Step by step guide to using Audacity

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1 - Introduction

Audacity is an easy to use but powerful audio recording and editing package. It is also free to download and use (see **Appendix A – Downloading and Installing Audacity and the LAME MP3 encoder** at the end of this document for information on how to do this). Audacity enables you to record your voice, edit your recording to correct any mistakes you might make, and to combine sound recordings from various sources such as interviews, music, or other sound recordings you may have. Audacity also enables you to export your recording as an MP3 file, and because of this it is ideal for producing podcasts.

This guide will serve as an introduction to the key features of Audacity 1.2.6 for Windows. A full reference guide for the software can be found at
http://audacity.sourceforge.net/manual-1.2/index.html

2 - Getting Started
2.1 - Starting Audacity

To Start Audacity:

1. Click on the Start button in Windows.
2. Choose Audacity from the Programs menu.

When Audacity starts, you will see the following screen as shown in Figure 1. Don't worry about it looking complex; you will only require a few of the basic features which are labelled below.
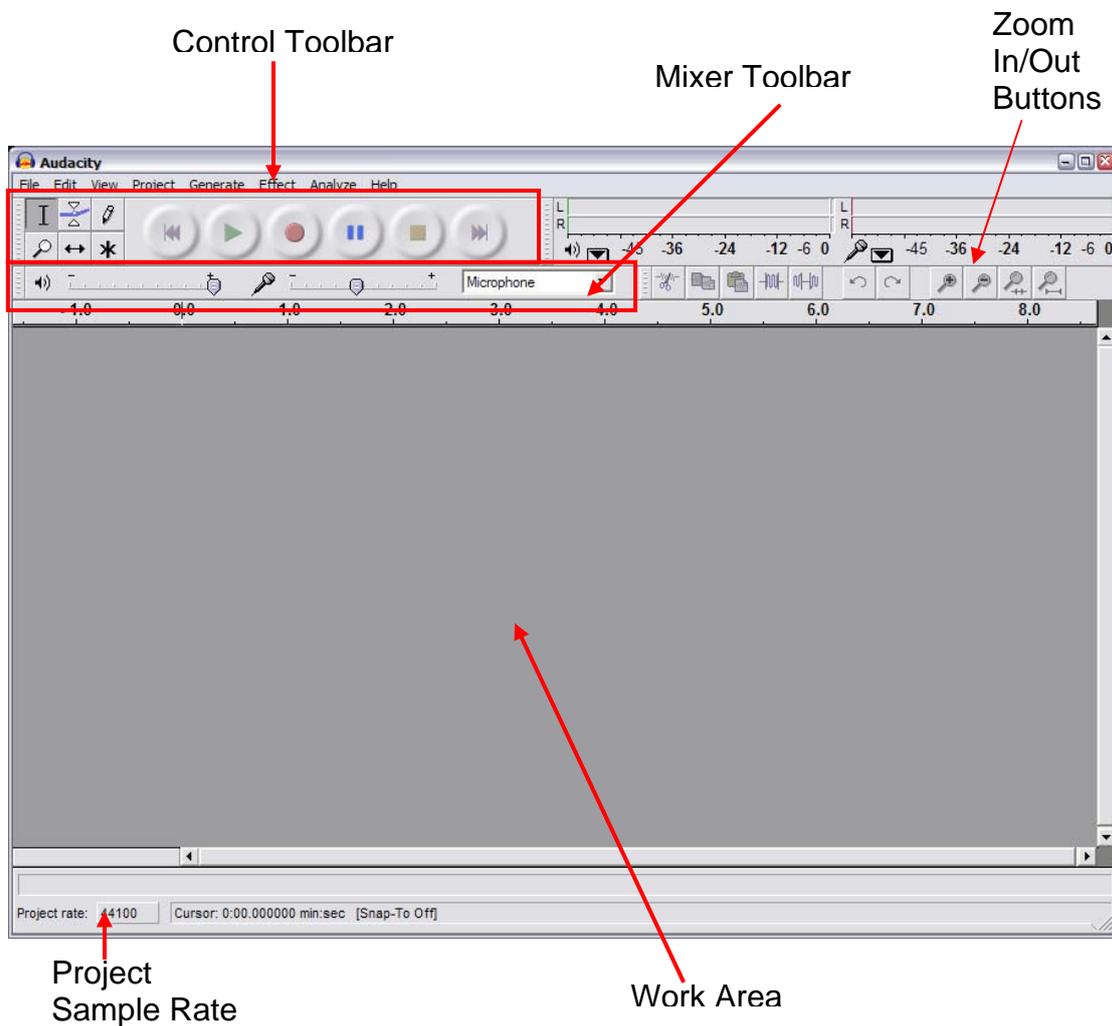

Figure 1 – the main Audacity program screen

3 – Recording, Saving and Editing Your Audio

3.1 – Recording your audio

Before starting to record your audio, you will need to do the following:

1. Make sure your microphone and speakers (or headset if using one) are correctly connected to your computer - check your microphone or computer instruction manual if you are unsure how to do this.
2. Prepare something to say.
3. Check that the Project Sample Rate is set at 44100, as shown in Figure 1.
4. If you are using loudspeakers, you may need to turn these down to prevent feedback.

