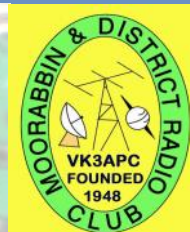


# APC NEWS

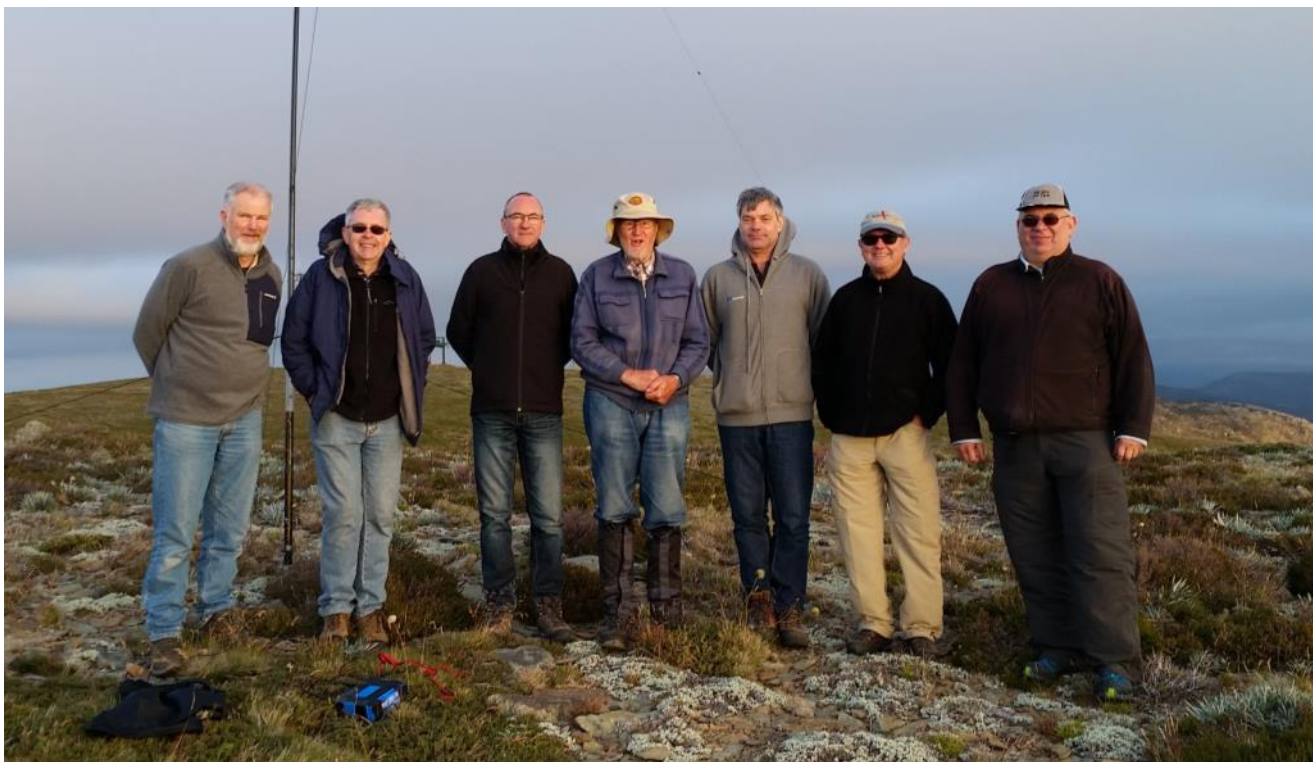


**In this issue:**

**Club Info.  
Events Calendar  
AR7 Restoration  
ANZAC Day Event  
SOTA at Mt Hotham**



Left. The M&DRC Museum AR7 as restored by Ian VK3XI. Details inside commencing p 5. Photo Ian VK3XI



The Hotham SOTA Weekend Crew. L > R. Tony VK3CAT, Glen VK3YY, Paul VK3HN, Ron VK3AFW, Allen VK3ARH, Brian VK3MCD, Peter VK3PF. Read the story commencing page 20. Photo by Sarah Sneddon

