



GATEWAY

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

March 2021



Face to Face General Meeting!

Trouble With Hard Drives

The Right to Repair

And More



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

Event Queue

March:

- 19th General meeting, in person, **Guide Hall**, Remember your **mask!**
- 13-14th Commonwealth Contest (BERU) - Courtesy WIA
- 20-21st John Moyle Field Day - Courtesy WIA
- 27-28th CQ World Wide SSB WPX Contest - Courtesy WIA

April:

- 2nd Prac/Natter night, via video link, see club emails
- 16th General meeting, in person, Guide Hall, Remember your mask!
- 25th ANZAC day AM / CW, from 9am on 7125KHz AM - Courtesy WIA

May:

- 1st Harry Angel Sprint 10:00 - 11:46 UTC - Courtesy WIA
- 29-30th CQ World Wide CW WPX Contest - Courtesy WIA

**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**

President's Paragraph, Postulation or Preamble.



Hello members and welcome to relative freedom after our recent CCT breaker lockdown. Because of this constant state of flux, we have rescheduled our visit to the Cranbourne botanic gardens to Saturday the 27th March at 10am. We have already sent out the information to members.

We have 4 plastic tubs of equipment, cases, bits & bobs for you to look through. These are from members who have items that are surplus to requirements. Any items left after the March meeting will end up in eWaste for recycling.

Yes, we will be having a face to face general meeting this Friday 19th March. Bring your own cup (preferred) or we will have disposable one's for you. The 10am morning coffee chat is still happening on 70cm. If any members have a suggestion for a place to go for morning coffee or lunch, please send through your suggestions to the committee – especially now that we can go places.

Paul has been busy putting together Gateway but needs articles for inclusion. If you have any articles for the magazine/newsletter, please send them to the committee@ggrec.org.au

Your committee is preparing for a Covid safe Hamfest but require an organiser and helpers. I'm sure many of you will help on the day, if it goes ahead, but we need some indication from members. This will be discussed at the meeting. Does anyone know of a larger under cover venue that we could perhaps use for the Hamfest?

Natter/tech nights will remain virtual for the moment. currently – virtual). There is a bit of maintenance to be done around the shack, antennas, repeaters, cleaning, etc, so we will talk about this to arrange a working bee or bees. It will probably take more than one. The 70cm repeater RGW has received a 7MHz split and seems to be functioning OK please send your reports to the committee@ggrec.org.au

Thanks to Bruno for keeping you informed and up to date.

Please remember that the April meeting is our AGM. Please have a think if you wish to stand for a position on the committee. It is not a big job, we are a small club, but we need a committee to keep operating.

If there is anything that you would like to try or have any suggestions, please contact the committee.

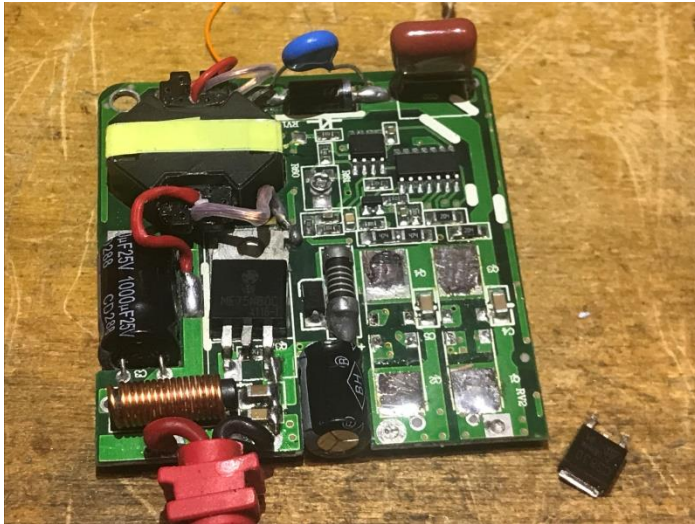
That is all for now. 73s

A handwritten signature in blue ink that reads "Michael". The signature is stylized with a long, sweeping underline.

VK3GHH - March 2021

Gateway is the official journal of the Gippsland Gate radio & Electronics Club.
It is published in good faith for its members and other interested parties. The articles here in do not necessarily represent the views of the committee or the membership.
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From The Editor



And then there is Windows...

Recently I decided to have a look at a HID, or 'High Intensity Discharge' headlight setup kit for a car, I cannot recall where I acquired this thing, however I only have one, and the actual lamp has a rather odd rubber boot, rather than the metal bracket seen on normal halogen headlight bulbs. So it's not much use to me, car wise – plus there seems to be a great pile of legal stuff getting in the way of me retrofitting it to my car.

It came as a 3 part assemble, an electronics block, a middle bit labelled 23000 volts, and the actual lamp itself.

Hang on, did I say 23,000 volts.... Ooh, time for some fun, so loose the actual bulb, cobble up a spark gap and let the fun begin. Three short but HOT sparks then nothing – Oh that's a tad boring.

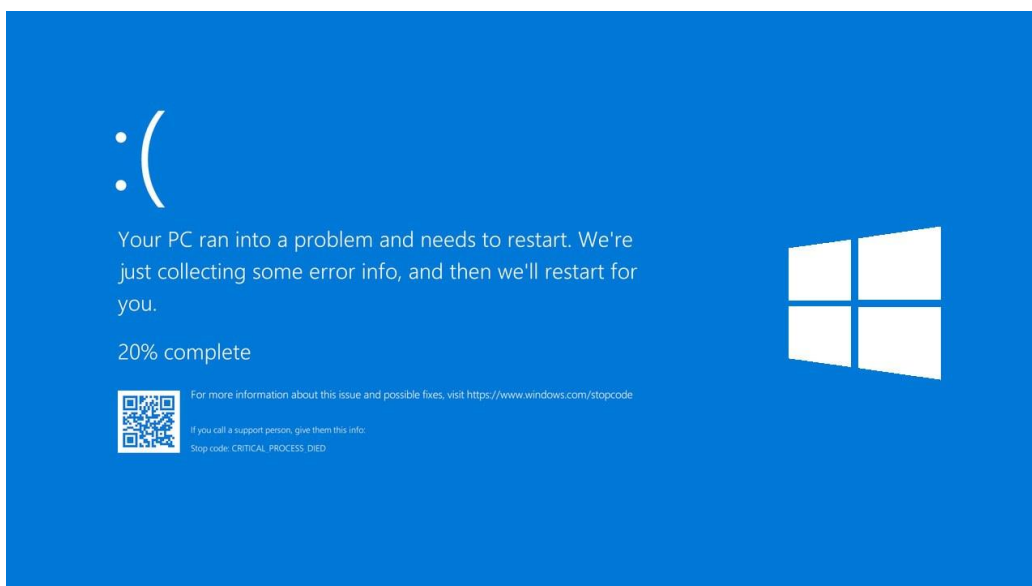
Old colour CRT TV's usually sport 25KV EHT supplies, however isolating the high voltage bits is painful, whereas this thing is a lot more compact and convenient – oh well.