   Tip: Before investing too much time in your recording, please consult Section 3.3 – Adjusting the Recording Level for Optimum Quality below. It is well worth doing a test recording to make sure that the recording levels have been set correctly.
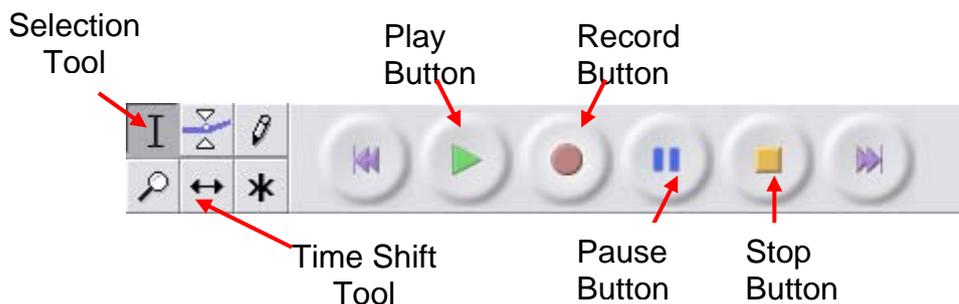
Figure 2 – The Control Toolbar

To start recording:

1. Click on the Record Button in the Control Toolbar, as shown in Figure 2.
2. Start saying what you wish to say.
3. Press the Pause Button in the Control Toolbar if you wish to pause your recording at any point – press it again to resume recording.
4. Press the Stop Button in the Control Toolbar when you have finished your recording.

When you have finished your recording, you should see your voice represented as a "waveform", as shown in Figure 3 below.

Your waveform will be visible as an "audio track". Audacity allows you to have multiple recordings in multiple audio tracks, and these can be edited independently of each other.

Figure 3 – Recorded audio shown as an Audio Waveform in an Audio Track

3.2 - Listening to your recording

You will almost certainly want to listen back to your recording to check that you are happy with the quality of the recording, and with your performance. You may wish to re-record it.

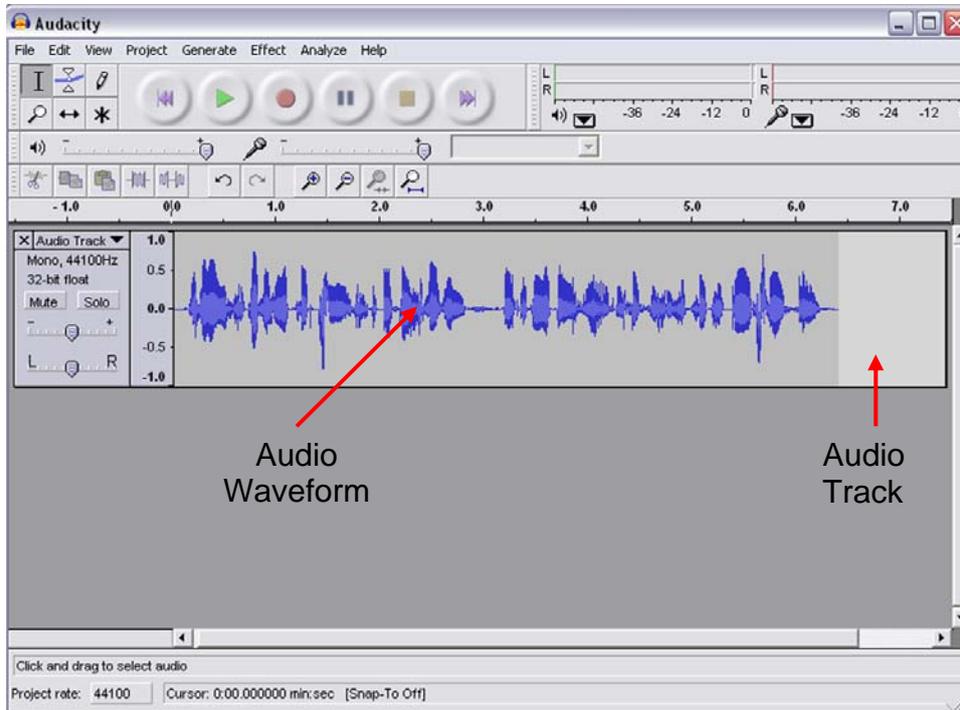To listen to your recording:

1. Click on the Play Button in the Control Toolbar as shown in Figure 2.
2. Click on the Stop Button or Pause Button in the Control Toolbar to stop or pause the playback.
3. You can adjust the volume at which you listen to your recording using the Playback Volume slider in the Mixer Toolbar, as shown in Figure 4 below.
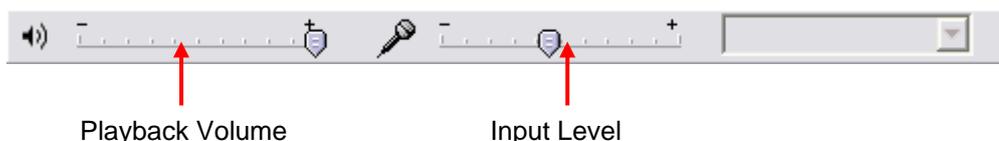

Figure 4 – The Mixer Toolbar

> **Important:** **If your recording seems very quiet, with lots of background noise OR your recording seems very loud and distorted, please consult Section 4 – Adjusting the Recording Level for Optimum Quality below.**

3.3 – Adjusting the Recording Level for optimum quality

It is very important to make sure that you record your audio at the correct recording level to get the best quality – too high a recording level causes distortion, whilst too low a recording level introduces too much background noise and hiss. Neither are desirable and make your recording difficult to listen to.

