February
2026

THE MUSE

Voted the best AKL Ham Radio Club newsletter by nobody in particular

Newsletter of the MUSICK POINT RADIO GROUP (INC.) - NZART Branch 86
Incorporating The Society for the Preservation of Amplitude Modulation (SPAM)
and Green Radios On The Air (GROTA) News

Musick Memorial Radio Station, Bucklands Beach, Auckland. Call Signs ZL1ZLD, ZL1ZLF

Club Open Times		
Sundays	10:00 ~ 16:00	
Wednesdays	10:00 ~ 16:00	
Fridays	19:00 ~ 22:00	
Online		
Musick Point Website	https://musickpointradio.org	Webmaster: ZL1NZ
Musick Point Blog	https://mprg.zlham.net.nz	
SoftRock SDR (80m / 40m)	http://spamnz.zapto.org:8901	
KIWI SDR	http://musickpoint.ddns.net:8073	
Nets		
ZL6AM: 3.850 MHz, AM	Fridays at 20.30	SPAM Net
ZL1ZLD: 7.125 MHz, AM	Wednesdays at 11.30	
ZL1ZLD: 145.575, FM	Tuesdays at 19:30	Musick Point Repeater
General		
Club Meetings	Second Sunday of Month	Except May: 3rd Sunday of Month
MuseLetter Editor	ZL3CK	musickpointradio@gmail.com

- NEXT MEETING- Sunday February 8th @ 1pm. Next AFN Net- Sunday 1st Feb. starting at 0830.
- Visit by the Jaguar Car Club Sunday Feb 22nd (will need some volunteers present to assist)

The Musick Memorial Radio Station on an early Sunday morning just before the "AFN "net.
See- WWW.AFN.org.nz for more on the Earthquake net.

From the Chair

Well, another new year has rolled in and some interesting weather along with it. I trust that you and your families all had a great celebration and survived. It was very busy and hectic for us with family visiting for Christmas and the week after.
I found a couple of interesting videos on YouTube, recently. The first is from a ZL and is titled "Cheap multiband HF antenna". The channel is "**The Ham Shack**" and can be found using the link below, enjoy

https://youtu.be/_6_kcs_NAlQ?si=y4FJp7jms_06K-gb

Note that it is interesting but I am not sure about its usefulness to me.

The second is from Hayden, VK7HH on his channel: "Ham Radio DX" and is titled:

"**How To Properly Measure Common Mode Chokes With A NanoVNA**" (link below)

https://youtu.be/AyURuo0UEdE?si=TdE34QaSSmQlKdoh

This might be of interest to some of us who are into antennas and the like. No names mentioned, Harry and Rob☺.

> Why don't you see elephants hiding up trees? ---------- Because they are good at it!

At the club, we have had quite a busy time since Christmas. There were dramas with the 80 metre AM receiver, which were finally resolved (I think and hope). It took a while and a lot of brain draining by the 'team', but it is working remarkably well now. Graham, ZL1TOF, spent quite a lot of time studying the circuit diagrams and probing here and there, testing this and that and, occasionally removing and replacing a capacitor or resistor. There wasn't much of that, but the occasional change was deemed necessary. Finally, when he thought that there was not much more that could be done, he gave a few things a tweak and that is where it was left. From what I have heard since, the receiver is performing very well. Thank you very much, Graham.

> The older I get, the better I used to be.

Walk into the club any Sunday afternoon, and you would think that we are a computer club. There is often as many as three or four laptops being used by various members, combined with obligatory onlookers offering opinions or just making silly remarks. It is quite interesting observing the goings-on, and often it can be quite amusing to listen to the discussions and the occasional banter. I have enough to do with PCs, etc., with my job, that I tend not to take my laptop in to Musick Point, preferring to think of it as having a break from the 'mill'.

> Q: What's the difference between a Hippo and a Zippo? A: One is really heavy. The other is a little lighter.

Finally, congratulations to Klara, who passed the Amateur Radio exam last Sunday with a respectable mark. Our best wishes for an interesting future in the hobby go to you, Klara.

I saw an advertisement in a window that said: "Television for sale, $1. Volume stuck on full." I thought, I can't turn that down.

