

BIM – ARCHITECTURAL

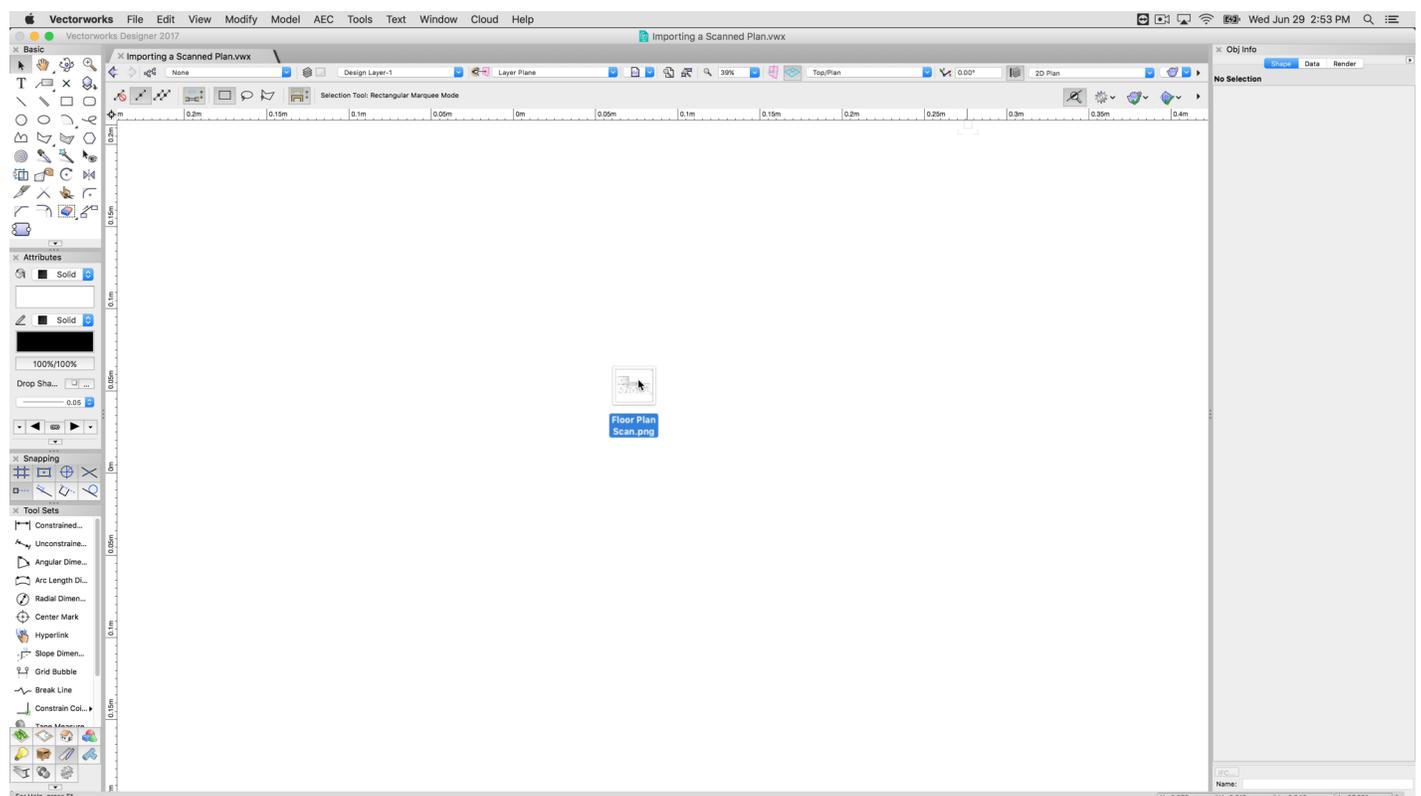
IMPORTING A SCANNED PLAN

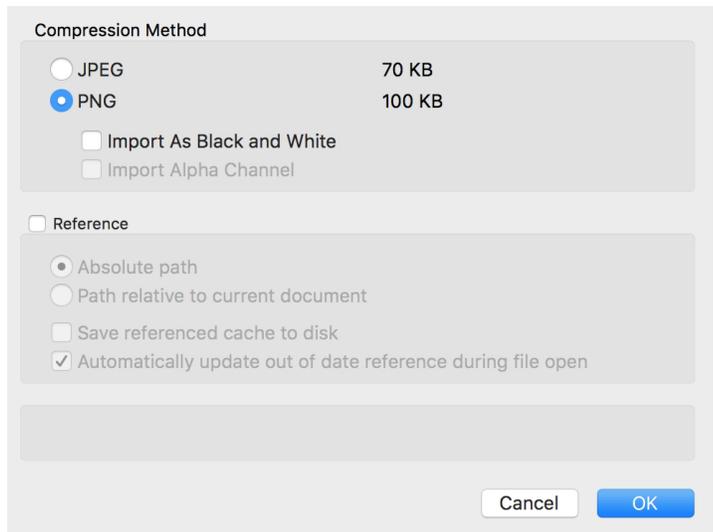
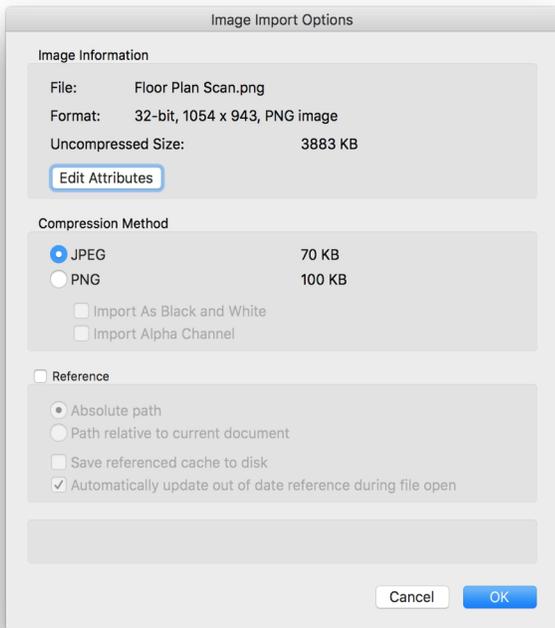
INTRODUCTION

In this section, we will demonstrate importing a plan created in another application. One of the most common starting points for a project is from a scanned-in, hand-drawn plan or an imported PDF or image. Importing a base plan from a DWG file is also very common, this will be covered in another section.