Examining the waveform will give you a good idea about your recording level. Please consult Figure 5 below

- Track 1 in Figure 5 depicts a waveform that has been recorded at the **correct** level.
- Track 2 depicts a waveform that has been recorded at **too low** a level.
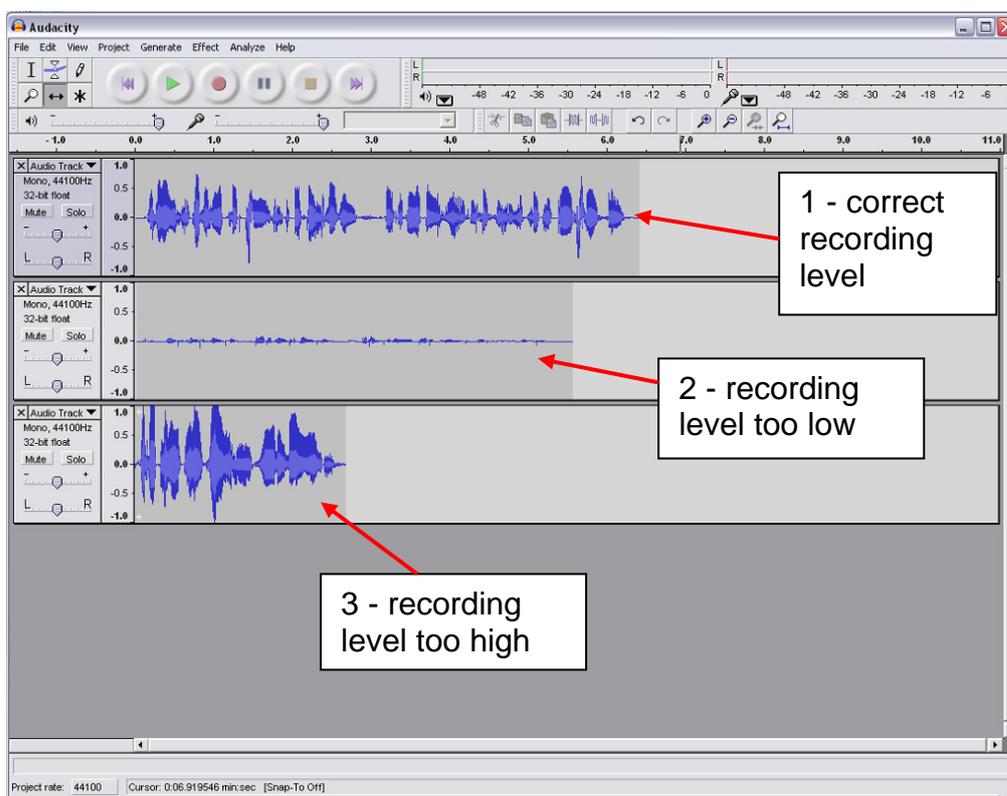- Track 3 depicts a waveform that has been recorded at **too high** a level.

Figure 5 – Waveforms showing recording levels that are correct, too low and too high.

If your recording level is **too low**:

1. Increase the recording level by adjusting the Input Level slider in the Mixer Toolbar, as shown in Figure 4 above, **and/or**
2. Sit closer to your microphone.

If your recording level is **too high**:

1. Decrease the recording level by adjusting the Input Level slider in the Mixer Toolbar, as shown in Figure 4 above**, and/or**
2. Sit further away from your microphone.

3.4 - Saving your work

At this point, you need to save the project for the first time. It is important that you save your work regularly to avoid losing any work in case a problem arises.

1. Choose **File**, **Save Project** from the main menu.
2. Save your Audacity Project in an appropriate location.

   Important: Please note that when you choose Save Project, this saves all the information from your current Audacity Project. This includes all your raw audio data, along with any other information such as the relative volumes of different audio tracks etc. This is NOT the same as exporting your audio in a format suitable for podcasting – this is covered in Section 4 below.

3.5 – Editing your audio

You will almost invariably wish to edit your audio in some way after you have recorded it. This may be to remove unwanted sections, record additional material, or incorporate audio from other sources, such as background music, interviews etc. Audacity provides a comprehensive range of editing facilities, which are briefly introduced here.

3.5.1 - Deleting audio

To remove an unwanted section of your recording:

1. Click on the Selection Tool in the Control Toolbar as shown in Figure 2.
2. Click and drag the part of the audio waveform you want to delete in the audio track.
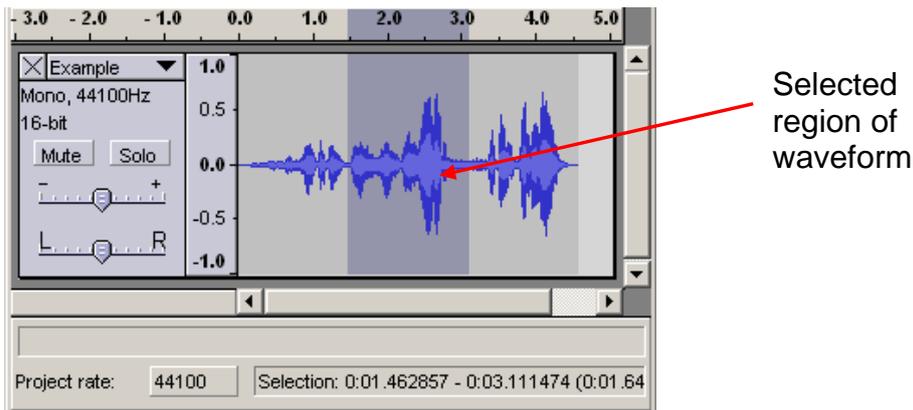3. The selection should appear as shown in Figure 6 below.