"Do you believe in life after death?" the boss asked one of his employees.
"Yes sir," the employee replied.
"That's good," the boss said. "After you left early yesterday to go to your grandmother's funeral, she stopped by to see you."

That's it for now, until next month:
73, and call CQ
David, ZL1DRV

Musick Point Radio Group News

The fine warm weather and long days have seen good turnouts of members to the station on Sundays. Nearly every Sunday there appears a veritable forest of portable aerials in the reserve especially on the AFN day (first Sunday of the month). The Auckland province was overrepresented from Musick Point with no less than 5 of us set up in scattered positions to participate. Interference (while severe) is not an issue as you are called in one by one and only have to give your call-sign, (NATO phonetics only please!) name, location, and if you are portable/off grid (Preferably) or not. No Rag chewing allowed! However, once the net is over you can go for it! It was most rewarding to contact Net Control ZL6EQ (Peter ZL3PWM) with only a few watts and a short portable aerial. 5 MHz (60 meters) has now been added as another net you can join. In the evening there's an 80 meter net as well if you haven't had enough by then. It's good practice to check out your POTA/SOTA set-up if you are in to that as well.

The writer, along with many of us at Musick Point now has a fully portable station permanently in the car just in case! If you look up your local council's website you can locate your nearest community centre which will be used as a coordinating base in the event of an emergency. It would make good sense to locate yourself as near as possible to this place for at least one AFN to see how it might work 'in the event'.

Here's ZL3CK set up at the Mt Albert Community centre for the AFN on Oct 5th '25, which has a small reserve adjacent. The K2 and Pack 12 worked remarkably well, the only problem was "QRM"- audio noise from the motorway right over the hedge! Earphones will be required!

The centre has that convenient overhang which was useful on the day at it was actually raining for some of the net. We must assume "In the event" the weather will be terrible, and it may be at night too.

Musick Point Collier and Beale 941 Receiver Progress

The 'New" C & B (S.N. 330) was used for the first time on the AM Net on Friday last. It performed well, but some distortion was evident on strong signals. It seems that it requires more gain reduction control of the RF stages as well as the IF, so Graham ZL1TOF is now tasked with researching the previously (by C & B possibly) altered circuit (It's not what is in the diagram we have). Hopefully that will improve an already much better receiver than the 'old' C & B (S.N. .470) The plan is to have a full AGC and manual override for strong sigs. The original design had no AGC at all-just RF and IF gain controls (no audio gain control either).

AM and CW on ANZAC Day event on Saturday April 25th 2026 from Mike VK4MIK

As per previous MUSE, we have this event now on our calendar and also its now on the NZART calendar and Website. There will actually be 3 days for the event. As Anzac Day 25 April is a Saturday and the Monday is the holiday in lieu, there is a 3 day weekend available and it looks as though the ANZAC event will run the whole 3 days. It is **AM and CW,** so get your old rigs out and tune them up!.

From **Andrew, VK5WT** he sends the following website about last year's Australian Military Radio Operator's ANZAC event (Its GREEN!) - http://110.232.143.96/~ww2armyr/AMRO/amro.htm

So that's started something…. Received the following (abridged) from **Mike VK4QS**

'**Mike VK4QS** here Mate,

A friend of **Mike VK4MIK.**
He does a great job co-ordinating the Anzac Day AM & CW here in Australia.
Something that would be amazing to see ZL Embrace.

I just wanted to let you know I really enjoyed the two Club Newsletters that were sent to Mike.
Especially so the articles about the Collier & Beale LF-HF Receivers, as for as much as I have heard of them I have never actually seen one until now. The ones at the club look amazing and no doubt you enjoy using them, especially from a Nostalgia point on air. I never knew they only produced 50 of them, so I guess my chances of adding one to my HRO Type Collection is near non-existent.

I have a particular fascination with one of the Australian versions, namely the Kingsley K/CR/11, of which 3500 were manufactured in Australia by Kingsley Radio for all three Australian services and the Dutch during WW2. Currently my mate and I are restoring one from the ground up as per the attached pic of the chassis. I also have a National HRO/R106 US Signal Corps unit plus matching speaker.