© All material in this magazine is subject to Australian Copyright Laws. Contact the editor if you wish to reproduce

# CONTENTS

Item	Page
ANZAC Day Special Event	18
AR7 Restoration project	05
Club Meetings	33
Club Nets	32
Coming Activities and Meeting Speakers	30
Committee members	34
Events Calendar	26
Getting back into Amateur Radio #1	23
Join the Club	28
Paying Subscriptions	29
SOTA Weekend at Hotham	20
The Editor's Desk	4
Trade Discounts	31



**BUILT SOMETHING?**

**BEEN SOMEWHERE?**

**DONE SOMETHING**

**INTERESTING?**

Tell the Editor. He needs material for the next issue of APC News. Please include pictures too.

Email: [vk3apc@wia.org.au](mailto:vk3apc@wia.org.au)

## THE EDITORS DESK - Ron VK3AFW



Golly, time for another issue.

I've sent off my vote for the WIA Board Directors and urge you to do the same if you haven't already done so.

I've also made my bookings for the WIA AGM in May at Hahndorf. It should be interesting. Will you be there?

It's the weekend after our Hamfest. We will have to start setting up later than usual due to a double booking problem. It will be all hands on deck and quite a rush but we will do it.

Before that we will be hosting a big event on ANZAC Day Tuesday 25th April. Details are in this issue.

Our main article is on the AR7 restoration and there is a report on the "Hotham Weekend"

Peter VK3YE has kindly provided some material that might be relevant to many members. Pass on a copy of the magazine if you know of members who don't have a computer and internet access or are not tech savvy.

Don't forget to send in your contributions for APC News. 73, Ron, VK3AFW



## Moorabbin and District Radio Club

### AR 7 RESTORATION PROJECT

by Ian VK3IX

The K/CR/11 receiver (left) was built during WW2 by the Kingsley Radio Company in Melbourne. It was adapted for the armed forces and in the case of the RAAF was called the AR7. Estimates suggest around 3,500 receivers were built. The receiver was based on the National HRO receiver of the time.. *(It was generally considered to be superior to the US units and US servicemen often tried to barter for one, sometimes successfully...Ed)*

## AR7 RESTORATION PROJECT cont'd

After the war many receivers were modified and used by the DCA as ground station receivers.

Amateur radio operators and short wave listeners were gradually able to get hold of receivers through disposal outlets. These throughout the years underwent many modifications and changes by their users. There were magazine articles detailing ways to improve performance. Examples were modifying coil boxes to give complete band spread across a given amateur band and valve changes to improve the receiver characteristics.

These days if you are able to get hold of an AR7 it is likely to have had many changes made to it.

An unmodified AR 7 valve line up consisted of 1st RF stage 6U7G, 2nd RF 6U7G, 6K8 mixer, 1st and 2nd IF 6U7G, detector/noise limiter/audio amplifier 6G8G, power amplifier 6V6, S meter and BFO 6C8G.

Receiver coverage is from 138 kHz to 25 MHz using five plug in coil boxes.

# AR7 RESTORATION PROJECT cont'd

The Moorabbin Radio Club is lucky enough to have one of these receivers in our museum. Unfortunately it is missing the power supply and some of the coil boxes.

Our museum curator Colin VK3UDC felt that it would be good to have this receiver operational as a working example of a general coverage receiver produced in Australia. Hence the project began.

Fortunately, the receiver had not been heavily modified. In the past many of these receivers had the octal valves replaced by seven and nine pin miniature valve types to "improve performance". Luckily this receiver still had octal 8 pin valve types, but some of 6U7s had been substituted out.

It was decided to try and maintain the status quo and generally not significantly try to back modify it. The only exception was to re instate the 6U7s where the top grid cap wiring had not been removed to accommodate higher gain valve types.



## AR7 RESTORATION PROJECT cont'd



Above: The under chassis view of an AR 7 showing the many old paper capacitors.  
Photo Ian VK3XI



# AR7 RESTORATION PROJECT cont'd

## Getting the Receiver to Work

The first task was to remove the spiders webs, dirt and grime and give it a general clean up.