So I lidded the main electronics box and was confronted by a sea of grey silicon potting compound. Luckily this stull is quite soft and easy to dig out; unlike the regular 'roof & gutter' silicon from the local hardware store (if it was like that, then that would have been the end of it, into the bin)

After an hour or so of careful digging I had the main electronics out, I was even able to get the gunk out from between the SMD IC pins without too many issues.

It appears to use a two stage inverter, first the 12V DC is stepped up to about 150V, then that is chopped up to feed the second box in the chain, the one labelled '23000 volts'. I likewise dug that one out of its silicon grave; however it's mostly a big inductor, so the 150V square wave probably comes out all spikey, to the tune of 23KV, to make the discharge tube strike.

So forget the 23KV bit, maybe I can use the ~150V to run a Nixie tube box. So I fired up the shack PC to get a data sheet and



So much for the inverter story, it sounds like I'm going to do one about fixing computers.

- Quickly, before taking Marianna to hospital for a knee replacement.

Paul VK3TGX

The Right to Repair

Over the years there have been various companies that supply repair information for goods that they manufacture. Admittedly it was a simpler time even up to the 1990s.

You could purchase OEM and aftermarket car repair/service manuals. Older radios and TVs had circuits stuck to or incorporated into the back of sets and you could usually buy a service manual or a circuit. This was generally pre surface mount, however post 1990s companies were reducing costs and goods were becoming more and more throw away items.

In more recent times with climate change and recycling, people have been baulking at throwing away items that might be repairable. Even if they aren't repairable, they should be.

There has been a ground swell around the world to push manufacturers to make items that are repairable or at the very least easily recyclable.

In Europe the people are pushing the governments and bureaucracy to enact legislation and force companies to be more environmentally responsible. This article on AP News 1st March "Europeans get right to repair on some electrical goods" Which states that goods must be repairable for at least 10 years. <https://apnews.com/article/technology-europe-environment-berlin-europe-65168395d1fc7dc0e22792722c93140d> This currently covers refrigerators, washers, hair dryers and TVs. It is a start. More European right to repair. <https://www.ifixit.com/News/48000/top-european-right-to-repair-wins-2020>

In the USA the people have pushed legislators too. The iFixit website <https://www.ifixit.com> (no association) has lots of info and articles on the right to repair as well as break downs of popular products.

Vice in the US says that the right to repair is poised to explode in 2021. <https://www.vice.com/en/article/jgqk38/the-right-to-repair-movement-is-poised-to-explode-in-2021> Fourteen US states have or are considering right to repair legislation.

The US PRIG which is a public interest advocacy group says that "Repair saves families big" <https://uspirg.org/feature/usp/repair-saves-families-big> In the US households are spending USD\$1,480 per year on new electronics. The average US family generates 80kg of eWaste per year. Rapidly replacing electronics isn't sustainable.

In the USA there are self help repair shops that have started to pop up. They are generally community based where volunteers help one another to repair items. The shop has the tools etc for this to occur.

Back in Australia we have agreement that will pass into legislation, that non dealer car repairers have access to the same information and tools that dealers do. Draft mandatory data sharing legislation released <https://treasury.gov.au/consultation/c2020-128289>

There is an Australian Right to Repair draft report due for release in June 2021. <https://www.pc.gov.au/inquiries/current/repair#draft>

As far as amateur radio is concerned, we have been helping each other to repair and recycle equipment for decades. Just look to see who turns up to a hamfest. 😊

Michael VK3GHM

Trouble With Hard Drives



Hard disk drives, or HDD's have been the main storage used for most of the history of computers. They have only recently started being supplanted by SSD, or Solid State Drives. For small storage use, SSD's win, mostly for their access speeds. Modern OS's like Windows are built out of thousands of modules that need to be rapidly loaded for the OS to appear to be responding in a timely fashion, however for bulk storage, the old mechanical spinning disk still wins.

←This is the IBM 350 hard drive, probably the first commercially made drive (1956), with a massive 5 megabytes of storage.

Have a look at this IBM video - <https://youtu.be/tFRBD2uN9PY>

Fortunately by the time I bought my first HDD they had advanced quite a bit, mine while only twice this capacity was considerably smaller, no forklift required, but still over \$1000.

With the early hard drives, you had virtually direct access to the read/write heads, and if anything went amiss, you could totally rewrite everything. Early hard drive software was quite thorough with its diagnostics etc., the controller chips used were quite versatile.