'Not sure if you blokes in ZL are aware, but the Australian company AWA also made a version of the HRO during the War called the AWA AMR 100/7 and the AMR 101. AMR100 – VK2RH ham radio

Cheers & 73, Mike, VK4QS, & VK4XQM (On qrz.com)'

And again from **Mike VK4QS** (abridged)-
'I have attached a link to a German Version of the HRO called the KORTING that you might find interesting. Also there was even a Japanese version of the HRO in WW2, but have never seen one.

I spent 3 months operation with the New Zealand Navy back in the early 90's when I was in the R.A.N..
We managed to visit, Auckland, Wellington, Napier, Bay of Islands, Treaty of Waitangi and then off to Fiji, Vanuatu and up to Port Moresby. When I think about it, We covered most of the areas of the big battles in the Western Pacific in WW2. Having previously been up to Malaya, Singapore, Philippines, Palau, Hong Kong, Japan and South Korea.

In many ways these Receivers are a very strong link to all that part of WW2, including Australia and New Zealand and the parts we played in Signals War against Japan and Germany.

Congrats on the Centenary of the NZART in 2026, Well done indeed. I am actually a QSL Card Collector, and I have some very early QSL cards from 1924 -1930 from ZL, kindly gifted to me from a US Ham, QSL Card Collector. More than just Sheep Farmers (NO COMMENT-ED!!) a lot of the early ZL's, I have one card from the bloke who set the Antipodes Record, New Zealand to Wales in 1924. My Card is just a month after the event. Proud Heritage indeed.'

Kingsley K/CR/11

https://www.youtube.com/watch?v=xh265YzoddM&list=PLLTogcYJemH43xhK-KMvpmZwROusbNE85&index=13

https://www.la6nca.net/tysk/kst/index.htm

https://vk2rh.com/amr100/

Japanese "Copy" of an HRO

Iron Powder Cores for Baluns - Why not? From Dave, ZL1DL

Iron powder and Ferrite are commonly used in magnetic cores at RF. Hams typically utilise them in toroidal form, although they are available in many shapes. There is a generalisation[1] that "Ferrite is for transformers and chokes; Iron Powder is for tuned circuits and filters". What determines this differentiation? One answer lays in the "Rule of 4 Times"; we'll look at that a little later.

Firstly though, the differences between Iron Powder and Ferrite[2]

We know from transformer basics, that eddy currents in a magnetic core can lead to significant losses, hence the insulated laminations of cores for low frequency transformers that are used to minimise such currents. As frequency rises, the isolated conductive components of the magnetic core need to be made smaller. For convenience reasons we shift to powders for the magnetic material.

As Iron Powder is conductive, it is coated in an insulating binder then formed into the desired core shape. This achieves the electrical insulation required between individual metal parts of the magnetic core while providing the desired form. A typical iron powder, known as Carbonyl Iron, has near spherical particles in the region of 3µm dia. They have a texture somewhat like onions – but I digress. These are created by distilling Pentacarbonyl Iron [$Fe(CO)_5$]. The liquid $Fe(CO)_5$ separates into Iron and Carbon Monoxide (don't try this at home).

Iron Powder cores are epoxy coated to avoid potential rusting of the pure iron. The colour of the coating follows a standard (mostly adhered to…) and identifies the specific "Mix" or characteristics of the core. As the iron particles are separated by the insulating binder material, the core experiences a "distributed air gap" in its magnetic path. This results in a relatively low permeability[3], with a high threshold of magnetic saturation.

Ferrites (Iron oxide as Fe_2O_3) are a little different. Ferrite is relatively non-conductive and therefore the individual particles do not require coating. The ferrite mix is pressed at high pressure and temperature to sinter the particles into a required shape. With the ferrite particles packed tightly; relatively high permeability results.

Ferrites do not need to be coated to protect the constituent materials, although coatings are sometimes used for specific requirements (very high voltage, abrasion protection etc.) Some manufacturer's do colour coat their ferrite products; however, there is no agreed colour standard.

So back to the "Rule of Four Times". There is correlation between permeability and inductance for a winding around a magnetic core. For comparable core sizes, inductance of a winding on an Iron Powder core will be magnitudes lower than that on a Ferrite core. We know that for a given frequency, we can determine the inductive impedance from inductance ($\mathbf{X_L = 2\pi fL}$).

