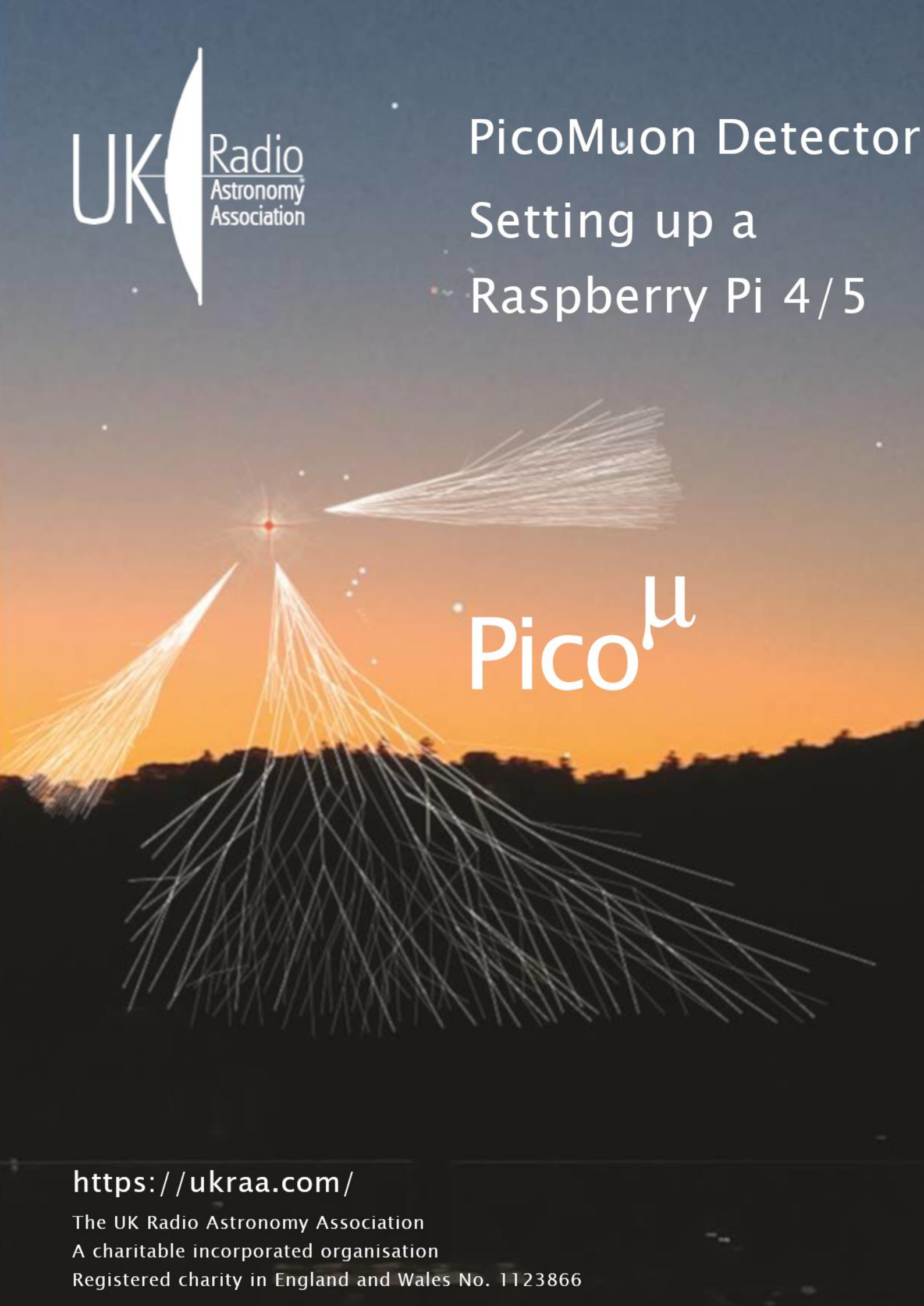
UK Radio Astronomy Association

PicoMuon Detector

Setting up a Raspberry Pi 4/5



https://ukraa.com/

The UK Radio Astronomy Association
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Registered charity in England and Wales No. 1123866

Table of Contents

Set-up instructions

These instructions cover setting up your Raspberry Pi4 or Raspberry Pi 5 with a suitable operating system and ability to be remotely access via VNC.

It is recommended that you use a Raspberry Pi 4/5 with at least 2GB memory.

When using the Raspberry Pi Imager, remember to write down the **hostname** you use – this is used to view the web page with the results from your UKRAA PicoMuon detector.

Please keep the username as **pi** when using OS customisation within the Raspberry Pi Imager.

The instructions for accessing your Raspberry Pi heedlessly assume use of Windows PC and that the following two applications are preinstalled on that PC.

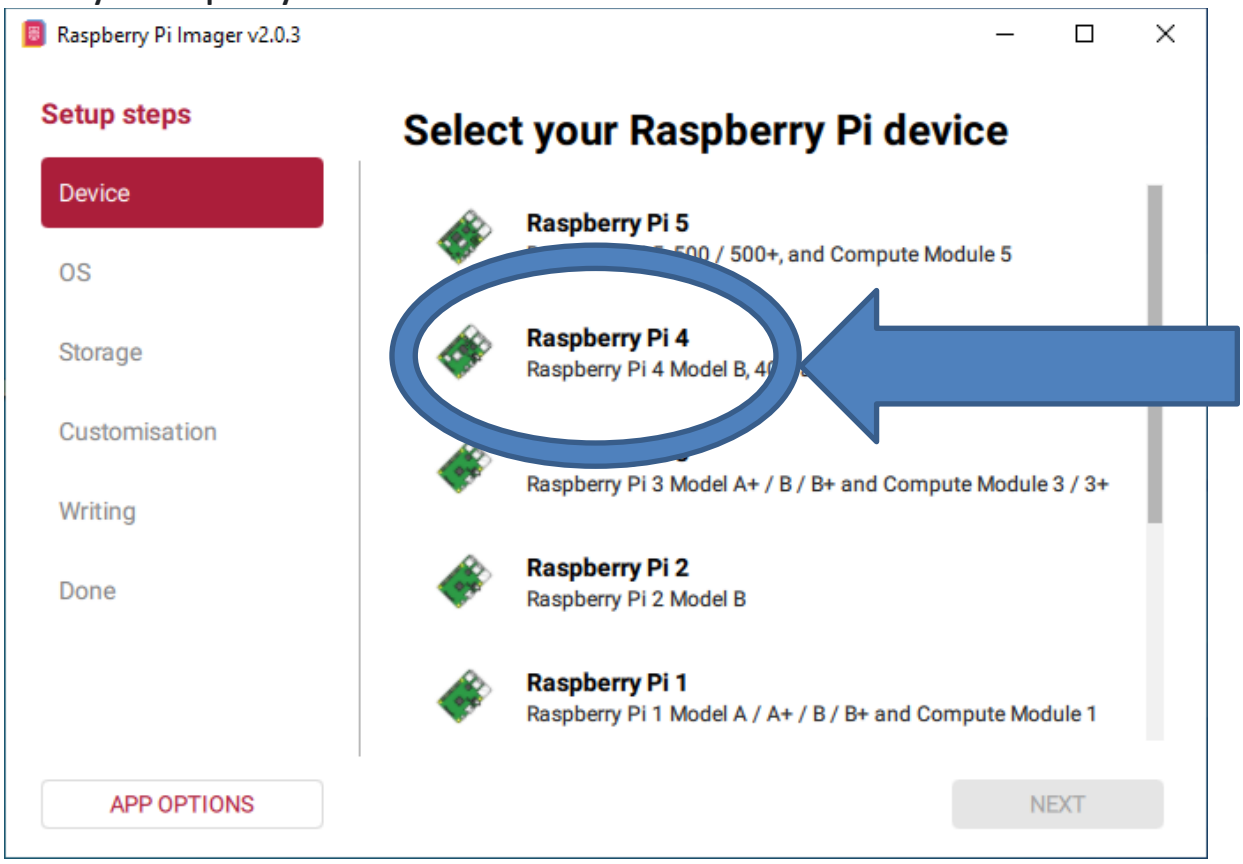
- PuTTY
- RealVNC Viewer

No information on installing these two applications is given in this text – there are numerous guides available on the internet.

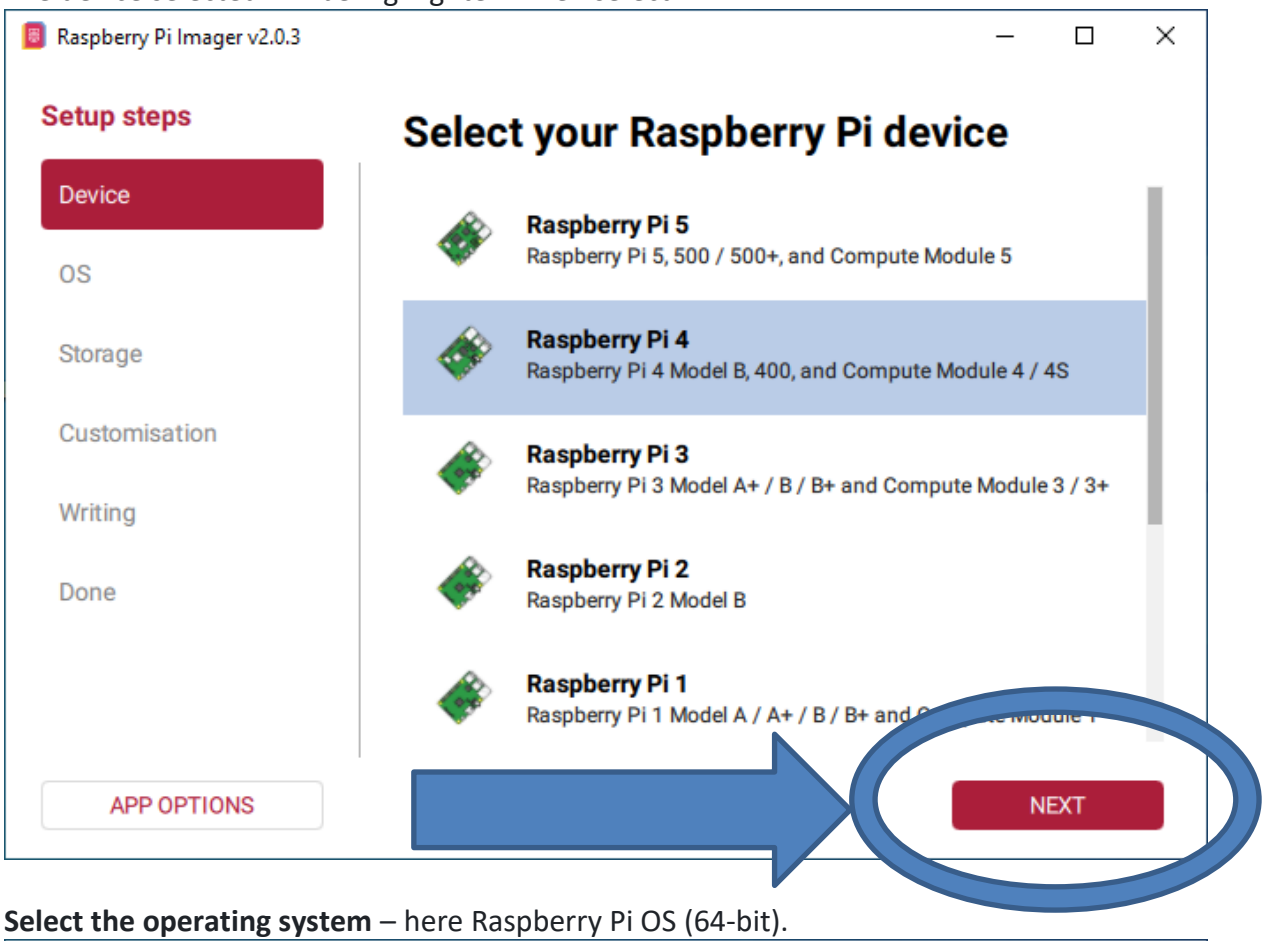
Raspberry Pi OS

1. Download Raspberry Pi Imager for your operating system.
2. Run Raspberry Pi Imager. 

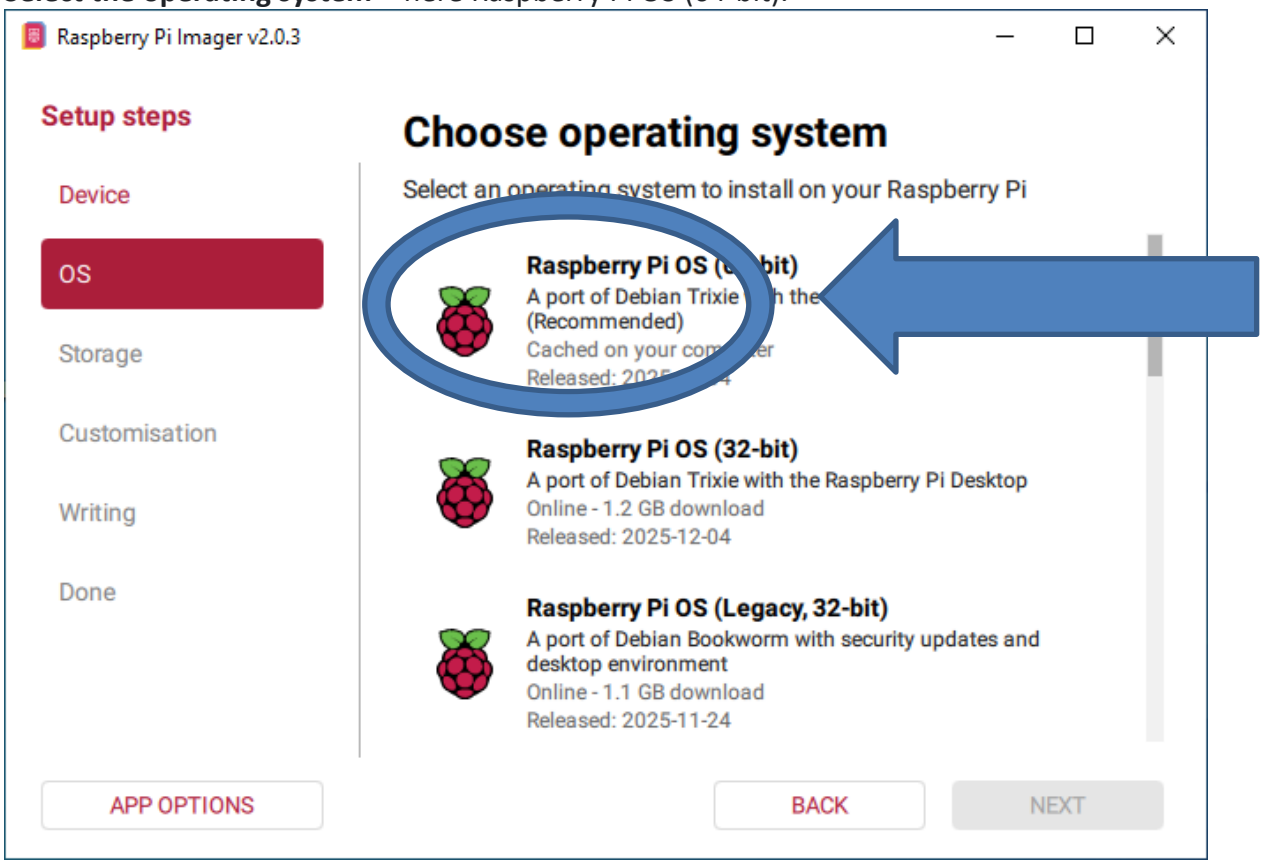
3. These instruction are written for **Raspberry Pi Imager v2.0.3** and **Debian Trixie**
3. **Select your Raspberry Pi device** – here an RPi4