The next generation of drives moved on to 'IDE', or 'Integrated Drive Electronics' which integrated the controller into the drive, however they didn't directly use the original controller, but an emulation of it, with a pile of additional modes like 'LBA', or 'Logical Block Addressing'

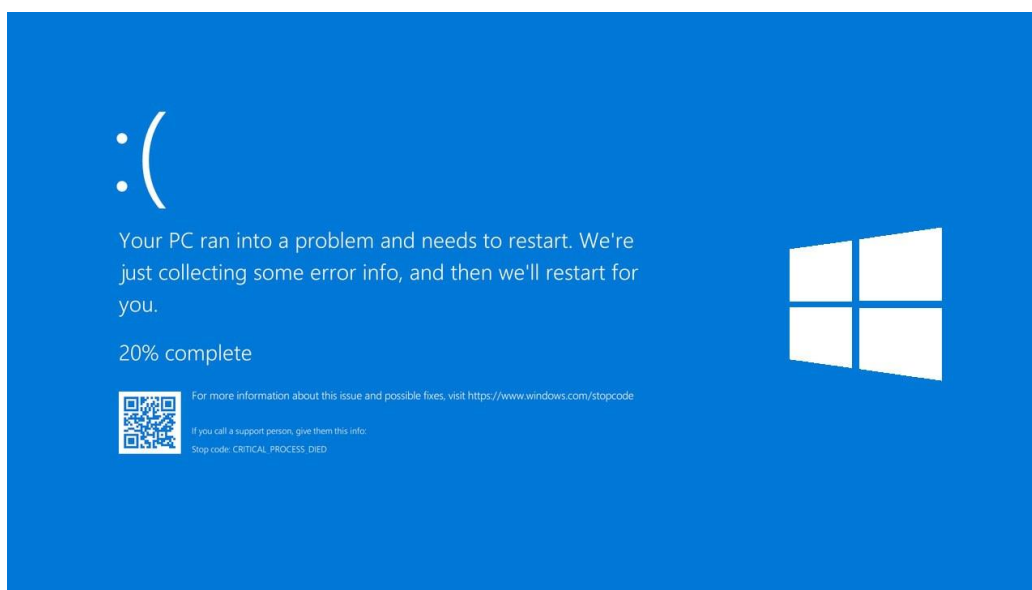
For a much more in-depth look at the history of computers, drives and all the limits involved, try reading <https://www.hardwaresecrets.com/hard-disk-drives-capacity-limits/>

Hard drives are no longer using stepper motors to position their heads, but rather 'voice coil actuators' which offer much finer control, allowing thousands of tracks etc. The downside of this is the drive now has a pile of servo marks written magnetically on the disk surface that the controller uses to position the heads, the drive cannot rewrite these marks, as it would need to be able to absolutely position the head without assistance (i.e. without any servo feedback it normally must have, a catch 22 scenario), something a stepper motor can do, not a voice coil. Unfortunately magnetic information does not last forever, while you can avoid 'bit rot' by rewriting your data, all the index marks and servo info cannot be. An old school drive can have its platters totally erased with a bulk demagnetiser, and re-written with appropriate software. Bulk erase a modern drive and you have just created land fill.

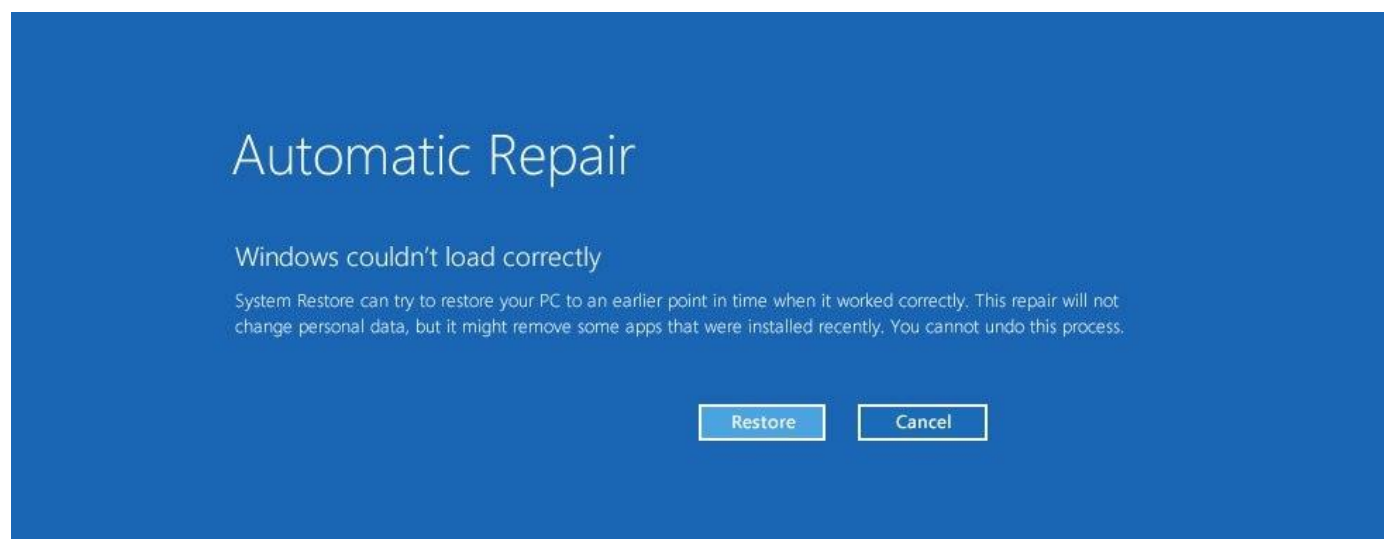
Power up a bulk erased modern drive and its heads will swing wildly around, crashing into the end stops as it tries to find where it is, kind of like being tossed into the middle of a swimming pool, blindfolded, and trying to get out with no idea where you are, and how far to go.

Along with these life limits is Microsoft Windows, the latest version is all but hopeless at reporting drive errors. If you have ever written any code then you will probably be aware of the problems of error reporting and recovery from problems. Most larger code projects (like Windows) have thousands of modules calling each other, both those written by your team of authors and a whole lot more that come in libraries of code. You may want the next block of data on a drive, however how this all translates back to control requests to a hard drive, or where your data actually is, is all but totally unknown to you. Yes you may know the file name, but a hard drive has no idea what a file name is, it wants a block number.

When Windows finds it needs to load another module, or swap a block of ram out to swap space, etc. etc. etc. it's all eventually translated into drive instructions, and if the drive cannot comply, then Windows will (after a few retries) give up and do a 'bug check'. Some deep down code cannot continue as the next instruction has been lost by the HDD, so gather all the info and tell someone. So what is a 'bug check'? Well most of us know it as a 'Blue screen of death'



Recently my radio shack computer hit this one. I'd power it on and a moment later this screen would come up, it would try and recover, offering a few options but nothing worked. Yesterday it was ok, so I went back to the last working configuration – no joy, same result.