The first step is to import the PDF or image. In this example, we will import an image file. There are multiple ways to import an image file, and one of the easiest is to simply drag and drop the image file into your Vectorworks document.

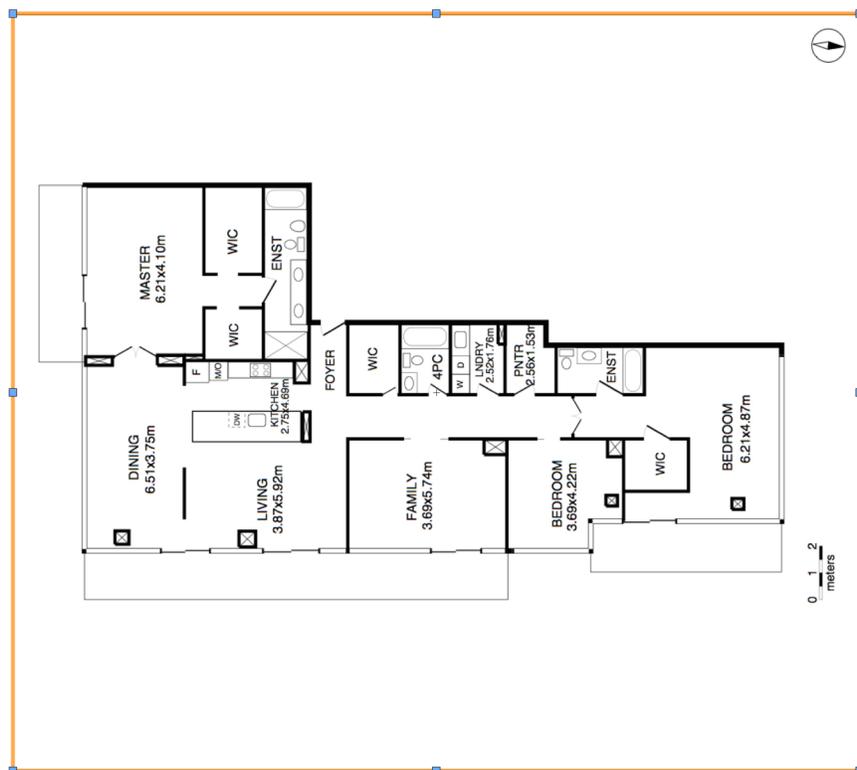
This will start the Image Import command. The Image Import Options dialog will appear.



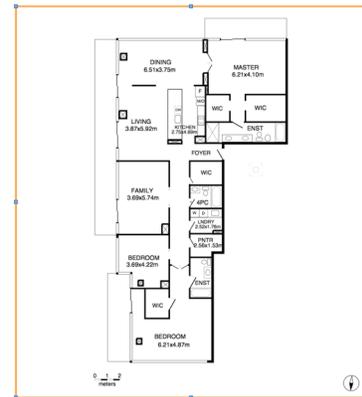
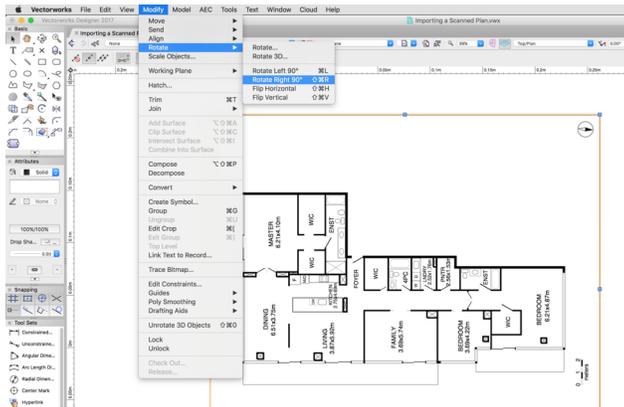


In this dialog, you will see information about the imported image as well as options for the compression method. JPEG will reduce the size of the imported image at the cost of quality.

PNG will provide the best quality, but will be larger. In this case, we want the best quality, so we will choose PNG and click OK. The import image will appear on the design layer as a Bitmap object.



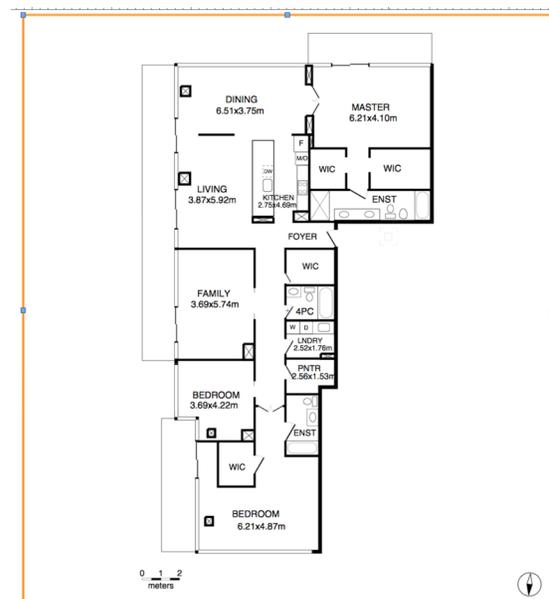
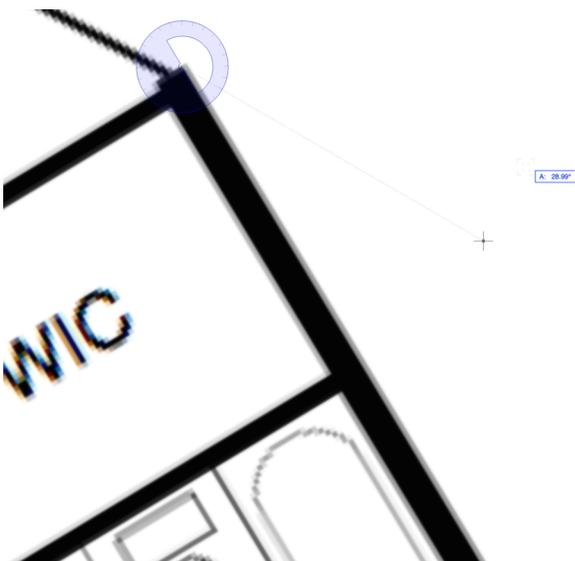
In this case, the image is rotated. To rotate this image to the desired angle, we can use the Rotate Right 90° command found under Modify > Rotate.