No effort was made to strip the receiver back to the bare chassis and start a complete restoration. Instead, the mechanics of the unit including the tuning dial were found to be OK when checked. Some minor lubrication was applied where necessary.

The contacts for the coil boxes were checked and cleaned.

All valves were removed from their sockets. Sockets were checked for tension and serviceability. Each valve socket was sprayed with electrical contact cleaner lubricant and valves then inserted back into their places.

The next job was to check the capacitors. It is usually good practice for a receiver of this age to replace all the capacitors, this can save a lot of time and frustration. My curiosity was aroused as to the likely condition of the old capacitors. Testing some samples revealed that all were leaky and had changed their values. So around thirty five were replaced !

# AR7 RESTORATION PROJECT cont'd

Right: Faulty components removed from the receiver

Photo Ian VK3XI



## AR7 RESTORATION PROJECT cont'd

No effort was made to make the new capacitors look like the old ones ! It is easier for some one in the future who may be working on the receiver to easily identify what work has been carried out on the receiver if the new components are readily identifiable.

Surprisingly enough when it came to checking all the resistors most were well within 20% of their rated value. Ultimately, about 12 resistors were changed.

The wire wound RF gain control potentiometer was replaced as it was open circuit.

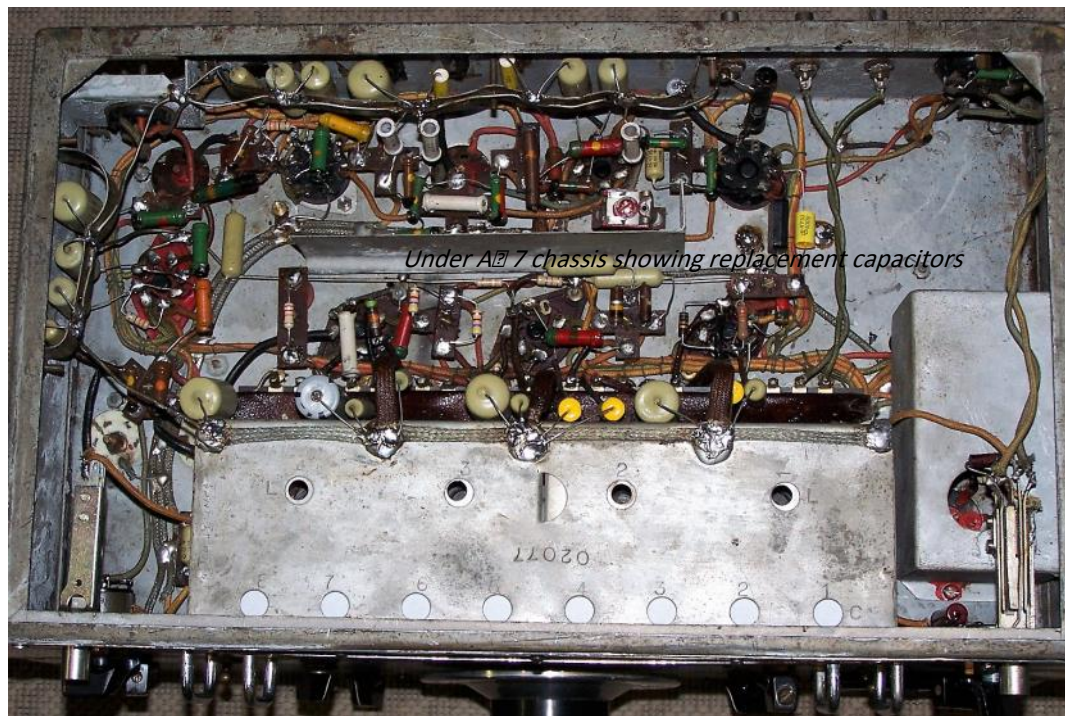
The S meter glass had come loose inside the meter. The meter was removed, disassembled and the glass re-glued.

A valve socket in the IF was replaced. This removed an annoying intermittent fault which was discovered during the testing phase of the receiver.

## AR7 RESTORATION PROJECT cont'd

Right: Under AR 7 chassis showing replacement capacitors.

