



2RPH Notes on Home Program Production

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With the increasing importance of social distancing during the corona virus pandemic, 2RPH like most other broadcasters will operate with the maximum possible amount of program content being produced at home. Naturally, the quality of the programs will not be as good as that usually produced in our studios, but in these circumstances the continuation of 2RPH broadcasts will be far more important to our listeners than a slight drop in technical quality.

With relatively basic equipment you will still be able to produce a good recording. These Notes are intended to help you in that process.

To create programs at home the basic set up you will need is:

- A computer, laptop, tablet or smart phone, with capacity to store and send audio files
- A microphone – even an earbud/mic combination will work reasonably well
- Headphones or earbuds
- A suitable location, and
- Audio recording software; there are many available and some are free.

These Notes will cover both the home recorded program option, and contributions from home to the studio, as well as recording presentations by several people in different locations linked by conferencing software.

Recording programs at home will involve using new tools, so be sure to allow yourself plenty of time, particularly for learning and practicing with new software.

1. THE RECORDING / REMOTE BROADCASTING ENVIRONMENT

No matter what microphone or recording device (computer, tablet or phone) you use for home recording or broadcast, the quality of the result will depend on the recording environment or space you use. Here are some tips for selecting a suitable recording/broadcast space:

- Ensure you are in as quiet a location as possible.
- Try and pick a less busy time of day to record, when street noise and other outside sound is least likely.
- Avoid use of washing machines, dishwashers, fans, air conditioners or other appliances while you are recording, as the sound they make travels a long way and is easily picked up by microphones.
- Ideally, do your recording or broadcast in a space with less hard surfaces for the sound of your voice to bounce off.
- Using a room with carpets and curtains or other soft furnishing is a good idea. A bedroom may work very well.
- *Bathrooms and kitchens should be avoided.*
- An easy way to test a room is to clap your hands and listen for an echo sound. The less echo the better. Try clapping your hands in a bathroom then in a bedroom, and you'll hear the difference.
- If you are sitting at a desk, try a piece of material, carpet or a towel on the desk surface to reduce the reflective sound of your voice.
- *Finally, do some test recordings in a couple of potential spaces, listen back and decide which location sounds best to you.*

2. MICROPHONES AND HEADPHONES

There's a huge range of headphones available and as long as it has a plug that fits your recording device it should be fine. However, *avoid Bluetooth headphones*. In some circumstances, they will introduce delay between the voice being recorded and what you hear in the headphones which makes it very difficult to work.

Microphone Techniques

There are many options available, but whatever you use, the distance from your mouth to the microphone is important.

If you are using a microphone similar to those in the studios or a USB Microphone, then employ a handspan distance between your mouth and the mic. As in the studio, avoid speaking directly into the microphone, instead doing so at about 45 degrees, to minimise 'popping'.



If you are using a computer's inbuilt microphone or your phone's inbuilt microphone, you need to do some tests and establish the best distance to be from the device. It will likely be optimised for your normal user position, but do a test and listen to the results.

If you use a combined microphone/earbud device, to avoid audible rustling sounds on a recording caused by your movement, try taping the cable to your clothes to minimise any cable movement.

In all cases do some test recordings with different combinations to work out what sounds best.

Microphone choices

Your choice will depend largely on your budget. But rest assured, you can get a good quality recording with minimal cost.

Reasonable Result

To record into a computer, laptop, phone or tablet you can use the built-in microphone. Depending on the recording environment (see Recording/Remote Broadcasting Environment above) along with the age and quality of the device, you may achieve an acceptable result.

You'll likely get a better result by using an external mic and by wearing headphones/earbuds. Here are some suggestions.

Good Result

Try a combined microphone/earbud device similar to those that come with mobile phones. They should be able to plug into the audio socket of your phone, computer or tablet and in most cases they will produce a recording of acceptable quality.



A headset mic combination such as those used for handsfree phone calls and the like should also be an option.



Better Result

USB microphones (for computer or tablets with USB ports).

