THE WORLD BELOW 400 GHZ

WAIKATO VHF GROUP EXECUTIVE

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General Meeting November 2023

The General Meeting of the Waikato VHF Group will be held on
Sunday, 26th November 2023, 1:30pm
at the Silver Fern Farms Event Centre, (aka Te Aroha Events Centre),
44 Stanley Ave, Te Aroha.
Our program will be normal business then a talk by Ian ZL1AOX who will give us a brief history of Weather Balloons, where they are launched from, and tracking and recovery of Radiosondes (Weather Balloons).

A sub renewal/joining form can be found HERE.

Repeaters/Beacons

The Waikato VHF Group owns and operates one beacon plus repeaters across six sites covering the Waikato, Thames Valley and Western Bay of Plenty, with our 'WaiPlenty 2m repeater network' accounting for twelve individual licenses. Each of our radio licences is available for annual sponsorship, see https://www.zl1is.info/sites.html for a list of repeaters, links and beacon licences currently available for sponsorship. If you'd like to sponsor one (or more) of these, please contact our Secretary (ZL1GWP) or Treasurer (ZL1TAT). All but one beacon and one link licence have been sponsored in 2023.

Annual radio license fees are our largest single expenditure item, occasionally exceeded by major repairs/maintenance. Funding for all Waikato VHF Group operations depends primarily on membership subscriptions, supported by income from trading table sales.

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Delivery of Waikato VHF Group newsletter

Our quarterly newsletter is now **delivered via email only**. It is therefore important for us to have your up to date email address. To confirm or update your details in our records, simply send an email to branch.81@nzart.org.nz with your callsign in the subject line, and if there's been an address change, place those details in the message body please? If your email bounces meantime, refer to the paragraph below for an alternative address.

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Waikato VHF Group email account

In mid-October, we became aware our VHF Group email address operated through NZART wasn't forwarding emails to our appointed recipients. This had become a casualty of NZART's migration of all @nzart.org.nz to a new system, and it appeared to have stopped our email along with others sometime in late September. If you sent us an email during that period and didn't get a response, please accept our apologies. At the time of going to print, this situation is still to be resolved, so in the meantime our secretary ZL1GWP can be emailed directly at petrie.gavin@gmail.com

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Constitution review

NZART are working on a template for branches to use for updating their constitution, and expect to have something in place by early 2024. All 24,000 incorporated Societies in NZ will be required to re-register under the new 2023 Act, with the re-registration period running from October 2023 through to April 2026. The Waikato VHF Group's June 2021 Constitution largely complies with this new Act, however we'll need to add a dispute resolution procedure along with several other minor changes.

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National System locked on Friday 27 November

On 28 October, we were alerted to the National System being locked on by a continuous carrier, like had happened twice earlier this year (January and August). It was soon confirmed the carrier was again coming from the Putauaki / Mt Edgecumbe link Tx facing Kaimai (where new equipment was installed in late 2022). Branch 51's trustee was able to remotely cycle their link off then back on to clear the lock-up, however has left that link off until this intermittent issue can be further investigated and resolved. Until that occurs, this leaves both Edgecumbe '9975 and Mercury Bay '480 isolated from the NS.

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Season's greetings

As the festive season approaches, our committee wish members and their families Merry Christmas and a Happy New Year. Study this Christmas tree to see how the pattern comes together ….

MATHS
Tree

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              1 x 8 + 1 = 9
            1 2 x 8 + 2 = 9 8
          1 2 3 x 8 + 3 = 9 8 7
        1 2 3 4 x 8 + 4 = 9 8 7 6
      1 2 3 4 5 x 8 + 5 = 9 8 7 6 5
    1 2 3 4 5 6 x 8 + 6 = 9 8 7 6 5 4
  1 2 3 4 5 6 7 x 8 + 7 = 9 8 7 6 5 4 3
1 2 3 4 5 6 7 8 x 8 + 8 = 9 8 7 6 5 4 3 2
1 2 3 4 5 6 7 8 9 x 8 + 9 = 9 8 7 6 5 4 3 2 1

              1 x 9 + 2 = 1 1
            1 2 x 9 + 3 = 1 1 1
          1 2 3 x 9 + 4 = 1 1 1 1
        1 2 3 4 x 9 + 5 = 1 1 1 1 1
      1 2 3 4 5 x 9 + 6 = 1 1 1 1 1 1
    1 2 3 4 5 6 x 9 + 7 = 1 1 1 1 1 1 1
  1 2 3 4 5 6 7 x 9 + 8 = 1 1 1 1 1 1 1 1
1 2 3 4 5 6 7 8 x 9 + 9 = 1 1 1 1 1 1 1 1 1