Photo Ian Vk3XI



*Under AR 7 chassis showing replacement capacitors*

# AR7 RESTORATION PROJECT cont'd

## Power Supply

The next job was to build a power supply for the unit.

Colin was able to come up with a suitable 385 volt aside transformer and two filter chokes. The transformer had a 5 volt winding for a rectifier (5Y3) and also two 6.3 volt filament windings which were wired for 12 volt operation. The filaments in the AR 7 are in series parallel combination wired for 12 volt operation.

]

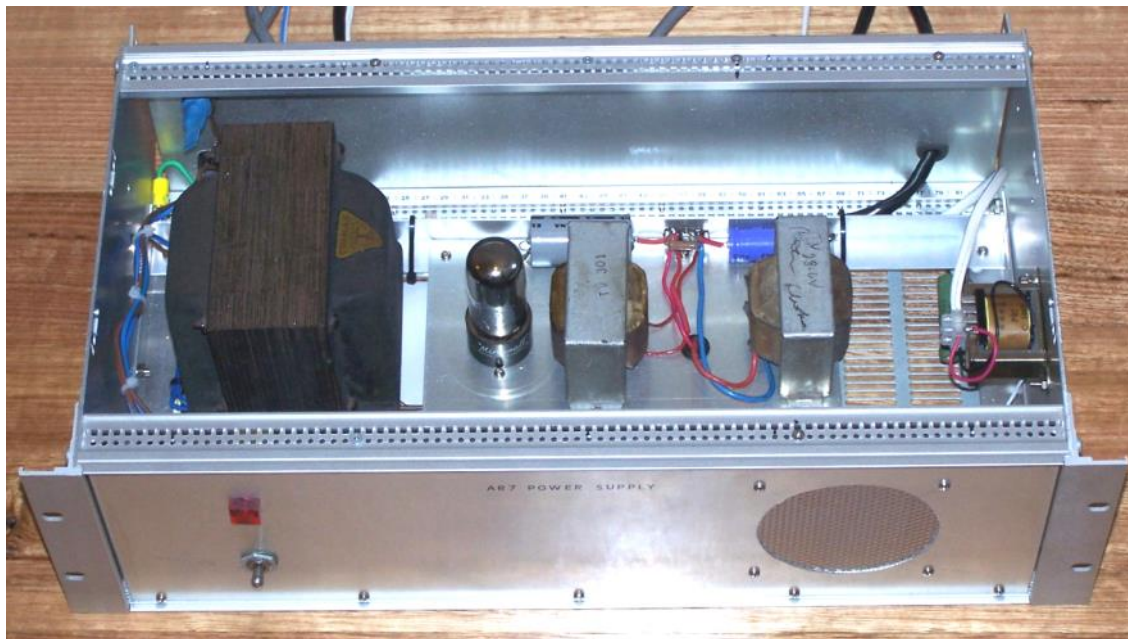
A rectifier valve was used instead of silicon diodes as it is kinder to the receiver during the warm up period and won't necessarily stress components during switch on.

The power supply was built into an old EURO card circuit board frame (old meets new !). This frame can be rack mounted if required to match the AR7.

A speaker was also mounted in the power supply This is feed with a 500 ohm audio feed from the receiver. A 500 to 4 ohm matching transformer provides the impedance matching for the speaker. Refer photo of power supply on next page



## AR7 RESTORATION PROJECT cont'd



Above: The completed AR 7 AC power supply.

Photo Ian VK3XI



## AR7 RESTORATION PROJECT cont'd

A point of design associated with the AR 7 - when the AC switch on the power supply is turned on, the filaments in the receiver heat up. However, the HT is not applied to the receiver until the AF gain switch/ potentiometer is switched on. This can be a trap for the first time user !

### Testing phase

The valve compliment of the MDRC receiver is - 1st RF stage 6SH7, 2nd RF 6U7G, XM61 mixer, 1st IF 6U7G, 2nd IF 6SK7 detector/noise limiter/audio amplifier 6G8G, power amplifier 6V6, S meter and BFO 6C8G.