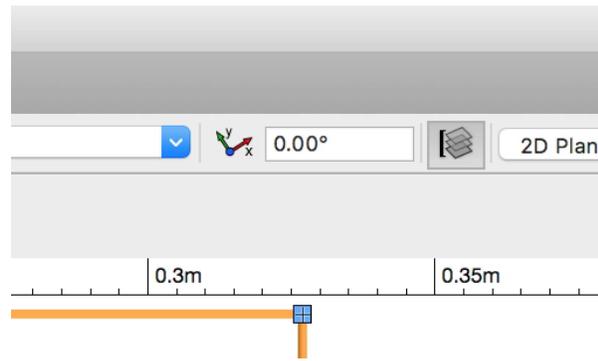
As you can see, this command rotated the image to correct angle. However, if the image was not exactly 90° off, we could use the Rotate tool from the Basic palette to rotate the image to any angle.



With the Rotate tool active and the Bitmap object selected, you can use any object in the image to align the base image. In this case, we will use this wall. Just click once on the edge of this wall. Then move the cursor down along the edge of the wall and click a second time to set the rotation axis. Finally, move the cursor to the left or right to rotate the image and click a final time to set the rotation.

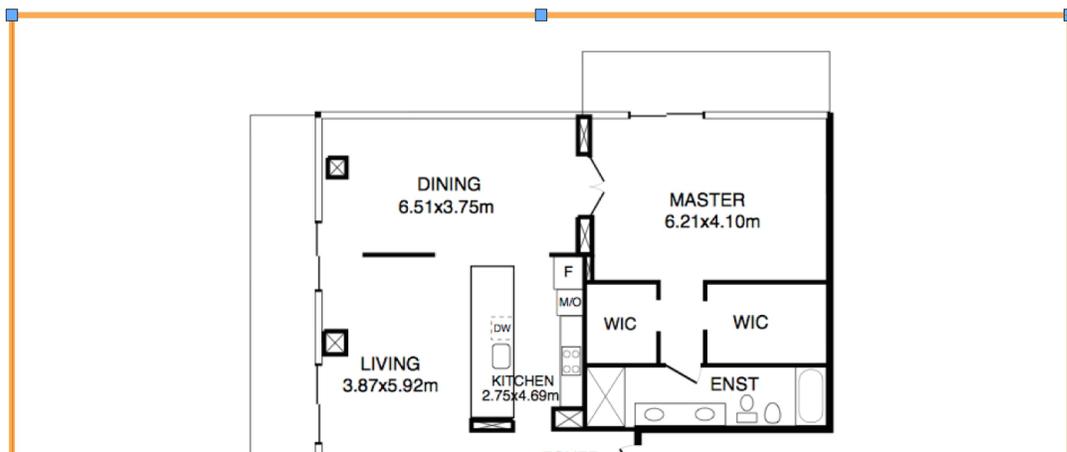


You would not want to use the Rotate Plan option to rotate the image. This option is used to adjust the rotation of your view to objects drawn at a different angle.

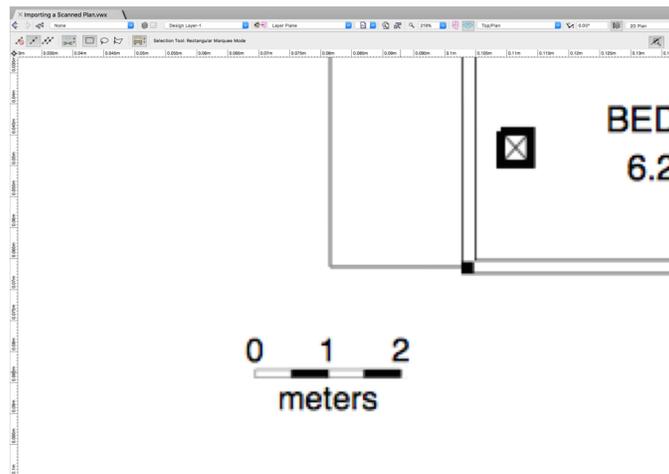


When starting with an imported image or PDF, you normally want to rotate the image to align with the default plan rotation.

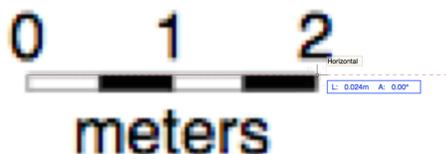
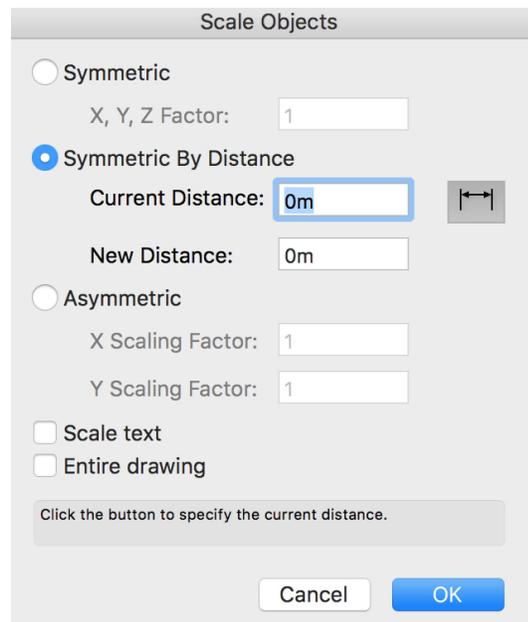
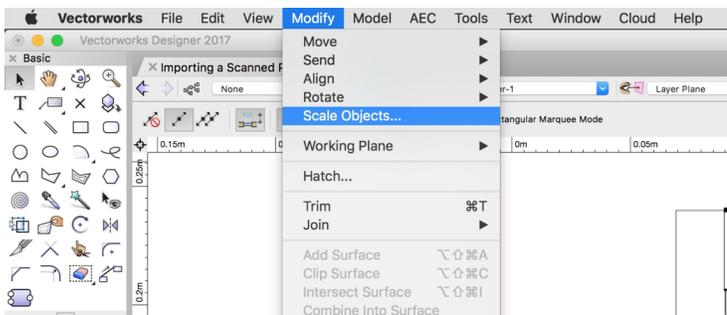
The next step is to check the overall size of the import image or PDF. In this case, the imported image is less than 0.25 meters across. This indicates the imported image showing a scaled representation of the plan. We need to scale the image so the objects measure correctly.