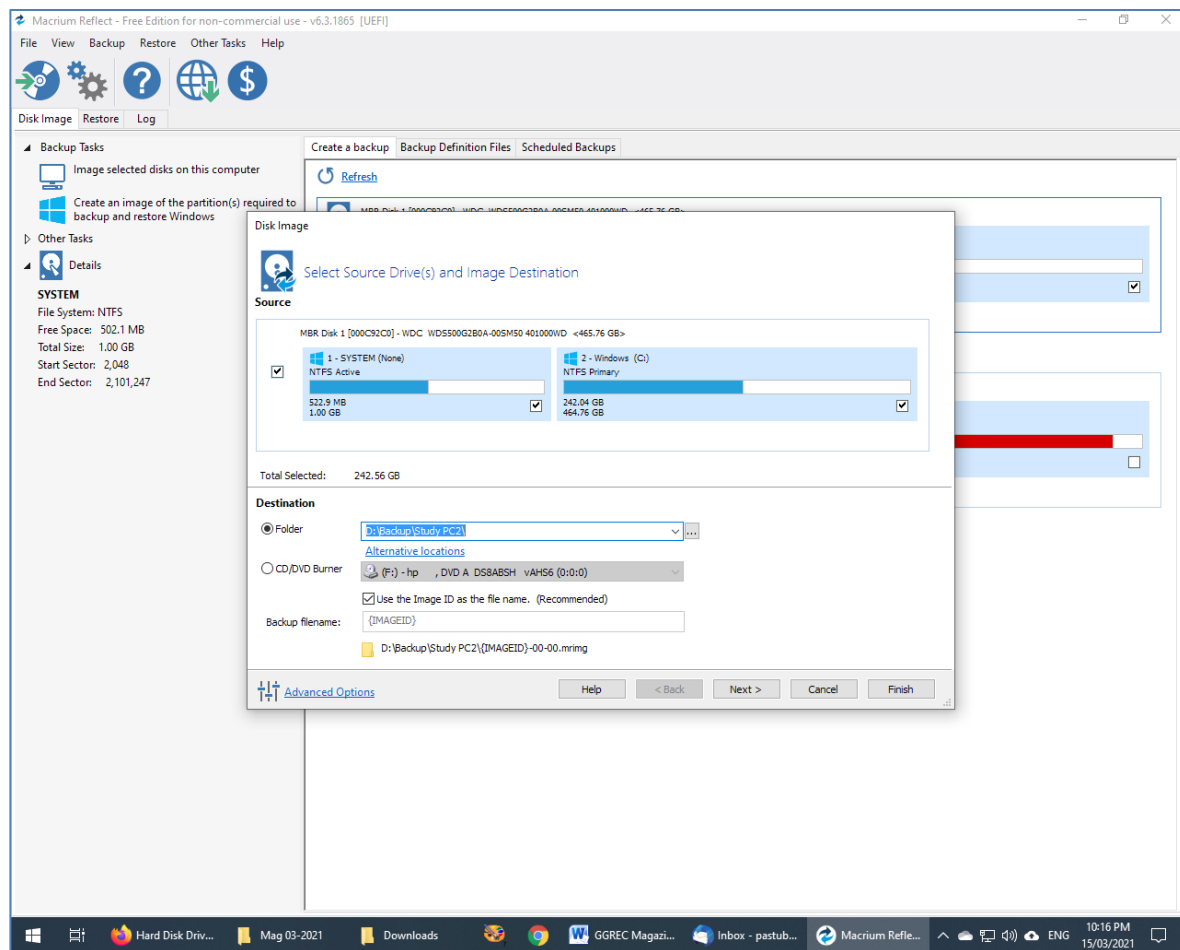
Windows could spend half an hour trying to repair itself, but never succeed, unfortunately it was unable to say where the problems lay. Unfortunately for Windows to talk to you it has to fully load, if it cannot it's all but lost. Unfortunately its repair tools are all but worse.

So after wasting the best part of a day trying to get Windows to repair itself, I decided to get a new hard drive, or rather an SSD, or 'Solid State Drive', I have quite a collection of machines and if this was not the problem, I'll just use it somewhere else another day.

Other possibilities were a memory or processor fault. However as I could go through and run all these Windows diagnostics, it kind of implied the memory and processor were good enough.

Now at this point you can either get out your windows install disk/USB and start from scratch, or restore from a recent whole drive backup. I did neither, and copied the old drive directly to the new SSD using another computer. I used Macrium Reflect, a free for home use program.

It could not do an intelligent sector copy (so, yes something was rotten)



However a regular non intelligent copy did work. (I must be a masochist for doing this...)

So what happened when I tried to boot from a copy of a dead drive – an all but normal Windows boot! – I was not really expecting that. (I thought I was just wasting time.)

Yes I had to do a bit of clean up work afterwards, however having the latest version of my setup was a touch more valuable to me than a more dependable, but 6 months old image. So should I have backed up more often, in this case I am limited by a slow network link (10Mb), however as this machine only receives light work in my radio shack, maybe not.

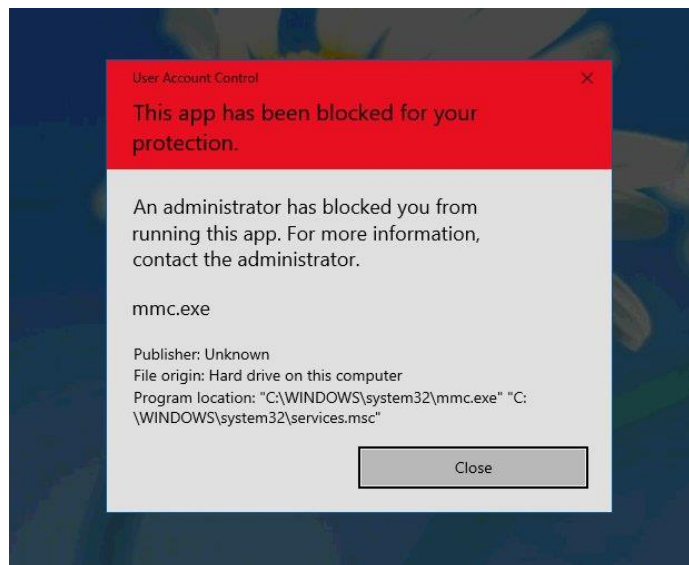
I took the old HDD and fitted it into an old USB enclosure and formatted it the slow way. While it was formatting I noticed several instances where it seemed to stall for a few moments, then continue on. There was no error generated, so here goes another example of an obvious problem not being relayed to the user. Maybe I should try repeating that with a Linux box?

