



New Zealand Association of Radio Transmitters

ZL1AA - AUCKLAND BRANCH 02

MARCH

2014

2m / 80m FOX HUNT @ ZL1WAL QTH

☞ 24 Dingle Road, St Heliers ☞

SATURDAY MAR. 15 @ 13:00 Hrs

BBQ at 1200

NO FORMAL GENERAL MEETING
Club Room will be open at 10:30 AM

**There will be a Fox Hunt at the QTH of
Wallace, ZL1WAL @ 1300**
Members of other Branches are welcome

80M FD station with a view

This year's Field Day had some interesting WX up and down the Country. ZL1AA Experienced High winds and Sunshine.

Japie, ZL1JJN attempts to secure the remains of the 80M Tent, while Ray, ZL1AJR forges on making QSOs without a break in the action.



NOTICE: SUBS ARE DUE BY MAR 31

ZL1AA
Auckland Branch 02
PO Box 18003
Glen Innes
Auckland 1743

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Club Officers

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gmarr@ix.net.nz

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ZL1AA Information:

Branch 02 Clubroom is located at
400 St Johns Road
Kohimarama, Auckland
(Off the beaten track / main road)

Google Earth:
36.869730s, 174.843860e

Clubroom is open every Saturday from
1030 hrs for members and guests to drop
by for coffee and a chat! .

General meetings are held on the third
Saturday of each month at 1330 hrs (except
Dec / Jan).

Committee meetings are held on the first
Tuesday of each month at 1930 hrs. ALL
paid members are welcome to attend.

Affiliations:
10-10 International
NZART
AMSAT-ZL

Club nets:
Monday:
3.645 MHz @ 2000 Ray, ZL1AJR NCO
Thursday:
145.775 MHz @ 2000 Ray, ZL1AJR NCO

10-10 Down Under Chapter Net:
28.530 MHz 2230Z Fridays
(1030 NZST Saturdays)

Branch Contacts:

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George Marr, ZL1TUJ

Branch Technical Advisers:

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SUBSCRIPTIONS

- ❖ **Subscription Rates:**
Regular \$45 (discounted with a \$5.00 raffle ticket if paid by 31st March 2014)
Youth Rate \$20
- ❖ Post to PO Box 18003, Glen Innes, Auckland 1743, direct credit may be made into our bank account 12-3047-0076823-00, or pay the Treasurer or Secretary at the clubrooms.
- ❖ A pro rata rate is offered to a new member joining part way through the year. The financial year runs from 1 December to 30 November
- ❖ Receipts will be distributed either in person at meetings or via mail/E-mail.
- ❖ Branch financial year currently runs from 1 December to 30 November.
- ❖ A current Membership Application / Renewal Form is required with all payments to assist with accurate record keeping. Available from the Secretary, or by download http://www.qsl.net/zl1aa/br02_mem_form.pdf
- ❖ All members' information is kept confidential unless approval is given for it to be released.

Newsletter material submissions are welcomed and appreciated by your editor. You may submit material in a variety of file formats: .TXT .DOC, or just plain old E-mail. Photos are accepted also. Please submit material via E-Mail to: ZL3TE @ dxer.com I will use what I can with the space available at the time of newsletter editing.

Auckland Unitary Plan Update

Further to the last Unitary Plan Update of 27 February from Douglas Birt, ZL1BFS, I would like to let you know what happens from here onwards. A comprehensive submission on behalf of all Auckland amateur radio operators was submitted on 27 February and has been received by the Auckland Council Unitary Plan Team.

The submission and its associated attachments can be found at www.qsl.net/zl1bq - look for the tab saying "**Auckland Unitary Plan**" and then go to the yellow and blue folders to view the information. This submission represents a lot of hard work by Douglas Birt ZL1BFS, Peter Loveridge ZL1UKG, Mike Newman ZL1BNB with assistance from Brian Heywood ZL1IE and Graham Barton ZL1GMB. My sincere thanks to these individuals for their time and effort resulting in a very comprehensive submission.

