GATEWAY

The Official Magazine of the Gippsland Gate Radio & Electronics Club Inc.

January 2022

Raspberry Pi 400 computer

Fixing a Thomson player

Clock Smoke

And More

WIA Affiliated Club

Cover photo, Christmas party at the back of the guides hall, see page 12 for more.
(If you have any good photos, please send them in)

Contents.

Note: - club meeting minutes are now via a link in club emails sent out by the secretary.

Event Queue

January:

21st General meeting, see club emails
26th Australia day BBQ

February:

4th Prac/Natter night
18th General meeting

Club run events are only possible with the involvement of ALL members.
Without volunteers to coordinate and participate in club events the club will fail to prosper

GGREC President's Message

President's Message January 2022.

Happy New Year to all our GGREC Memebers.

The January General Meeting will be the first official meeting of 2022 and we have a lot to talk about. Our Club needs to decide if it is safe enough to proceed with a Hamfest this year or to look for alternative means of fundraising for the Club.

We have gained some new members in the last twelve months and I welcome you to our Club. Participation is the key to getting the most out of any Club and GGREC is no exception.
I look forward to seeing you at our Club events.

I and many Club members attended Antennapalooza 2022 at Ian and Dianne's property in Drouin and had a great time attending the presentations and catching up with old friends. GGREC thanks Ian and Dianne for hosting Antennapalooza and promoting GGREC.

Let's get together and make the most of 2022.

Kind regards,

Bruno Tonizzo

President GGREC Inc.

From The Editor

Clock smoke,

In last month's magazine, I lamented about how I'd built this big digit clock, and that it was now quite hard to make any changes to its code without re-writing a great swag of it.

Well after getting the latest code running in my new ICM7208 based clock, I set it up under this one, my original 'Big clock' and just left it to run, however my wife noticed a growing error between the two… Darn, (especially after I had written an article on the new clock) so I added a third clock, to be sure. With all being driven by the same master source they should track each other. It soon became apparent that my 'Big clock' had lost the plot. Power cycling it soon confirmed my first thought; it was no longer listening to the master, and was only relying on the Arduino's internal ceramic resonator – a very poor source.

My first port of call was to check the master RS232 data line, while my other clocks were happy, it couldn't hurt to check. For a very long time this signal had been severely supressed, down from about 10V to about 1.5V, I'd always assumed 'way too many loads'. An RS232 driver usually talks to just one load, sometimes two, I had at least 8, however all was working, so an "it ain't broke, don't fix it" attitude ensued. Problem was it was now back up to 10V! So was my kitchen clock the culprit all along? Looks so.

So I whipped it off the wall (It was long overdue for some TLC, as the front plastic glue was letting go). So I had a looks at its RS232 receiver – BUGGA, the incoming signal was supposed to go to a BC548 transistor via a 10K resistor, with a diode to shunt the negative half of the RS232 signal to ground. However in flipping back and forth between the front and back of the perforated board, I had obviously got out of sync, the RS232 was connected to the diode (now blown) that was supposed to go to ground, whereas the resistor was left doing nothing. No wonder my clock data line was down to 1.5V, two diode junctions to earth was killing it.

So I corrected my error, replaced the now blown 1N914 diode, and the transistor for good measure, then put it all back together after re-gluing the front panel.

I took it back to the kitchen and …. Bang goes the clock, with a good dose of smoke – needless to say, Marianna, my wife was not impressed. So back to the workshop, several hours later I found and removed a solder dag from the board and replaced a freshly cooked 1N4004 reverse polarity protection diode, so all is well again.

Paul VK3TGX

Drouin Amateur Radio Coffee group (DARC)

https://groups.io/g/DrouinARCoffee

Drouin **A**mateur **R**adio **C**offee group. is a group for those **living in the Drouin area** that is a ham radio license holder or are just interested in ham radio or shortwave listening. The group is also known as DARC.

We are not a formal club it is just an email list to allow people to have a platform to communicate and arrange get together's for a coffee and a chat now and then.