They look like traditional mics in the studio, but connect directly to your computer via a USB cable. Do not connect via the keyboard as this may cause delay problems. They range in price and quality and can produce very good recordings.

Unless your recording space is exceptionally quiet a cheaper dynamic USB microphone will be better than a condenser.

The USB mic should have a headphone socket built into it and you will be able to plug any headphones or earbuds directly into the mic to listen back to your recordings or broadcast, without experiencing any echo or delay (zero latency).



The Samson Q2U is an example of a versatile dynamic USB Microphone. It connects to a computer via USB but can also connect to professional audio gear via an XLR connector. It also has a headphone socket to allow monitoring without echo or delay (zero latency). It costs around \$120.00

Best Result

Professional Microphone such as those used in the 2RPH studios.

However, to connect these to your computer or phone you will need an additional interface. Again, unless your recording space is exceptionally quiet, go for a cheaper dynamic microphone rather than a condenser.

Below is an example of a USB Interface that allows a professional microphone to be plugged into a computer.



3. AUDIO SOFTWARE

There is a wide range of audio production software, some of which may only be available for certain operating systems or devices. There are some reasonable quality products available free of charge. Below is a summary of these products.

Audio Software	Device	OS	Record	Trim	Full edit	Cost
Zoom	All	All	✓	X	X	Free
Cleanfeed	All	All. Requires Chrome on computers, Safari on iPads, iPhones	✓	X	X	Free
Windows Sound/Voice Recorder	PC	All	✓	✓	X	Free
Apple Voice memos	Mac	All	✓	✓	X	Free
Various Voice record aps	iPad	All	✓		X	Free
GarageBand	Mac	All	✓	✓	✓	Free
	iPad	Version 13	✓	✓	✓	
Audacity	PC	All	✓	✓	✓	Free
	Mac	OSX 10.7 to 10.14 Not Catalina	✓	✓	✓	
WavePad	All	Win7 up, Mac 10.5 up, iPad 6.0 up	✓	✓	✓	Free
Adobe Audition	PC	Win 10 or higher	✓	✓	✓	Monthly \$30
	Mac	OS X v 10.12 or higher	✓	✓	✓	
Hindenburg	PC	All	✓	✓	✓	\$139
	Mac	OSX 10.5-10.15 / Cat	✓	✓	✓	

APPLE VOICE MEMOS

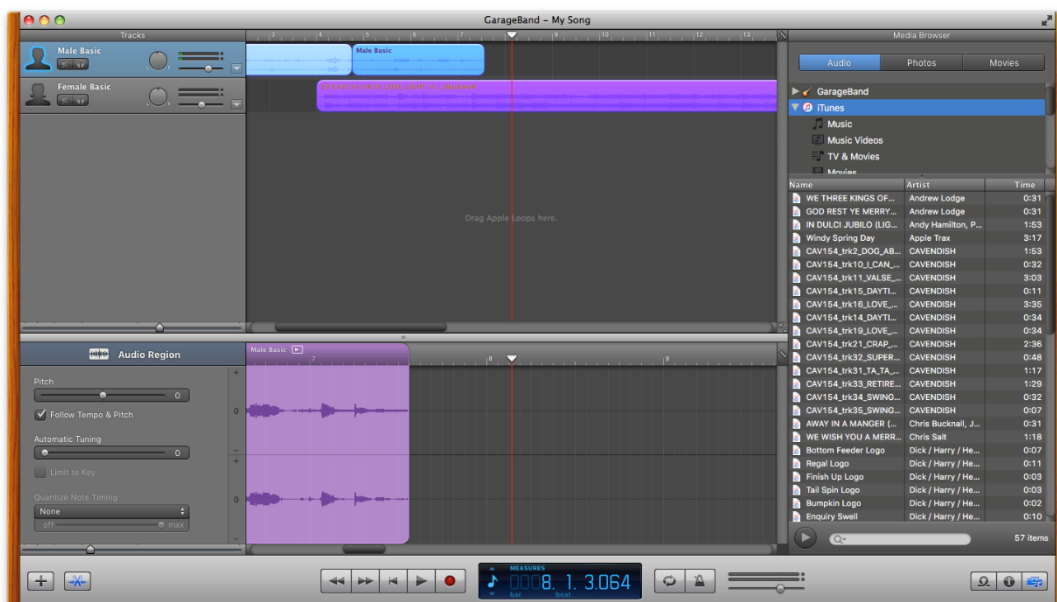
This is a basic product which does what the name implies - records voice memos. Apart from recording, limited editing is available. Files are saved in m4a format.