The AR 7 is connected to the power supply by a four pin plug and cable. The 500 ohm audio feed is connected via a five pin plug.

After completing the inter unit wiring all was checked for errors and appeared OK.

The receiver was powered up with the 5Y3 rectifier valve removed. All, but two valves filaments lit up. This was traced to an open circuit filament in one valve, which was replaced.

## AR7 RESTORATION PROJECT cont'd

Next the rectifier valve was plugged in to apply HT to the receiver. Again, all seemed to be well with around 280 volts DC measured.

The audio stages seemed to be working fine with that reassuring BUZZ when the control grids are touched.

Next was the alignment. The local oscillator was temporarily disabled and a 455Khz modulated AM signal was applied to the mixer grid. Some IF cans were found to be way out of alignment.

Next a Band E coil box (13 to 25MHz) coil box was plugged into the receiver. It showed very promising signs of life. Radio Beijing was very prominent, and other signals could be heard across the whole dial. The oscillator and RF tracking were checked and aligned on the E plug in coil box.

A Band A coil box ( 140 to 400 KHz) was plugged in. At this location the Moorabbin NDB was strong and very audible.

## AR7 RESTORATION PROJECT cont'd

As mentioned earlier our club receiver unfortunately is missing some of the plug in coil boxes. Namely the - Band B (495KHz to 1430KHz), Band C (1420KHz to 4.32MHz) and Band D (4.25MHz to 12.6MHz)

A - Band D plug in is currently being made up from some coil box parts that the club has on hand. This is showing promising signs of working and should be finalised soon.

**If you have some AR 7 coil box plug-ins that are not required I'm sure our museum curator would very grateful to receive them !!**

Thankyou to Colin VK3UDC and other club members for dipping into their "junk boxes" to supply various components to complete this project.

73's and Happy Listening !

Ian VK3XI



# ANZAC DAY SPECIAL EVENT

The **School Amateur Radio Club** kids and the **Melbourne Region Cub Scouts** will be joining forces again this year to participate in group activities, displays, demonstrations and challenging missions during an ANZAC day special event at the Moorabbin and District Radio Club (entrance opposite 68 Turner Road Highett), 25 April 2017 from 10am to 4pm.

The event includes an ANZAC day commemoration, BBQ lunch, morning and afternoon tea.

This all-day family event is for school children, scouts and young aspiring amateur radio enthusiasts.

## **Group activities include:**

- First Aid – CPR demonstrations
- SARC electronics, prototyping and circuit board soldering demonstrations
- Scout proficiency badge activities
- Amateur satellite, shortwave, line-of-sight and weak signal communications
- Portable, solar-powered, emergency communications
- Hidden transmitter hunts, direction finding, navigation and triangulation



# ANZAC DAY EVENT cont'd

## Timetable:

- 1000 ANZAC day commemoration
- 1015 History of Radio in Australia
- 1045 The world of Amateur Radio
- 1115 Morning tea
- 1130 Electronic Kit Construction
- 1230 BBQ lunch and drinks
- 1300 Search and Rescue Mission
- 1400 Afternoon tea
- 1415 Search and Rescue Mission
- 1600 Finish

**PARENTS:** Why not bring along some camp chairs and have a relaxing time while your kids have fun, make new friends and learn new skills!

**REGISTER:** To receive a detailed program prior to the event and to register for your name tag and lunch, please visit the **School Amateur Radio Club Network** at [www.sarcnet.org](http://www.sarcnet.org).



# SOTA WEEKEND at MT HOTHAM

The second annual Hotham Weekend for SOTA enthusiasts organized by Club Member Brian VK3MCD was held on 24<sup>th</sup> to 26<sup>th</sup> February using the Peninsular Ski Club as a base. Club members attending were, Ken VK3KIM, Tony VK3CAT, Brian VK3MCD, Ron VK3AFW and Ruth and Paul VK3HN. Others there were Peter VK3PF, Allen VK3ARH, Allan VK3FABT, Glenn VK3YY and Sarah,

Tony set out to try new things, including 160 m CW operation. He and Allen VK3ARH also did the 3 h each way walk to the summit of Mt Feathertop and successfully got the required contacts to score. Brian and Paul, guided by Peter activated some new peaks. On the way back they collected Ron whose car had broken down, and then did two more peaks plus a 4WD short-cut through the alpine forest back to Dinner Plain.