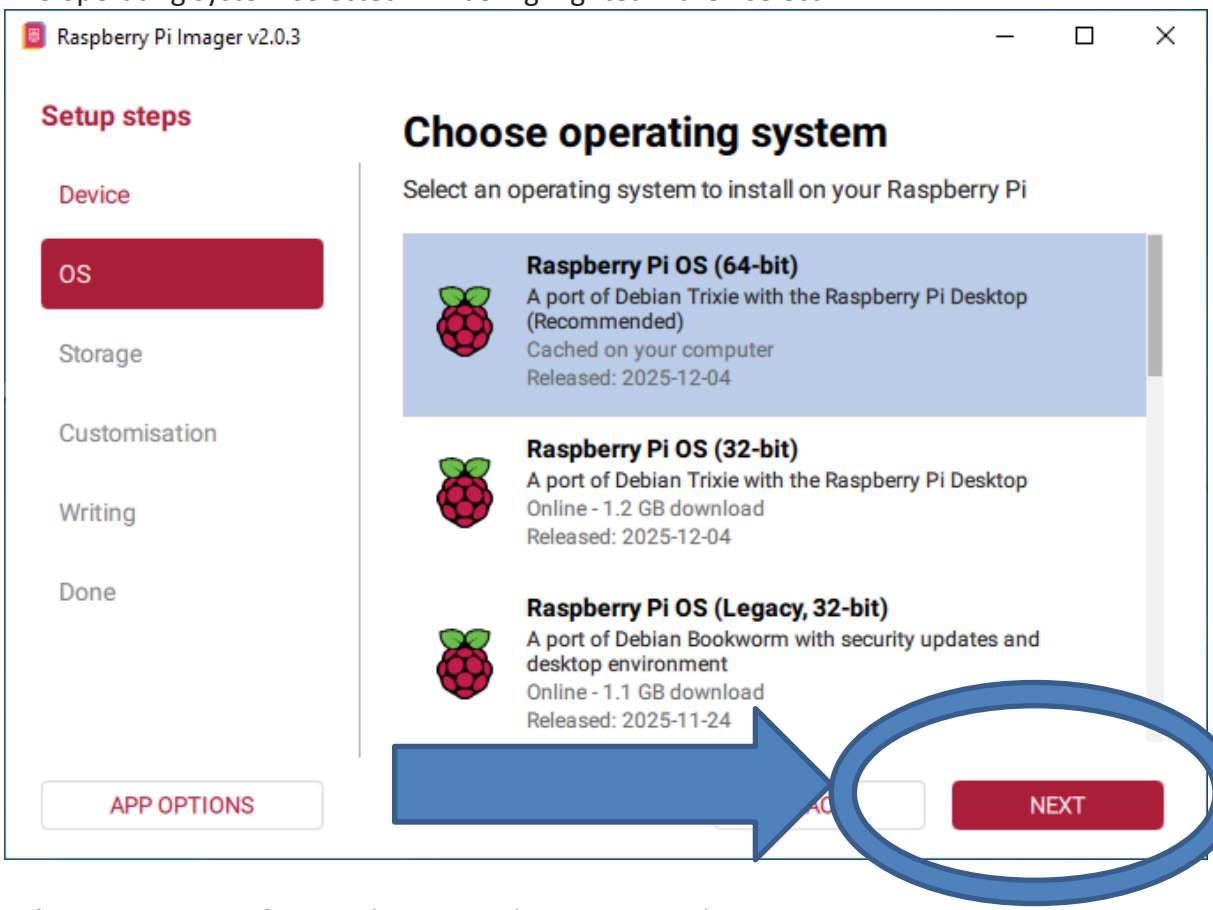
4. The device selected will be highlighter. Then select **NEXT**.



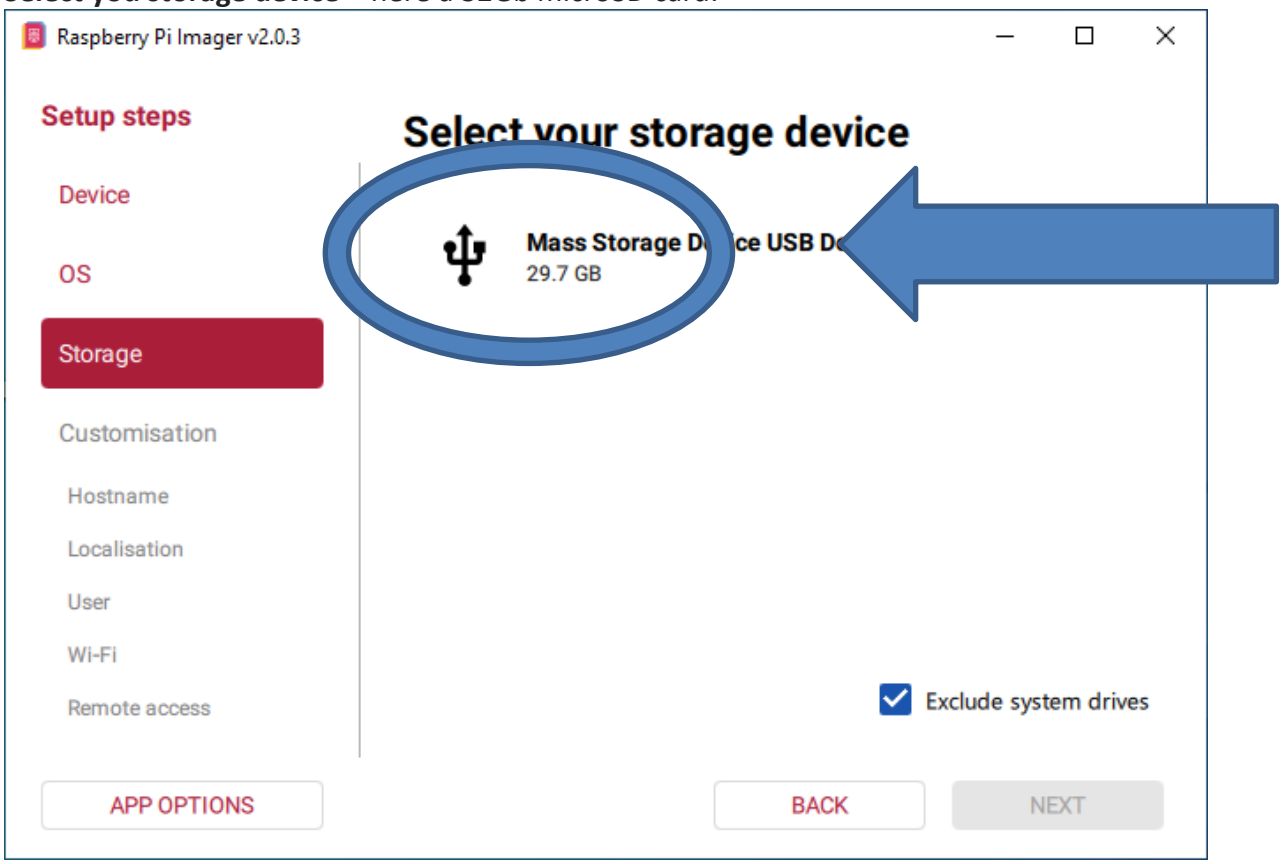
5. **Select the operating system** – here Raspberry Pi OS (64-bit).



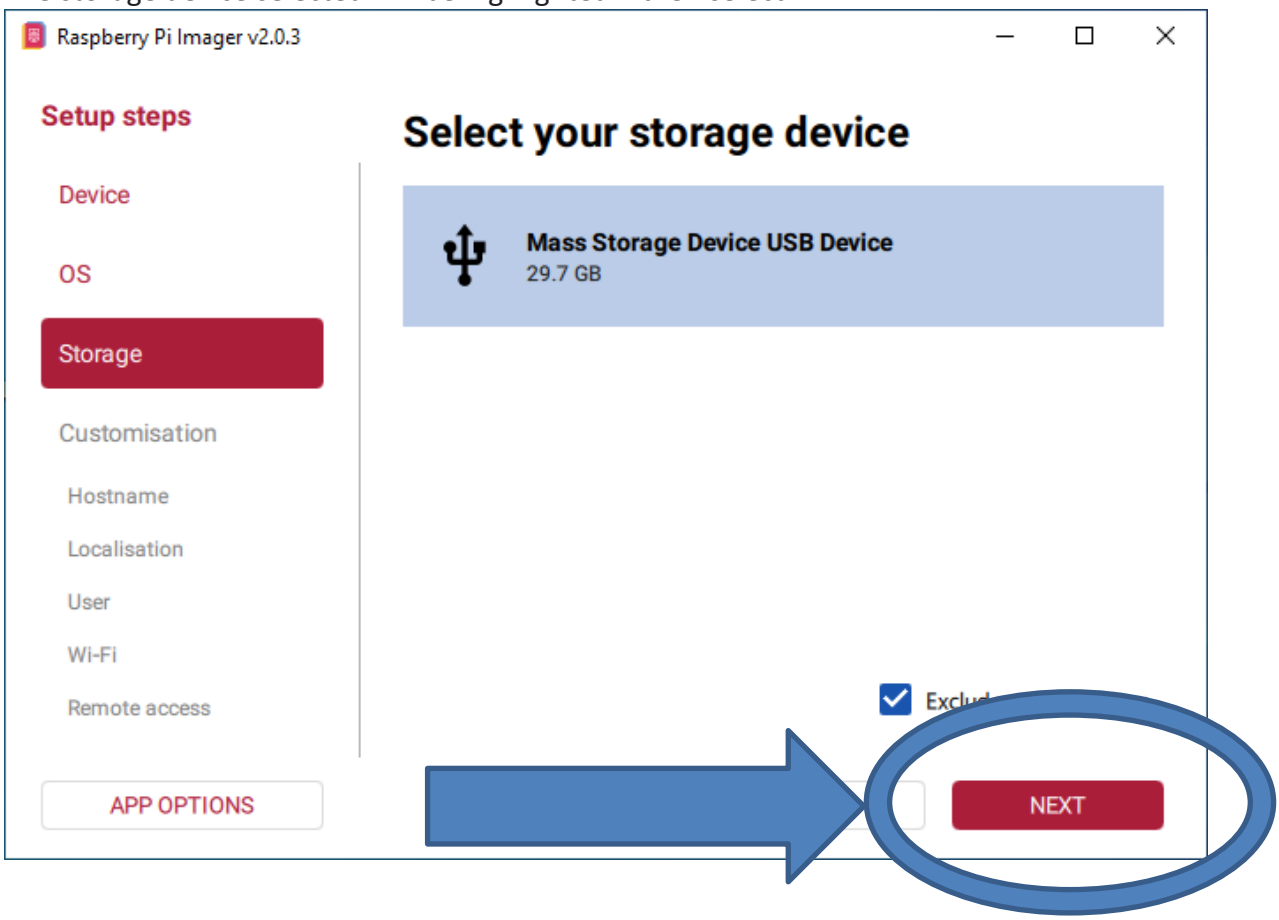
6. The operating system selected will be highlighted – then select **NEXT**.



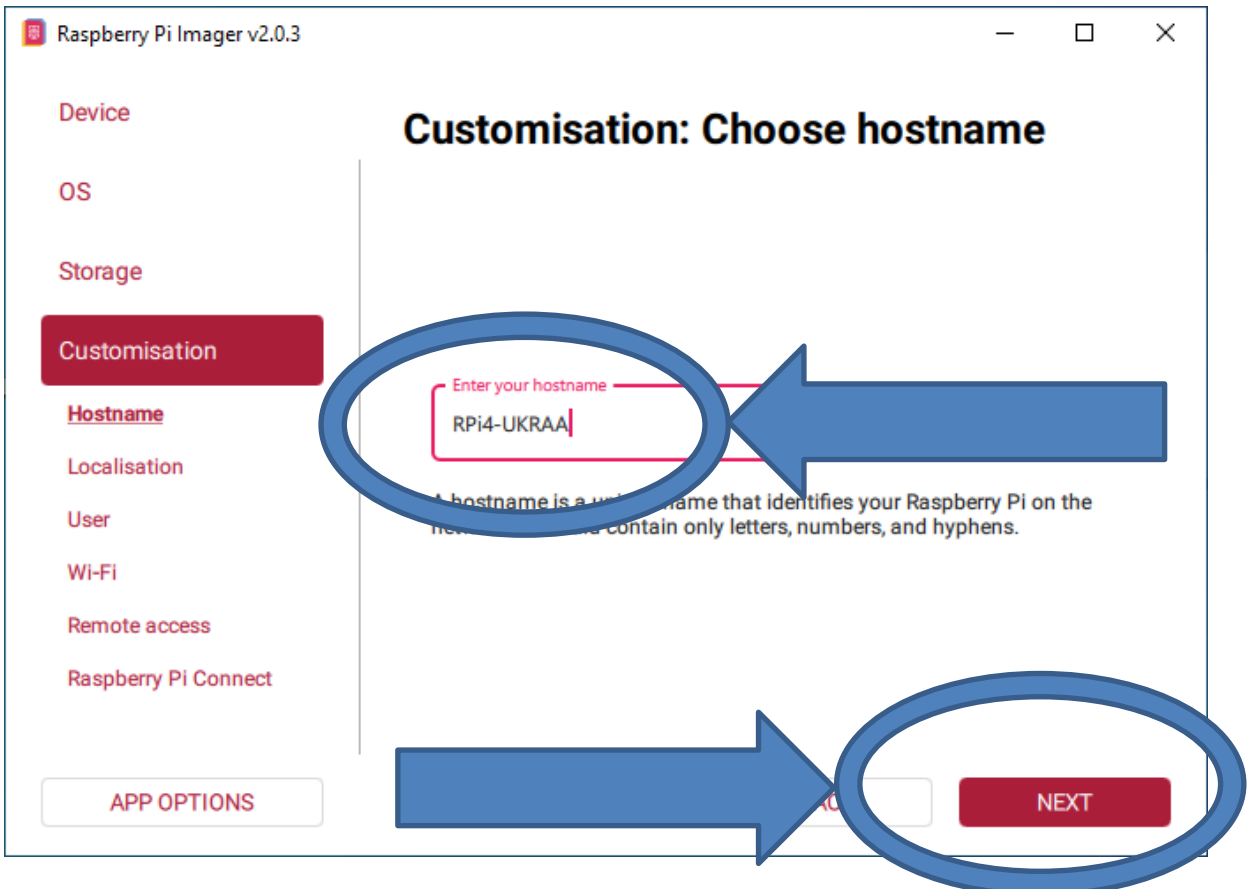
7. **Select you storage device** – here a 32Gb microSD card.