The Windows equivalents, *Windows Sound or Voice Recorder* are similar to *Voice Memos*.

These apps are not recommended for use for 2RPH program recording.

5. GARAGE BAND

(A) These are basic instruction for use of this software on Mac devices with OS earlier than Catalina:
Open GarageBand.



For a new project select 'Voice'.

You'll get a project with 2 tracks.

Clicking on the panel 'male basic' or 'female basic' will select which track to record on.

On the 'clock panel' at the bottom, click the 'quaver'? to alter timer to be set to 'time' rather than measures.

Click the 'red button' to the left of the timer to record.

Double click the recorded track for a magnified 'audio region' near the screen bottom. This 'region' seems to allow better view of waveforms, but is not useful for editing it would seem.

New recording is placed at where the 'play head' is - upside down arrow & red line.

No warning of over record is given. 'Apple z' will undo.

Trimming can be done in the 'main track display'. Drag edge.

The system default appears to store completed projects in the 'garageband app' folder. You could also create a 'Garage Band Projects' folder within my documents folder and direct saved projects there.

To save the file as MP3, go to the top menu item - Share - Export 'Song' to disk - then - checkbox compress, compress using: Mp3 Encoder. Audio setting: 'High Quality'.

The file can be stored where you choose.

(B) **Garageband on iMac running Catalina** (Garageband Version 10.3.4) has a quite different appearance to its predecessor.

A recommended guide is the following YouTube video: *GarageBand Tutorial for Beginners - Record Audio Vocals, Edit, and Export to MP3*

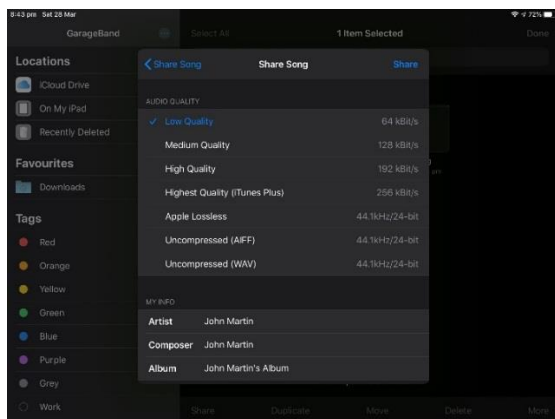
<https://www.youtube.com/watch?v=YcLQ0f5vC7w>

This guide is explicitly for voice - spoken, rather than singing and thus relevant to our situation.

(C) **The iPad version of Garageband** is different again, but similarly is fairly straightforward to use, with automatic or manual audio input levels.



Music or program theme files can be added as additional tracks after they have been saved on to the iPad.



Recordings are saved as *Songs* and can be 'shared' to other apps such as Dropbox or emailed. They are saved in the m4a file format.

6. AUDACITY

A beginner's guide.

AUDACITY is a free recording software program for use with PC's and Macs (note: Audacity does not work with the latest Mac Catalina OS update).

If you're new to this kind of software, Audacity is probably a good place to start.

(A) Download and install AUDACITY

Hovering the mouse pointer over the various buttons on the screen gives a description of what that button represents.