## SOTA WEEKEND at MT HOTHAM cont'd



Tony VK3CAT and 160 m antenna on Mt Hotham

Saturday night saw the whole team on the summit of Mt Hotham for a champagne, dips and cheese snack as the sun set. This year it was quite cold. Dinner at the local hotel followed.

On Sunday Ken , with Peter navigating, took Ron to several difficult to access peaks in his trusty Range Rover including Blue Rag Range and White Timber. HF conditions were poor but enough contacts were scraped up on HF and 2 m to qualify.

As the local mechanic was not able to look at Ron's broken down car until midday Monday, Ken very kindly delayed his departure for Melbourne until the verdict was in. Blown gasket. Expensive repair. So as not to waste the morning two peaks near Omeo were activated, VK3/VG-064 and Sam Hill. HF was worse than Sunday but VHF saved the day again.

## SOTA WEEKEND at MT HOTHAM cont'd



Above, Ken and Peter on Mt Blue Rag.  
Top right, Mt Feathertop from Mt Hotham summit



After a bite to eat, Ken took Ron back to Hotham where Ruth and luggage were put on board and the long trip back to Melbourne commenced.

Thanks to Brian for organizing the event, to all participants for making it a great weekend and to Ken for his patience and generosity.

Ron VK3AFW

# Extracts from

## GETTING BACK INTO AMATEUR RADIO #1

### Item 1: What's changed in radio - equipment

Amateurs continue to be inspired by waves of surplus or cheap equipment. Sixty years ago it was heavy war surplus gear. Then there was VHF AM and then FM gear as commercial users moved to higher frequencies, narrower bandwidths and trunked systems. Later we benefited from satellite or microwave cast-offs. More recently we've had the global marketplace that is eBay, and the availability of modern yet cheap equipment.

If you haven't looked at new transceiver prices lately you're in for a pleasant surprise. It's a buyers' paradise compared to 30 years ago.

Back then transceivers only covered the HF bands and cost maybe a month's wage. All-mode rigs for 50, 144 and 432 MHz were separate units and cost a similar amount each. A 160 metre to 70 cm station could have easily cost three months' pay, and we haven't even counted the accessories yet.

Today an all-mode 160 metre to 70 cm transceiver can be yours for maybe two weeks' income. And a basic 100 watt HF-only transceiver is down to a week's average wage.

# GETTING BACK INTO AMATEUR RADIO #1 cont'd



VHF/UHF handheld prices have plunged even more. A 2m/70cm handheld was an expensive luxury in the 1980s and early 1990s. Today the cheapest eBay handhelds from China cost under \$US50. They may lack the quality control of the established brands but their presence in the market has improved affordability for all models.



Such low prices are now seen on HF as well. At the time of writing the Bitx40 prebuilt 7 MHz SSB transceiver module is available for \$US59. Solder a few wires and be on the air in an hour. The cheapest Morse transceiver kits go for under \$US10 but their low output power and crystal control makes achieving contacts 'challenging', to put it politely.

## GETTING BACK INTO AMATEUR RADIO #1 cont'd

Online purchasing and payment systems have further cut prices. Thirty years ago most large cities had several radio shops but are now lucky to have one. Instead, a great deal of amateur gear is available online from both domestic and overseas suppliers. Online suppliers have lower overheads and prices but you need to weigh this up against support provided by local dealers.

Warranties have lengthened on the established brands. At one time HF transceivers were guaranteed for 12 months only. Now warranties as long as five years are offered. This, coupled with lower prices, makes buying new gear more attractive than it used to be.

Enjoyed the read? There's more in '*Getting back into Amateur Radio*' by Peter Parker VK3YE. It's available as an ebook through Amazon for \$6.99. Search the title on Amazon, like 'VK3YE Radio Books' on Facebook or visit [vk3ye.com](http://vk3ye.com) for more details.