Please feel free to spread the email address or web address of the groups https://groups.io/g/DrouinARCoffee around to people that may be interested

Below are our RF details for the **Drouin Amateur Radio Coffee** group located at grid square QF21

Our local call in frequency is **146.475MHz** and we can also be found on **TG 146475** on the **BM DMR** network
If you are having problems getting anyone on simplex you can try the Mt Worth Repeater on 70cm
70cm Rptr **VK3RWD** In **431.575** MHz Out **438.575** MHz Tone **91.5Hz**

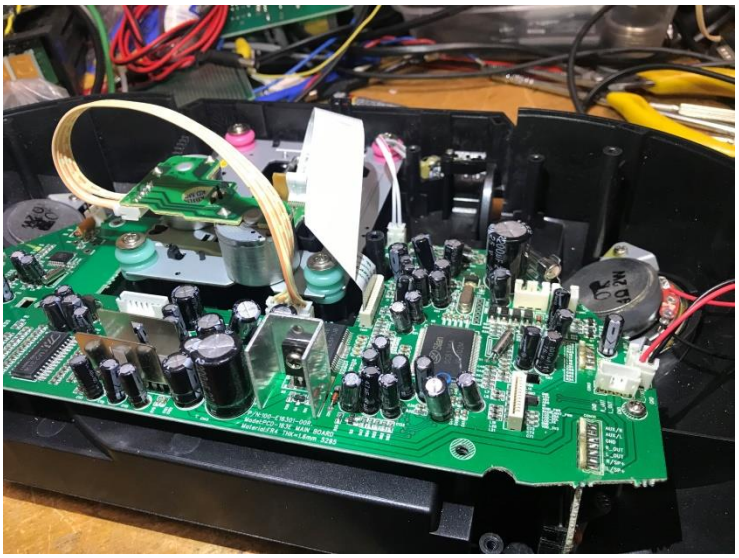
Mark "Pockets" Clohesy
VK3PKT

Covid Safe Meetings.

To help stop the spread of Covid we encourage members to wear a mask indoors, bring your own coffee cup, check-in to the Club shack and Guide Hall by using the QR codes. Hand sanitiser will be available for you to use at the meetings.

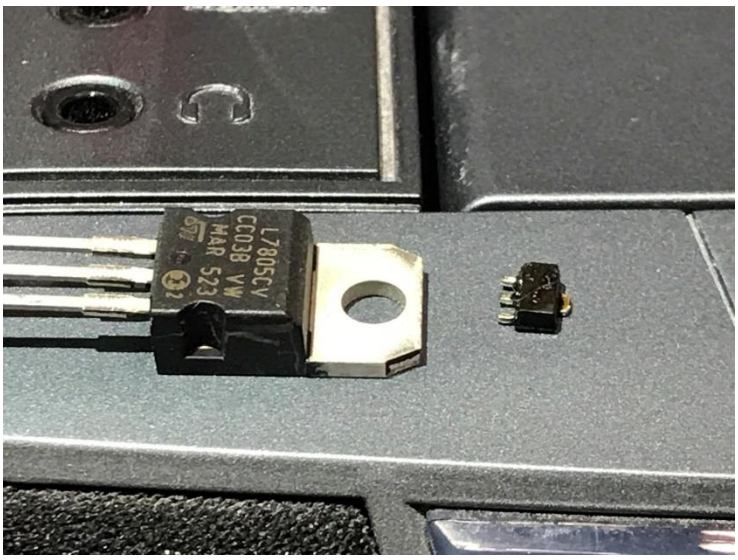
Thomson CD/Radio/Cassette repair

Quite a whiles ago, I had the task of tracking down a new 'economy' CD player for church, unfortunately the choices were few and far between, however Target were selling these. I quite liked it as it also would allow audio recording to a USB memory stick. So I bought one for myself and two for church, then another lady there also bought one.



It was only later with repeated uses that I found their shortcomings, some being a doozy, like running a permanently backlit clock display and standby LED, from batteries, with the only option to stop this being removing the batteries – some designers are IDIOTS.