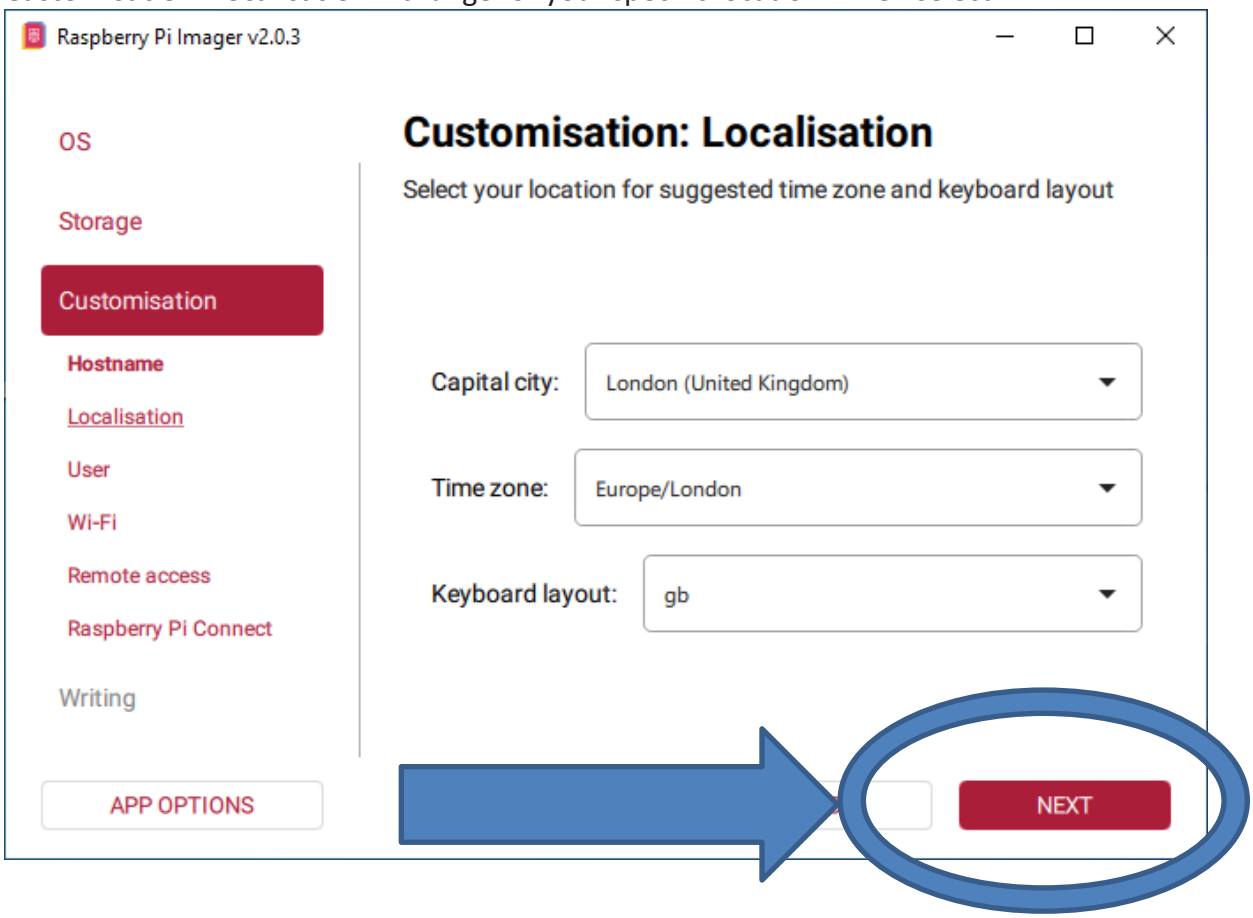
8. The storage device selected will be highlighted – then select **NEXT**.



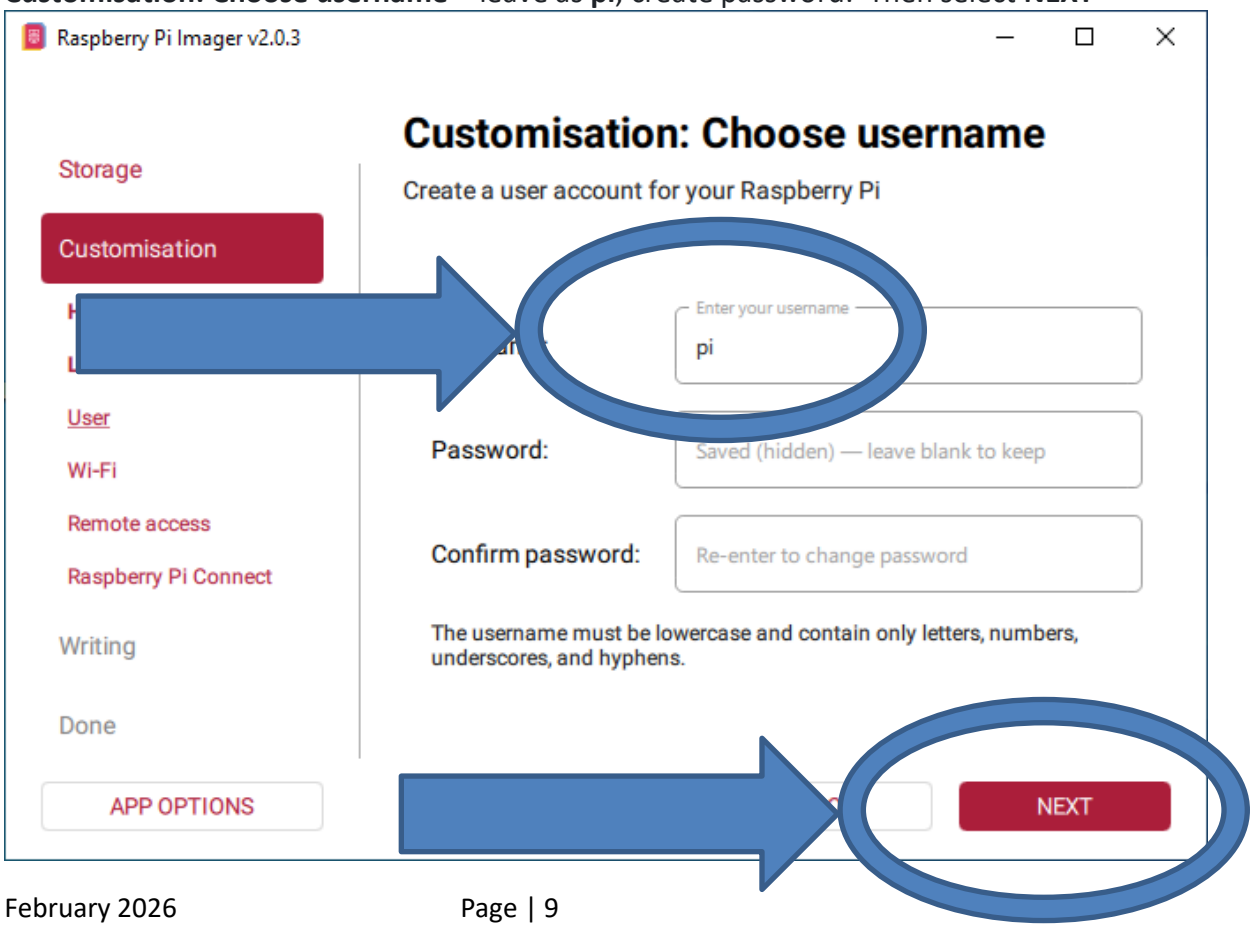
9. **Customisation: Choose hostname** – here *RPi4-UKRAA*. Then select **NEXT**



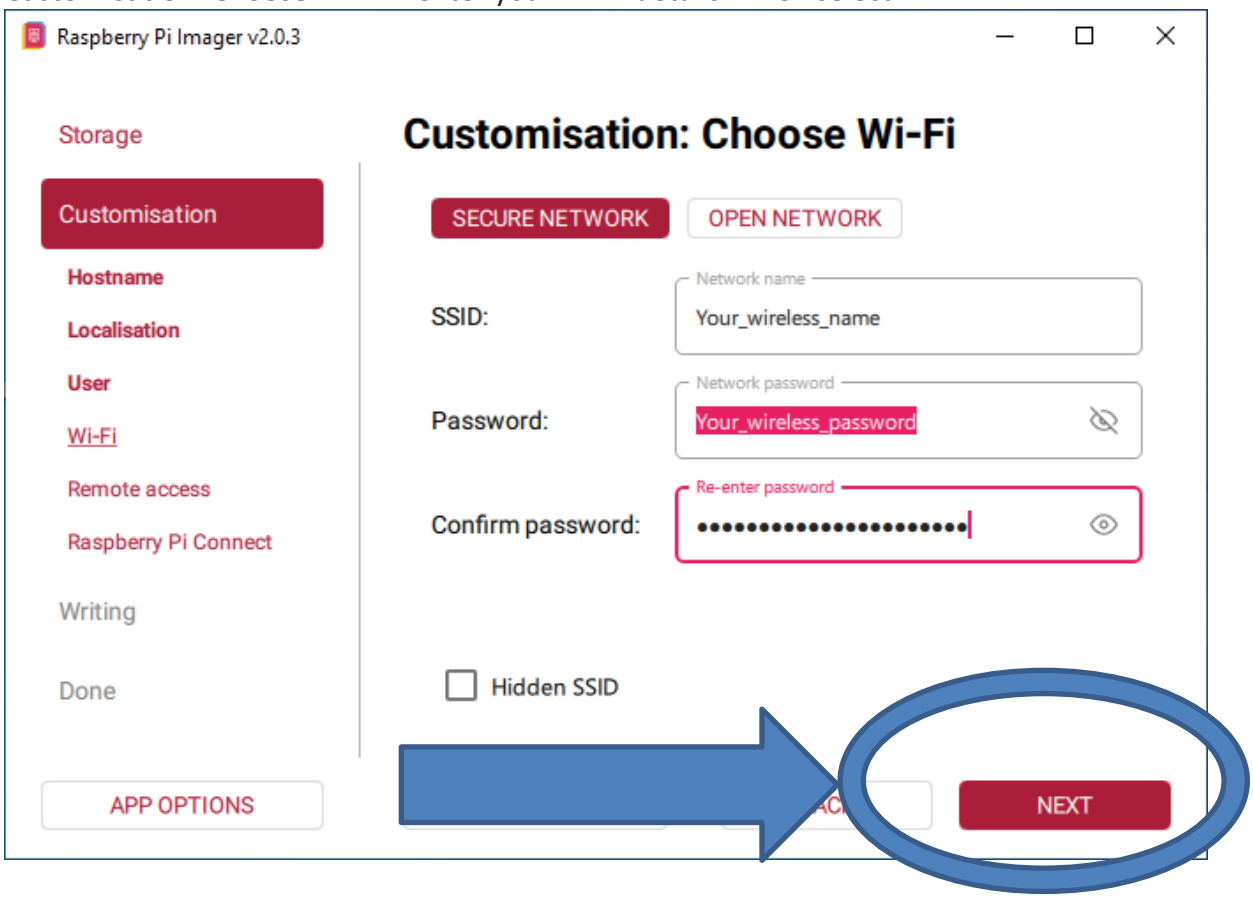
10. **Customisation: Localisation** – change for your specific location. Then select **NEXT**