What happens now? The Council will publish all submissions online by the end of May, along with a summary report of the decisions requested in them. The submissions will be indexed and searchable by submission number, name, local board and theme. The summary report will be publically notified, marking the start of a further submission period.

It is during this period that we would like you, the individual radio amateur, help by making a supporting submission. These submissions can be made on-line at the Auckland Council web site, or submitted in paper form to any Auckland Council office, or public library. If the summary report appears on time, at the end of May, then the time to start making individual submissions will be from 1 June. To assist you in making a submission, some suggested submission forms will be posted on the ZL1BQ web site in the BLUE folder.

More information on this will appear over the next two to three weeks. If you have already seen the draft suggested submission forms which have been circulated to some of the Auckland Branches by email, the final version will not look much different. If you have already made a supporting submission, thank you. For now, I would recommend you wait until the start of the next submission period (1 June) when we will have the official submission number and you can use that number when referencing the submission you are supporting.

By speaking with one voice, Auckland radio amateurs have a very good chance of getting much of all that we are asking for in the final version of the Unitary Plan. I urge you to support this initiative and send in your supporting submission when Auckland Council provides a further window of opportunity midyear.

73, Vaughan Henderson, ZL1VH

Looking for something to do on the weekend? Need to fill some more DXCC Challenge slots? work new Countries, work new modes? Why not operate a short while in a contest. There are several to choose from. More Information can be found here:

<http://www.hornucopia.com/contestcal/weeklycont.php>

March 15-22

- BARTG HF RTTY Contest Mar 15-17
- Russian DX Contest Mar 15/16
- Virginia QSO Party Mar 15/16
- FOC QSO Party Mar 22
- Oklahoma QSO Party Mar 22/23
- Louisiana QSO Party Mar 22/23

March 22-30

- QCWA Spring QSO Party Mar 22/23
- UBA Spring Contest, SSB Mar 23
- SKCC Sprint Mar 26
- CWops Mini-CWT Test Mar 26/27
- CQ WW WPX Contest, SSB Mar 29/30

Every Month: NZART Official Broadcast: 3900 kHz LSB last Sunday of month at 2000hrs and at 2100hrs. (Also broadcast on the National Link and available on the NZART Website).

Auckland Branch 02, NZART (Inc.) Minutes of General Meeting

Date / Time / Place: Saturday 15th February 2014 / 1330 hours / Clubroom

Attendees: George ZL1TUJ Presiding; Wallace ZL1WAL, Ray ZL1AJR, Logan ZL1LMN, Selwyn ZL1BRC, Jeff, ZL1TOU, James ZL1KNI as per the Attendance book.

Apologies: Gwynne ZL1AAR, Steve ZL1FS, Wes ZL3TE

Sustained ZL1AJR / ZL1WAL

Minutes: of the General meeting on Saturday 16th November 2013 (See Newsletter December 2013)

Taken as read and approved ZL1WAL / ZL1TUJ

Correspondence In:

- Break-In.
- Peter Loveridge, Author of NZART's submission to the Unitary Plan, rejecting our suggestions.
- See web page <http://www.qsl.net/zl1bq/page13.html> for details of NZART submission (not yet lodged).
- Roger Birt with enclosure from Auckland Council allowing submissions by mid 2014.
Arising: The meeting is wary of this advice. Secretary is asked to prompt all Members to make their submission supporting NZART's submission once the number of their submission is known this week. Approved ZL1TUJ / ZL1AJR
- Auckland Council Property Division: stating "reimbursement for our costs of trenching is inappropriate." Arising: Secretary to prompt Council to get reimbursement from either Civil Defense or enforce clause 45 of the Scarbros lease to make good the property, or, dig the trench as Scarbros originally offered to do. We were charged \$943 by their younger generation management. Approved ZL1WAI / ZL1TUJ