(B) The top left hand of screen has 6 buttons. They are (left to right):

Pause

Play (green button)

Stop

Skip to start

Skip to end

Record (red button)

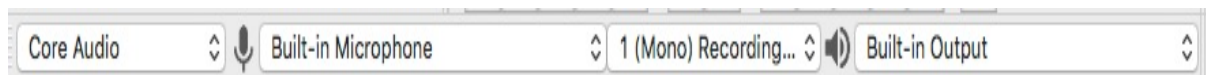


Look for the sliders to adjust recording volume and playback volume



(i) For Apple Mac users

Below in the centre are 4 pull-down tabs; hovering the mouse shows the settings:



Audio host - leave at default

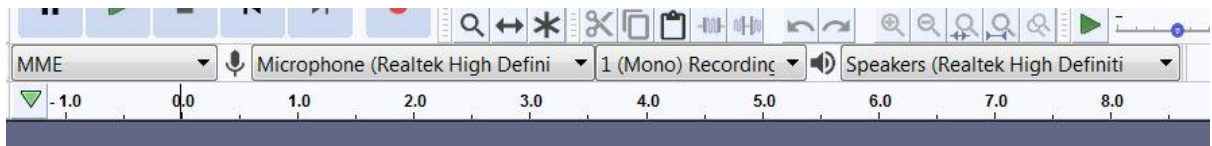
Recording device - should default to current microphone plugged in

Recording channels - for 2RPH select mono channel

Playback device - defaults to current speakers/ headphones

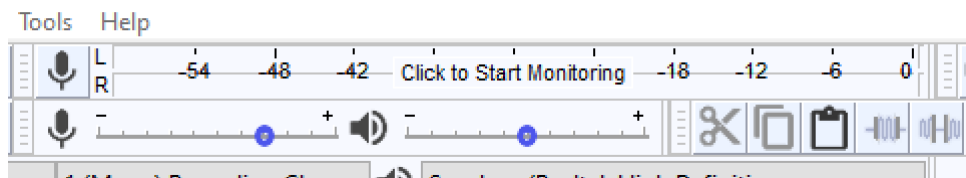
(ii) For Windows users

The same details appear as a panel and dropdown boxes, including the default microphone and speakers.

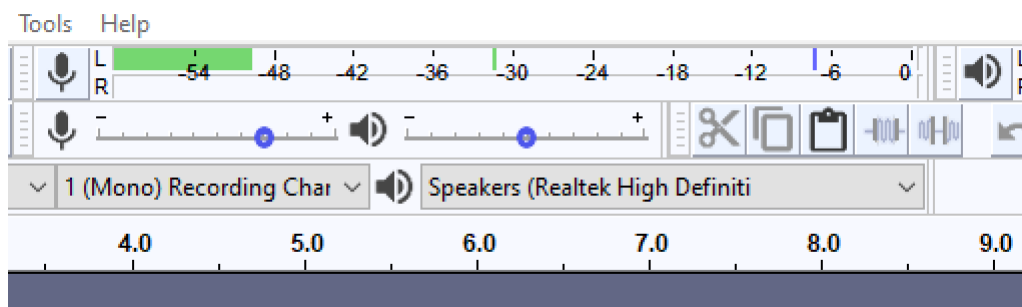


(C) Preparing to Record

Before you start recording, set the microphone level by clicking on the microphone icon or *Start Monitoring*,



Then you can adjust the mic level with the slider below the level meter.



(D) Record

Press red button - a window will pop up showing the waveform of your voice.

To pause - click on the pause button. To resume, press pause button again

To finish - press the STOP button

To replay - press the play (green) button

Alternatively, pressing the space bar will play the recording from the start. Pressing the space bar again will stop the replay.

(E) SIMPLE EDIT

With the project open, you can easily edit out unwanted audio segments such as a cough or an error in reading.

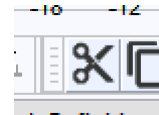
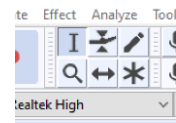
First check that the selection tool is selected.

On the recording track left click and drag the mouse to select the piece you want to remove.

In the *View* menu you can select *Zoom* to expand the track making it a bit easier to see the selection.

To remove the section of the recording you have highlighted, go to the *Edit* menu and select *Delete* or *Cut*, or press *Ctrl + X* on the key board, or click on the cut tool on the menu bar.

If you're not happy with the edit, press *Ctrl + Z* to undo.