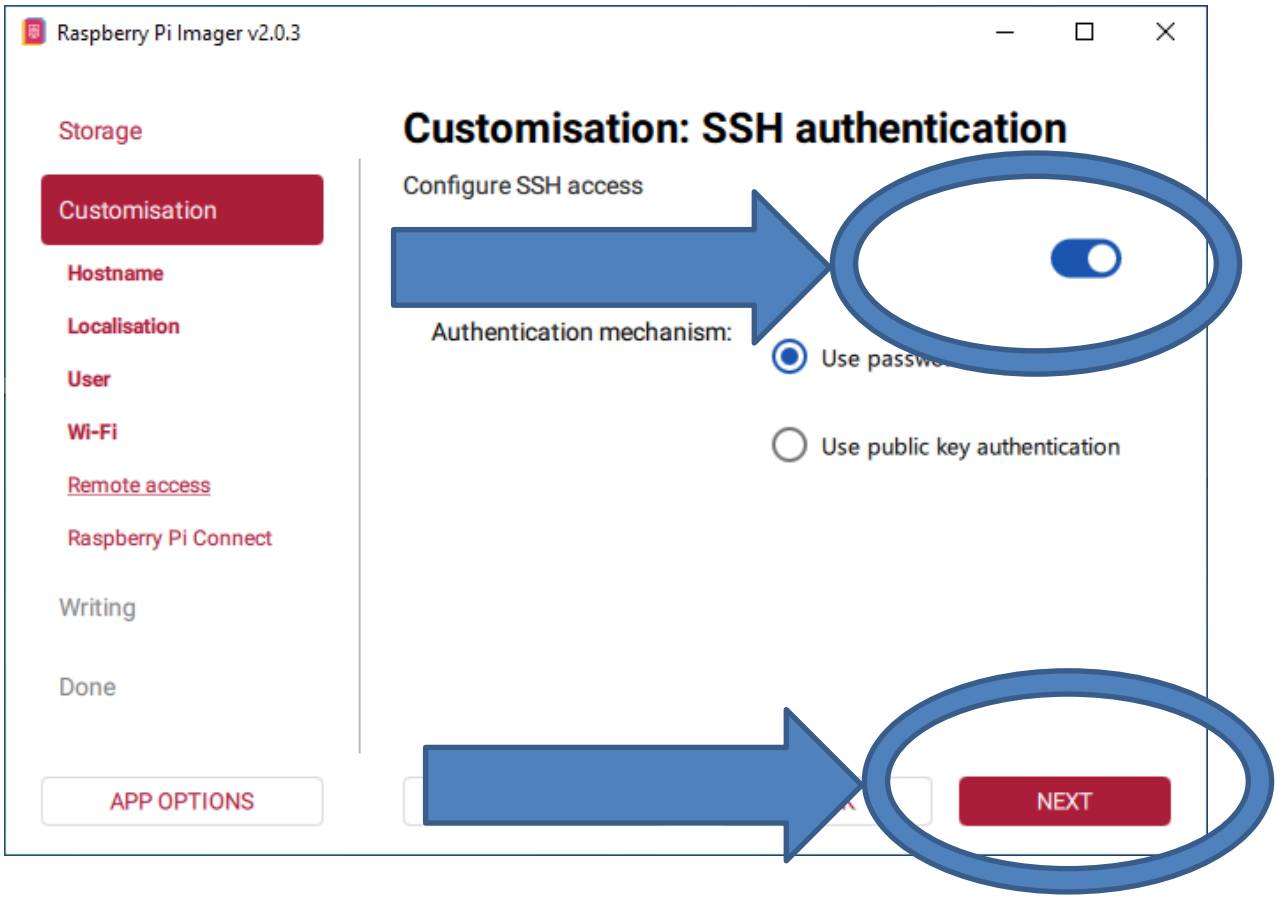
11. **Customisation: Choose username** – leave as **pi**, create password. Then select **NEXT**



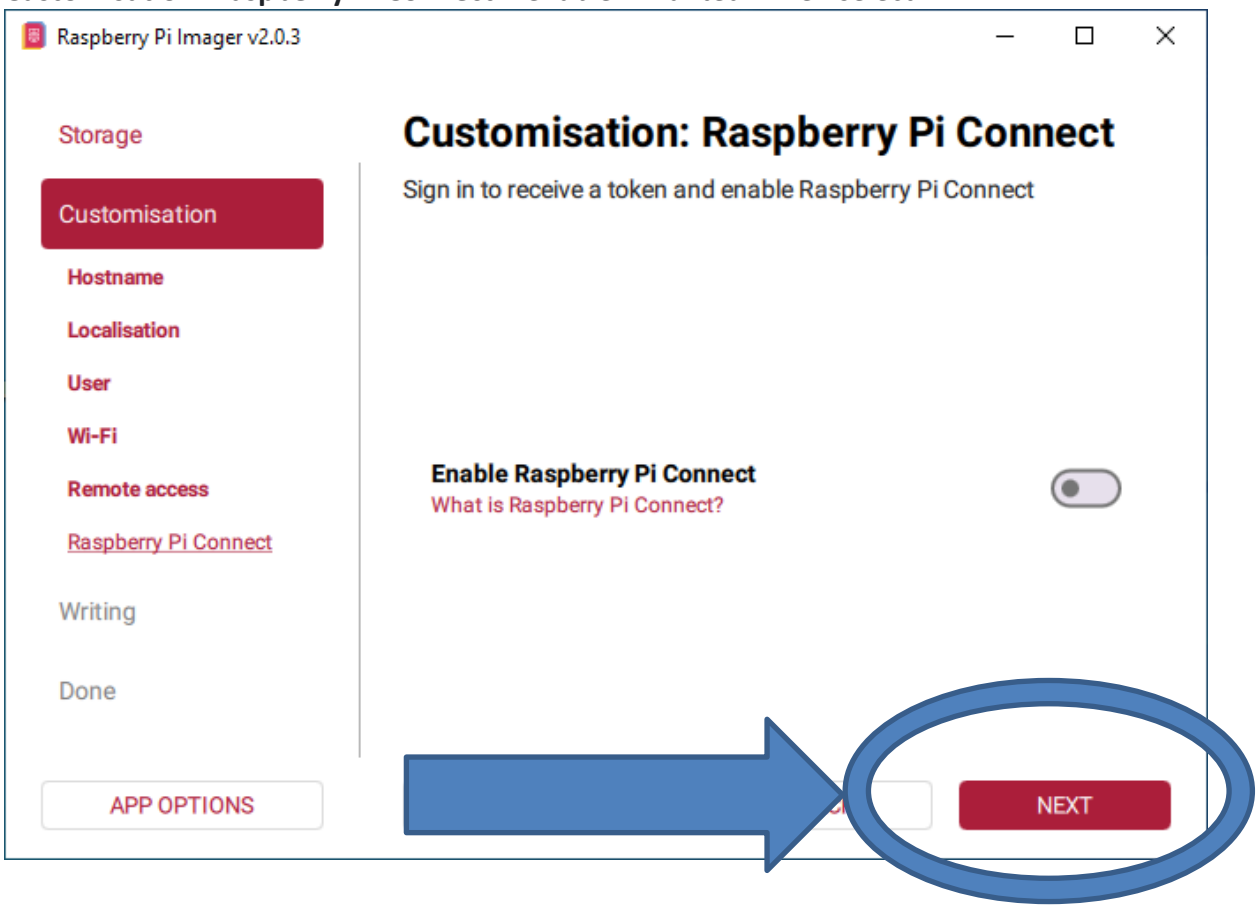
12. **Customisation: Choose Wi-Fi** – enter your Wi-Fi details. Then select **NEXT.**



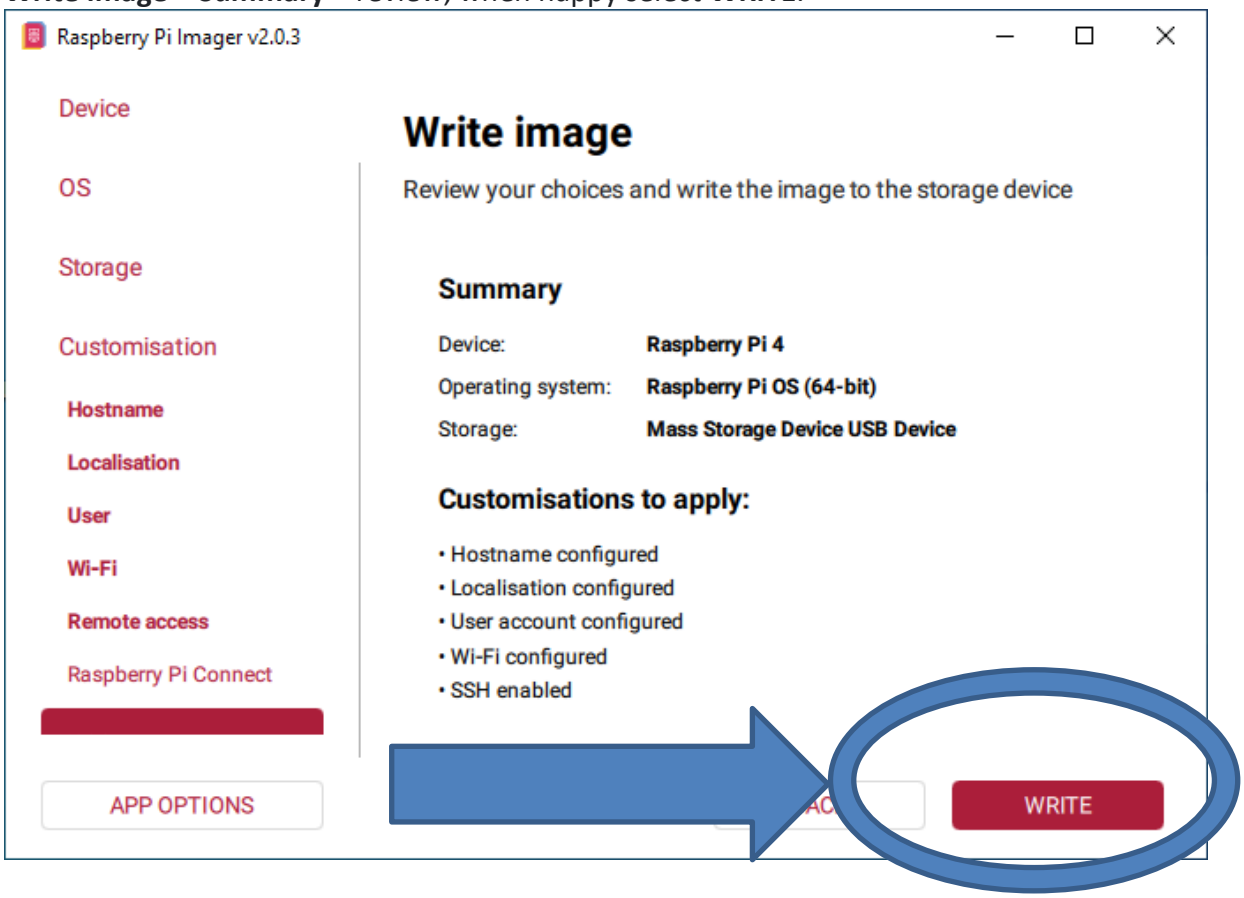
13. **Customisation: SSH authentication** – enable SSH. Then select **NEXT.**



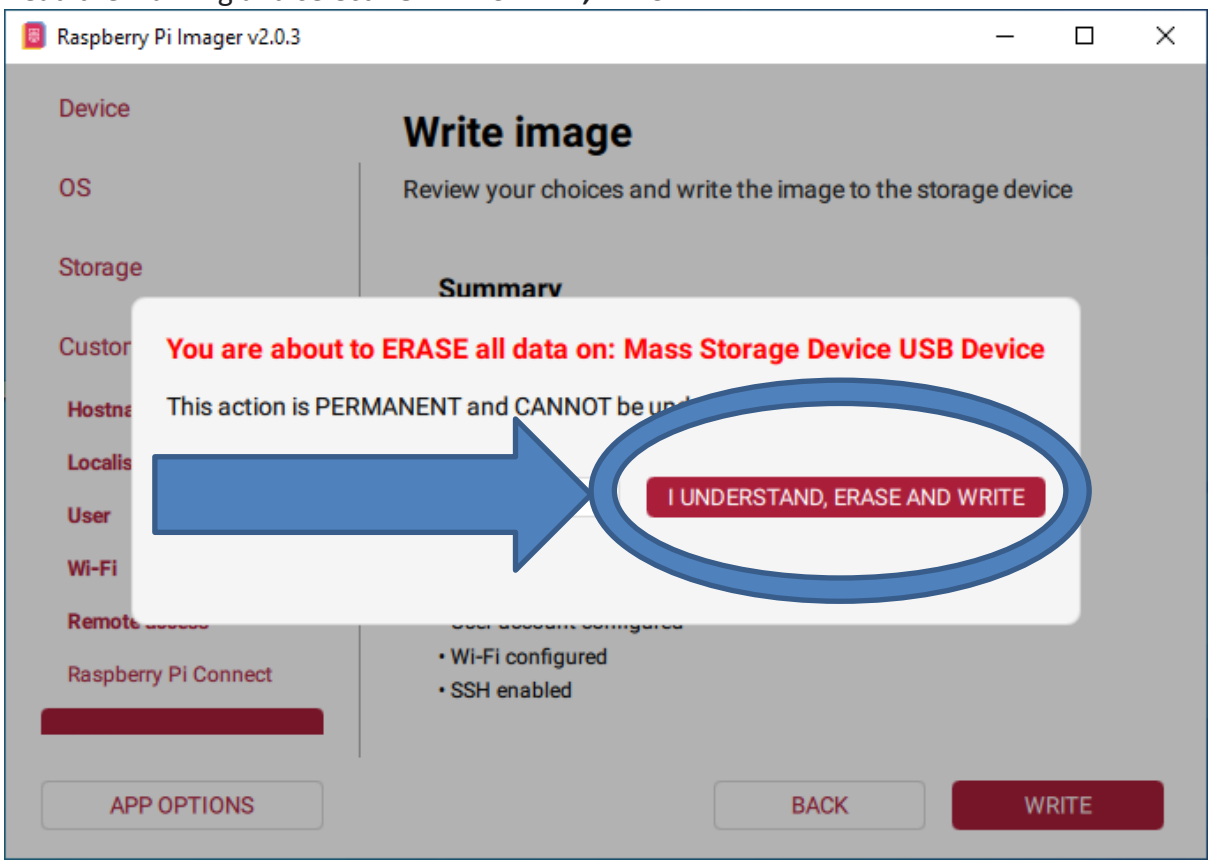
14. **Customisation: Raspberry Pi Connect** – enable if wanted. Then select **NEXT.**