Correspondence Out:

- Auckland Libraries: update of details of Branch.
- Web page: Update of phone numbers.
- Call –Book editor: Update of elected Committee and more information under Branch Directory.
- James: Various applications by overseas Amateurs wanting to tune the Remotely operated station.
- Wes ZL3TE - Various contributions to the Newsletter

Progress reports:

- The Budget for 2014 has been adopted by the Committee. It shows a loss of \$1,000 until some windfall sale of components is made. Steve is testing the market because sale of the Kenwood TS450 is eminent.
- Computers: Logan ZL1LMN has reinstalled XP to speed them up and the network has been upgraded.
- Corrections to Directory in newsletter and web page – done. James is to be removed as examiner.

Maintenance:

1. Possum – there is evidence of it still living in the ceiling space
 2. Painting – North wall to be done next
- Tower – design of foundation – done. Timetable to pour concrete will be decided at next Committee meeting.
 - Fox hunting for Orienteers' was held last Monday after work at Ellerslie Race Course. Good response.
 - Inter-branch Fox hunt will be in March 2014 using 80 m.
 - JWFD next week end: Plans are formed; poles are erected; antennas are labeled and ready to hoist; catering has been arranged. Operators are asked to volunteer directly to Wes at zl3te@dxer.com

General Business

- **Committee Agenda:** The subject of speakers should be given prominence.
- **Remotely operated station.**
 1. Some software glitches have been experienced, requiring a shut down and restart.
 2. In response to James' requested authority to grant privileges to overseas listeners' requests: George explained that a Policy document (to receive only) has not yet been adopted by the Committee. It is likely that another Class of Membership will be needed to be added to the Branch Constitution. Thus a Special General Meeting will be called to approve it.
- **Submission to Auckland Council Unitary Plan:** Ask subcommittee to reconsider our suggestion.
- **QSL cards:** Secretary is asked to send envelopes to ZL1 bureau.

Meeting closed at 14:14.

- A lecture about contesting tips and techniques was not held. However Selwyn's notes on this subject were circulated and copied. They are not to be published for competitively sensitive reasons.
- Instead, some members visited Capt. Bill Schlef, ZL1BJN, Life Member, to celebrate his 90th birthday.

Auckland Branch 02, NZART (Inc.)
Minutes of Committee Meeting

Date / Time / Place: Tuesday 4th March 2014 / 1950 hours / Clubroom

Attendees: George, ZL1TUJ presiding; Wallace, ZL1WAL, Gwynne, ZL1AAR, Wes, ZL3TE, Ray, ZL1AJR, Japie, ZL1JJN, Logan, ZL1LMN, and Members: Selwyn, ZL1BRC, Simon, ZL1SWW, and visitor: Carolyn Nicoll.

Apologies: Steve ZL1FS

Sustained ZL1WAL/ ZL1TUJ

Minutes: of the Committee meeting on Tuesday 4th February 2014.

Received ZL1WAL / ZL3TE

Correspondence In:

- Newsletters: Franklin, North Shore (by post); Franklin, North Shore, Hibiscus Coast, VHF Group (by email).
- Wes – Suggested change to Membership form that poses questions about Members' interest in Branch activities.
- Paul Manley ZL2CQ - log check from ZM90DX for JWFD.
- Submission to Auckland Unitary Plan. See web page <http://www.gsl.net/zl1bq/page13.html>
- Selwyn ZL1BRC – Various reports about noise issues re Remotely controlled station.
- Selwyn – HF Station 1 issues
- Doug Birt response to our suggestions for submission to Auckland Unitary Plan.
- Vaughan Henderson – Instructions about making a supporting submission after 1 June 2014.
- Consent to use 2m Foxes.