In a transformer such as a Balun, UnUn or BalBal[4], we can represent the resistive load across the secondary winding as a resistance seen in parallel with the primary winding. Of course, windings have an inductance and this appears as a frequency dependant inductive impedance in parallel with our virtual resistor. As an example, let's say at 3.5MHz, our primary winding presents an $\mathbf{X_L}$ of 50Ω and our load is represented by 50Ω resistive. So now we effectively have a reactance of (50 + j50 Ω). This results in a 45° phase shift and our magnetic transformer only achieving 70% efficiency.

To improve efficiency, we need to increase the $\mathbf{X_L}$ by adding more turns. But by how much? Well, the rule of 4 times says if we target $\mathbf{X_L}$ to be a minimum of 4 times the resistive impedance. At 4 times, we will achieve an acceptable 97% efficiency[5] with a phase shift of around 14° (of course other losses may impact the transformer performance).

So how does this work in practice? Well firstly we consider the lowest frequency the transformer will be used at (as the inductive impedance will be proportionally higher for higher frequencies) and look to the number of turns required to meet the 4x impedance. So, for a 50Ω primary (quite common!), we need at least 200Ω $\mathbf{X_L}$. Calculating the required winding turns to achieve an $\mathbf{X_L}$ of 200Ω at 3.5MHz, we find:

- On a ferrite toroid type FT-240-43, 3 turns will achieve around 212Ω
- On a T200-2 Iron Powder Core, we would need 28 turns to achieve 200Ω

Clearly, it is difficult to use an Iron Powder core for a transformer at HF as accommodating the high number of turns can be physically difficult and other performance degradations occur with increasing turns. So, in a nutshell, iron powder cores need too many turns to make an efficient transformer.

For tuned circuits such as filters, antenna "tuners" etc, different rules apply and Iron Powder is preferable as it better accommodates the high circulating currents and can offer a higher Q. Horses for courses! So next time you see a transformer design using a few turns on an Iron Powder core, perhaps you should think "Mmmm?

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[1] Generalisation – does not apply in all cases, for example ferrite slugs are commonly used in coil cores of tuned circuits.

[2] Magnetics based on Iron Powder and Ferrite, typically consist of a "Mix" of materials to provide desired properties.

[3] Permeability (magnetic): how easily something is magnetised in response to an external field

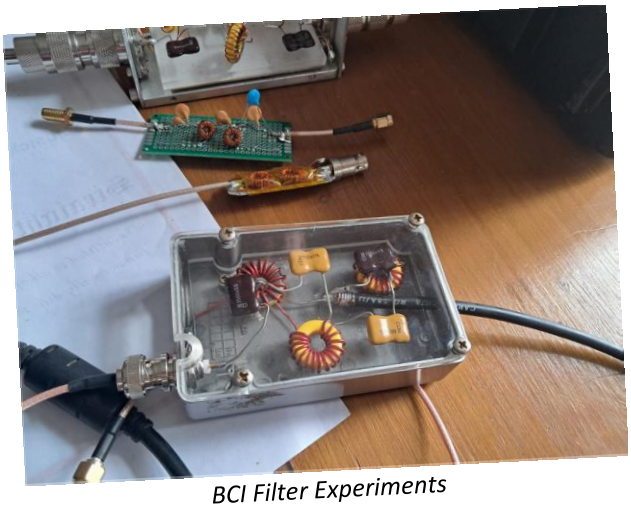
[4] BalBal ? Never heard of it – just contributing to the ridiculous collection of acronyms that we like to confuse people with

[5] The mathematical proof of this is thankfully beyond the scope of this article and could cause you to lose interest in Ham Radio