We will use the Scale Objects command found in the Modify menu increase size of this image. First, we need to find an object in this image to use as reference when scaling. In this case, the imported image has a scale bar. This makes it very easy, because we know this distance between the start and end of the scale bar is exactly two meters. If you import a plan that does not have scale bar or other exact dimension to use as a reference, you can use any object that normally has a standard length, such as the width of a wall or a door.

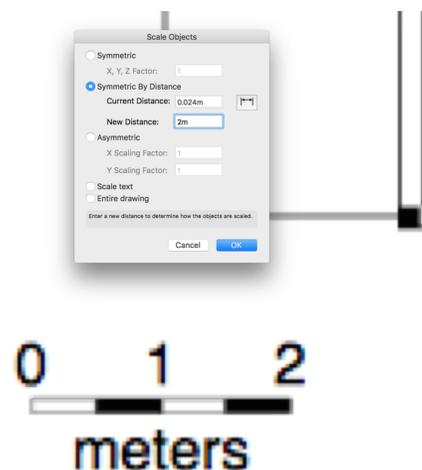


Under the Modify menu, choose Scale Objects. This will bring up the Scale Objects dialog. Here we can use the Symmetric By Distance option to measure two points on the image. Just click the dimension icon to the left of the Current Distance field.



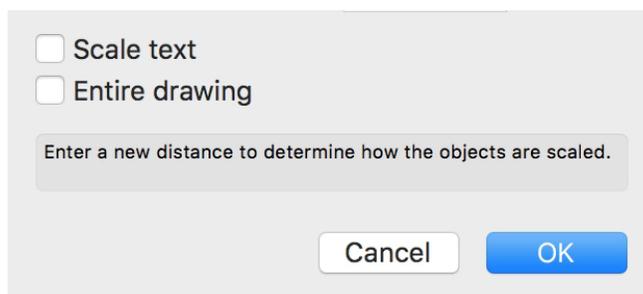
The Scale Object dialog will disappear to allow you to click on the two points to measure. If we zoom in on the scale bar, we click once at the start and once at the end of the bar.

The Scale Objects dialog will reappear. You can see the Current Distance field now shows a value of 0.024 meters. We know the length should be two meters, so just enter this in the New Distance field.

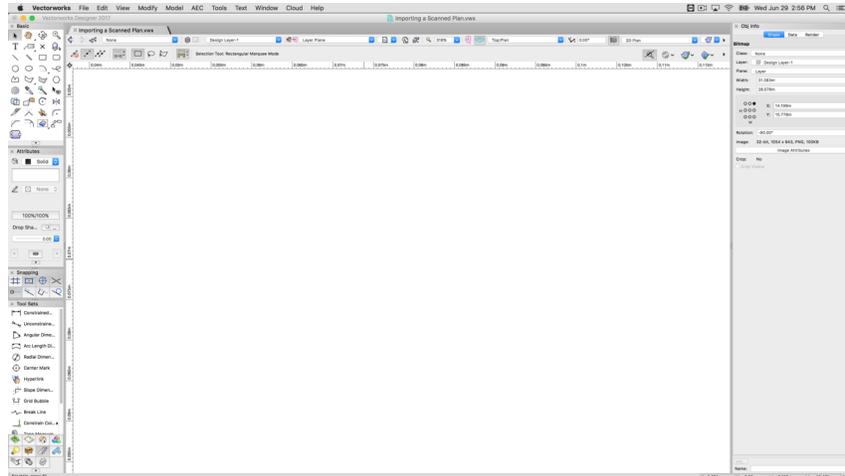


Before clicking OK, notice the two options at the bottom of this dialog: Scale Text and Entire Drawing. The Scale Text option controls whether this scaling operation will also scale text objects.

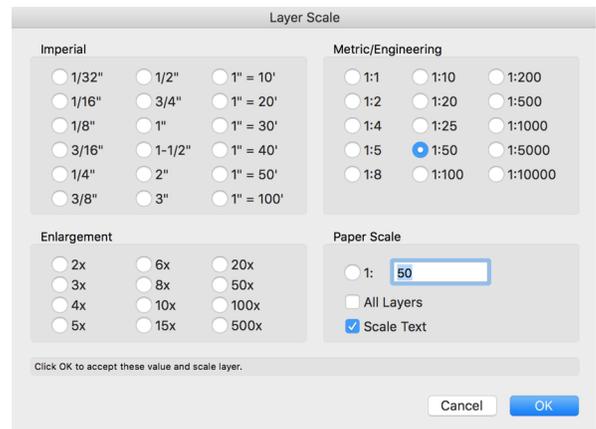
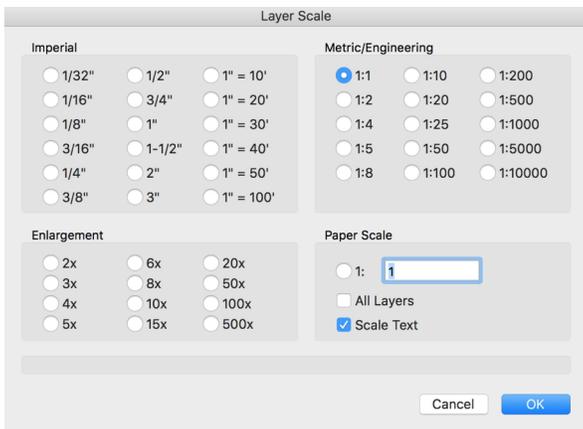
If there are existing text objects, this may be desired to maintain the size of the text objects compared to the other objects that are being scaled. The Entire Drawing option lets you choose to scale all objects in the file, not just the selected Bitmap image. This will include all resources, as well. Normally, you will have this option disabled. In this case, the only object in the file is the image, so neither of these options are needed. However, if you did have other objects, you may want to enable one or both of these options depending on your needs.