Photos from the web sites of Icom, Yaesu and Kenwood.



# EVENTS CALENDAR



## CLUB EVENTS FOR 2017 Updated 8 March 2017

The following events are in addition to the normal weekly and monthly meetings. They include the events the Club normally undertakes plus all WIA sponsored events for which there are dates. If you know of an event that should be added please email the editor.



## EVENTS CALENDAR

EVENT DATE	EVENT NAME
18 <sup>th</sup> , 19 <sup>th</sup> March	John Moyle Field Day
25 April	ANZAC Day Scout Cubs Event
6 <sup>th</sup> May	M&DRC Hamfest
6 <sup>th</sup> May 10:00 -11:46 UTC	Harry Angel Memorial 80 m Sprint
13 <sup>th</sup> May	Jamboree on the Trail
19 <sup>th</sup> , 20 <sup>th</sup> , 21 <sup>st</sup> May	WIA AGM Hahndorf SA
17 <sup>th</sup> , 18 <sup>th</sup> and 24 <sup>th</sup> 25 <sup>th</sup> June	International Museums Weekends.
24 <sup>th</sup> , 25 <sup>th</sup> June	VHF UHF Winter Field Day
12 <sup>th</sup> , 13 <sup>th</sup> , August 2017 0300z to 0300z	Remembrance Day Contest
00:01UTC 19 August to 2400UTC 20 August 2017 (48 hours)	International Lighthouse Lightship Weekend – ILLW.
26 <sup>th</sup> August	ALARA Contest
8 <sup>th</sup> , 9 <sup>th</sup> , 10 <sup>th</sup> , 11 <sup>th</sup> September	ALARA Meet, Cairns.
9 <sup>th</sup> , 10 <sup>th</sup> October 0800 UTC Saturday to 0800 UTC Sunday	Oceana DX Contest, Phone.
16 <sup>th</sup> , 17 <sup>th</sup> October 0800 UTC Saturday to 0800 UTC Sunday	Oceana DX Contest, CW
20 <sup>th</sup> , 21 <sup>st</sup> , 22 <sup>nd</sup> October	Jamboree on the Air.

# LIKE TO JOIN US AT THE M&DRC?

**Annual Membership Fees are due 1st July.  
Pro rata payment for new members in first year**

Schedule of Fees (Annual)	Amount
Joining Fee	Nil
Annual Membership Fee, standard	\$45.00
Student, Retiree, Pensioner Annual Membership Fee	\$40.00
Family Membership Fee	\$60.00
Honorary and Life Members Membership Fee	Nil

**Send your application with cheque† to:**

The Secretary M&DRC  
Box 58,  
Highett,  
Victoria  
Australia 3190.

# PAYING SUBSCRIPTIONS

## **Paying by computer.**

Go to **Internet Banking** on your computer and select the account from which you want to make the funds transfer. Do not select a Credit Card Account. In the "Transfer Money" screen enter the following.

- 1 In the ACCOUNT NAME box to which the funds are to be transferred, enter MOORABBIN AND DISTRICT RADIO CLUB INC
- 2 In the BSB box enter the number 033-385
- 3 In the ACCOUNT NUMBER box enter the number 77-4955
- 4 In the TRANSACTION DETAILS or ACCOUNT DESCRIPTION box enter your name or Call sign in uppercase.
- 5 Email the treasurer to advise of your payment.

## **Paying by cash over the counter at the bank**

Go to a **Westpac bank** and fill out a deposit slip as below. Take this plus the necessary cash to the teller.

- 1 In the FOR CREDIT OF box enter MOORABBIN AND DISTRICT RADIO CLUB INC
- 2 In the BSB box enter the number 033-385
- 3 In the ACCOUNT NUMBER box enter the number 77-4955
- 4 In the TRANSACTION DETAILS or ACCOUNT DESCRIPTION box enter your name or Call sign in uppercase.
- 5 Collect the receipt and email the treasurer to confirm payment.