Another Day at Musick Point…

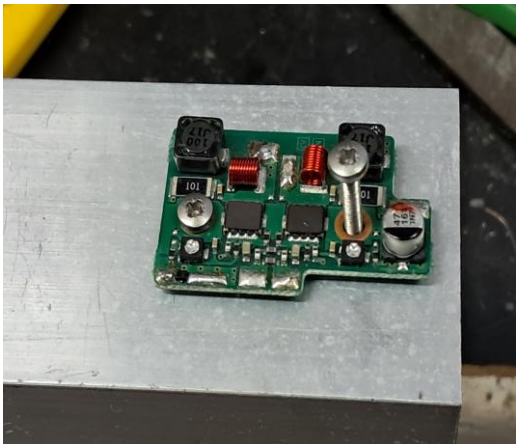
New Server being commissioned

Rewiring Rob's Fan Dipole

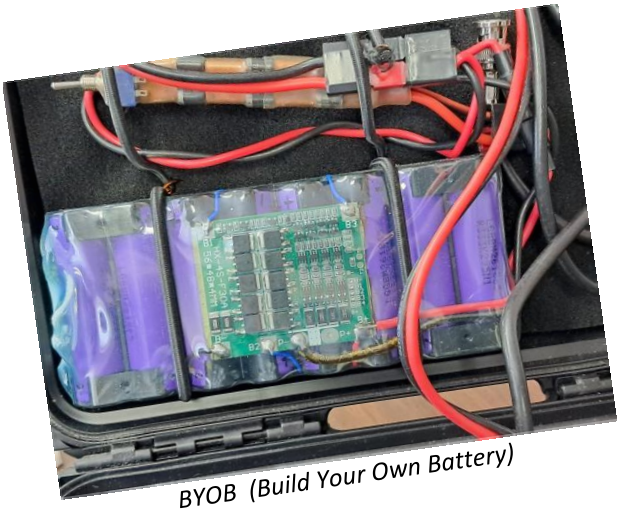


BCI Filter Experiments

Green Radios with a little help from modern technology



FT-817 PA Board being mounted on heat plate to desolder failed finals



BYOB (Build Your Own Battery)

Dave's "How Convenient" corner….

Mesh is Not Only for Looking Through - By Dave ZL1DL

Quite some years back, a WiFi mesh network specifically for amateur radio was developed. Known as Broadband Hamnet, the concept was that if enough amateurs each established a node with an external antenna, there would be sufficient density of stations to make an effective mesh network. Unfortunately, a combination of the comparatively short reach of 2.4GHz on non-directional antennas and the scarcity of nodes meant it didn't take off in NZ. I recollect 'flashing' 3 routers (one of them being the venerable Linksys WRT-54g[1]) with "Broadband Hamnet" and being impressed at their ability to immediately connect to each other in an ad-hoc mesh. And for me, that's about as far as it went.

WiFi developments have in the main have followed the need for speed, with 2.4, 5, 6 and 60 GHz[2] bands offering increasingly higher speeds but poorer penetration, relative to their frequencies. There is, however, an exception or opposite to this: WiFi HaLow or officially - 802.11AH.

Wifi HaLow operates in the 900 MHz band and trades a limited data rate for the better distance offered by the lower frequency. With relatively limited bandwith at 900 MHz for channels, data rates are comparatively low, however link speeds in excess of a 1Mbps are achievable at distances well in excess of a km. Yes, it is designed for distance and penetration, as opposed to speed. So, could it be used to revive a Ham Mesh? While the specification is theoretically for up to 1km range, hams see published specifications as only a starting point.

The big advantage as I see it, is you are creating a TCP/IP network and so the internet type app goodies that we are used to utilising could use the HamNet (with the exception of the bandwidth hungry applications – absolutely no 4k streaming thankyou). The increased toolset could be very valuable in emergency communication scenarios.

There is an argument that TCP/IP is quite inefficient and therefore not ideal for low bandwidth networks. I believe the advantage of having a wide range of tools and applications as negating that argument. Hey we used to think it was magic in the days when we upgraded to 56kbps modems from 28 or 33kbps.

Although the 802.11AH standard was published in 2017, there is a relative scarcity of hardware supporting this standard, possibly owing to the relatively small range of applicability. However, with the increasing uptake in "Internet of Things" technology, interest in 802.11AH is ramping up.

In an effort to see what distance / data rate we might squeeze out of HaLow, we are going to try some experiments utilising a couple of HaLow hardware devices: the Alfa Network Tube-AH.