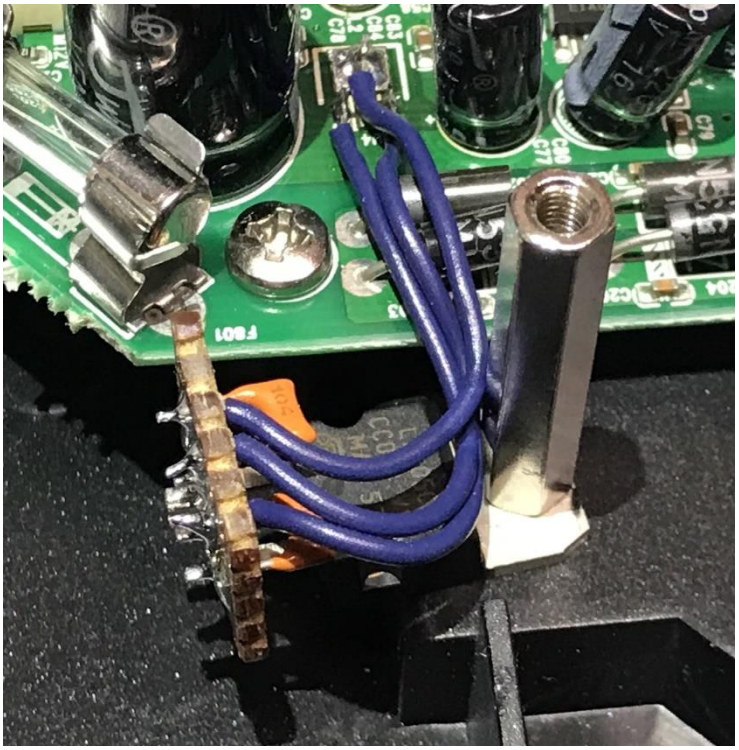
Anyway, the lady's one died, so she brought it to me, and first examination seemed to indicate a switchmode power supply with dried out caps. When plugged in the standby LED would slowly come on, only to disappear if you pressed any buttons.



Once inside I soon realised it had tricked me, there was no switchmode supply, it was a boring old conventional iron core transformer based design, with a SMD 5V linear regulator to run the micro etc.

Now to say this linear regulator was small was an understatement, have a look at this pic. And it's heatsink….. what heatsink, all it had was the surrounding PCB and components to take away any heat.

To make matters worse, this player supports USB flash drives, meaning the load on this regulator could easily hit an amp, especially if some bright spark plugs in a USB hard drive, or worse, tries to charge a mobile phone from it. There is only a fuse for protection, and with a 12V rail as its input, this regulator can easily have a hard life. This one's life had expired, time for a replacement, I elected to use a 'regular' 7805, as I had a few, however I would have to mount it 'off board'

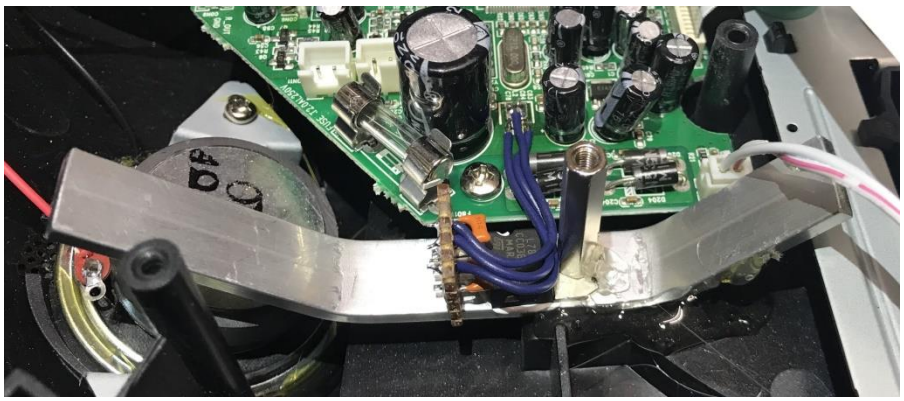


I actually I ended up taking out two regs from my spares box, as the first one, a no name unit from a bargain pack, was unable to run the radio at all – and that's with no external USB load.

The second 7805 reg IC was much better, however it was soon apparent that even with a metal standoff as a heatsink, that a real heatsink was required, especially when I inserted a USB stick, so how was the original supposed to survive?

The board around the original regulator was a tad crispy, no wonder.

And where was the main filter cap?, all but upon this regulator, dried out caps anyone?



I fabricated a heatsink out of some aluminium flat bar I had.

There was not enough room to do much better.

Hopefully she does not try and use it as a phone charger.

Paul VK3TGX

Raspberry Pi as a desktop computer

For several years we have had Raspberry Pi single board computers, originally brought out as an educational tool. I currently have one in my HiFi rack as a music streamer (juke box). Recently the Raspberry Pi foundation released a new model, in a quite different form factor, the ”Raspberry Pi 400”, If you have had anything to do with early home computers then this form factor will be very familiar to you. My first computer, a Tandy TRS-80 (model 1) was built the same, although somewhat larger – it did have a ‘more proper’ keyboard.