# M&DRC MEETINGS, ACTIVITIES AND SPEAKER SCHEDULE 2017

MONTH	DATE	SPEAKER	DATE	ACTIVITY
March	Friday 10 <sup>th</sup>	Amateur Digital Television, Peter Cossins VK3BFG	Saturday 25th	HF antenna rebuild working bee.
April	Friday 14 <sup>th</sup>	Easter Friday No meeting	Saturday 22 <sup>nd</sup>	HF antenna rebuild working bee.
May		No Meeting, Hamfest next day.	Saturday 27th	Informal meeting. Room and garage clean up and natter



there or



# TRADE DISCOUNTS

## FOR CLUB MEMBERS at ALTRONICS and JAYCAR.

Moorabbin and District Radio Club Inc. members can now buy over the counter at Trade prices from both **Altronics** and **Jaycar**. When making a purchase ask for Trade Discount and for **Altronics** quote the Club's Trade account number **32323** and your **call sign** or for **Jaycar** quote Customer Number **45400209**. **This is NOT a charge account so you use your money.**

**Note: Minimum purchase of \$20 may apply.**

Check out these companies at their websites.



<http://www.altronics.com.au>



**Get your Club photo ID  
discount card NOW**

<http://www.jaycar.com.au>

# CLUB NETS

## VHF net.

Wednesdays: **146.550 MHz FM**  
Starts at 20:00 (local)

## HF net

Wednesdays: **3.566 MHz (± QRM) LSB.**  
Starts at 20:30 (local).

**Note: this is in recess but do feel free to come on and call.**

## Drive Time net

Week days: **146.550 MHz FM**  
Starts at about 16:40 (local)

Please drop in and join the Nets and catch up on the latest happenings around the Club.



**D- STAR repeaters are now operational.**

For more information about D-STAR go to the Club's web page  
**[www.mdrc.org.au](http://www.mdrc.org.au)**  
click on the link to Susan VK3ANZ's Newbies Guide to Using D-STAR



# CLUB MEETINGS

**Formal Meeting.**  
*Second Friday night of the  
month, 8:00 PM and*

**Informal Meeting.**  
*Fourth Saturday morning of the  
month 10:00 AM*

**Check the web site and the  
weekly Club nets for the latest  
doings.**



## **COFFEE GROUP.**

**Every Tuesday morning -  
10:00 AM to 11 AM.**

Retired? Come along, swap  
yarns, bits of gear and info or  
get helpful advice all with a bis-  
cuit and a cuppa.

**Visitors are always  
welcome.**

**Free disposal items for  
financial members at most  
meetings**

## COMMITTEE MEMBERS AND OFFICE BEARERS

<b>President:</b>	<b>VACANT</b>	
<b>Vice President:</b>	<b>Lee VK3GK</b>	
<b>Secretary:</b>	<b>Ken VK3KIM</b>	millisk@hotmail.com
<b>Treasurer:</b>	<b>Brian VK3MCD</b>	bmcderm@tpg.com.au
<b>Committee members:</b>	<b>Gerard VK3GER</b>	
	<b>Graeme VK3GL</b>	
	<b>Mike VK3FRTM</b>	
<b>Combined Clubs Reps:</b>	<b>Ian VK3IFM and Ken VK3KIM</b>	
<b>Publicity Officer</b>	<b>Various</b>	
<b>Repeaters</b>	<b>Graeme VK3GL</b>	
<b>Webmaster:</b>	<b>Cohen VK3HCL</b>	
<b>Museum Officer</b>	<b>Colin VK3UDC</b>	
<b>Speaker schedule</b>	<b>Gerard VK3GER &amp; Ron VK3AFW</b>	
<b>Education and Training</b>	<b>Graeme VK3GL</b>	
<b>Station Officer:</b>	<b>Tony VK3CAT</b>	
<b>QSL Cards</b>	<b>Denis VK3BGS</b>	
<b>Librarian:</b>	<b>Ben VK3FBCN</b>	
<b>Magazine Editor:</b>	<b>Ron VK3AFW</b>	vk3afw@optusnet.com.au
<b>Assistant Editor:</b>	<b>Cohen VK3HCL</b>	