Designed for exterior use, the Tube-AH has an N connector to directly attach an antenna, and an RJ-45 socket (with POE) for data. It natively supports 802.11S (mesh networking), so it's good to go out of the box. Initially we will have laptops connected to each of two Tube-AH nodes. One laptop will host a speedtest server, so we can survey performance in differing conditions. To substantially exceed the design distance, we may have to increase the "ACK" window timing for the wireless. This parameter isn't exposed in the standard web-based config, so we're going to have to figure out the root password to the underlying Linux. First world problems…

[1] For those of you too young to recognise the WRT-54g, it is credited with being one of the first WiFi routers running Linux, that was modified by hobbyists to increase it's capability and functionality. This led to the development of Open-WRT and dd-WRT Linux forks specially for **W**iFi **R**ou**T**ers [WRT]. In a full circle scenario; some routers now utilise Open-WRT as their default factory firmware.

[2] To be fair, while 60HGz WiFi offers ridiculously high data rates, it can only effectively be used line of sight (e.g. within the same room). Its availability / uptake has been minimal.

Green Radios On The Air- Kelvin ZL3KB, 8th January 2026

W.S. No. 38 in the wild...Obviously greener than a Normandy beach...

GROTA update, some trials with the WS38.

We thought we would start the new year with some trials of the WS38 sets. These are very low power WW2 man portable transceivers, designed to lightweight, simple, and cheap, which means expendable. Used for short range platoon comms, and sometimes by SOE agents talking to aircraft or offshore submarines, they were worn on the operator's chest with a four-foot rod antenna and a hands-free throat microphone. Alternatively, a twelve-foot rod antenna could be used when in a static role.

Their frequency range of 7 to 9MHz allows use on the 40m band. They need a battery of 3V and 150V, and have a rated TX output of 17mW and a RX sensitivity of around 10uV, so not a top performer in the radio stakes. The operator's handbook states a range of half mile on the short antenna and two miles on the long antenna, and it was these figures we wanted to verify.

Our first trial was with the 4' antennas and the sets worn on our bodies, to replicate the original ground plane. A surface wave test site of flat land was chosen in a north Christchurch "red Zone" with just a few trees and shrubs, see map 1 below. One operator setup at point A and with the other operator roaming around point B we found a max range of approx. 0.4mile, so less than the stated handbook range. As a portable station, we found the 'vertical' rod antenna was slightly directional. However, when station B moved over to the road, the two-way signals became very loud, maybe another +10dB, and the range could have extended much further. By experiment, we found this was due to the overhead roadside powerlines acting as an RF transmission line! (Ed- has had similar experience using CB's for the Temple Basin flying fox)

First trial- "Foot" mobile sets with 4 foot aerials.

(Note all the abandoned sections-must be Christchurch…☹)

The next trial was using the 12' antennas with the radios in a static role. A similar surface wave agricultural landscape was chosen, see map 2, where one station stayed at point A, and the other moved down the road, testing at ever increasing range. The signals at 1.5 miles were painfully loud, comfortable volume at 2miles and weak but readable at 2.8 miles. We were very pleased with that, and would probably win a prize in the "km per mW" contest if there is one! We have to remember the 12' antenna has a gain of around -10dB, so the actual power radiated is approximately 1.7mW, and the 4' antenna even less, so no chance of RF burns there!

The Achillies heal of these sets is the transmit oscillator being used as the receive local oscillator, so it has to shift by the IF frequency of 285kHz between TX and RX. This is never exact, and can be a few kHz off, so when each station retunes “to get the best signal” they chase each other up the band in frequency. Fortunately, our sets were reasonably well behaved in this respect.

Second Trial- fixed sets 10’ whip aerials

So, still some work to try and achieve the 0.5-milerange on the short antenna; ground resistivity, permittivity and local noise floor can all degrade the range; maybe we will try a different area. The handbook was probably assuming ‘typical English countryside’, so does that mean cold, wet, sticky mud? Or maybe some of the handbook figures are just aspirational goals!

Till next time, keep it green .**Kelvin ZL3KB**

Minutes of the General Meeting of the Musick Point Radio Group
January 11th 2026 Commenced at 1302.

Present- ZL's 1DL,1TLC,1MRT, 1TOF, 1EC, 1DRV, 2MOH, 2JDH, 3CK, 4ROB.
Apologies-ZL1OJ

Minutes of November 2025 G.M.-
Accept as distributed in printed form today Moved-ZL4ROB Seconded-ZL1MRT.
Carried unanimously.
Matters Arising-
ZL1DL- Rust converter not advisable for tower as may affect existing galvanising. "Fisholene "suggested as alternative.