What I wanted to know was whether these could be used as an everyday computer. Now don’t get me wrong, I don’t expect to be able to do everything with one, However, as a secondary PC in the radio shack etc., where basic web browsing & some email would see me through in most cases. However I did add music playback to this mix.

Mark VK3PKT is currently setting one up as a retro game station, using an ‘old school’ CRT TV for that added retro feel – hopefully I can coerce him into writing an article on his efforts

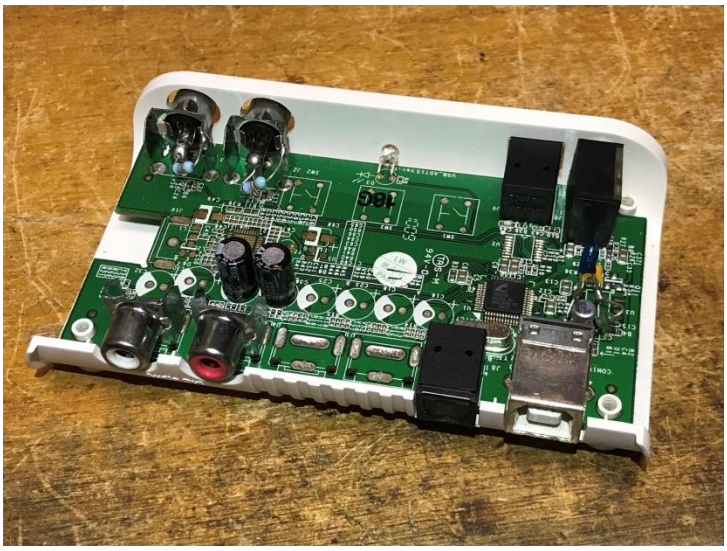
These things run on the smell of an oily rag, so to speak, as in battery power is easy, they run on 5V, and a 3 amp USB power supply is all that you need. The Pi 400 comes in two forms, one is just the computer as I have, from Jaycar, However a better option, that I was unable to source, has it in a kit, with a power supply, micro HDMI cable, and mouse etc. etc.

If you are interested I’d point you in that direction. This is the kit as listed on the Scorptec website for $179.

https://www.scorptec.com.au/

Not having this kit, I initially ran mine from a Samsung charger, however with that on the floor in a power strip, my only USB ‘C’ cable was all but stretched, so my second option was a 12V PC power supply board. It runs it ok but…. Something about it is sub optimal with audio.?

My next challenge was sound. The only output on this '400 is HDMI, so all the sound goes there, there is no analogue out like on the original Pi. (most say that was 'not the best' anyway) My only compatible screen has no audio, so my only option was to add an external DAC. Now *somewhere* I have a DAC the size of a USB stick – as originally used in my jukebox project mentioned above, however look as I will, it is still hiding, so I went for this larger unit. It works, however there is quite a lot of digital crud in the audio. It appears to be common mode crud superimposed on the USB ground by the Pi, unfortunately at $99 it's a bit hard to ask for perfection from the Pi.



I opened the DAC, however there is not that much in there, I was slightly shocked to see so little, there is obviously a bigger brother as there is room for another IC, three press buttons & two more RCA jacks. I am slightly tempted to add a 3.5 mm stereo jack as so much computer gear these days uses that standard rather than the RCA's that are more at home on a HiFi stereo system.

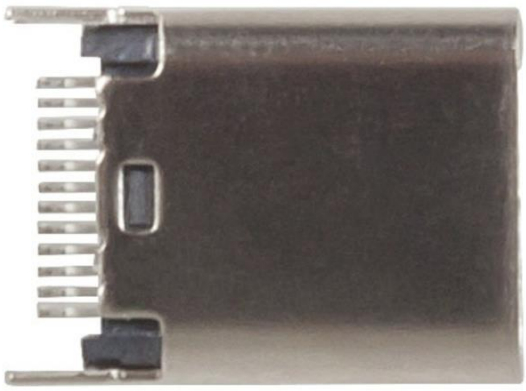
I just watched a YouTube video on a cheap DAC, https://youtu.be/ISLN9u1QOgo and I was wondering if this had anything in common with that one – No.