Correspondence Out:

- Authors of NZART Submission – Suggestions
 - All Branch Members - Copy of forms for Supplementary Submission to Auckland Council
 - Vaughan - Request to borrow the 2m Foxes and sniffers after they have been aligned to the same frequency.
- Received and approved ZL1TUJ / ZL1AJR

Finance:

- The Treasurer submitted the Finance Report for March 2014.
 - Investment** of \$5296.72 in Term Deposit at 4.1% matures on 11th Feb 2015
 - Fighting fund** (\$800) and Members' deposits towards it (\$805) have been lodged in Savings accounts.
 - Raffle** - Subs due by 31 March. The Raffle will be drawn at the next Meeting. Proceeds pay for the next ARRL Handbook.
- Expenses requiring approval:

Broadband	Orcon	\$75.00	Direct debit
Lawns	R Higgins	\$36.80	Approved
Donation	VHF Group	\$100.00	
Donation	Musick Point	\$150.00	
Subscription	AMSAT-ZL	\$15.00	
JWFD catering	Steve	\$49.37	Approved ZL1WAL / ZL1TUJ

General Business:

- Program for General Meetings
 - Wed 12th March - Fox hunting for Orienteers at The Domain by Maunsell Street entrance
 - Sat 15th March - Fox hunt at Dingle Dell using 2m and 80 m from Wallace's QTH at 24 Dingle Road. BBQ at noon.

Mar. Committee Minutes (Continued on page 6)

Mar. Committee Minutes (Continued from page 5)

- Sat 12th April - Whangarei Car Rally supported by AREC volunteers. QSL to Japie.
- Sat 19th April - Inter-branch Fox hunt - Cornwall park (Start at Archery Club on East side) is suggested.
- Sat 17th May - Remits followed by talk about RF Noise detection and filtering / eliminationny Selwyn and Simon
- Sat 31st May - NZART Conference and AGM – Gwynne is likely to attend.
- Sat 21st June - Report of NZART Conference followed by Demo of PiHEV Outliner by Japie - subject to its availability
- Sat 19th July - Routers by George
- Sat 16th Aug - Software defined radio (speaker to be asked first)

• **Progress reports:**

- AREC – Our request for funds for comms has been denied. Repeater priorities prevail.
- Maintenance – discussion deferred until Steve is present
- Bamboo - Two groves have been located nearby.
- Tent - See newsletter pics of tent being blown away at JWFD. We need another. QSL please.
- Computers upgraded. PC at HF1 needs to be cleaned. George will provide HDMI cable for TV.
- Tower – design of foundation – done. Wallace has obtained boxing for the new slab.
- QSL – Gwynne gave envelopes to ZL1 bureau. Flag counter has been added to our QRZ.com listing

Remotely operated station:

- Performance is better now
- Welcome message should warn that ZL1AA station is in experimental stage.
- Policy document - Wallace will rewrite it as “a receive only station”
- Overseas membership fee – Wallace is to prepare amendments for our Constitution
- Compliance – George will approach RSM to discuss monitoring. An automated operating time limit is being considered before approval is given to transmit by overseas users.
- Antennas / Bands – A suggestion that 6 metre band is used.
- K3/0 - Logan is working on this interface.

• **Other business:**

- JWFD - Gwynne is collating the logs and he will submit the summary, pictures and notes.
- Certificate – Simon ZL1SWW won the UHF/ SHF Contest for ZL1AA. Gwynne has a frame for it. Received with acclamation

The meeting closed at 21:45 with supper provided by Ray ZL1AJR.

ICOM IC-7700 UPGRADE

Icom America announces a new firmware upgrade to their IC-7700 transceiver. This update provides enhanced user interface, refined operational controls, improved audio and voice functionality and more. The firmware upgrade will be free to download on-line in March 2014.