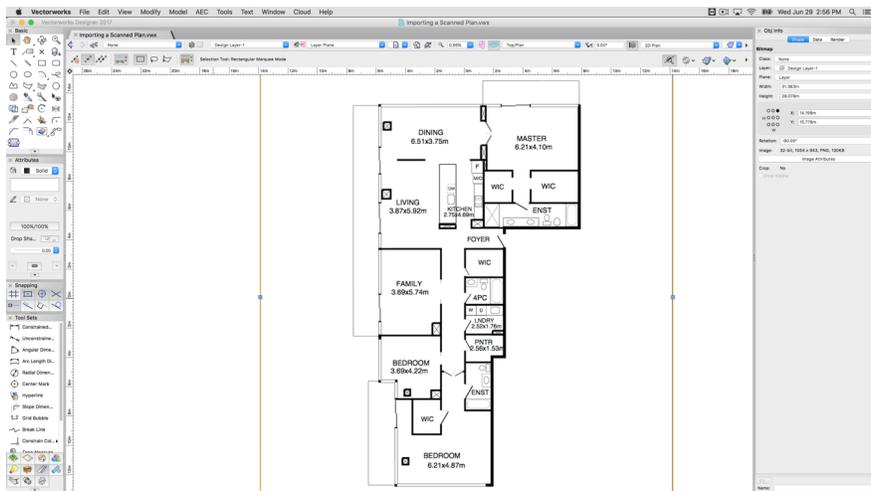
After clicking OK, it may appear that the Bitmap image has disappeared. This is not the case. The Bitmap is now much larger than before. If we zoom out, the image will reappear.



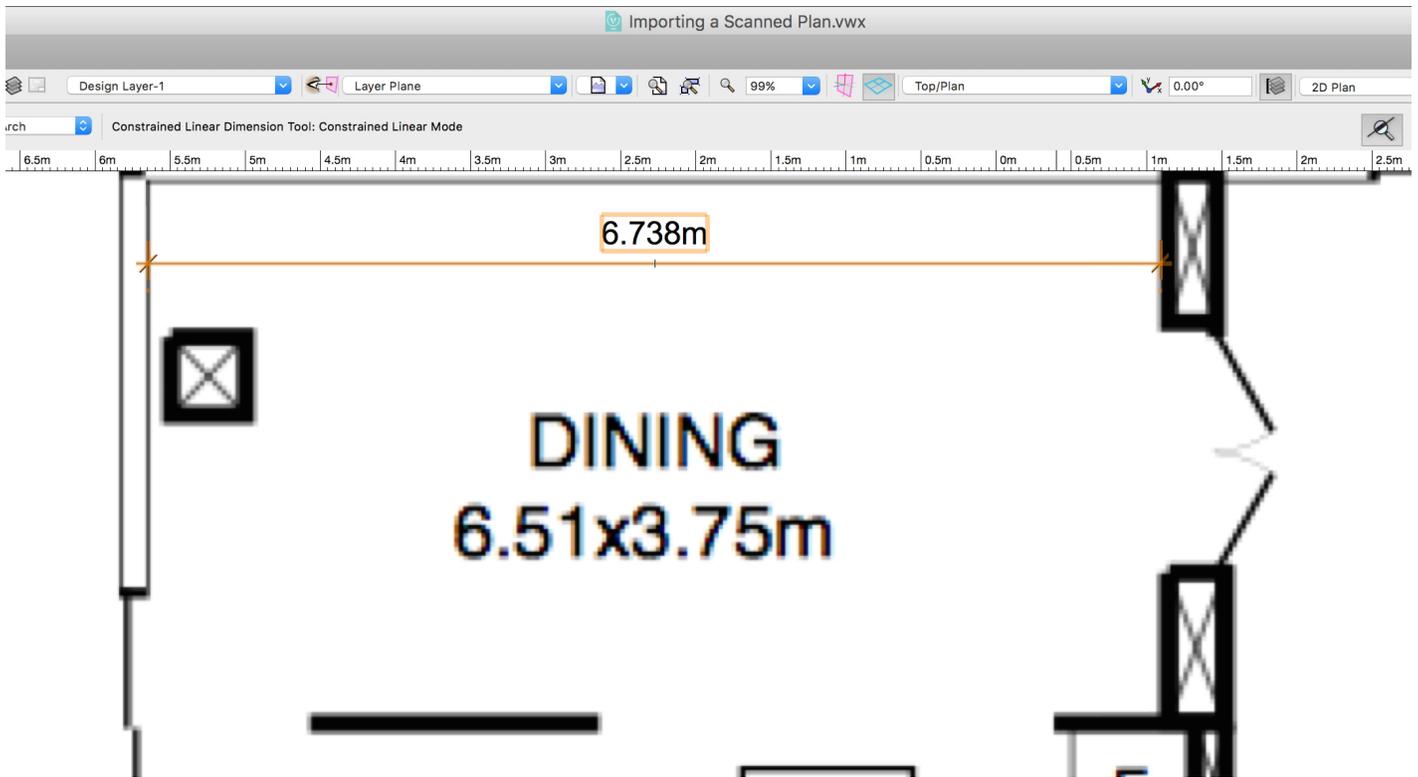
Now is a good time to check the design layer scale. If you right-click in a blank area and choose Design Layer Scale, you will see that the scale is currently set to 1:1.



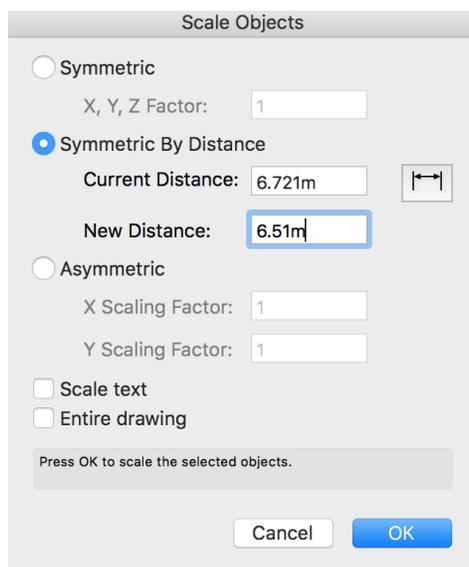
A 1:50 scale will be a better scale for an image of this size.