              9 x 9 + 7 = 8 8
            9 8 x 9 + 6 = 8 8 8
          9 8 7 x 9 + 5 = 8 8 8 8
        9 8 7 6 x 9 + 4 = 8 8 8 8 8
      9 8 7 6 5 x 9 + 3 = 8 8 8 8 8 8
    9 8 7 6 5 4 x 9 + 2 = 8 8 8 8 8 8 8
  9 8 7 6 5 4 3 x 9 + 1 = 8 8 8 8 8 8 8 8
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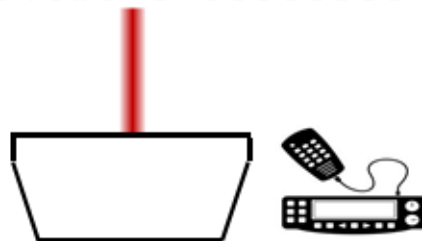
THE VERY FIRST NZPO MULTI-CIRCUIT RADIO LINKS Ian Hutchings ZL2HUT

In the 1940's there were various radio installations that gave telegraph type capabilities to outlying settlements in New Zealand. Typically, these were on MF or HF and were used to places where a telegraph line had not been established, or were for emergency use. As the population grew there was a growing demand for voice communications, which was first met by converting telegraph lines for telephone use. The use of "carrier current" technology allowed groups of three or twelve voice circuits to operate on suitable open wire lines.

A COOK STRAIT RADIO LINK

In 1943 there was a 3 and a 12 circuit carrier telephone system on the "new" 1936 coaxial cable across Cook Strait, as well as two "old" telegraph cables, but capacity on that route was exhausted. Radio knowledge and technology was becoming available from wartime developments and as trained personnel became available an experimental link was established across Cook Strait in 1943. This was between a site at Buckley Rd, Wellington and one on the low hills east of Seddon.

AERIAL ARRAYS – SEDDON

The Seddon site had both aerials roughly in line and was unfenced. The purpose of the two separate poles is unclear.

A report by Tom Clarkson on radio activities on the NZPO during the war years records:

Cook Strait - Provision of Radio Communication Link.

Over many years consideration has been given to the question of providing a radio communication link between the two islands for peace-time requirements. The advent of the war caused the matter to be regarded from the wider angle of national security. Although arrangements were made during the war for an additional co-axial cable across Cook Strait, it was nevertheless considered by the Fighting Services that an additional safeguard should be retained in the form of a radio communication link. Investigation was made into the possible use of metre waves or, alternatively, micro-wave technique for this purpose. It was decided to concentrate on the metre wave technique, and a system was installed between Buckley Road, Wellington (overlooking Island Bay) and a point near the Repeater Station at Seddon. Tests were instituted in March 1943 and proved that good grade communication between the two islands was possible; and later tests proved the link to be capable of carrying a 12-channel carrier system fully loaded with telephone and telegraph traffic. Although the equipment was not actually for traffic purposes during the war years, it was shortly after used for commercial purposes.

The Post Office Annual Report of 1944 records that a building for radio telephone use at Seddon was completed. The Public Works Statement of 1945 records that buildings were constructed for the Post and Telegraph Dept. at Island Bay and Seddon (amongst other main towns). These were likely the building at Buckley Rd and Seddon for the radio link. The Post Office Annual Report of March 1945 records:

INTER-ISLAND VERY-HIGH-FREQUENCY RADIO-TELEPHONE LINK

With a view to supplementing the existing submarine cable facilities in order to meet the demands of the Armed Services for additional communication circuits, and to provide a means of inter-island communication in the event of a disruption of existing facilities, arrangements were made for the establishment of a developmental very-high-frequency radio-telephone link between Wellington and Seddon, which interconnects with existing toll circuits. Communication was first established on the 5th May, 1944, and in March, 1945, experimental communication on a multi-channel system was introduced.

From the extract above the link appears to have initially been a simple transmitter receiver arrangement, with the multi-channel development in 1945.
Reg Motion, a NZPO technician and engineer has commented about the photos:

This is the Radio terminal at Buckly Rd, Lyall Bay, Wellington of the Wellington – Seddon System about 1946. The antennas are broad side arrays operating about 50mHz. 10watt transmitters were used with amplitude modulation capable of up to 12 carrier channels over 60-108kHz. The system increased the number of Wellington to Christchurch circuits by 8. It was very effective in cutting toll delays down to a very minimum at the time of introduction

It is understood that the transmitter used a reflex klystron, although this seems unusual at low VHF frequencies. The purpose of the parabola (and stylized logo) in the Seddon picture is unknown. The tall mast does not appear to have any antenna wires so may be a lamp or other hazard warning. With the difficulties of high-power outputs, the use of high gain arrays was needed to obtain adequate signal levels for multi-channel operation.