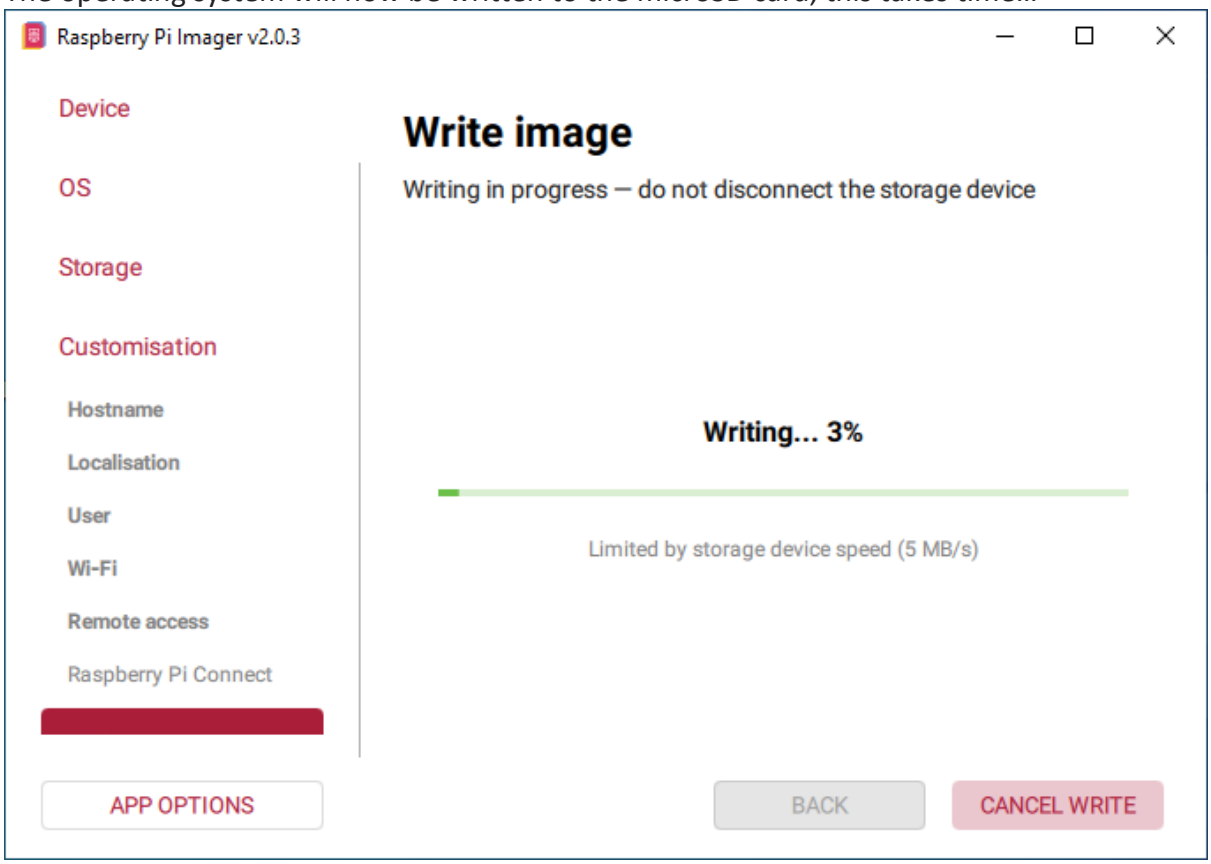
15. **Write image – Summary** – review, when happy select **WRITE**.



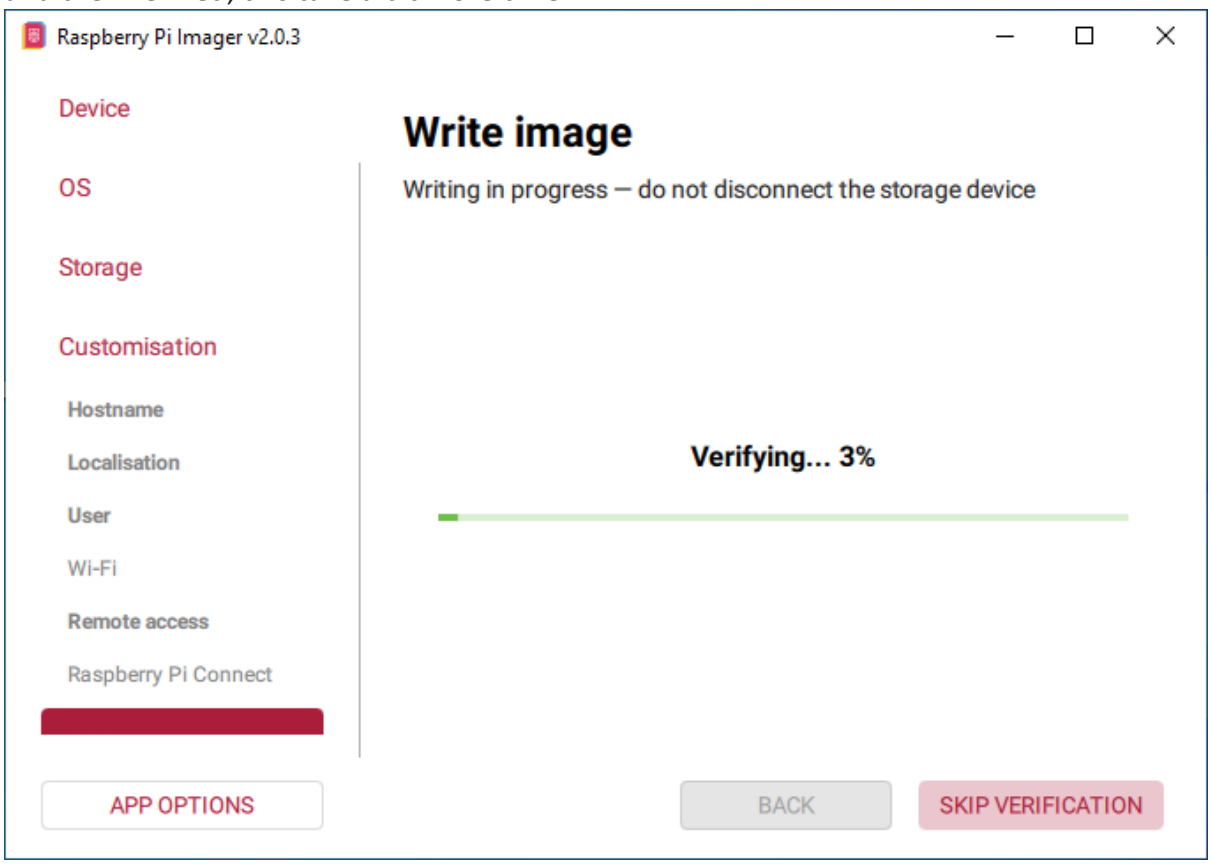
16. Read the warning and select **I UNDERSTAND, ERASE AND WRITE**.



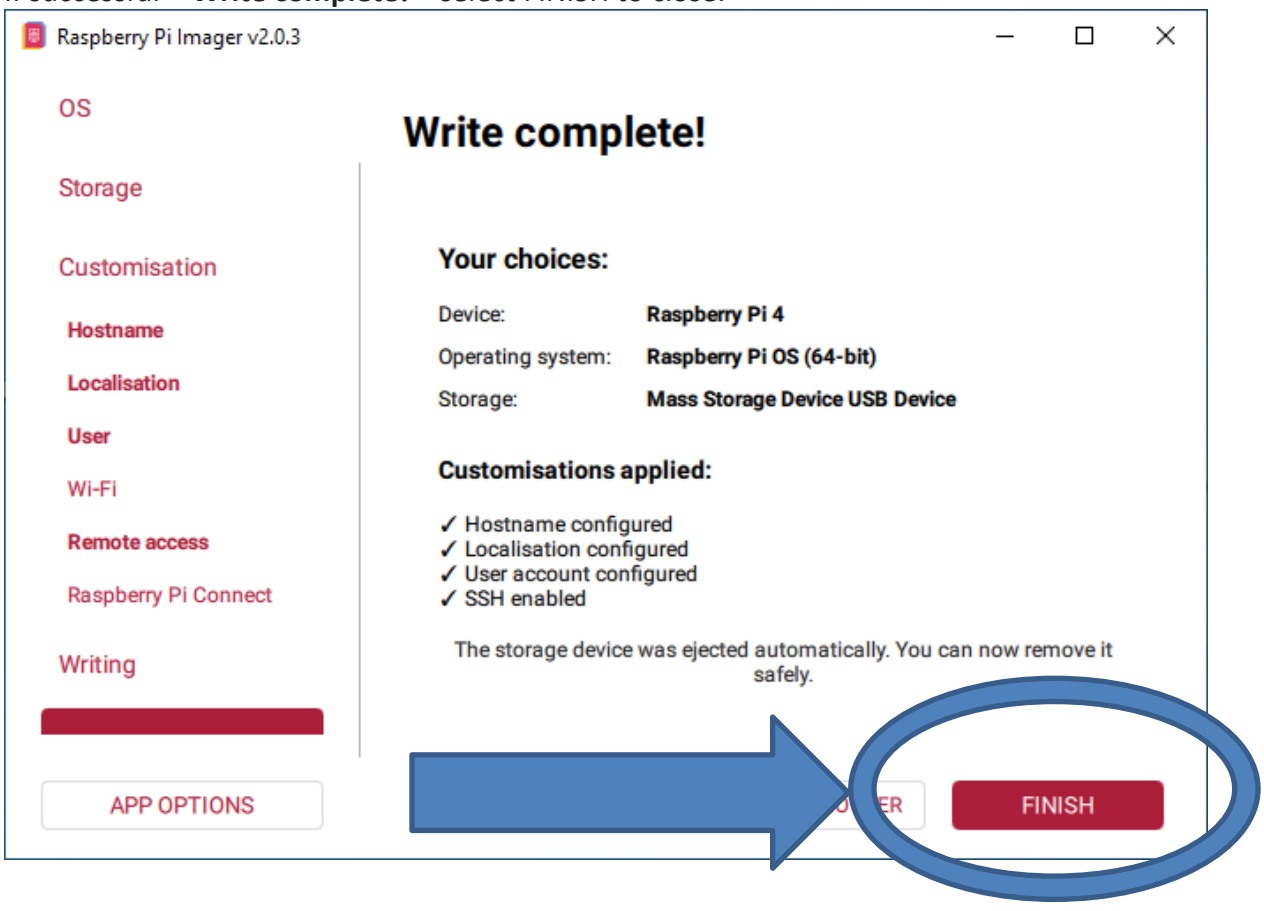
17. The operating system will now be written to the microSD card, this takes time…



18. and then verified, this take a bit more time...



19. If successful – **Write complete!** – select FINISH to close.



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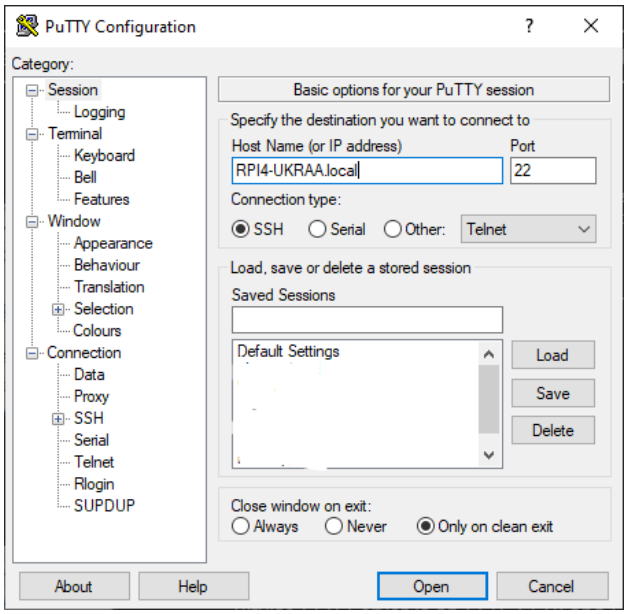
RPi4 first boot and initial configuration

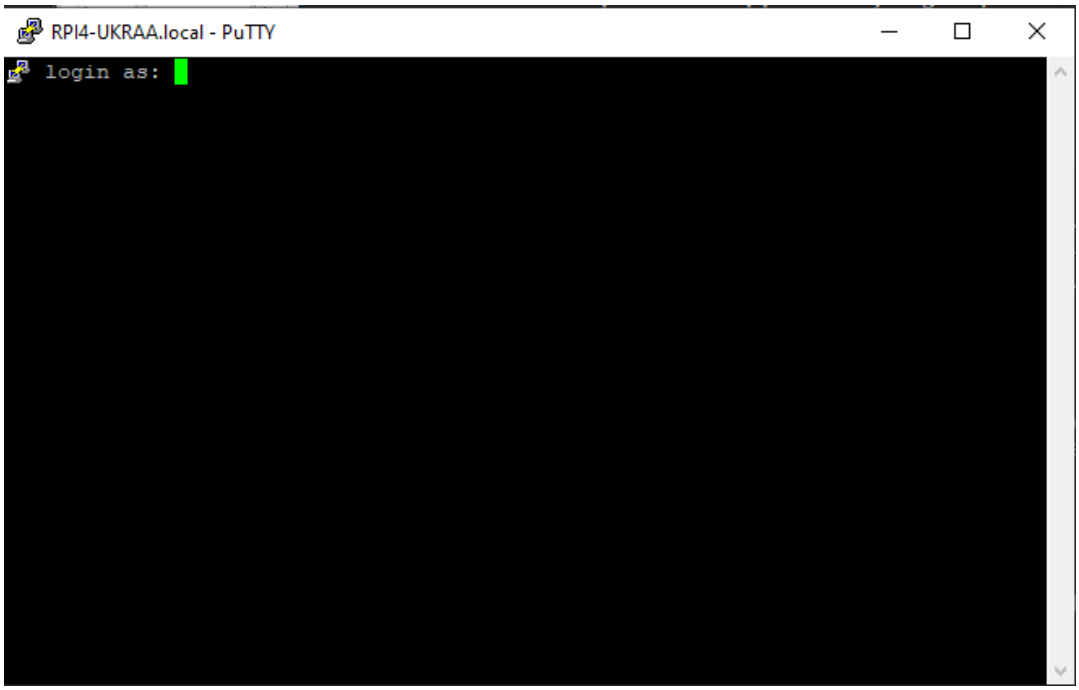
Put the microSD card you have just created into your RPi4, connect the RPi to your LAN if necessary, insert the power cable and turn on.