I mentioned Windows lack of error reporting to a salesman a CentreCom, he said that Linux is a tad better, however as 99% of my software is Windows based, so I'm kind of trapped.

As I didn't have any easy backup strategy for the shack PC (and the 10Mb bottleneck to my NAS will be around for a while yet), I popped that drive into the shack 19" rack, and had Macrium reflect create an image backup on it. I then I did a disk scan and later had a look at the drives SMART report to see how it is fairing. The SMART drive technology is supposed to be able to predict the imminent failure of a drive. Nothing to report, all is fine – absolute BS from both a top tier drive manufacturer & software house.

In the home videotape market, (VHS & Beta) that is now all but gone, there were several top tier manufacturers that were releasing better and better equipment, with new heads that would last substantially longer, on transports made of ultra-rigid castings, using the best bearings etc. etc. etc. After that peak the industry started on a rapid race down the road to the cheapest and crappiest thing they could conceive. If you paid top dollar for the best, you got the same shitty transport, adorned with a heap of extra features, you'll probably never use.

So is the hard drive industry heading down the same road, it's certainly looking like it. Unless you are a big boy ready to shell out the big dollars for enterprise grade gear, you're with everyone else on the race to the bottom. And is the next industry to take that road the ICE (Internal Combustion Engine) car industry? If your faced with an uphill battle to be competitive (when 80% of the world is outlawing ICE cars) in the EV marketplace, why spend any money on a potentially dying product? Emission standards are only going to get tighter, and most players have no real idea how to proceed, short of cheating. Dare I mention VW?



Anyway, back to computers. In working on the shack PC, I discovered another sick PC, this is an Acer small form factor (SFF) Core 2 duo box that is basically a muck about machine. I have 3 of these, from the Frankston tip shop, one running the latest Ubuntu quite well. However the Windows 10 ver is 'not very good'. In this case its pair of eSata ports were extremely handy for copying HDD's. I noticed it was having Windows update issues, so down the rabbit hole I go again, bumping into messages like this one ←. So I tried the SSD trick, however it's going to need a bit more, as some of the internals of Windows appear to be

corrupted. However the scan and repair command cannot entirely fix things as the suspect files are 'open', as in part of the currently running copy of windows, so "sfc /scannow" needs a bit of a hand to get the job done. It seems that from this error message, that Windows has recognised some corrupted code and it is blocking me from running it (I am the administrator, so there is more to it).

So is this another dickie hard drive? I cannot see any other reason why some very well protected internal Windows code could become corrupted. With the current state of me NOT being able to properly test a drive, I'll have to assume that it's probably a bad HDD.

So get yourself a copy of Macrium Reflect, or simular, and Backup, Backup, Backup.

<https://www.macrium.com/reflectfree>

Paul VK3TGX

For Sale - Shack Clear-out

Icom Mounting Bracket MBA - 2 x 2

This bracket is the Head mounting plate for the ID - 5100A Remote Head.

Brand New RRP \$40 Sell \$25each



Zoom H - 1 Digital Voice/Note/Meeting Recorder

+ Accessory Pack

This item is Brand New, Purchased for a project. However due to my poor eyesight, I cannot use this product.

Paid \$200+ Sell \$150



MFJ Versa Tuner II

MFJ 948

300Watt

1.8 to 30MHz

Paid \$349 Sell \$250



Automatic SLA Battery Charger

Brand New, Never Used.
6,12 & 24 Volt 1.2 Amp
Model Number: MB - 3527

RRP \$39.95 Sell \$20



RM Italy Linear Amp - HLA-150V

Amp is in Excellent Condition, Item has not seen much use so time to move it to a new home.
The AMP has Dual Cooling Fans.

Sell: \$550



Sonia 43 Inch Full HD LCD TV

Non Smart TV, Has both Analogue & Digital Tuners, AV & HDMI inputs with Remote, Excellent Working Order.

Paid \$500 Sell \$85

Some of the small items can be posted at cost, Larger items are collect only,
I don't have boxes or the ability to post these larger heavy items.
Reasonable offers will be considered.