Figure 6 – Selecting part of the waveform for deleting and/or editing

4. Press the Delete key on the keyboard, or choose **Edit**, **Delete** from the main menu.
5. The unwanted audio is removed, and the audio either side of the selected region is joined together leaving no gap.

Tip: Click on the Zoom In button as shown in Figure 1 to make it easier to select the portion of the waveform you want to delete. Remember you can always correct any mistakes by choosing Edit, Undo from the main menu, or by pressing Ctrl+Z on the keyboard.

3.5.2 – Inserting audio into your recording.

You may want to add extra audio in the middle of your original recording – this has to be done in several steps:

1. Using the Selection Tool (or "cursor"), click in the waveform at the point from where you want to add the new audio.
2. Click on the Record Button in the Control Toolbar to start your new recording.
3. Audacity automatically creates a new track and starts to record from the position you clicked the cursor.
4. Press the Stop Button when you have finished recording your new piece of audio.
5. You should see your new recording in a new audio track, as shown in Figure 7 below.
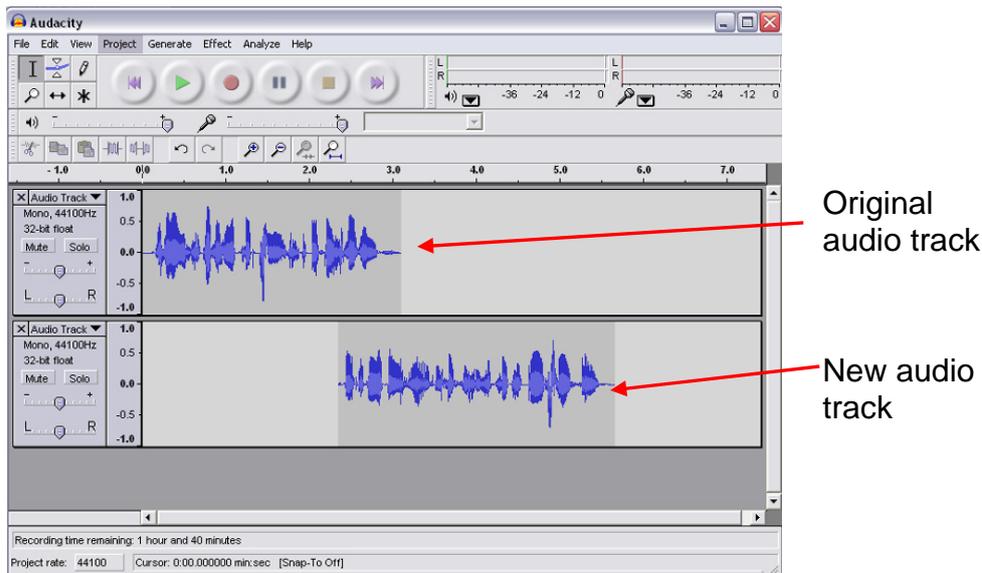
Figure 7 – Overlapping original and newly recorded audio tracks

6. At the moment the two tracks overlap and if you press play, your two recordings mix together in the middle. To complete the insertion of the new audio, you need to move the second half of your original recording.
7. Go to your original track, and highlight the waveform from the point the second track starts to the end as shown in Figure 8.
8. Choose **Edit**, **Split** from the main menu. This will remove the highlighted section from the original track and add it to a new track at the bottom of the work area, as shown in Figure 9.
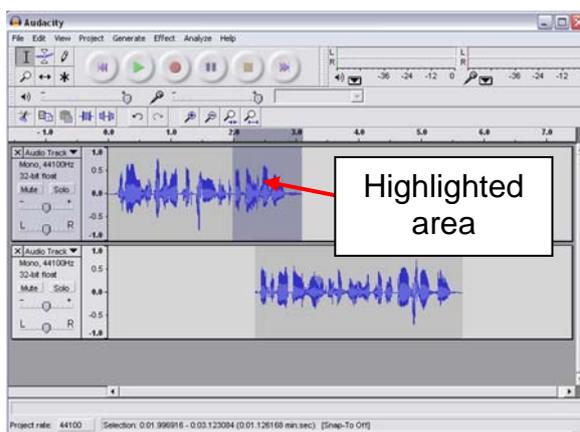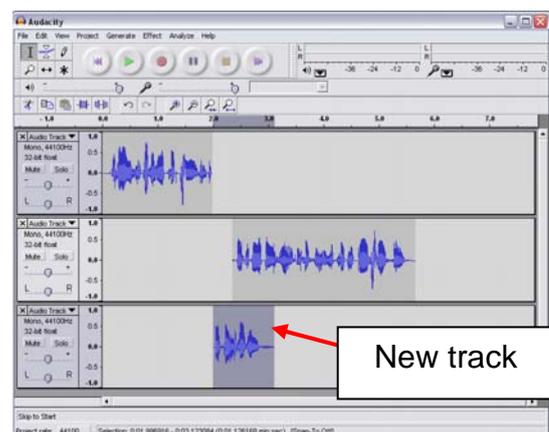