The 60 - 108 kHz band is the range of a basic "group" for carrier use, but it is likely that this was shifted to a lower range say up to 48 kHz for use in the radio system.

The Post Office Annual Report of 1945/46 records:

INTER-ISLAND VERY-HIGH-FREQUENCY RADIO-TELEPHONE LINK

Developmental work has been continued on the very-high-frequency radio-telephone link between Wellington and Seddon and has indicated the possibility of transmitting up to twelve carrier-current channels over the link. In the near future three such channels will be brought into use experimentally as part of the normal inter-Island telephone facilities. The extra channels thus available represent a valuable addition to communication resources across Cook Strait.

The 1950/51 report notes that the three-circuit capacity was expanded to give a ten-circuit capacity.

The Buckley Rd site can be located (approx. Map Ref BQ31 492223) on aerial photographs on 1945, about 900 m along Buckley Rd from Mt Albert Rd, some 650 m from Houghton Bay Beach and 880 m from The Parade and Mersey St junction.
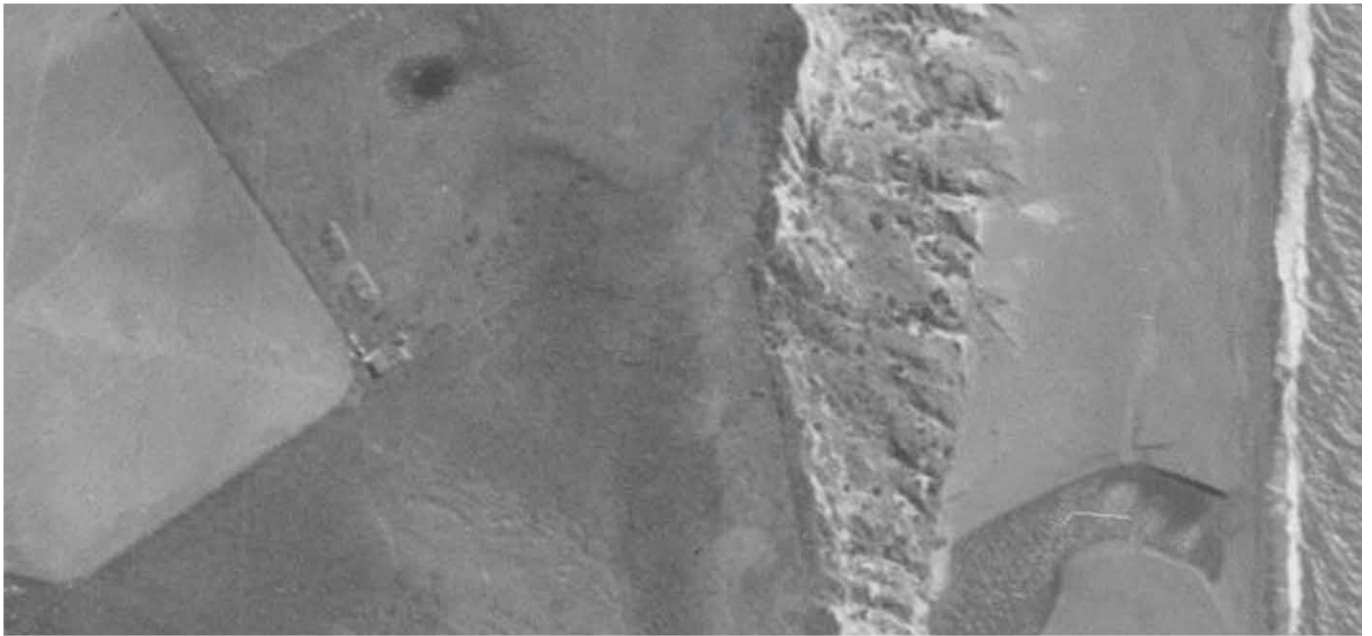

BUCKLEY RD SITE 1947 AERIAL PHOTO

AERIALS - BUCKLEY RD
The Seddon site was adjacent to the spot height 108 m, Map Ref BR29 960880, just 500 m from the coast, 1 km north of the Blind River mouth. Presumably this allowed easy access to the lines running from the Blind River Cable Station to Seddon

The Buckley Rd site had the aerials offset from each other and was fenced
Q-Bit 9 July 2023

SEDDON SITE 1947 AERIAL PHOTO

SEDDON SITE - aerials in centre

Erection of the poles, bracing, and phased aerials would have required a significant degree of confidence among those promoting the "experiment"

The success of this link would have led to the use of the Mt Albert site in the 1950's for Marconi HM100 equipment across Cook Strait to Seddon and Weld Cone.