Using PuTTY (https://www.putty.org/)

1. In **Host Name (or IP address)**, type the host name of your RPi that you wrote down earlier... and select **Open**



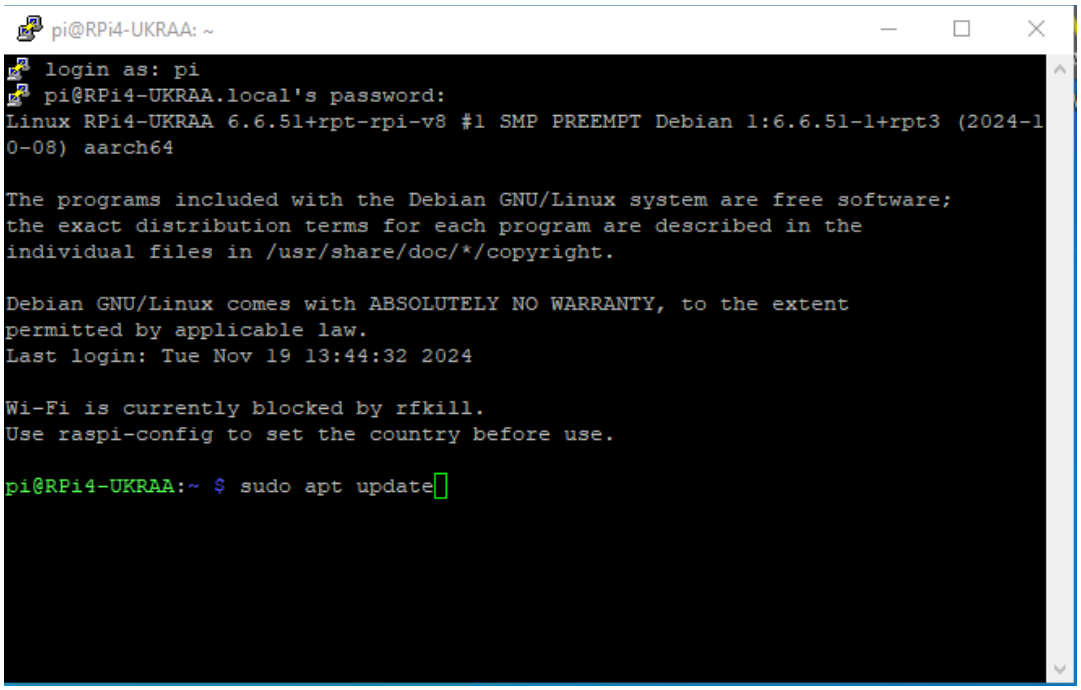
2. You will be presented with a PuTTY Security Alert - select **Accept**. You will now have a PuTTY terminal window.



3. Login as **pi** and enter your **password**

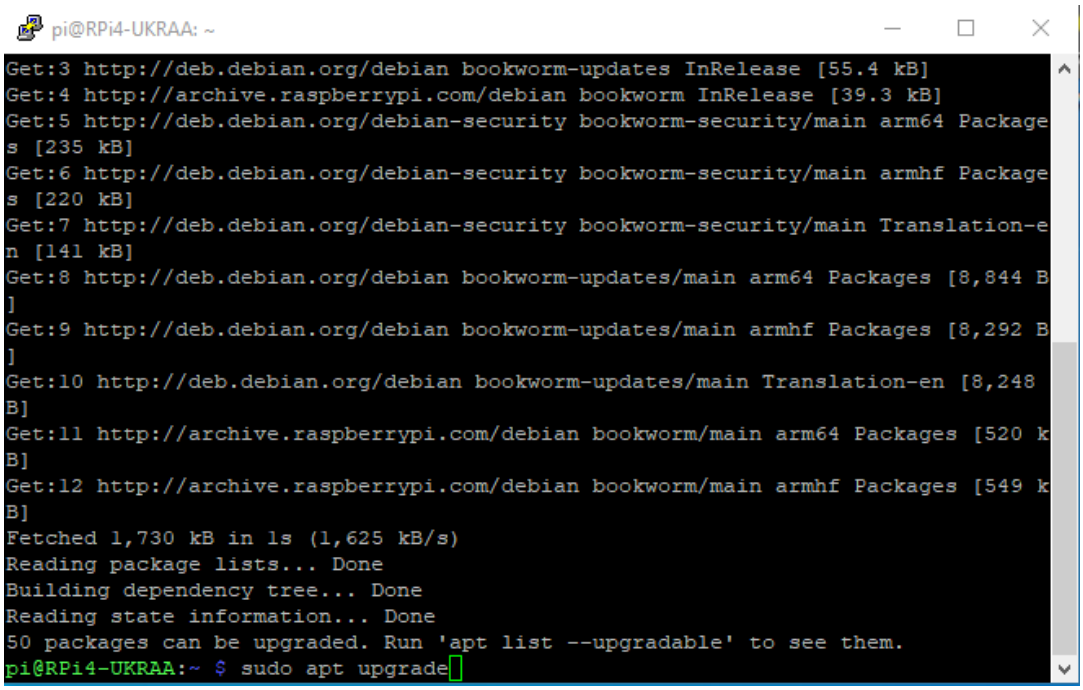
4. Now type the command below and press **enter**. This will update the RPi OS

sudo apt update



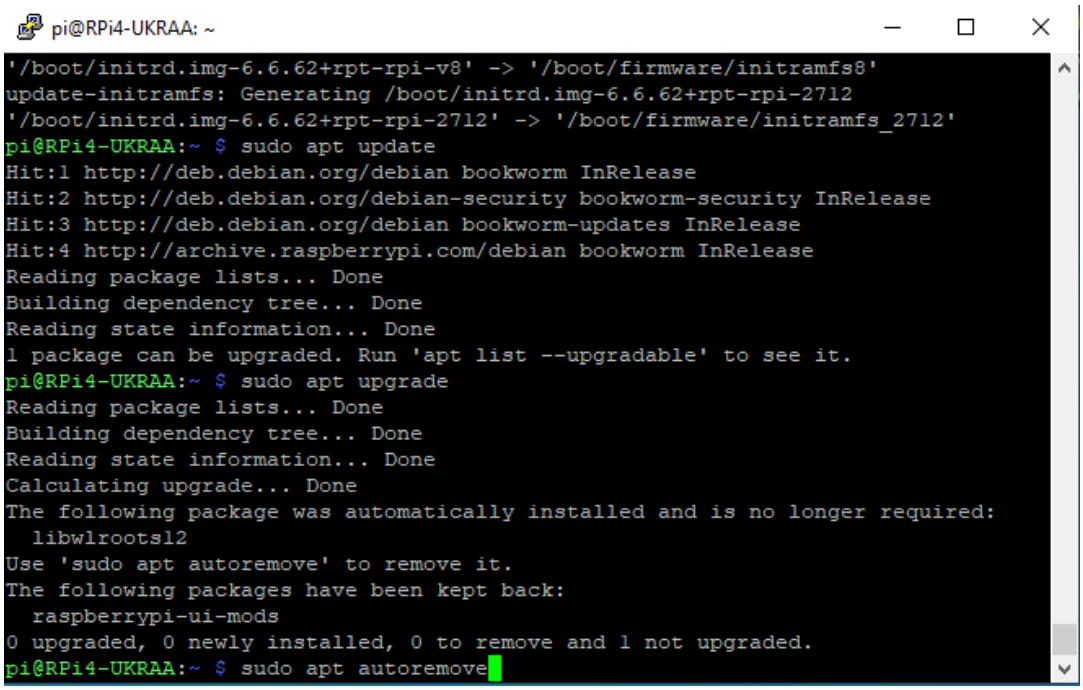
5. Now type the command below and press **enter**. This will update any preinstalled software packages. You will be asked to type **y** and press **enter** to proceed.

sudo apt upgrade



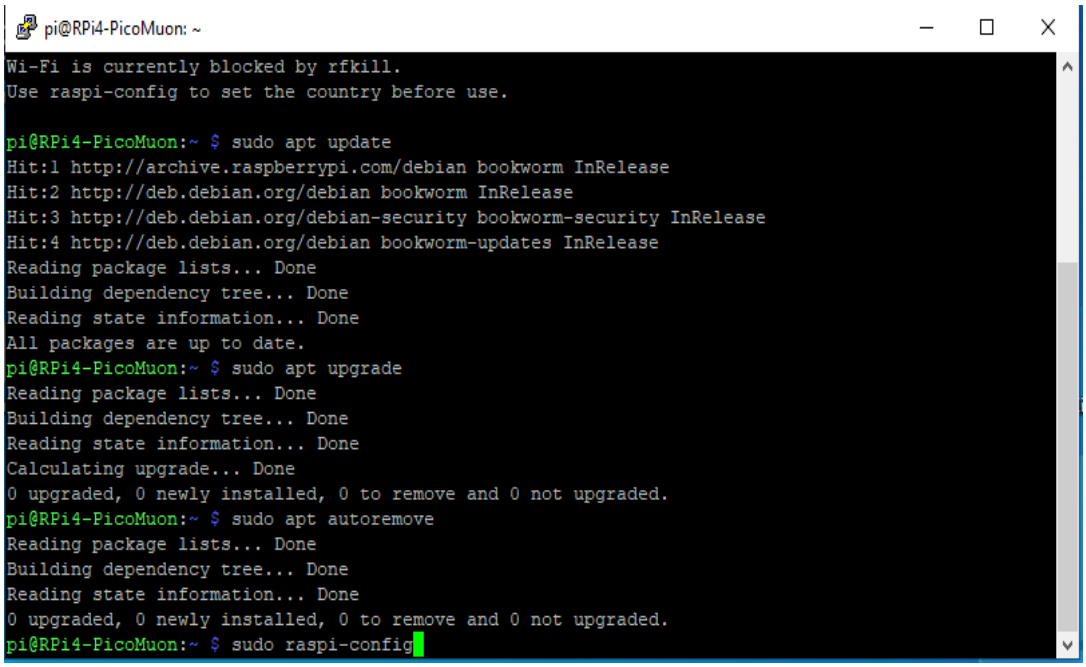
6. You may be advised that you can remove **no longer required** packages. You can type the command below and press **enter**. Again, you will be asked to type **y** and press **enter** to proceed.

sudo apt autoremove

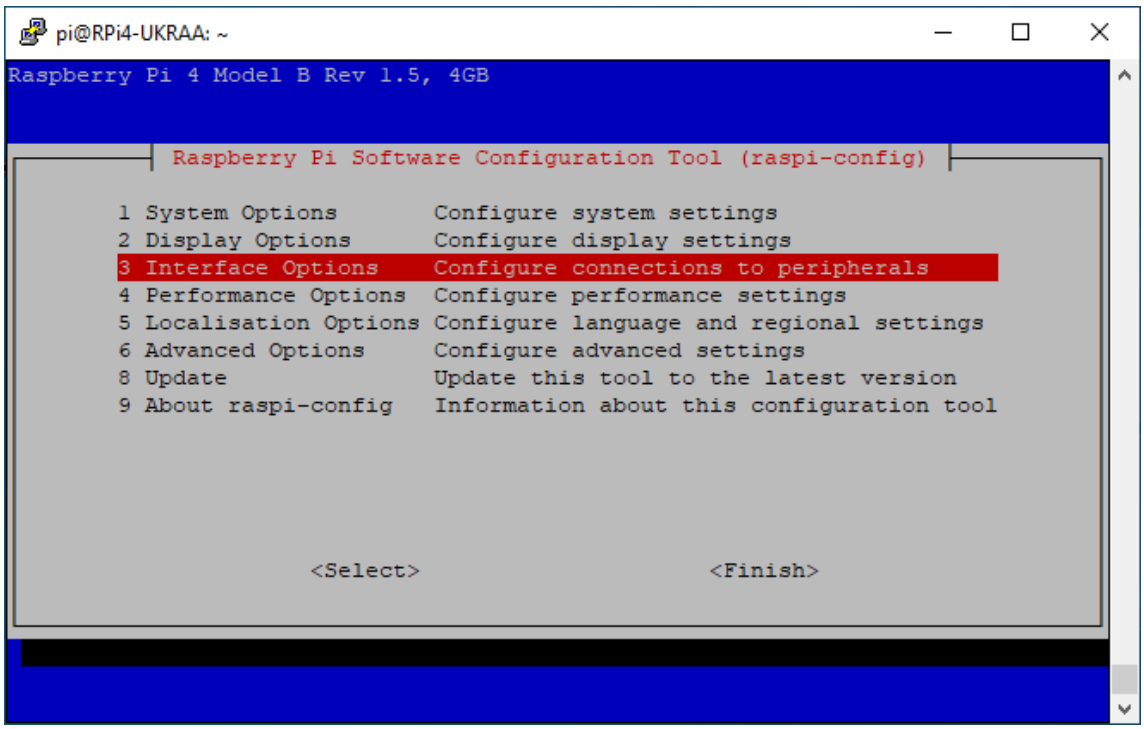


7. We can now set up VNC to access the RPi from our desktop PC. Type the command below and press **enter**. We will be presented with the RPi configuration tool.