Figure 8

Figure 9

9. Now select the Time Shift Tool from the Control Toolbar and click and drag the waveform on the new track at the bottom so it lines up with the end of the waveform on the track above, as shown in Figure 10 below.
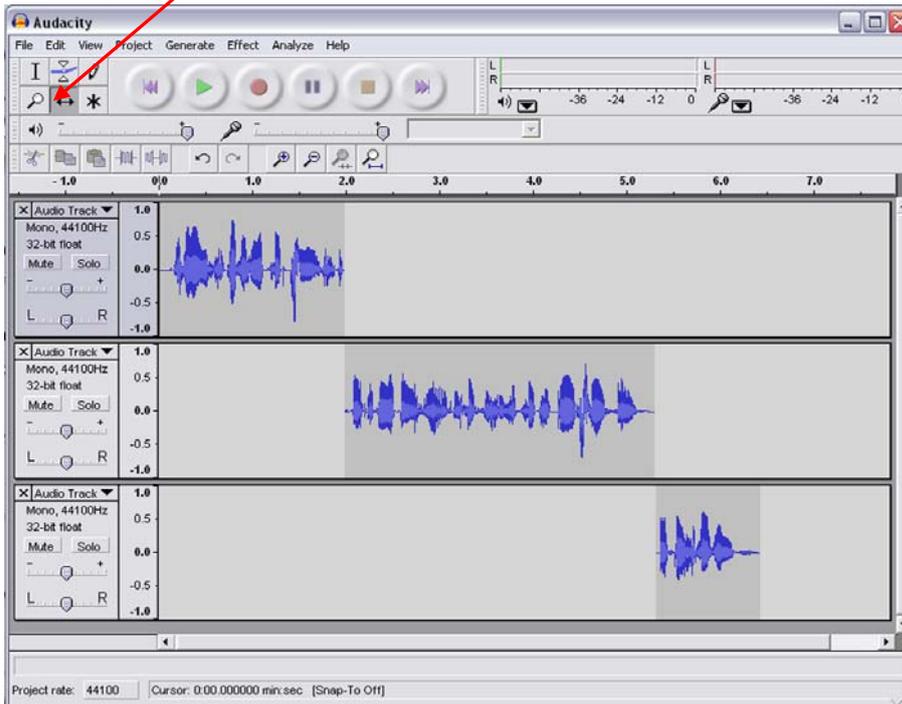
Time Shift tool

Figure 10 – Audio tracks re-aligned with Time Shift tool

10. If you now play this back, the recording will play as one continuous piece without overlapping any audio.

3.6 - Adding other audio

If you want to add audio that you have not recorded directly with the microphone, such as music, or material that you have recorded elsewhere such as an interview, you will need to import an audio file.

Important: Be very clear that you are not breaking copyright law. If you wish to use audio that you did not produce yourself, or get from a copyright free site, then you should not use it unless you negotiate permission from the copyright owner, for example by buying a licence.

A few of points to note on importing audio:

- Audacity allows you to import audio in WAV and MP3 formats.
- Please Note that the WMA format is **not** supported.
- If you are ripping (copying) music from a CD using Windows Media Player or other ripping software, make sure you use the WAV or MP3 format only.
- You can convert files that are not in the correct file format using cheetah-audio-converter, which can be downloaded from: http://www.vnunet.com/vnunet/downloads/2128754/cheetah-audio-converter
  Using this software is not covered in this guide.

To add an audio file to your Audacity project:

1. Choose **Project**, **Import Audio** from the main menu.
2. Select the file you wish to import and Audacity will add it as a new track at the bottom of the work area.
3. If the track you have imported is in stereo, as will often be the case with music, it will look different from the track you have recorded with the microphone, having two waveforms - one for stereo left and one for stereo right, as shown in Figure 11 below.
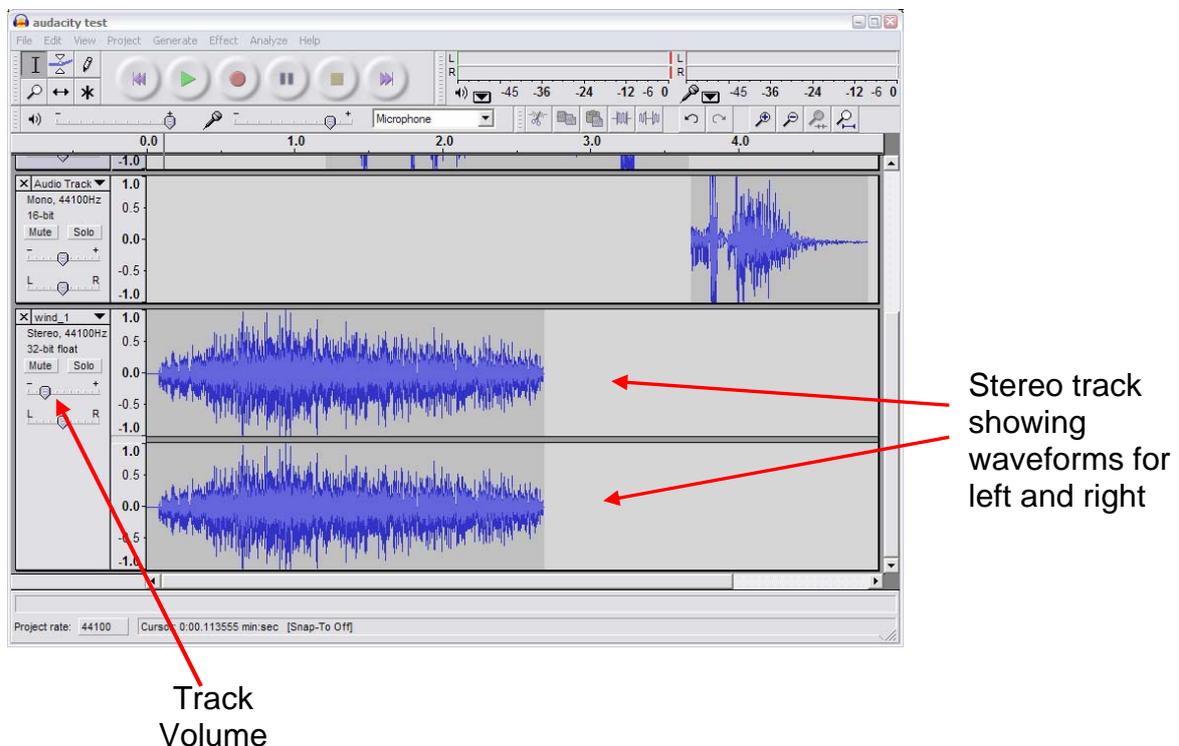

Figure 11 – A stereo wave form imported into Audacity

When you have imported some audio from another source, you may find you will need to adjust its volume to match your own recording. To do this, see **Section 3.7 - Adjusting the volume of different audio tracks** below.

3.7 - Adjusting the volume of different audio tracks

If you have combined audio from a number of different sources, you may find that you need to adjust their relative volumes to be able to hear them all properly.

To adjust the volume of an audio track:

1. Click and drag the Track Volume slider for the track you want to adjust, as shown in Figure 11 above.

3.8 - Fading in and out

You may want to shorten this new audio because it is longer than you require. Rather than simply chopping of the end which doesn't sound very good, you can easily make this track fade away to nothing, which is called a "fade out".

To create a fade out:

1. Highlight a section of waveform at the end of the track where you wish the audio to fade out.
2. Choose **Effect**, **Fade Ou**t from the main menu.
3. You will see the waveform gradually get smaller at the end, and if you listen to it, you will hear it fade away to nothing.
4. You can create the opposite effect by choosing Effect, Fade In from the main menu, to create a gradual "fade in" at the beginning of an audio track if you wish.

   Tip: See the online Audacity documentation for more in depth information about editing and mixing, at http://audacity.sourceforge.net/manual-1.2/tutorial_ed_beginner1.html

When you have mixed the audio to your liking, it is time to create your final audio file for your podcast, and archive your work. This is covered in **Section 4 – Archiving your work and exporting your podcast**, below.

4 - Archiving your work and exporting your podcast

During your work, you should have been regularly saving the project using **Save Project** from the **File** menu. This is essential to keep all your work intact, but this cannot be played by any other software than Audacity, and the project files can be very large. It is very useful to keep these project files if you want to revisit or re-edit your podcast. As with any other important work you do on a computer, it is highly advisable that you create a backup of this work in the normal way (by writing to a CD, or copying to a shared network drive for example).

4.1 - Archiving your work as an uncompressed WAV file

We also **strongly suggest** that you create an 'archive version' of your recording by exporting it as a WAV file. This is uncompressed, high quality audio, that can be opened, played and edited by a very wide range of audio programs.

To create an uncompressed archive version of your recording:

1. Choose **File**, **Export As WAV** from the main menu.
2. If you have created several audio tracks in the course of your recording, you will see the following message, as shown in Figure 12 below.
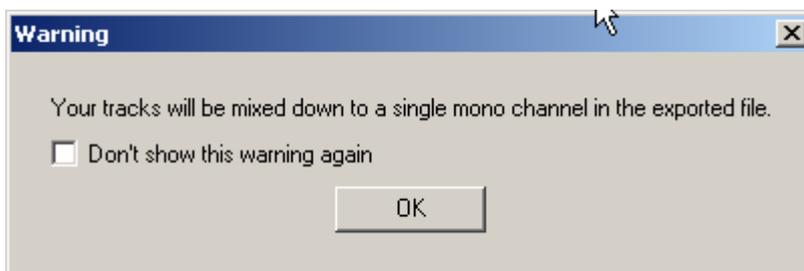

Figure 12 – Warning message indicating that all separate tracks will be combined on export

3. Click on OK if you see the above warning message.
4. Save your WAV file to an appropriate location using the file save dialogue box.

4.2 - Exporting your audio as an MP3 file

To create a podcast that anyone can listen to, you have to export your audio as an MP3 file.