73

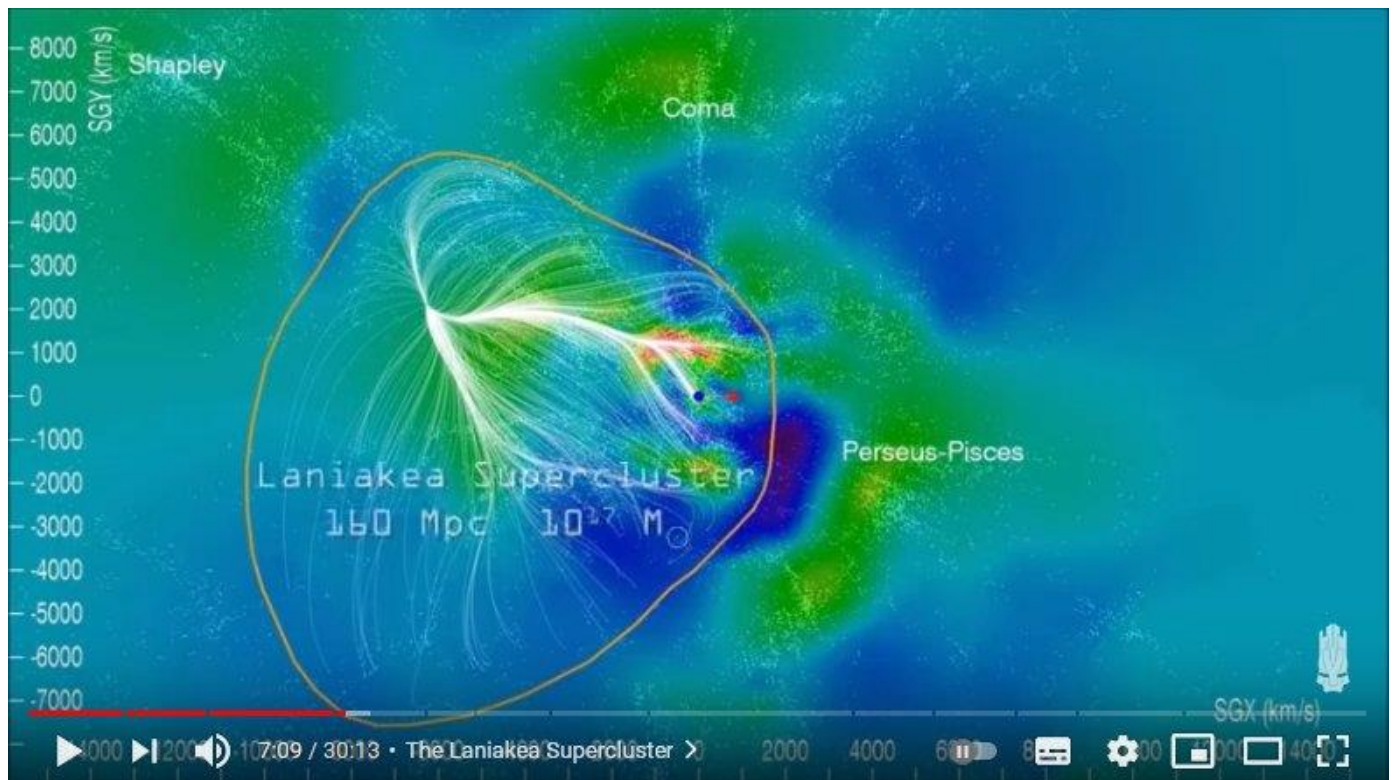
Allan

VK3SLR

Email: vk3slr@apollo-net.co.uk, Phone: 0402 406 796

Please note, I am unable to read or reply to SMS Messages.
Email or phone calls are my contact methods.