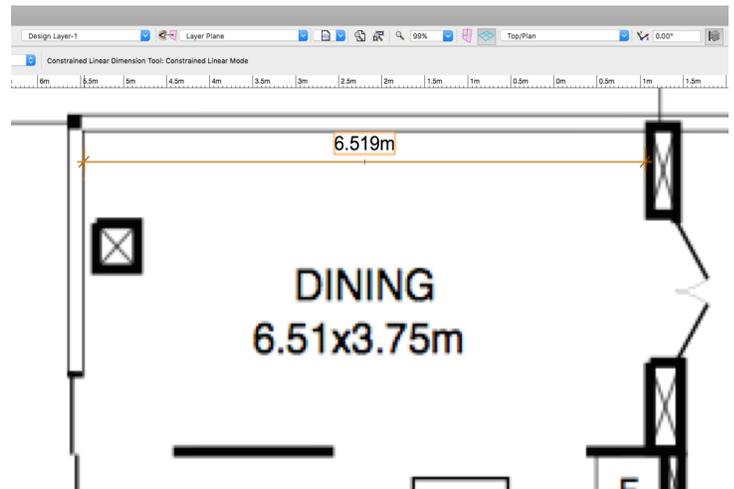
Let's check the size of objects in this image. If we measure the width of this dining room for instance, we can see that it measures 6.738 meters, but the drawing indicates it should be 6.51 meters. The accuracy of the scaling operation depends on a few things. First, the quality of the imported image or PDF. The lower quality the image, the less accurate the measurement will be. Also, when measuring the desired distance during the Symmetric By Distance operation, the more accurate your clicks are, the better.



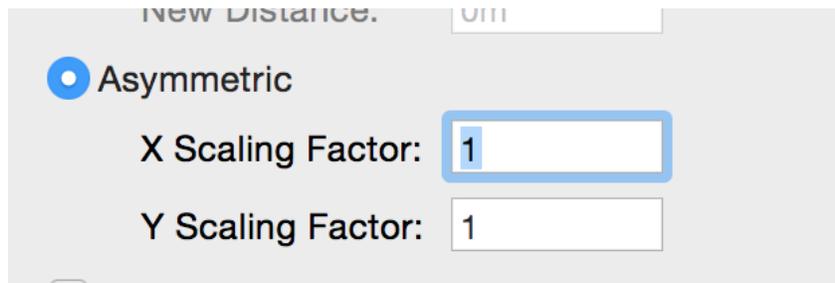
In this case, let's try to get the image a little closer to actual size. With the Bitmap selected, we can run the Scale Objects command again. This time we will measure the width of the dining room and set the New Distance to 6.51 meters.



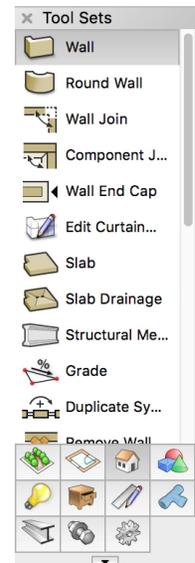
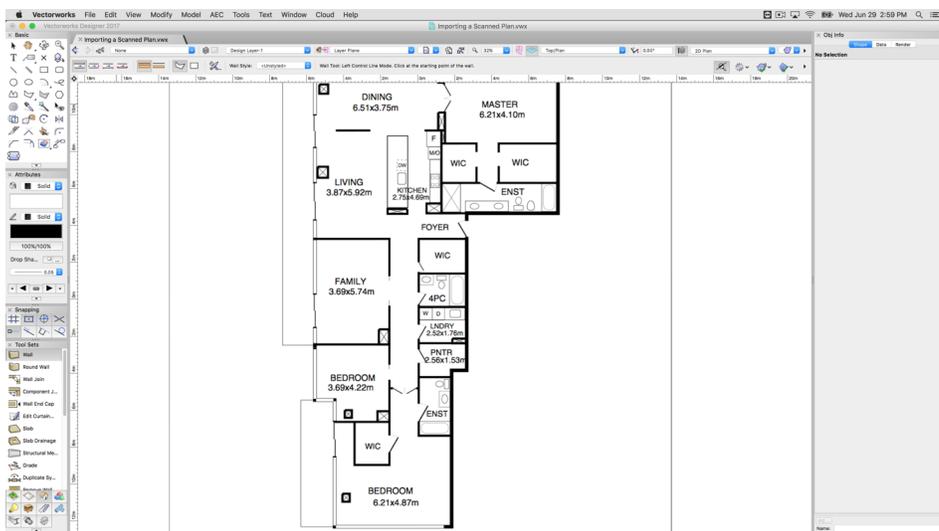
Now, if we measure this distance again, it is much closer to the reported width.



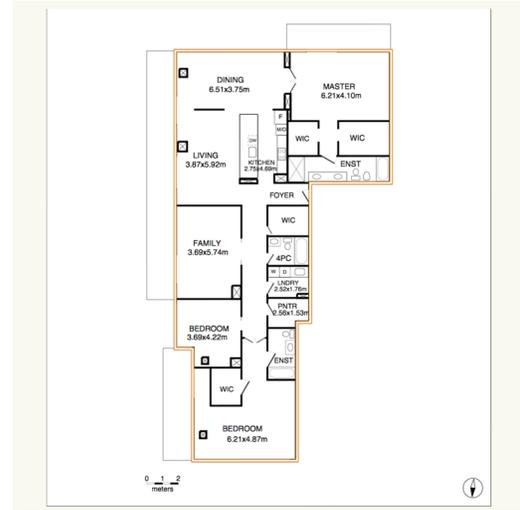
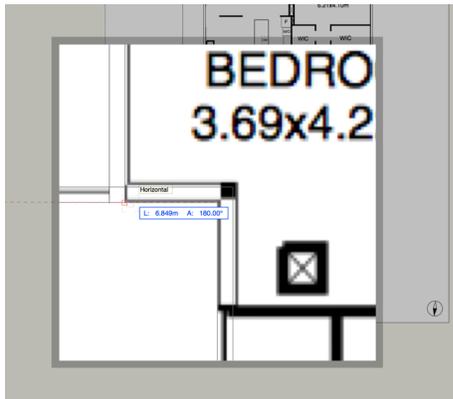
If the imported image or PDF was scanned or exported in way where the resulting file was asymmetrically scaled or skewed, you may find that measuring objects horizontally is accurate, while measuring vertically is not. This is more common with scanned-in, hand-drawn plans. In these cases, you may need to use the Asymmetric Scaling option.