In order for Audacity to export your recording as an MP3 file, you will need to have installed the LAME MP3 encoder, as described in **Appendix A** below. If you have not yet done this, follow the steps outlined in **Appendix A** now.

4.2.1 - A note on file size and compression

MP3 files use what is known as "compression" in order to keep their file sizes small, and this is why they have become so popular for use as podcasts. By comparison, MP3 files can be as much as 20 times smaller than an equivalent CD audio track of the same length.

Although this ability to compress the size of MP3 files is very useful for Internet distribution, it does also come at a cost, which is sound quality. There are several factors that effect how much compression that we can use in creating an MP3 file, and hence the final file size and audio quality. The most important variable we can control when using Audacity is to alter what is known as the **bit-rate.**

Before you export your audio as an MP3 file in Audacity, you therefore need to make sure you have chosen an appropriate bit-rate for your final recording. If your final podcast will only contain speech, you can afford to set a lower bit-rate for your output than you would if your recording was mainly comprised of music (the latter of which needs higher sound quality to be perceived as acceptable)

The following bit-rates are **strongly recommended** as a matter of policy:

Type of Podcast	Bit-rate	File size per minute
Speech	64kbps	500K
Music	128kbps	1Mb

4.2.2 - Setting the bit-rate in Audacity

To set the bit-rate in Audacity before exporting your MP3 file:

1. Choose **Edit**, **Preferences** from the main menu.
2. You should see the following screen as shown in Figure 13 below.

3. Click on the File Formats tab.
4. Choose the appropriate bit-rate from the drop down list box
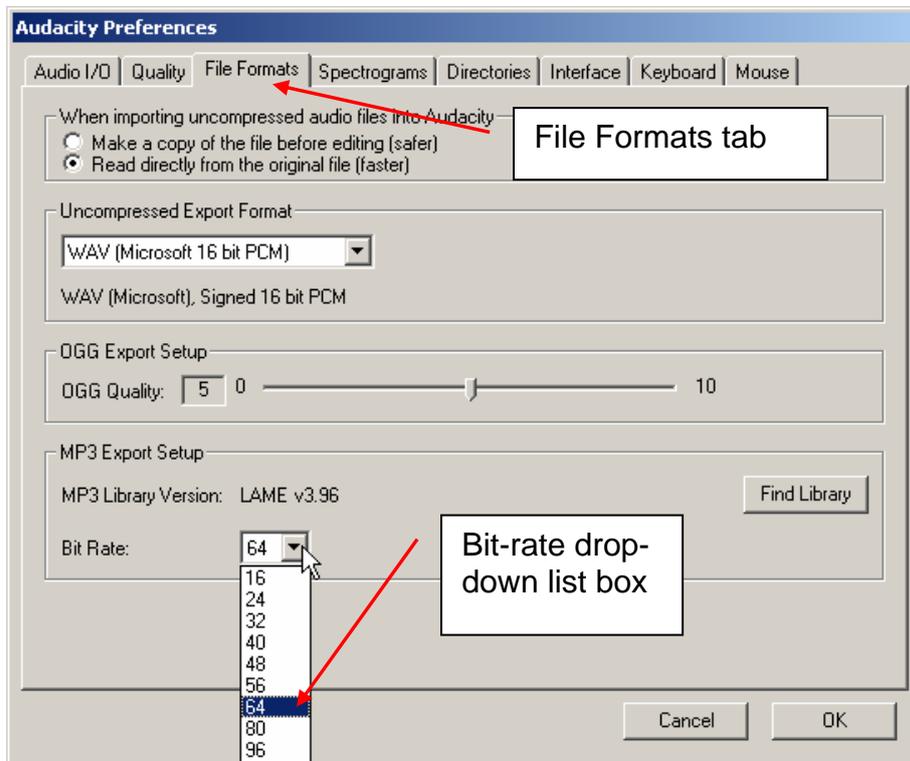5. **Remember – 64 kbps for speech, 128 kbps for music.**

Figure 13 – The Audacity Preferences screen

4.2.3 - Creating your final MP3 file

After you have set the appropriate Bit-rate, as described above, you are now ready to create your final MP3 file. This will be the file that you will upload to the Internet for distribution.

To create your MP3 file:

1. Choose **File**, **Export As MP3** from the main menu.
2. You may see the warning message shown in Figure 12 above – click on Ok if so.
3. Choose a filename and location to save your file **– you are recommended to only use lowercase letters and no spaces in your filename.**
4. Enter some summary information into the **ID3 Tags** using the dialogue box shown in Figure 14 below.
5. This information will appear when people listen to your podcast using iTunes, Windows Media Player, or their MP3 players.