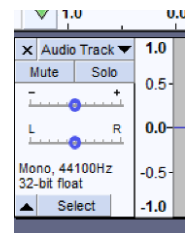


(F) IMPROVE AUDIO LEVEL

If the voice recording is a bit low you can fix that by selecting the voice track – press *Select* at the bottom of the box on left-hand side.

Then in the *Effect* menu select *Normalise*.

You would not do this if you had deliberately recorded audio with louder and softer parts.



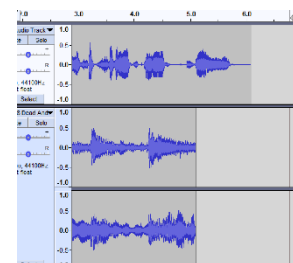
(G) ADDING MUSIC OR OTHER AUDIO

These are the basics of adding music or other audio files to your voice recording.

You will need to have those audio files available on your computer in a suitable format – MP3 is best.

In the File Menu go to *Import* and then select *Audio*. Navigate to the file you want to add and double click. As a music file is in stereo, a new set of tracks will appear.

If needed, you can trim the music, as described in the basic edit section above.



If you now play the project, all tracks will play at the same time.

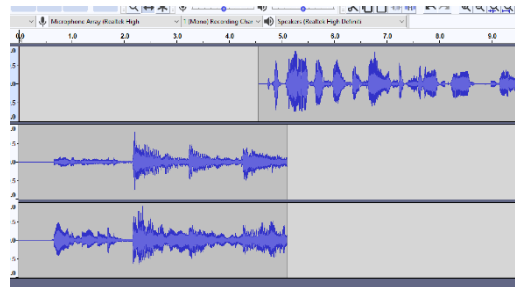
Separate the tracks by time shifting them. First select the time-shift tool.



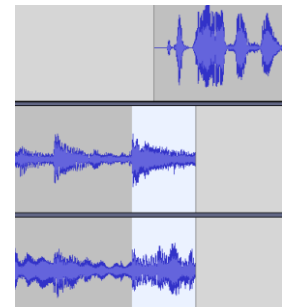
In this example, we want a brief music intro before the voice track begins.

Select the voice track by pressing *Select* at the bottom of the box on left-hand side of the track (as in 7. above).

Then hold down the mouse whilst moving it down the time line, leaving a brief overlap with the end of the music tracks.



There are several ways to create a simple fade at the end of the music tracks. One method is to click the selection tool again, and select the section of the music tracks which overlap the voice track.



Then, under *Effects Menu* select *Fade Out*.

(H) Save a Project

In the File menu- select save as PROJECT and give it a name. Click on SAVE.

You can save the project where you wish.

(I) Save an MP3 file for 2RPH

Go to *File Export* - select *Export as MP3*

Select the folder where you want the file to go

Give your MP3 a file name (see section 7 on file naming)

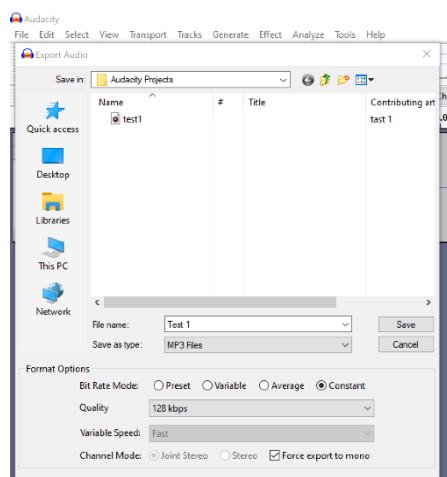
In *Format Options*:

Set the bit rate mode to *Constant*

Quality to *128kbps*

Tick *Force export to mono*

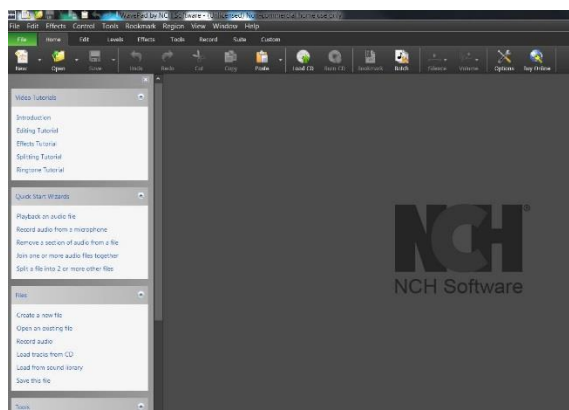
Click on *save*



Note: There are many YouTube videos describing editing and more advanced features for Audacity, see **Resources** section below.