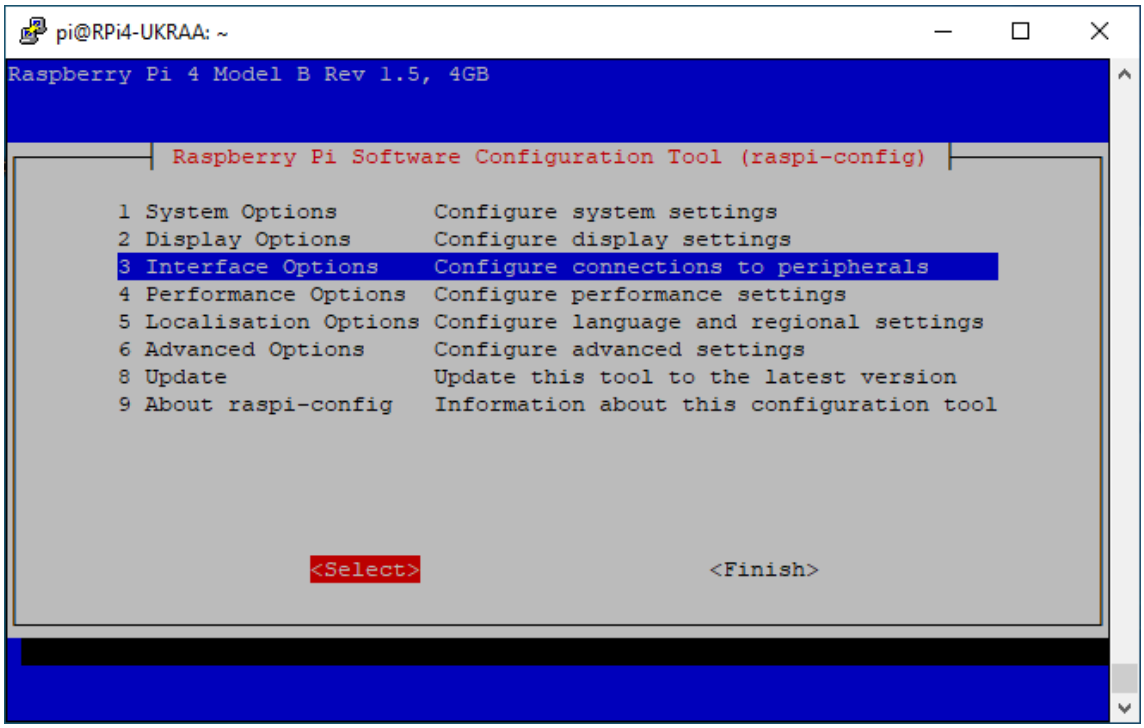
sudo raspi-config



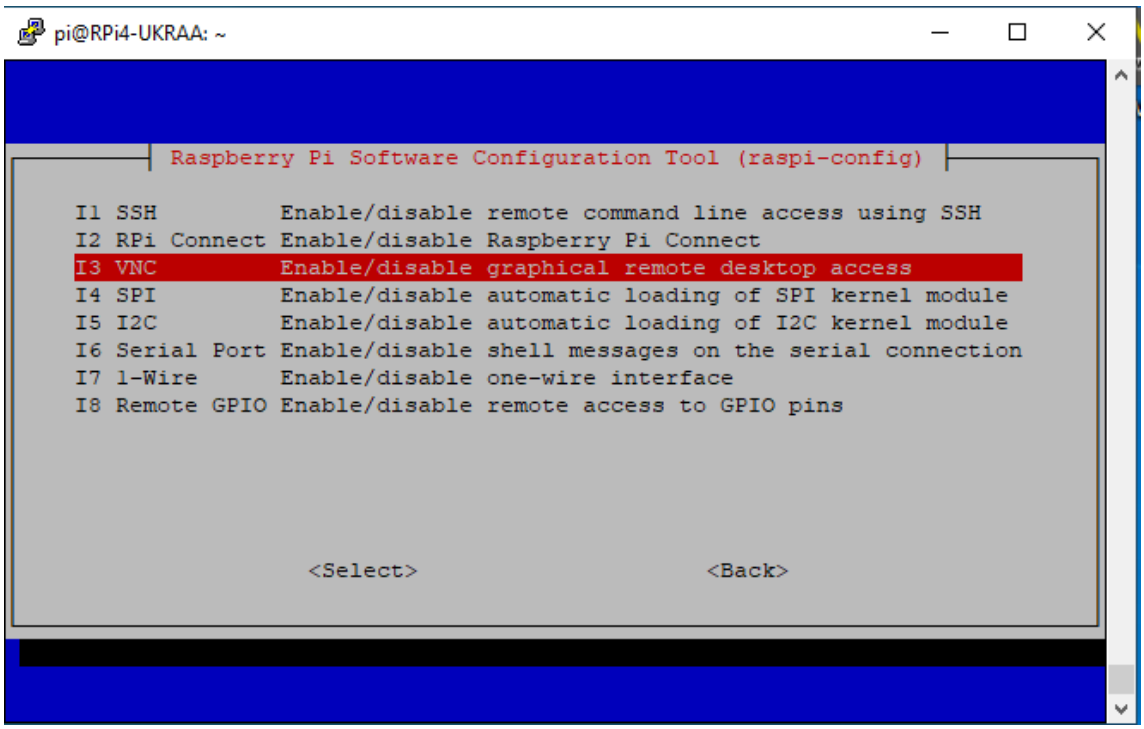
8. Select **3 Interface Options**



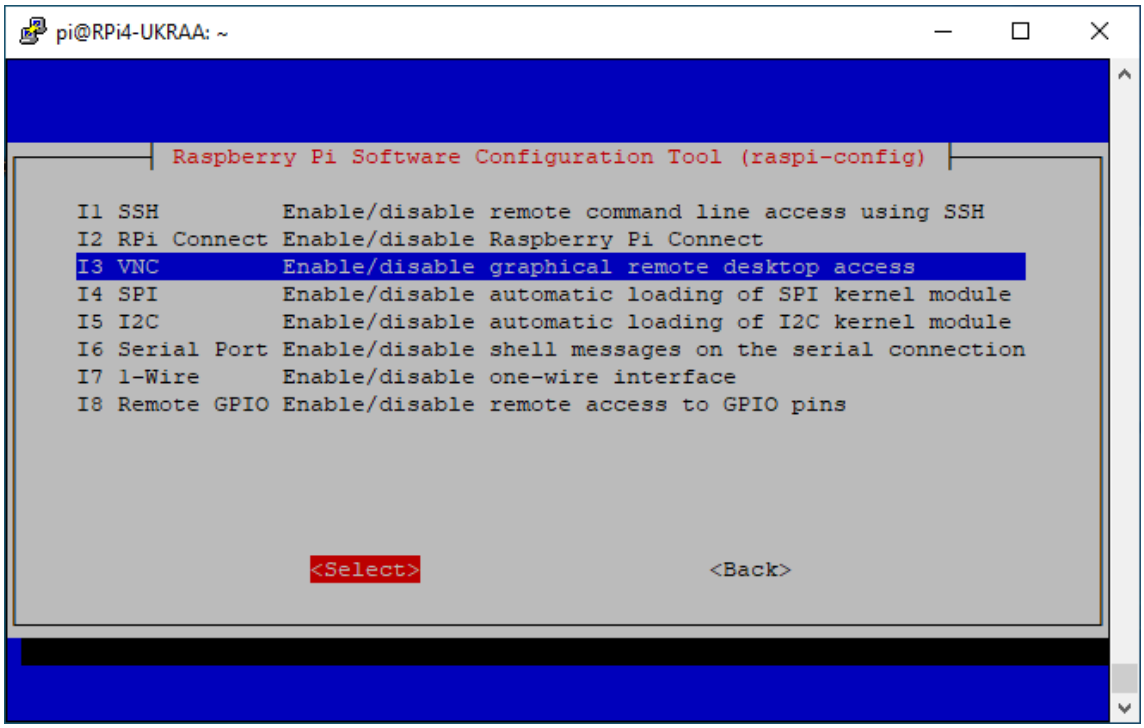
9. Navigate to **Select** and press **enter**.



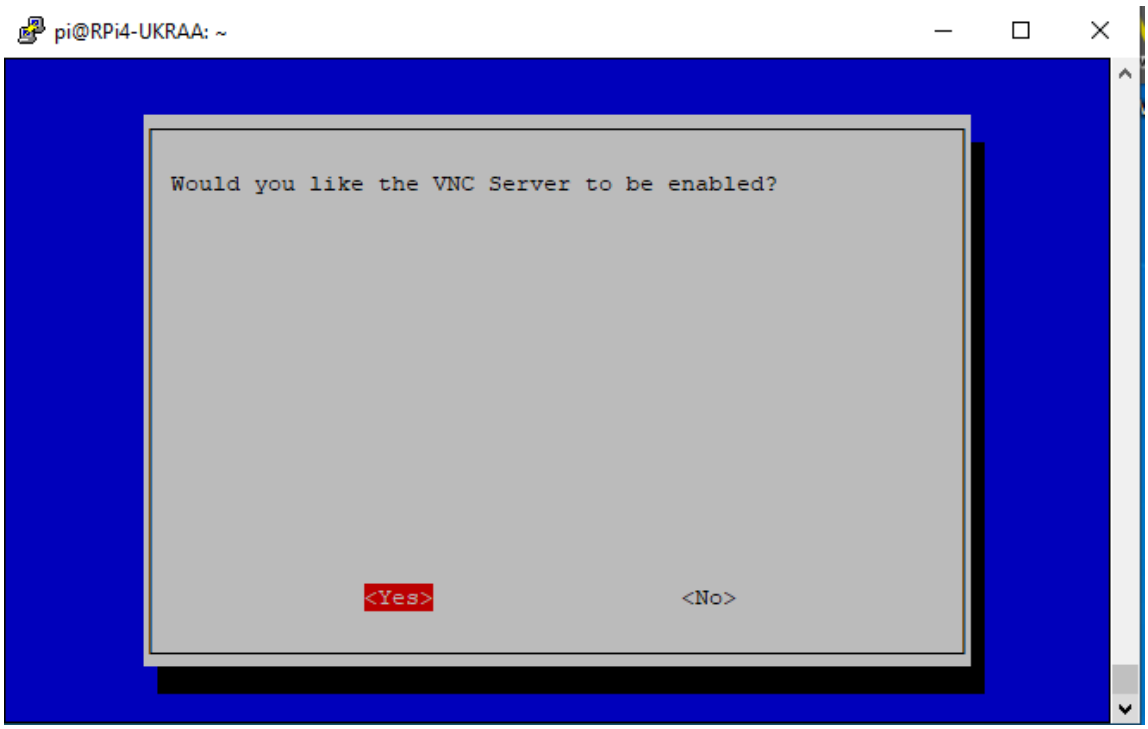
10. Now navigate down to **I3 VNC** and selecting **Select** and press **enter**.



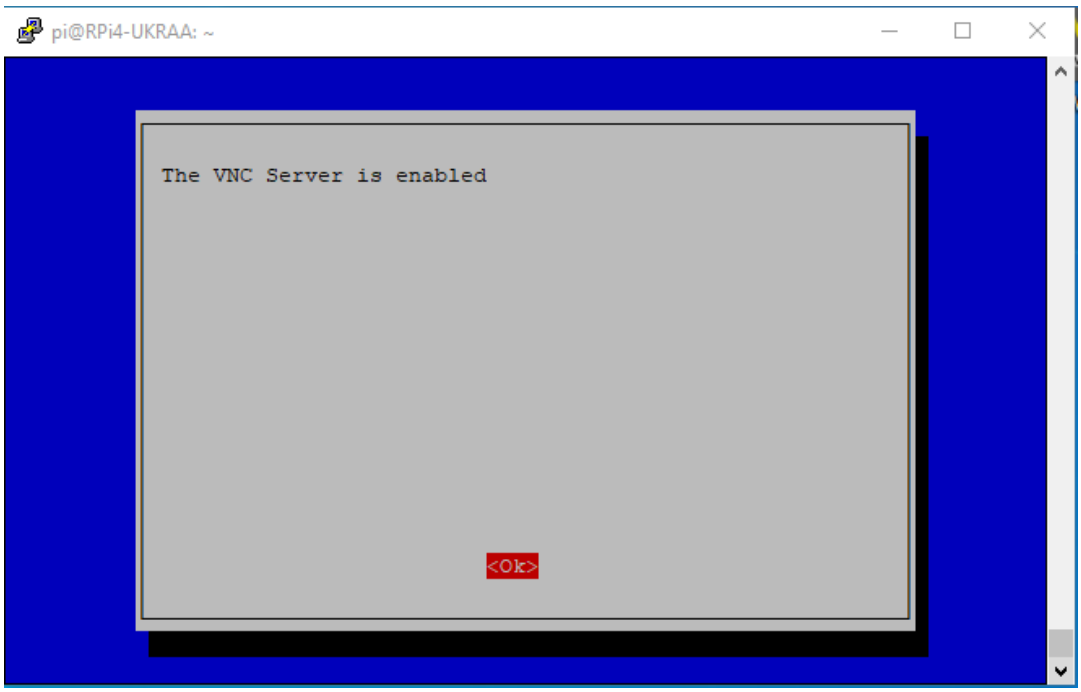
11. Navigate to **Select** and press **enter**.



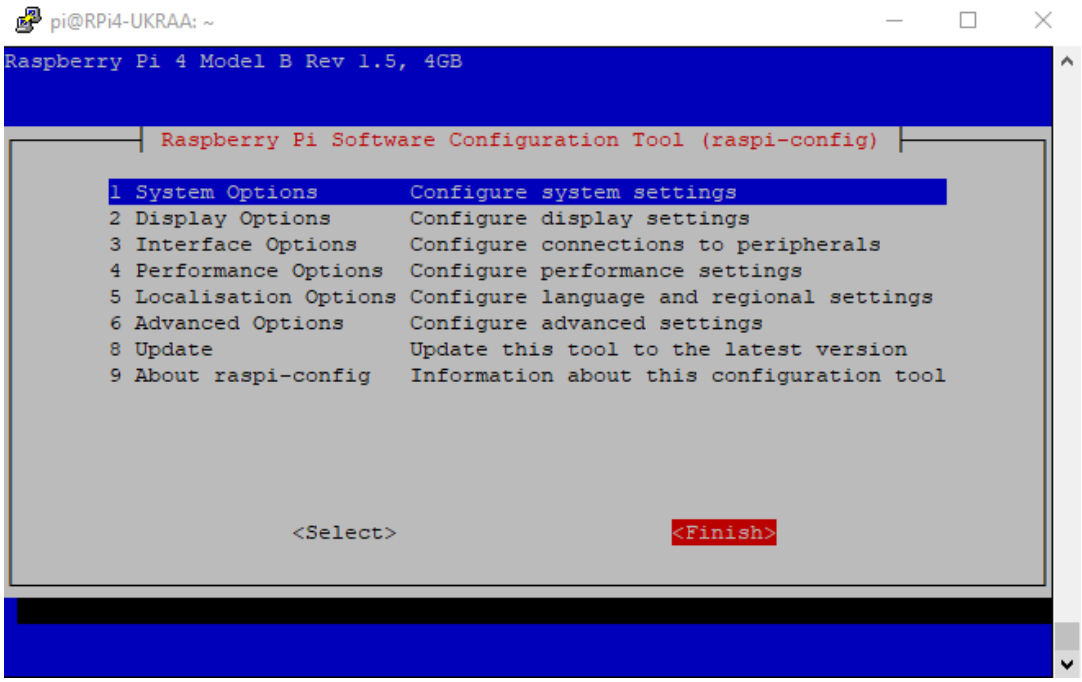
10. Select **Yes** and press **enter** to enable the VNC Server.