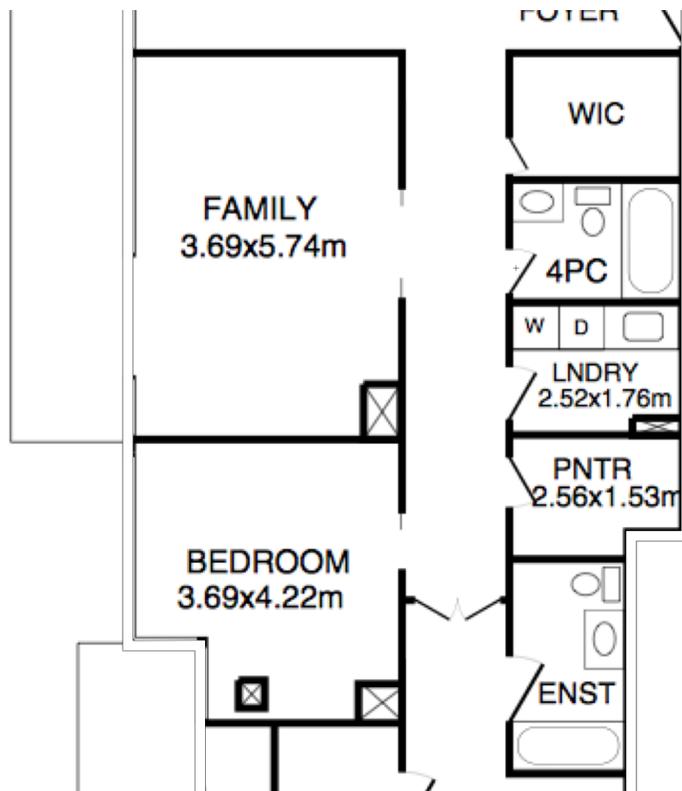
We now have an imported image scaled to actual size. We are ready to start tracing the image to create these objects in our file. To start, you will normally want to create the walls first. To do this, we can use several methods. We will discuss the Wall tool and its various modes in more detail in another section. In this section, we are going to show a few techniques that will speed up the process of tracing walls from an imported plan.



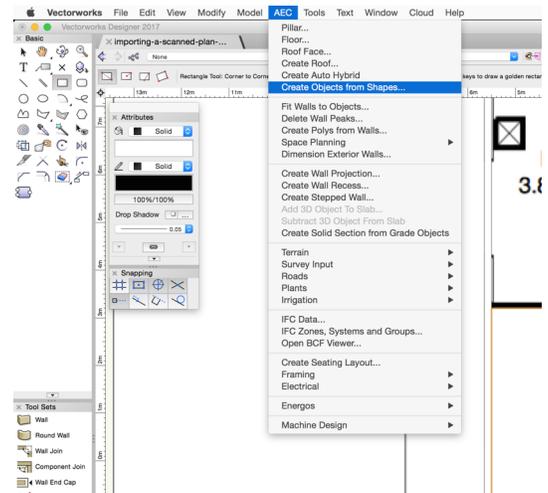
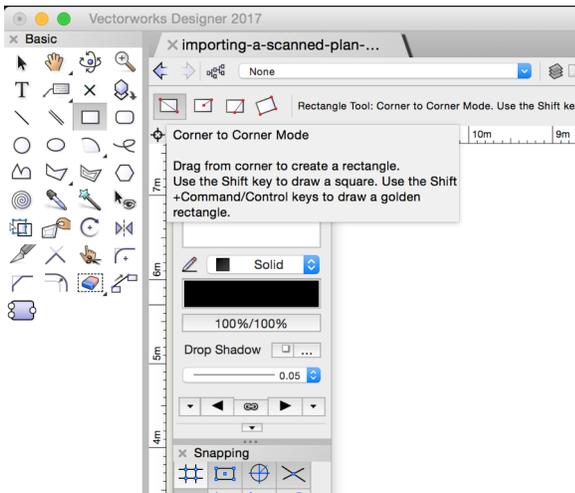
Initially, you may want to simply use the Wall tool and trace each of the walls individually. We can activate the Wall tool in the Building Shell tool set, choose the needed mode, and start tracing. In this case we'll use the Left Control Line mode to trace the exterior walls. Drawing in a clockwise direction, we can align the left line of the wall being drawn with the exterior line of the wall in the image.



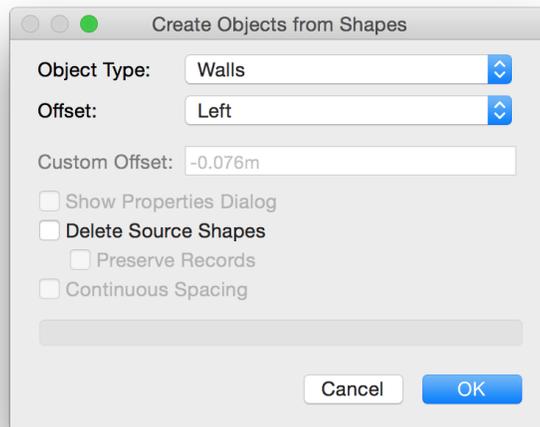
Tracing each individual wall like this can be time consuming. There are a couple of faster methods. For these interior walls, they are all basically rectangular in shape.