7. WAVEPAD

Another free audio recording and editing software package is WavePad, which can be downloaded at <https://www.nch.com.au/wavepad>. It will work on Windows, Mac and there is an iPad version available from the App Store.



WavePad is very straightforward to use and has lots of on-screen help and a range of tutorials explaining all the basic functions and features.

8. TRANSFER FILES TO THE STATION

Audio files recorded at home will be uploaded to 2RPH through the station's Dropbox. A separate folder will be created for each program with an invitation sent to each producer to enable access to that folder. Then it would be a simple process to drag a completed program file to the appropriate Dropbox folder on your device.

Please contact the 2RPH Technical/Production Manager to set this up for your program.

The preferred file format for recorded 2RPH programs is **128kbps MP3** files. However, m4a files are also acceptable, but will require further processing by the production team. Therefore, please discuss with the Technical/Production Manager if you need to use this format.

The critical issues are to ensure the correct length of recorded programs uploaded and the have very clear labelling of files.

AUDIO FILE NAMING

The protocol required is to label each file with the date of **broadcast** (not the date of recording) in the form of YYMMDD followed by the name of the program (or an abbreviation).

As an example, the file name for a *Special Program* recording to be broadcast on 30th July 2020 which is in the MP3 format, would be: **“200730 special program.mp3”**

The system of Dropbox folders for each program will also enable program themes and the like for each program to be stored in the program folder for ready access.

9. ZOOM – for live reading to 2RPH Studio

These are instructions to join a Zoom enabled live broadcast from home. It is dependent on the Zoom host being in a 2RPH studio.

Zoom, like Skype, is a medium used to hold meetings between two or more people remotely. Zoom tends to have better reception and easier functionality, plus it is free for any meetings of less than 45 minutes.

2RPH has a Pro version, with unlimited time - so most meetings would be initiated by someone in the broadcasting studio.

Here are some steps to follow at home when getting ready to broadcast live.

A. Download Zoom following these steps:

(i) Laptop/desktop

Click this link: <https://zoom.us/j/163608204> - it will prompt you to install an app (which is free/safe).

(ii) Mobile app

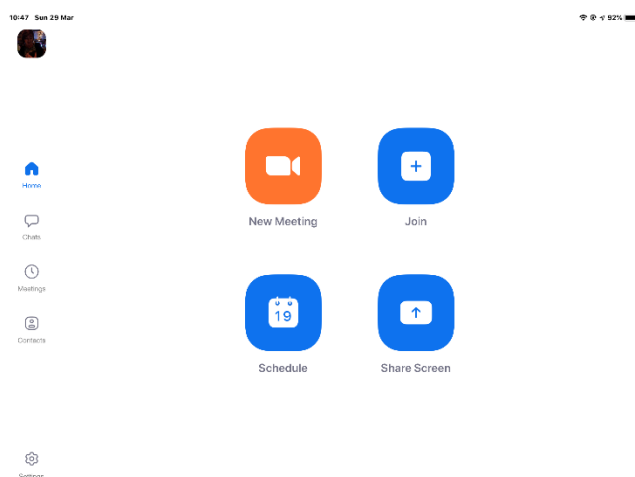
Available for Apple/iOS - <https://itunes.apple.com/us/app/id546505307>

and Android - <https://play.google.com/store/apps/details?id=us.zoom.videomeetings>

It is recommended that you do **not** use a mobile phone or landline to broadcast. Zoom will work with those devices but the quality of sound is very poor for broadcasting purposes.