I tried some ferrite cores on the audio cables, however that had little effect, if you just want low-Fi, then maybe it's ok, however I wanted Hi-Fi, so the quest to get rid of the audio crud continues, next is a linear 5V supply…..

(In my book, Ferrites are way overrated; I've used many to no avail on many occasions)

This is a 5V regulator I built many years ago, it's using TO3 devices so it must be ancient, but should be good for 20A of 5V.

Mark VK3PKT is using a HDMI converter to couple his '400 to his composite video CRT TV, that converter has an audio out. At church we have a HDMI to VGA adapter, same, audio out, so there are plenty of options out there; I'll keep looking for my other adapter, its way more compact than this 'SnapMusic' thing.



This pic is a USB-C plug from Jaycar, I'm not looking forward to working with those pins, but can see not many other options. Other club members love USB-C, I only see a need for a $$$ microscope to work with it.

Now for software, the normal Raspberry Pi OS, seems pitched at education, while it does include a free office suit, it was lacking in audio etc. in their software store, I usually use Ubuntu on my Linux boxes, so I went to try that. It is available by the standard Raspberry pi imager software. I tried downloading Ubuntu, from the Ubuntu website, however every time I tried to flash it onto a micro SD card, Balena Etcher came back with errors, not so with the Raspberry Pi downloader.

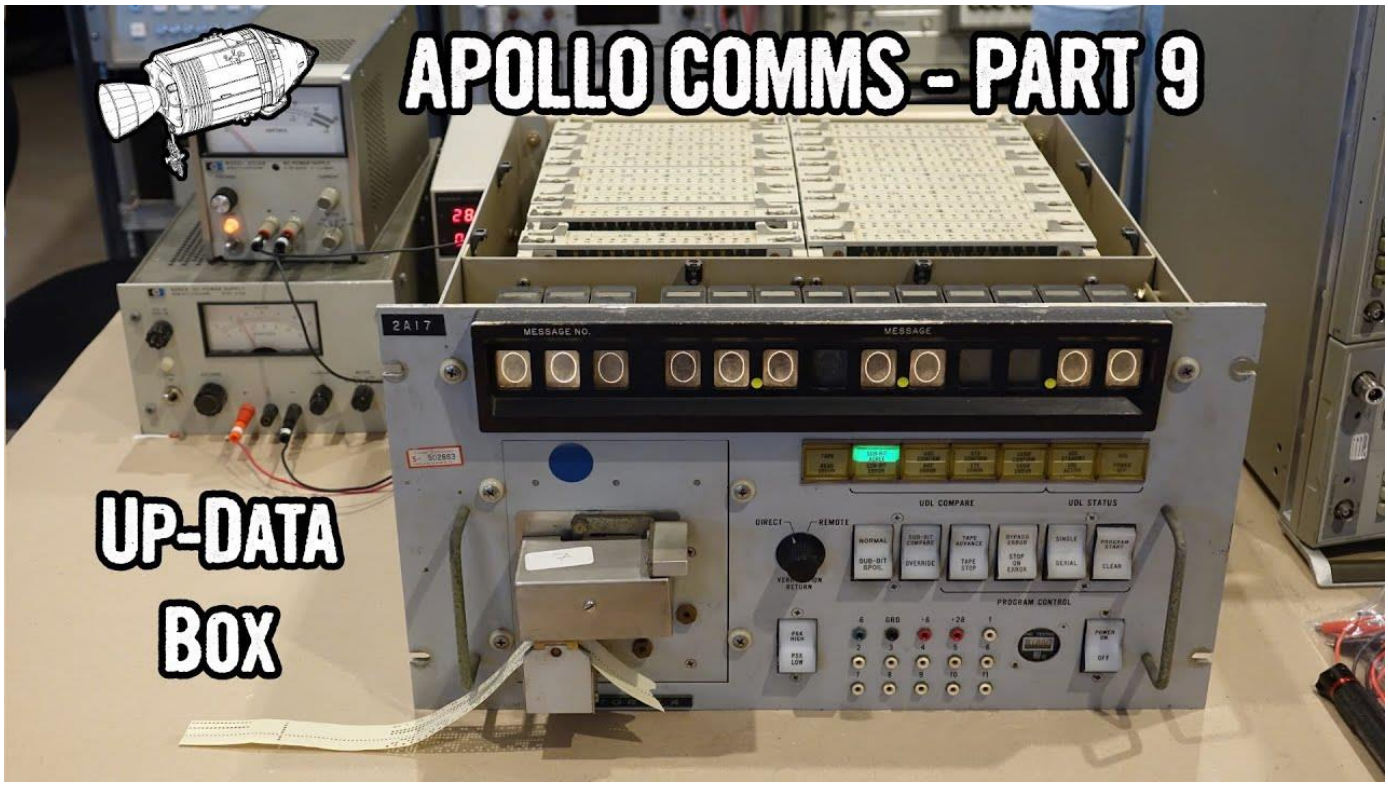
Ubuntu is a little slow to boot, however it has my preferred browser, Firefox, and also Thunderbird email. I did try Firefox on the 'Raspberry Pi OS', however It had issues, and I had to use an older 'ESR' release, not so in Ubuntu. The biggest problem now is when browsing YouTube, the Pi is not quite there, speed wise. I do have two options, they are to try some overclocking, or to use a storage media that is faster than an SD card. There are countless articles about adding faster storage to the Pi on the internet, via USB3. This pic came from the 'MagPi' website https://magpi.raspberrypi.com/articles/turbo-charge-raspberry-pi-400-with-an-m-2-sata-ssd-drive So it looks like I better grab an 'M.2' drive and a USB enclosure – just watch a few video's etc. on it and I should be 'good to go' – However with no direct answer as to whether this 'solution' will solve my problems. Oh well just what I need, more kit.