OSCAR-11 / UOSAT-2 celebrates 30 years in orbit

UOSAT-OSCAR-11 has now been in orbit for 30 years and remarkably its signal on 145.826 MHz FM (AFSK 1200 bps ASCII) is still being received. OSCAR-11, also known as UOSAT-2, was designed and built by a team of engineers at the University of Surrey in Guildford, Surrey, UK as the successor to OSCAR-9 / UOSAT-1 (see Hobby Electronics August 1981). It was launched from the Western Test Range at Vandenberg Air Base, in Lompoc, California along with LANDSAT-5 on a Delta 3920 rocket on March 1, 1984.

OSCAR-11 was the most rapidly designed OSCAR, going from inception to launch in only five months. It was also the first amateur satellite to carry a digital communications package into Earth orbit, and the first to be controlled by a CPU running software written in the high-level programming language “Forth”.

Addition OSCAR-11 information <http://www.g3cww.co.uk/oscar11.htm>



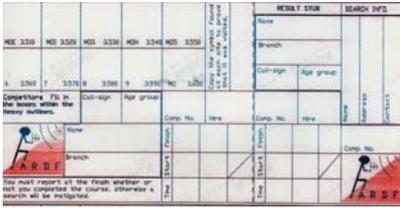
The Fox hunting page

by Wallace, ZL1WAL



ARDF - Amateur Radio Direction Finding using 80m gear

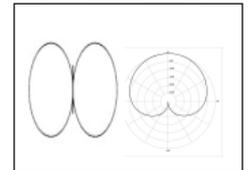
- **Three** Transmitters are hiding at places also Identified with a white and orange prism-shaped flag at each place.
- Obtain a **control card** on which you must write your **Name, Age, Address, and Phone number twice** please.
- Hand this card in to the **Starter** who will give you the **next available start time** (in 5 minute intervals), but he will keep half of the card. Only after starting may you turn on your Direction Finding Radio, also called a **“Sniffer”**.



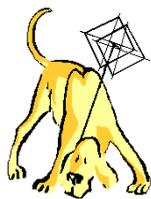
- Plug in the headphones. This turns the sniffer on. Tune and listen for the foxes' call-signs (see below). As you turn around, the signal peaks when the ferrite rod is broadside to the fox (front and back). To resolve the ambiguity about which way to go, press the red button to activate the telescopic antenna as well. This suppresses one of the signal reception lobes as seen by the signal strength graph shown here. The greatest accuracy is obtained when the signal fades out completely. When you are very close to a fox, you will need to attenuate the signal (turn the volume down).



- Each fox broadcasts its call-sign in slow Morse code on 3.51 MHz, 3.52 MHz, and 3.53 MHz respectively. They are:
 M O E sounds like “dah dah dah dah dit”
 M O I sounds like “dah dah dah dah dit dit”
 M O S sounds like “dah dah dah dah dit dit dit”

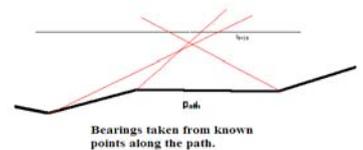


Signal Strength direction



- As you find each fox, note its alphabetic identifying **letter** (ignore any numbers), thus scoring 20 points for each.
- **Time allowed is 1/2 hour.** One point will be deducted for each minute late in returning. As you finish, we shall record your elapsed time, and compute your score. Control cards will be progressively displayed so that you may compare your score with others and discuss your strategies
- **You must hand in your control card** even if you abandon the course, otherwise we will think that you are lost and a search party may be sent out to find you..

TIP: Ask about **“triangulation”**. This means: from two or three different known places on your map, plot the bearings to all of the foxes that you can hear. (For this you may need a compass to orient your map.) Go that little bit further along the road to take more bearings, thus making a precise **intersection** of these bearings to show where all of the foxes are hiding. Then study your map to plan how to run around the park by the shortest route, scoring 20 points for each fox as you go. This is faster than bush-bashing towards each fox in turn. Remember to keep an eye on your time out on the course so as to avoid point deductions for being late back.