B. Invitation from 2RPH

The Home page for Zoom on an iPad looks like this:



At this stage, at home you would await an invitation from the person in the Studio (initiating the meeting) and any others also to be broadcasting during your program. An invitation to a Zoom meeting will look like this image below, however please ignore the telephone numbers (not shown here), and use the Zoom link to connect you to the meeting:

2RPH is inviting you to a scheduled Zoom meeting.

Topic: Breakfast Show 2RPH Zoom

Time: [Mar 28, 2020 10:30 AM](#) Canberra, Melbourne, Sydney

Join Zoom Meeting

<https://zoom.us/j/262895851?pwd=bWFqOTkxeXJOK0Y1cFg4VmFaRDUvdz09>

Meeting ID: 262 895 851

Password: 072073

Meeting ID: 262 895 851

Find your local number: <https://zoom.us/u/azRcWNBNP>

C. Connecting to the Studio:

Once you have joined the meeting, you may have to wait for the 'host' to initiate the meeting - you will be in a kind of 'waiting room'. If it has already started, you will see the names and images of the other members of your team.

There are options to 'see' people in either a Gallery version:

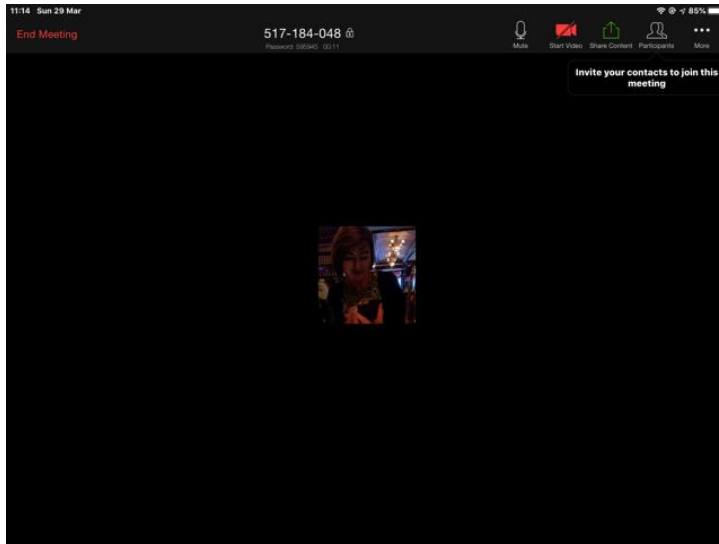


Virtual Friday Writing Group

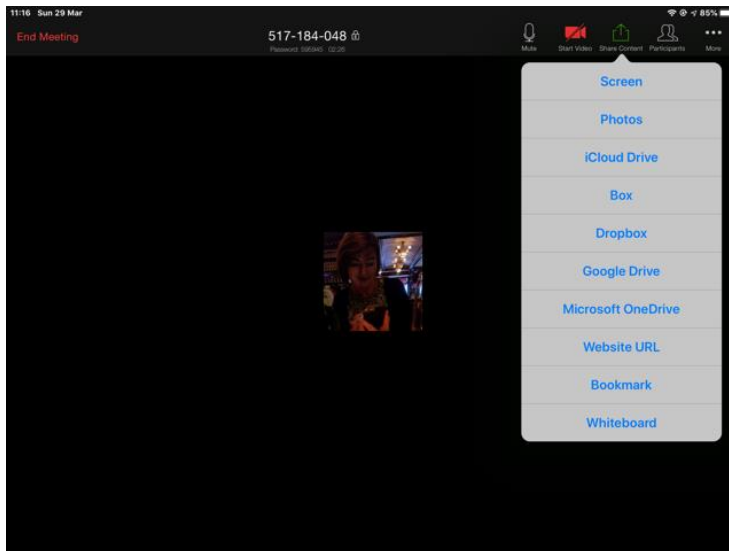
Or individually (i.e. the person who is talking will be in view).