Interesting YouTube Videos



The Great Attractor

<https://youtu.be/0w4OTD4L0GQ>



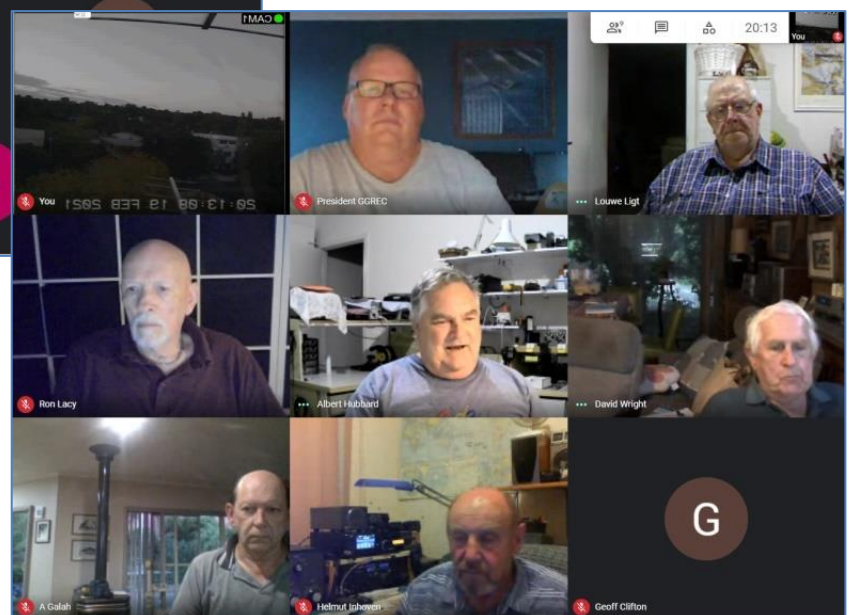
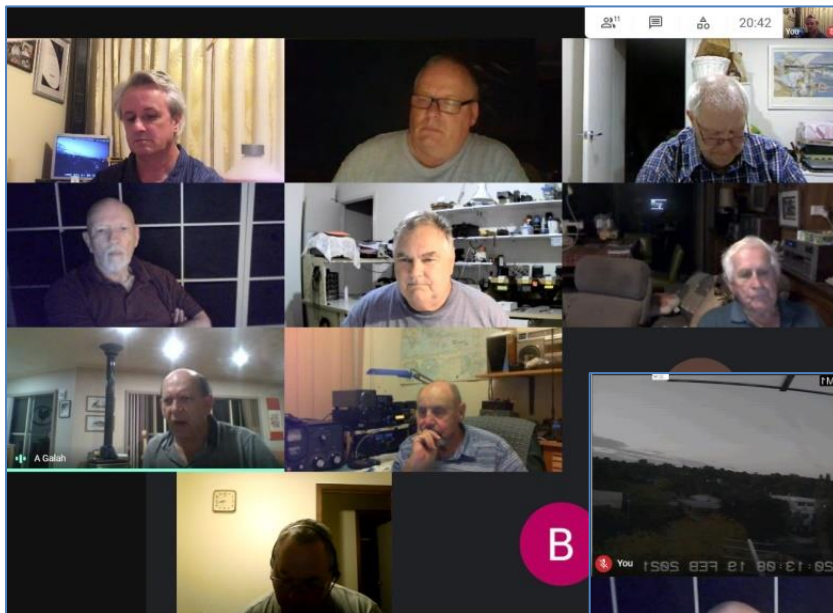
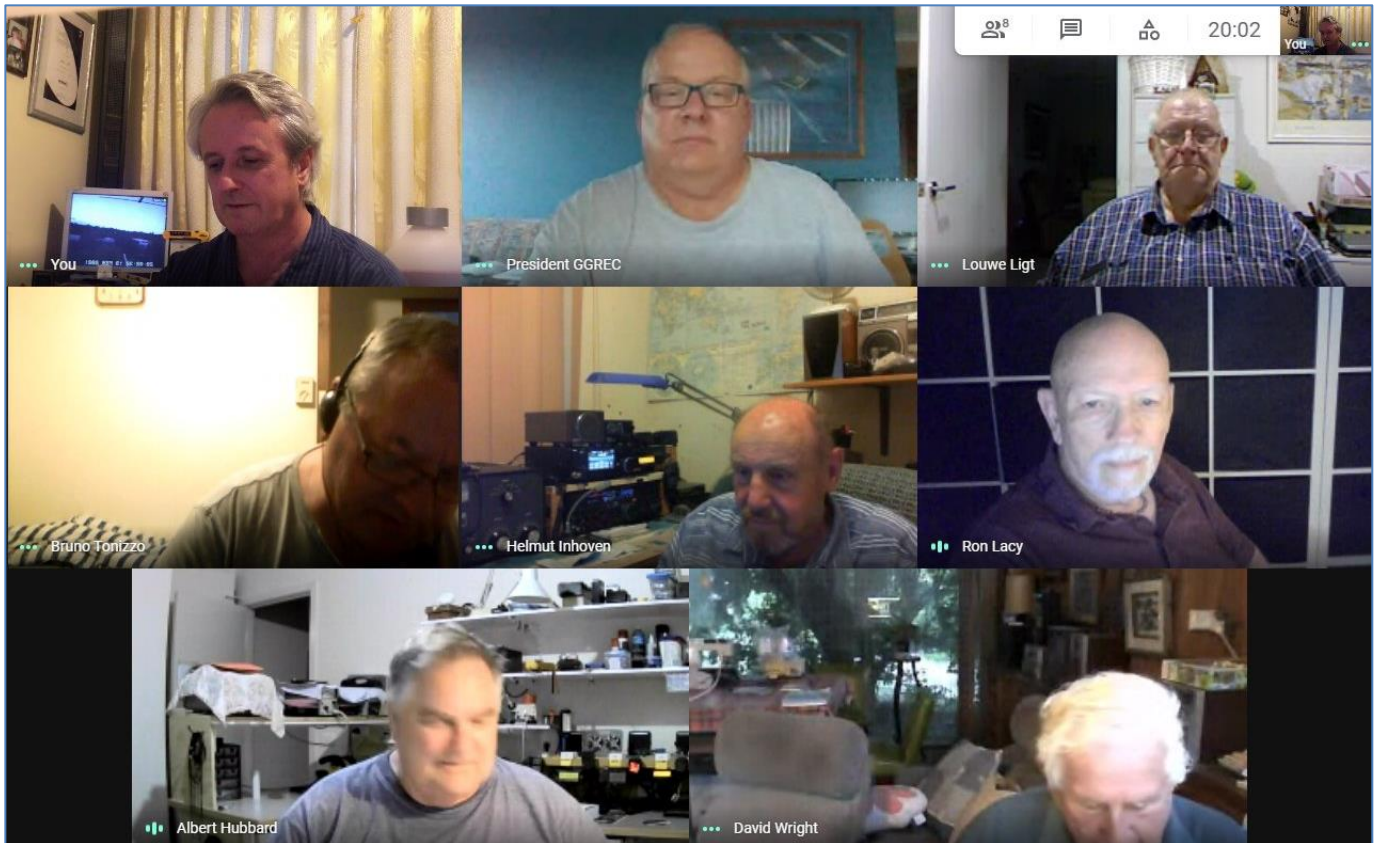
Meet the Engineer Preserving The Last Analog Motion Graphics Machine