A GOLD COIN DONATION FOR BATTERY MAINTENANCE IS GREATLY APPRECIATED

WEAK SIGNAL PERFORMANCE AT ZL1AA

The quest for weak signal performance is not every amateur's cup of tea, but I submit that in the Club context it is important. Those who are brought up on FM transmissions and repeaters (or cellphones) may not think so but for many others the challenges of working equipment at weak signal levels and contacting distant amateur stations, and the skills needed to do so, are an important part of being a radio amateur. Millions of amateurs worldwide support those views.

Weak Signal (Continued on page 8)

Take for example the recent Jock White Field Day (JWFD) contest. Here we are using parts of the 3.5 and 7 MHz amateur bands for 18 hours out of a 24 hour period trying to accumulate as many ZL contacts, branch multipliers and eligible overseas contacts as possible. Those bands are not ideal daytime bands for at least half that period, with problems of Maximum Usable Frequency, F2 Critical Frequency (on 7 MHz at times), and propagation distances varying from 20 to over 600 kilometres locally (1,600 plus kilometres across the Tasman) and unpredictable skip conditions. If ZL1AA does not work enough of the weak signals, which are there at all hours, it will not score well.

The same general principle applies to any international contest you care to name, or to regular international skeds, or to random DX QSOs, and to any transceiver. Then there are the choices between Short Path and Long Path for long distance QSOs and time of day, season of year and state of Solar Cycle factors to consider.

The common factor when you call CQ is making your signal from Down Under heard at the other end, often against the distant station's levels of QRM or QRN or in spite of deep QSB. Conversely, being able to dig their signals out of the noise at this end can also be a battle in which you can improve the chances of success by adopting low noise strategies.

A seemingly lifeless band is one where no one is calling CQ at either end. It often takes only a few operators with the right gear and quite low power at times, working intelligently, aiming preferably in the right direction, to coax signals out of the woodwork unless propagation on a given path is totally hopeless at the time, and even that condition can change in a few minutes. The weakest signal detectable may indicate that a given band is not lifeless after all and rotation, if possible, of antennas at either end or both ends may produce good results. There is no single, universal, cure.

Consider also the remote receiving station of ZL1AA using an Elecraft K3 receiver which offers superb low noise reception if given the chance. The international reputation of ZL1AA depends on that outstanding potential being achieved to the satisfaction of overseas listeners, some of whom may not even be aware of difficult propagation factors affecting ZL.

Most modern transceivers are capable of receiving signals down to a fraction of a microvolt in the hands

of any operator. For that reason alone the aim has been to produce a relatively low noise environment at Auckland Branch clubrooms to give members a better chance of working DX than they have at home.. We do not have the advantage of a low noise site like Musick Point but we can try our very best.

PREPARATIONS FOR LOW NOISE RECEPTION AT ZL1AA

Low Noise Reception does not just happen all by itself, whether in a home installation or a club installation. To make it possible requires understanding and applying a number of remedies, each one gaining a few percentage points, some more than others.

EMC (electromagnetic compatibility) is best addressed by eliminating or suppressing any offending equipment such as switch mode power supplies, noisy ethernet switches, plasma TVs etc. For example when we took the simple step of replacing an early model of computer switch running at low clock oscillator speed and generating many harmonics and intermodulation products thereof and with a modern ethernet switch from Jaycar, the lower noise level was of benefit to all HF receivers on all bands. For one thing, many low level "birdies" ceased to exist throughout the HF spectrum..

Even if a balanced antenna is in use, effective earthing is vital. At Auckland Branch we do not have the large earth mat system which Musick Point inherited from the days of ZLD, old Auckland Marine Radio, so we make do with an earthed heavy mains copper wire bus or counterpoise at ground level running half way round the clubrooms. To this we connect individual earthing leads by means of small stainless steel D shackles. It works pretty well.

Each HF transceiver must be separately earthed to that bus. There should be no sharing of earth leads, to avoid common mode couplings and no reliance on power cords for earthing.