11. VNC server will now be enabled, press **enter**.

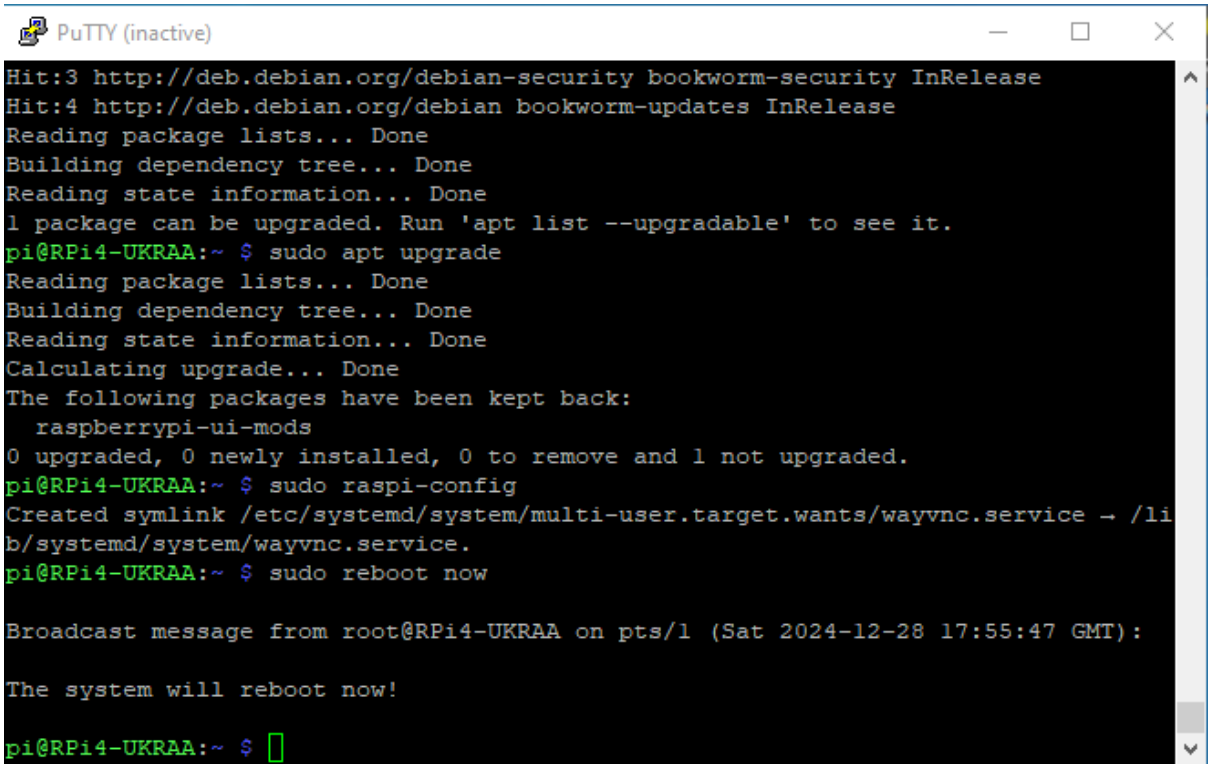


12. Finish with the Configuration Tool by selecting **Finish** and press **enter**.



13. Reboot the RPi, type the command below and press **enter**. This will close the PuTTY connection. You can close the Putty window.

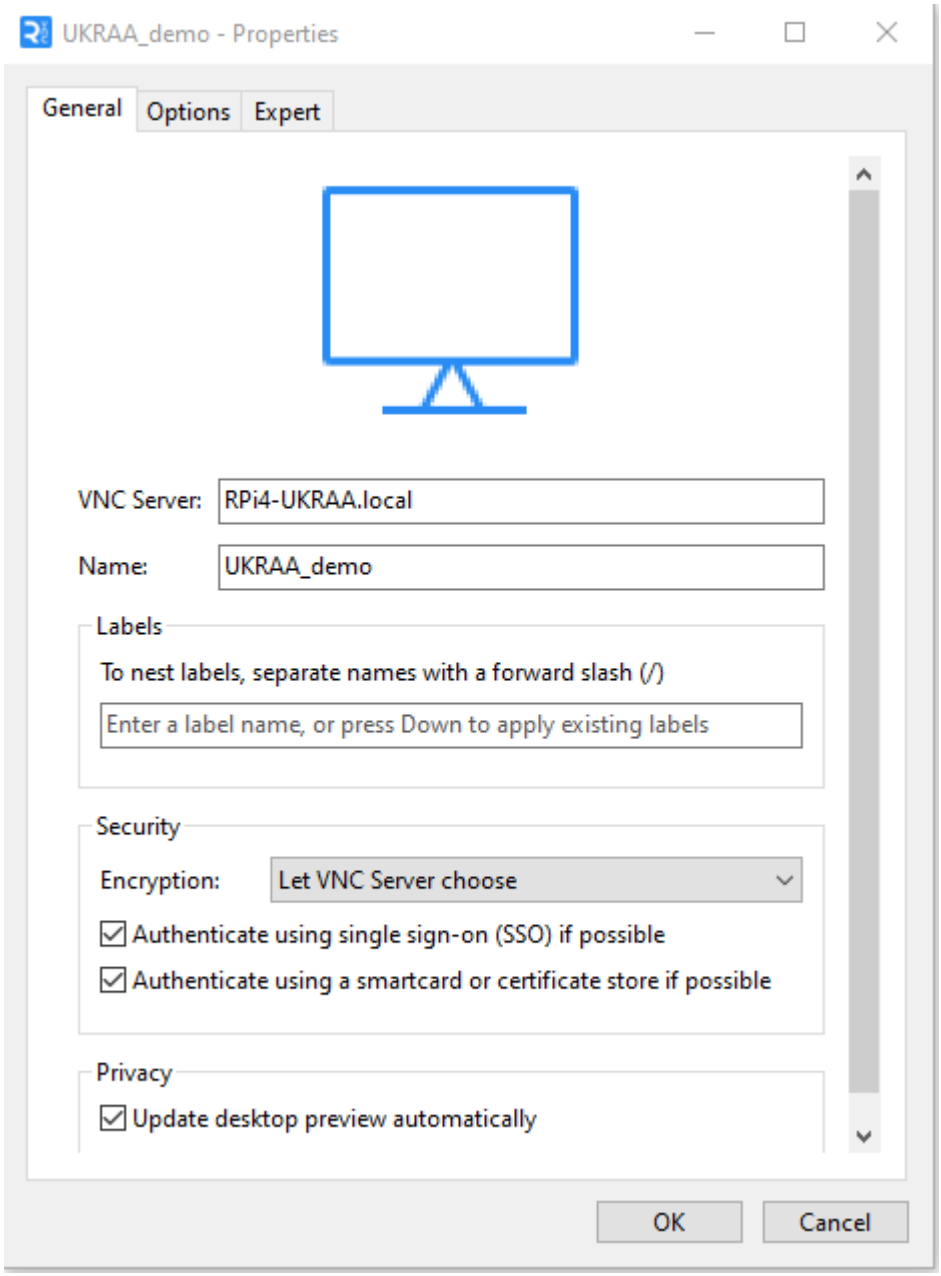
sudo reboot



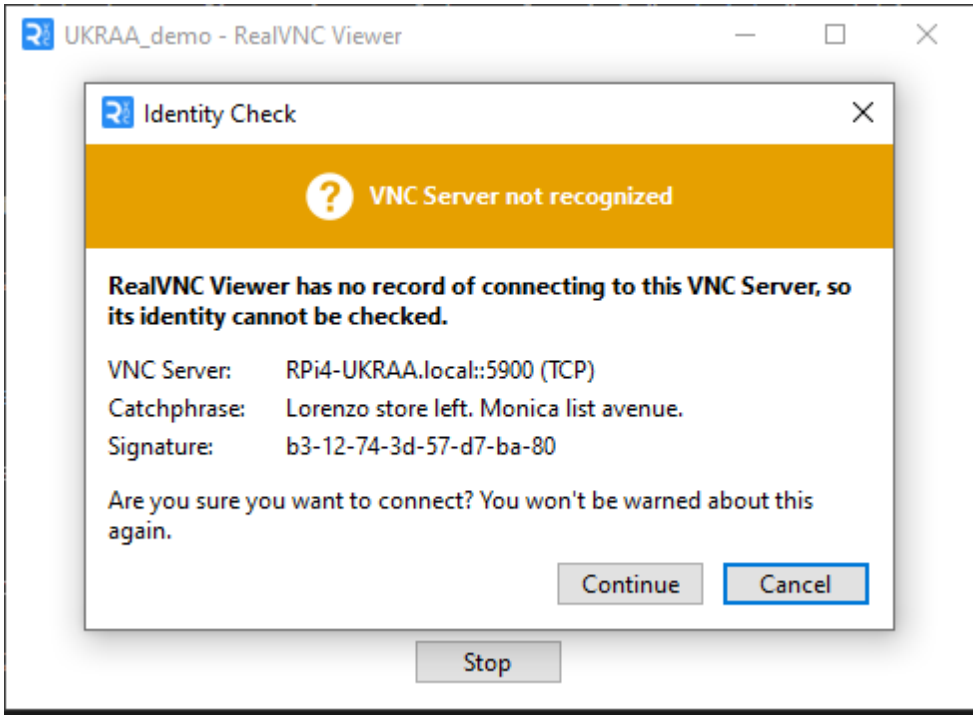
Headless access to RPi via VNC

Using a VNC program like RealVNC (https://www.realvnc.com/en/), connect to your RPi using your desktop PC...

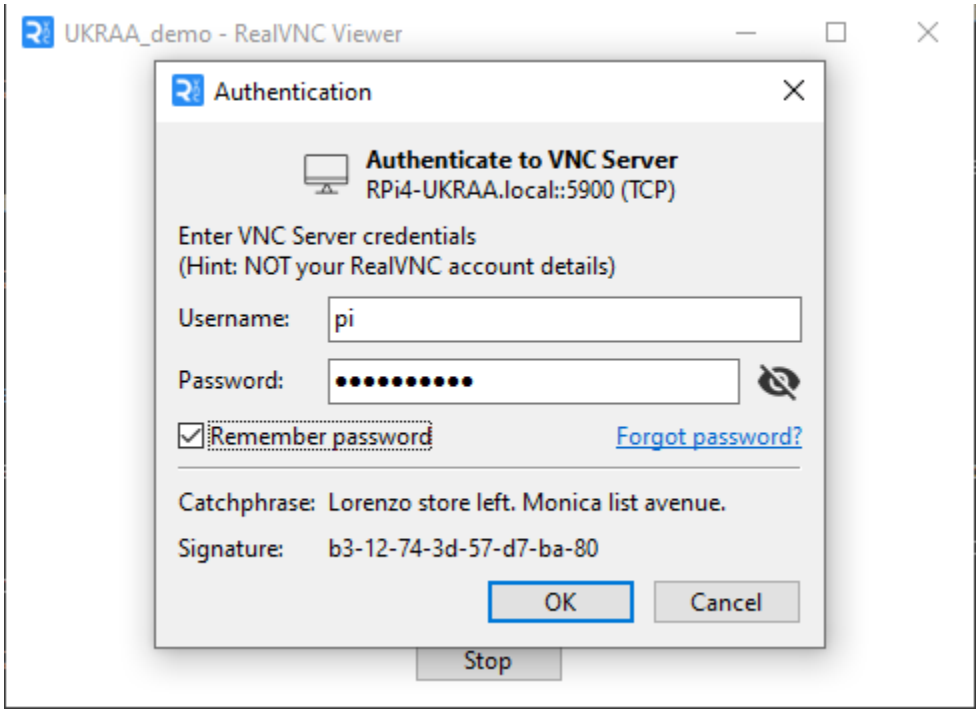
1. Create a **New connections** (CTRL-N) and enter the hostname into the **VNC Server:** box, add friendly name in the **Name** box and select **OK**.



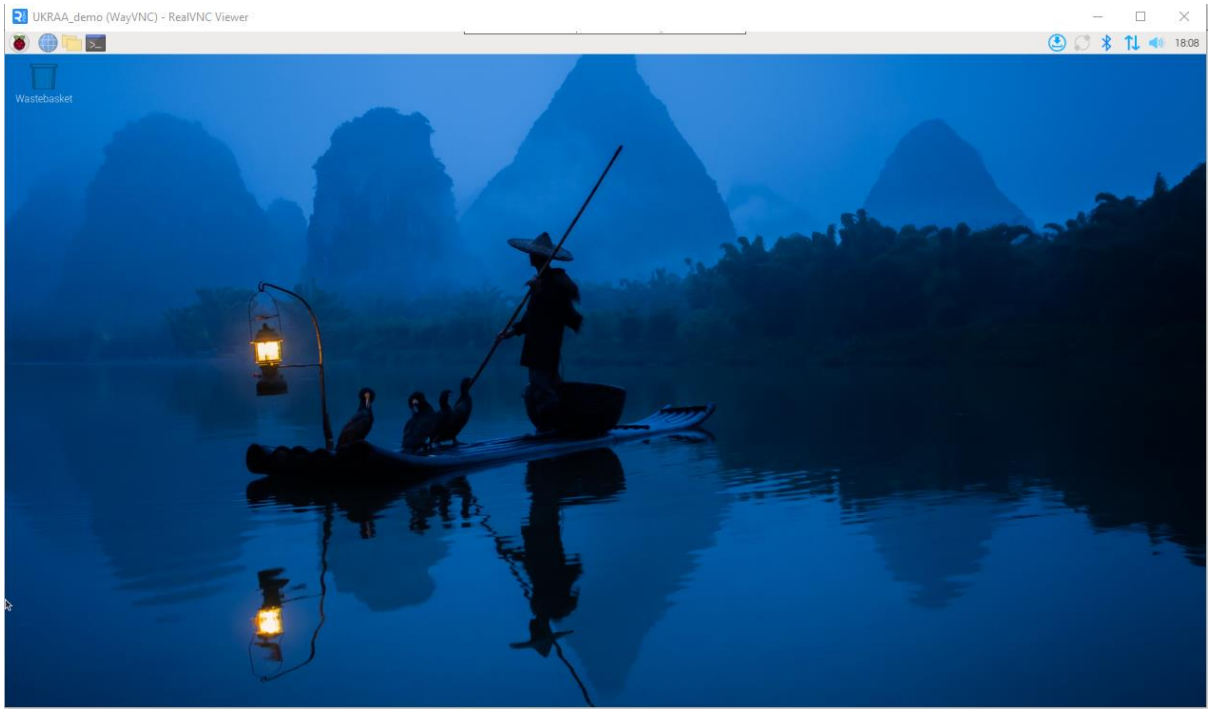
2. Open this VNC connection to your RPi; you will get a **VNC server not recognised** window from RealVNC. Select **Continue**



3. You will now get an **Authentication** window from RealVNC, enter your **Username** and **Password** details and select **Remember password** to make it easier to login in future.



4. You are now remotely accessing your RPi from your desktop PC...



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