One advantage of the Pi over a traditional computer is the OS is stored on a Micro SD card (or a USB3 M.2 drive) meaning that changing OS's is a doddle. You can easily have several cards ready to insert, changing the Pi completely, things like many flavours of Linux, Windows 10, Android, and several 'specialty' boot images that turn your Pi into a media centre 'Kodi', a retro games machine 'RetroPi' etc. etc. https://youtu.be/MkTbvknZQKU Have fun.

Paul VK3TGX

Interesting YouTube Videos

I have a new MEGA Antenna for 6 Meters! 50 MHz Ham Radio.
https://youtu.be/UkLgBfbxCOQ



Apollo Comms Part 9: Mystery Up-Data Box
https://youtu.be/VReePQJRRI0

Christmas BBQ

More at http://www.ggrec.org.au/gallery/albums/2021-christmas-bbq/

WIRELESS INSTITUTE OF AUSTRALIA

WIA Affiliated Club

The GGREC is an affiliated club of the WIA

We also give Thanks to

Jaycar Electronics

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For their generous support over the years

Club Information

Meetings 20:00hrs on third Friday of the month at the
Cranbourne Guide hall, Grant Street Cranbourne
Prac/Natter nights first Friday in the Peter Pavey Clubrooms Cranbourne 19:30hrs
Visitors are always welcome.

Office bearers

President	Bruno Tonizzo	VK3BFT	Web Master	Mark Clohesy	VK3PKT
Admin Sec	Miguel Vaca	VK3CPU	Magazine Editor	Paul Stubbs	VK3TGX
Treasurer	Klaus Illhardt	VK3IU	Property Officer	'committee'	
General 1	Bruce Williams	VK3BRW	Assoc. Secretary	Miguel Vaca	VK3CPU
General 2	Leigh Findlay	VK3FACB			

Call in Frequencies, Beacons and Repeaters

The Club Station VK3BJA operates from the Cranbourne Clubrooms.
6m Repeater Cranbourne VK3RDD, In 52.575 Out 53.575 CTCSS none
70cm Repeater Cranbourne VK3RGW, In 431.425MHz Out 438.425MHz CTCSS 91.5Hz
VK3RGW Repeater supports Remote Internet access (IRLP), Node 6794 **offline.**
70cm Repeater Seaview VK3RWD, In 431.575MHz Out 438.575MHz CTCSS 91.5Hz **'Testing'**
Simplex VHF - 145.450MHz FM, Simplex UHF - **TBA**
VK3RLP Beacons 1296.532MHz & 2403.532MHz **(currently offline)**

Membership Fee Schedule

Pensioner member rate $40.00, Extra family member $20.00
Standard member rate $50.00, Junior member rate $25.00
Fees can be paid by EFT to BSB 633000 - Account 146016746
• Always identify your EFT payments
• Membership fees are due by each April Annual General Meeting (AGM)

Magazine Articles to editor@ggrec.org.au Cut off, 10th of the month
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