<https://youtu.be/0wxc3mKqKTK>

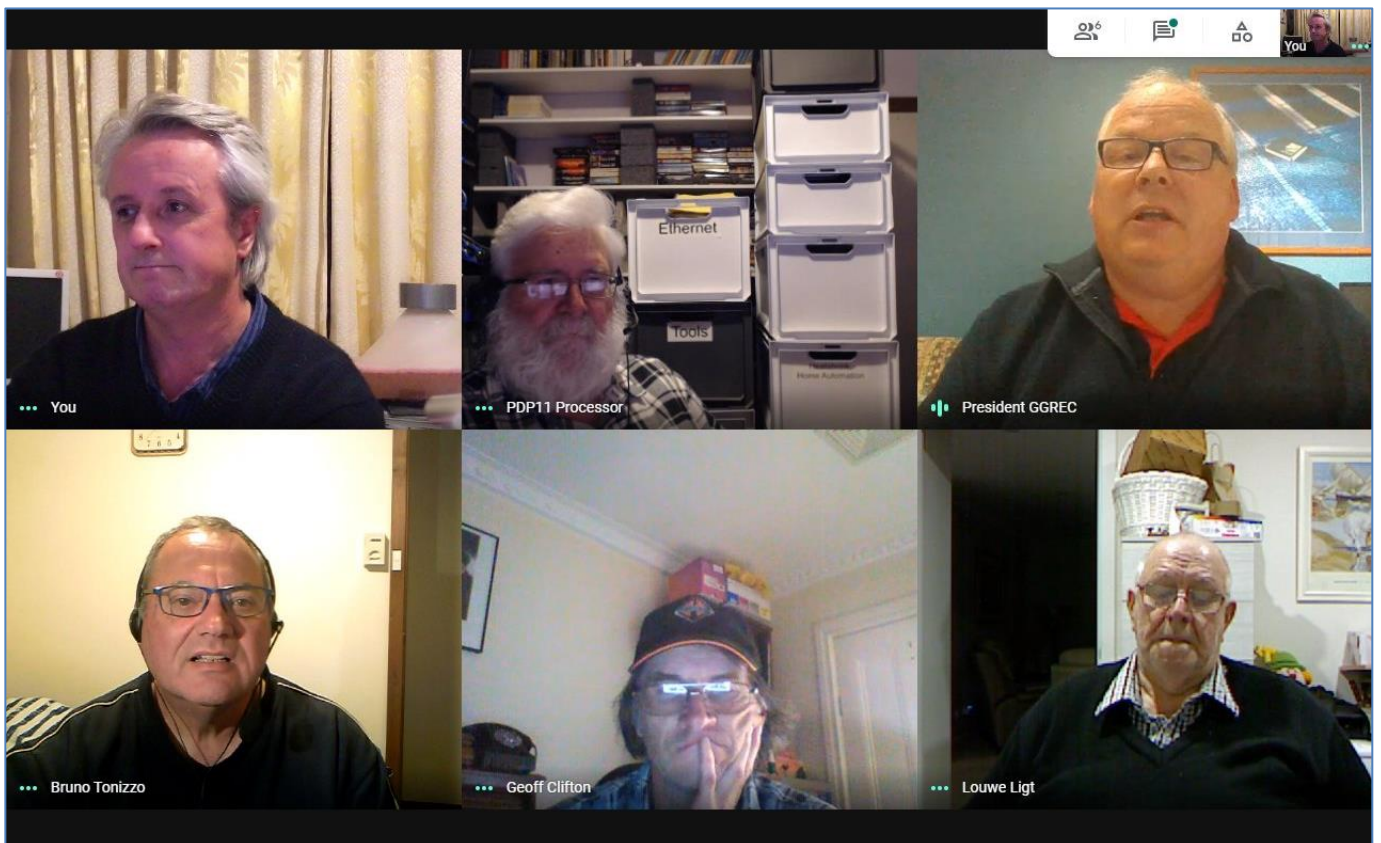
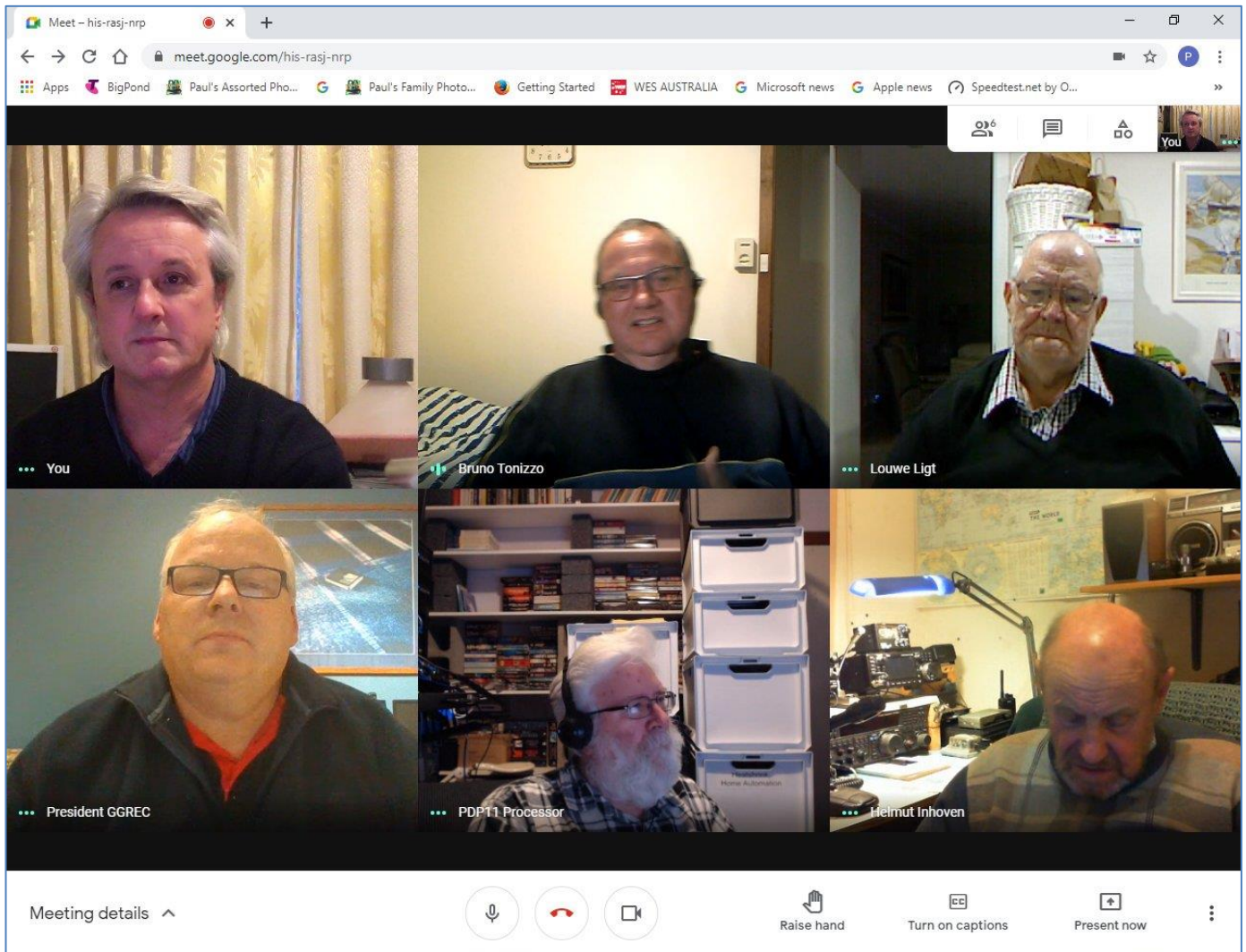


As Seen on Google Meet

Meeting 19/02/2021



Natter Night 5/03/2021





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The GGREC is an affiliated club of the WIA

WIA Affiliated Club

We also give Thanks to



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	Micheal Van Den Acker	VK3GHM	Web Master	-	-
Admin Sec	Bruno Tonizzo	VK3BFT	Magazine Editor	Paul Stubbs	VK3TGX
Treasurer	Albert Hubbard	VK3BQO	Property Officer	'committee'	
General 1	Bruce Williams	VK3BRW	Assoc. Secretary	Bruno Tonizzo	VK3BFT
General 2	Paul Stubbs	VK3TGX			

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 433.575MHz Out 438.575MHz CTCSS 91.5Hz **offline**
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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