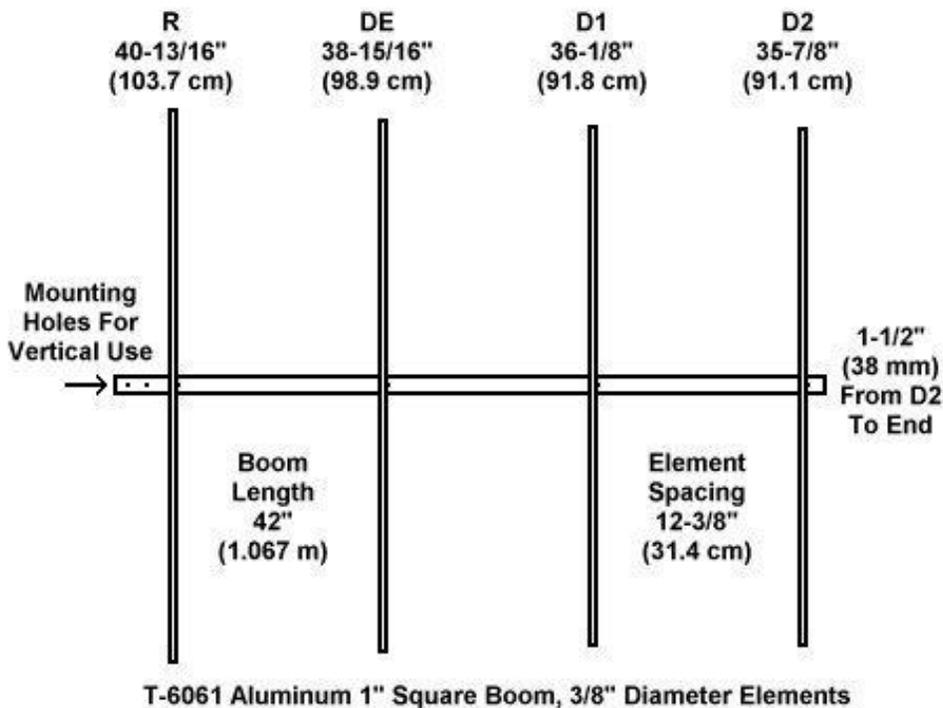
This video - [part one](#) and [part two](#) - demonstrates how easy it is to make a gamma match for a 2 meter yagi antenna. You may use this gamma match on a much larger 2 meter yagi, too. Some hams prefer to design their own yagi antennas and might find this style of gamma match very useful.

The gamma match is made using a 10mm aluminium tube and a piece of RG-8 coaxial cable. The outer jacket and the shield is removed from the section of coaxial cable. The center and dielectric of the piece of RG-8 is then placed inside the aluminium tube. This forms the capacitor for the gamma match. All details are included in the video.

Element Spacing

For element spacing I simply removed the original blue insulators from the boom and reused the same holes. The spacing is 12-3/8" between all antenna elements.

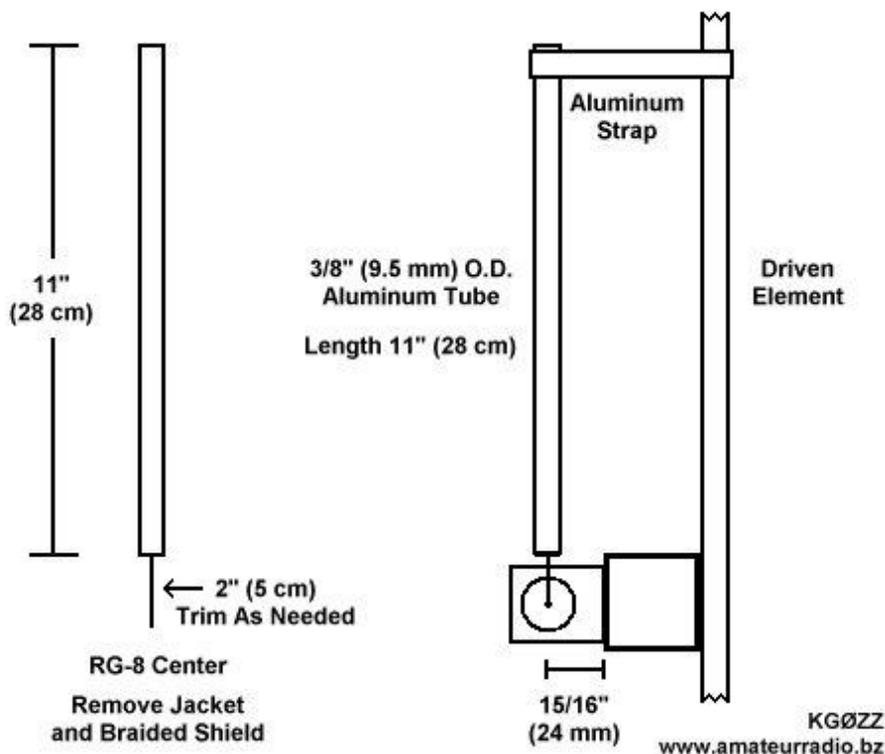
2 Meter Yagi Antenna



Tuning

Tuning is done by sliding the gamma match tube back and forth. The grounding strap on this antenna is positioned near the end of the tube and the tuning is a bit tight.

2 Meter Gamma Match



My coaxial cable length mentioned in the video is incorrect. Instead of the way that I calculate the length of coaxial cable to use you should instead use multiples of 1/2 wave lengths. It is not critical to do this but doing so should reflect a more accurate SWR measurement.

Remember though that after testing and tuning your antenna just a few feet above the ground the SWR reading may change a

bit after raising your antenna to a much greater height.

[The VHF/UHF DX Book, 2017 Replica Edition - is now available for free download](#)

'The VHF/UHF DX Book' was written in the early to mid-1990s by a team of experienced VHF/UHF DXers and equipment developers, in an effort to pass on our knowledge and stimulate further developments.

But eventually the book went out of print, and information of lasting value became trapped on the printed pages.

To keep that information alive for future generations of VHF/UHF DXers, a digital replica of the Second Printing (1995) has now been released as a free download, by kind permission of the copyright owner TRPublishing and its proprietor Trevor Preece.

As with all older books, the challenge for the reader is to separate the parts that are of lasting value from other parts that have become dated. But we make no apology for that; even the outdated parts remain an accurate snapshot of VHF/UHF DXing in its heyday.

http://www.trpub.net/html/dx_book.htm

(with an underscore, not a space)