Although the information to be entered into the ID3 Tags is optional, you are **strongly recommended** to add the following as good practice:

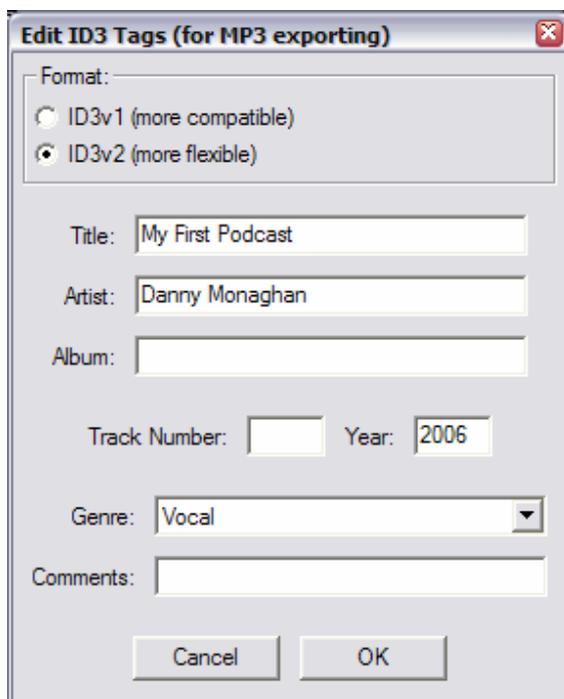| Tag	Description
Title	A sensible title for your podcast – NOT the same as the File name for your MP3 file
Artist	Your name
Year	Year you created the podcast
Genre	Normally applies to music so is optional
Comments	These could be used as a short précis of your podcast

Figure 14 – ID3 Tag editing dialogue box.

4.2.4 - Distributing your podcast

Now you have recorded and exported your podcast, you need to distribute it via the Internet. It is current University policy to use the University of London Computing Centre (ULCC) podcasting service for this. To do this, please consult the "Using the University of London Computing Centre Podcasting Service" document that accompanies this guide.

> **Important: Please do <u>NOT</u> use MOLE, cPanel or the University's CMS web server for distributing podcasts.**

Appendix A - Downloading and Installing Audacity and the LAME MP3 Encoder

Downloading and installing Audacity:

1. Using your web browser, go to http://audacity.sourceforge.net/.
2. Choose "Download Audacity 1.2.6 for Windows", if you wish to download the Windows version. This will take you to the Windows download page (which you can also go directly to at http://audacity.sourceforge.net/download/windows).
3. From the Windows download page, click on the link to the "Audacity 1.2.6 installer" – the link to this is in the **Recommended Download** section at the beginning of the page.
4. After a few moments, the download should start.
5. Save the installer file, **audacity-win-1.2.6.exe**, to a folder on your computer.
6. When the file has downloaded, double click the installer program you have just saved, and follow the on-screen instructions to complete the installation.

Installing the MP3 Encoder

Due to licensing reasons, Audacity cannot export MP3 files by default, but requires an extra piece of software, the **LAME MP3 Encoder**, to be installed. Like Audacity, this is also free to download and install.

1. Using your web browser, go to the LAME download page at http://lame.buanzo.com.ar/.
2. Under "For Audacity on Windows", left-click on the link "**libmp3lame-win-3.97.zip**" and save the zip folder to a folder on your computer.
3. When it has downloaded, unzip the file.
4. When the file has unzipped, copy the file **lame_enc.dll**, and paste it into your Audacity folder (NB on most Windows XP machines, this should be located in Program Files/Audacity folder).
5. When you are ready to create your first MP3 file using Audacity, Audacity will ask you to specify where you have saved the **lame_enc.dll** file, showing the following warning.

6. Click on the Yes button.
7. Navigate to where you have saved the lame_enc.dll file as described in step 4 above, and click on the Open button, as shown below.
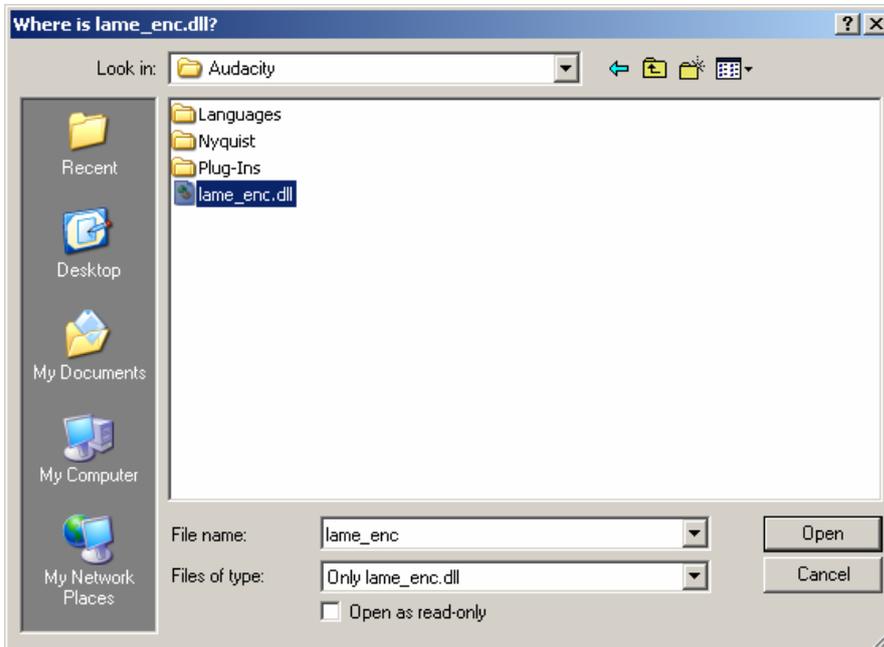
8. You will now be able to export your audio recordings in MP3 format suitable for podcasting.