Some notes to assist in operating:

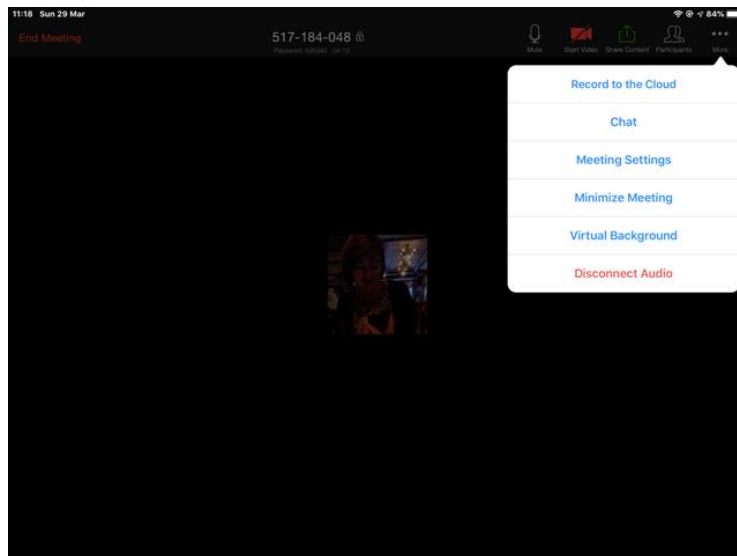
- note the Mute option - if you are not speaking, but instead perhaps sorting notes etc, please put the Mute button on so that no external noise is detected from your device to the studio.
- find a suitable room – see the section on *Recording/Remote Broadcasting Environment* above
- use any type of earphones and microphone you have in preference to just speaking through the devices open audio facilities. This optimises the quality of voice transmission and minimises any external noise/room noise.
- starting the meeting early means that the team can speak to each other before the broadcast starts, so that articles etc. can be discussed.
- there is a facility for being able to read your article on-line (either as a PDF, Scan, or open source web article etc). This is found in the 'Share Content' button – (top right hand on PC and iPad, bottom menu bar on Mac) green arrow symbol, as follows:



If you hit that button you will be given options to follow your files and documents and choose the piece you want displayed on the screen:



- there is also a facility to send a message to your fellow team without interrupting with speech. This is under the three dots at top extreme right, and the Dropbox will provide the option to 'Chat'.



Choosing **Chat** will take you to a box where you can choose which person (or all) you can send an SMS-type text to, without interrupting the flow of the broadcast.

You may leave the meeting at any time; the button at top left of screen gives you the opinion to 'leave'.

Note: it is better to avoid having too much other internet activity happening at your home while conducting a Zoom session – two simultaneous Zoom sessions over one internet service can cause problems.

10. RESOURCES

- The Community Radio Training Organisation (CMTO) Quick Guide to Recording your Show at Home:
<https://cmto.org.au/latest/840-quick-guide-to-recording-your-show-at-home.html>
- A webinar on Creating Content Remotely conducted by the CBAA and CMTO was held on 26 March 2020. It can be accessed at <https://cmto.org.au/latest.html> and scroll down list of webinars.
- CMTO notes on Audio Editing software for the Computer and Smartphone:
<https://cmto.org.au/what-we-do/projects/multiplatform/skills/80-audio/577-audio-editing-software-for-the-computer-and-smartphone.html>
- Garageband tutorial: <https://www.buzzsprout.com/blog/garageband-podcast-tutorial>
- Voice Recording in the Home Studio:
<https://transom.org/2013/voice-recording-in-the-home-studio/>
- Use of smart phones for interviews and home recording:
<https://vimeo.com/83811743>
- Some relevant notes from Transom:
<https://transom.org/2020/recording-during-the-coronavirus-pandemic/>

These notes have been compiled by John Berry, Mary Jane Hogan, Maria Issaris, John Martin, Colin Payne, Greg Richardson, Fran Telec and Peter Worthington, and have drawn on the CBAA / CMTO webinar on Creating Content Remotely, held on 26 March 2020.

Your comments and suggestions on improvement of the Notes are very welcome, please send them to info@2rph.org.au

Version 2.1 200416. Addition of WavePad and a Garageband Resources link.