Finance- ZL1DL- No significant changes. A few more Subs received. No immediate future major expenses anticipated. (Summary attached) Balances at 31/12/26- Current-$2908.07 Savings-$8770.02 Repeater-$74.47. Tot- $11752.56

Accept financial statement as presented: Moved-ZL2MOH Seconded-ZL1TOF, Carried, unanimously.

Correspondence-Wedding photo request- ZL3CK has replied with the usual advice to check our website and contact Spark.

General Business-

Jaguar Club Visit- Sunday 22nd January, not a club meeting day but volunteers needed to show about 30 visitors around. 15 Cars expected (ZL3CK- previous correspondence with Martin Rees, the Club Chairman).

Fox Hunting suggested (again) as an activity we could promote—ZL1DL- can produce a small programmable keyer for an FM "fox". Also a 70cm Yagi or loop to attach to a H/H for tracking to be looked for.

100Y Centenary NZART Conference- progress of organizing committee discussed.

Meeting concluded at 1335.

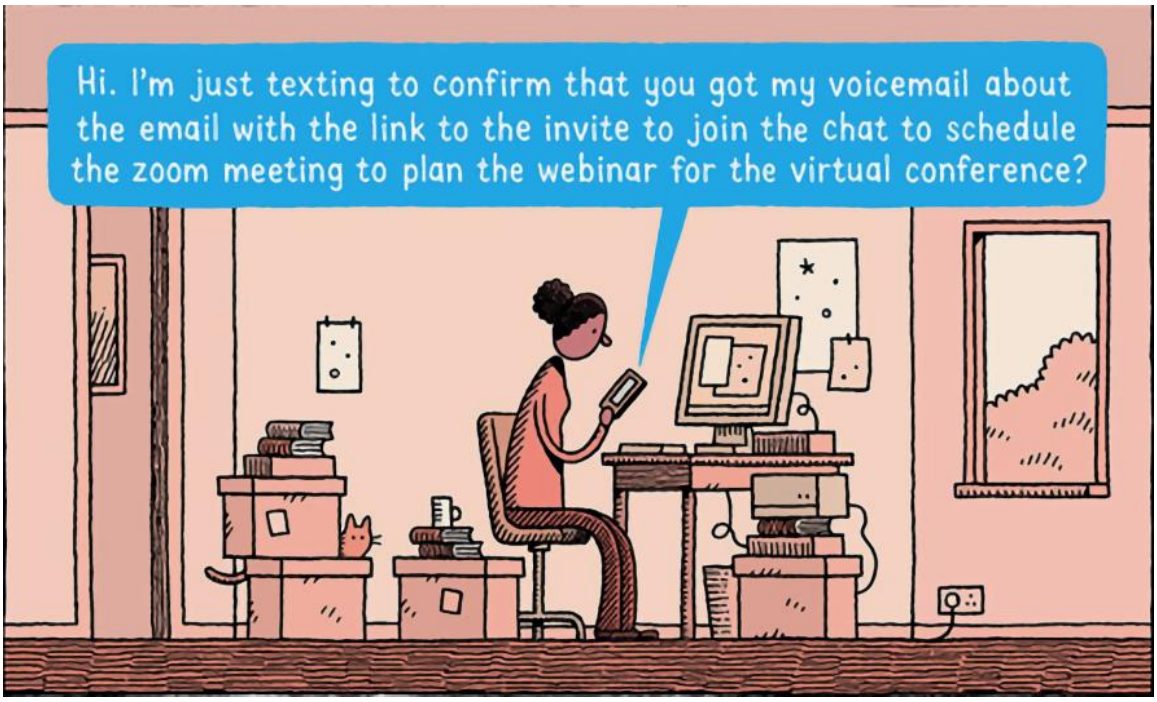
Minutes taken by ZL3CK.

O'Flattery Award

This months O'Flattery Award nominee is recognised for putting their radio's interests above those of the operator.

A nice day in the park, comfy chair and protection from the Sun – what more would a radio want?

Name withheld, but he's the only person in the club to own a K2 and he has quite an interest in Green Radios.



Free Amateur Radio Buy, Sell and Wanted

"ZL Ham Classified Ads" at https://zlham.net.nz