Special attention has been given to earthing the tower on which the tri-band beam is mounted, for which the mounting bolts are epoxied into the concrete base. Our tower therefore tends to act like a partly insulated probe into the complex field of radiation emanating from Auckland Skytower, and local ambient noise fields, and also to pick up rain static. In the light of detection results with an AM sniffer the decision was made to earth this tower directly into the lawn at its base and not to couple

Weak Signal(Continued on page 9)

those undesirable signals into our signal return path. That helps by lowering the noise floor still further.

What we need now are more operators to use the Club's HF equipment more frequently and keep ZL1AA on air under all sorts of propagation conditions, good or bad. So here is the challenge to members. Operating facilities have improved for you since my earlier article about keeping ZL1AA on the air.

One object of our Constitution is to operate a transmitting station – and that should include much more regular activity on the HF bands. Let's do that!

Selwyn Ross ZL1BRC 23 February 2014

VHF DX WEEKEND RESULTS

STATION	SCORE
ZL1AA	10064
ZL2BKC	7123
ZL4AA	3213
ZL2FAE	2806
ZL2ADU	1578
ZL1RS	1497
ZL2IP	654
ZL2TAL	146
ZL3UYJ	94

ZL1AA Entry into the VHF DX Weekend Contest.

Mark, ZL1BNO and Simon, ZL1SWW put ZL1AA on the air for the February VHF DX weekend contest. It was relatively quiet from a participant standpoint with many other events clashing with the contest. Nevertheless we had a good time and the weather was kind to us unlike one contest where we had 40 – 60 knot winds.

We operated all bands from 6 metres up to 24 GHz (9 bands in total). The highest successful band used was 5.76 GHz at only 17 km, We were heard 337 Km away by ZL2BKC at Mt Taranaki but a sticking relay on his gear meant we could not hear his transmissions. 3400 MHz (9 cm) was successful at 337 Km.

Sadly, we didn't work any long haul DX on 6 m due to band conditions not playing ball.

The site was one we use frequently as it has a good view to the useful bearings. West is a little obstructed by bush but some of that problem is helped by the altitude at 375 meters ASL. We camp in our cars on the side of the road as this is where we operate from.

ZL1AA won the contest overall mainly with the additional QSOs on the microwave bands and the QRP multipliers worked for most of the microwave bands bar 1296 MHz. The southern stations cleaned up on the 6 m, 2 m and 70 cm bands.

73, Simon, ZL1SWW



BAND	STATION	DISTANCE
6 m	ZL1RS-ZL4AA	1211 km
2 m	ZL2ADU-ZL4AA	759 km
2 m EME	ZL2ADU-WA3QPX	14190 km
70 cm	ZL2FAE-ZL4AA	645 km
32 cm	ZL2BKC-ZL1AA	337 km
23 cm	ZL2BKC-ZL1AA	337 km
13 cm	ZL2BKC-ZL1AA	337 km
9 cm	ZL2BKC-ZL1AA	337 km
6 cm	ZL1TBG-ZL1AA	16 km

ZL1AA JOCK WHITE FIELD DAY 2014 PHOTOS



Ray, ZL1AJR, Logan, ZL1LMN, Paul, ZL1AJY
80M SSB Operation Photo © ZL1LMN



Steve, ZL1FS trying to write fast enough to work
through the 40M SSB Pile up Photo © ZL1LMN



Wes, ZL3TE working 40M CW Photo © ZL3TE



Ray, ZL1AJR and Japie, ZL1JJN Discussing
either operating strategy or lunch. Photo © ZL1LMN



Paul, ZL1AJY searching for multipliers on 80 CW. Is there
a standard posture for operating 80M CW/SSB? Photo © ZL1LMN



Simon, ZL1SWW operating 80M SSB,
wondering why are we not exchanging
Grid Locators? Photo © ZL1LMN