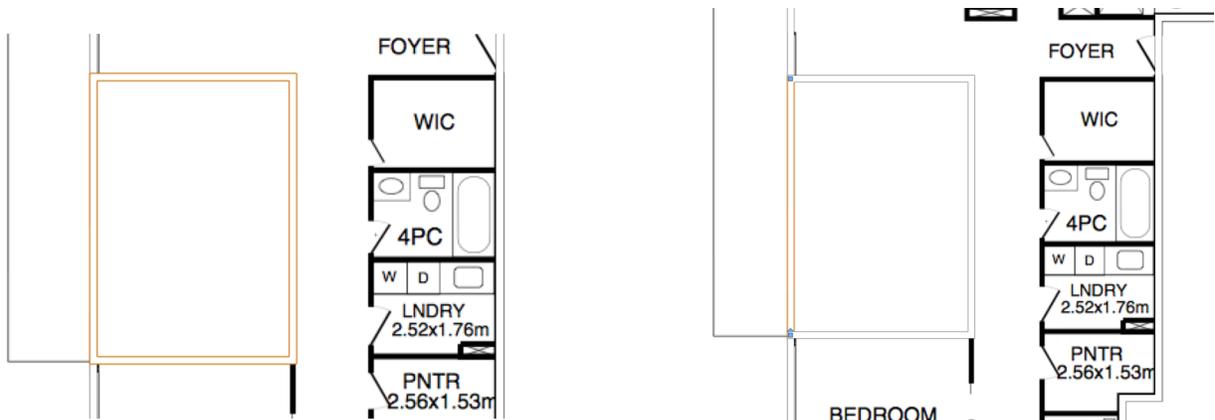
We can use the Rectangle tool to trace each of these rooms and then convert the rectangles to walls. Take the family room for example, if we activate the Rectangle tool in the Basic palette, then we can trace the interior edge of these walls using the Corner to Corner mode.



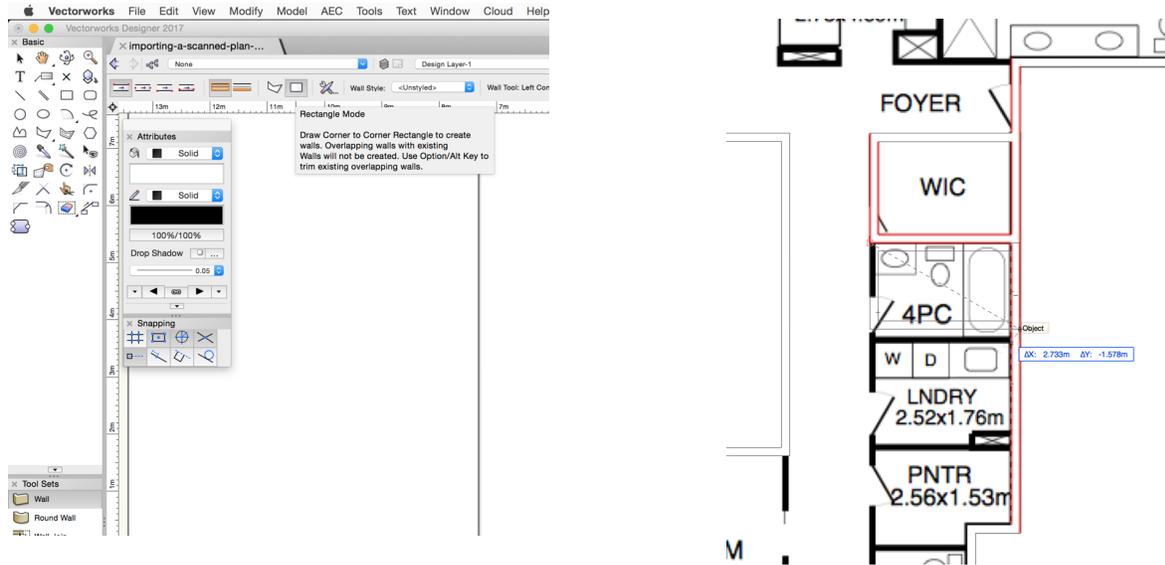
With this rectangle selected, go to AEC > Create Objects from Shapes. Here we can set the Object Type to Walls and the Offset to Left. The Offset option is the key. This tells the command which direction to offset the created wall. Since we traced the interior, or right side of the wall, we need to offset to the left.



After clicking OK, you will see that four walls were created. This does lead to an issue with this method. The Create Objects from Shapes command simply converts the selected shapes into Wall objects. It does not know we already drew a wall on one side of this room.

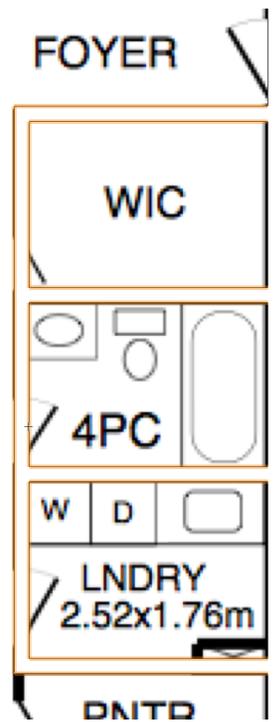


This extra wall will need to be deleted and the two horizontal walls will need to be joined to the exterior wall. A way to avoid this issue is to use the Rectangle mode of the Wall tool instead of the Convert Objects to Shapes command.

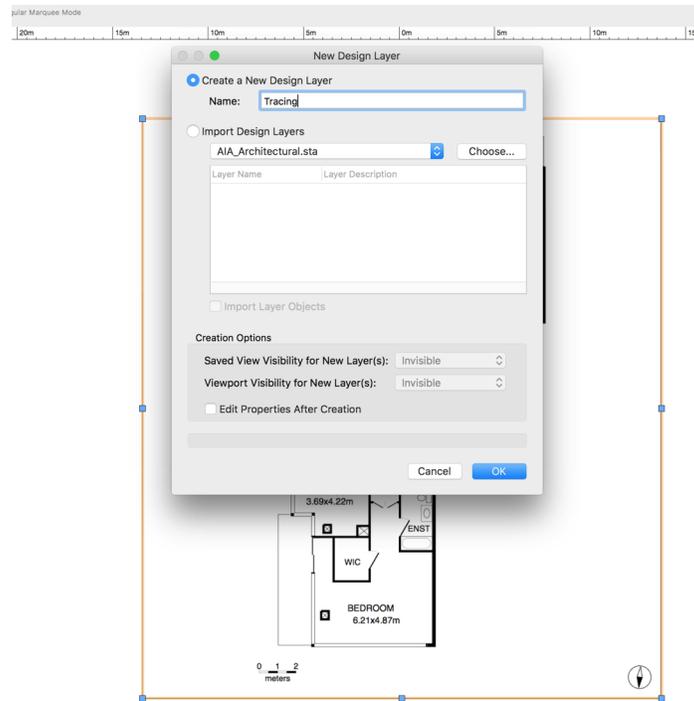


This mode will allow you to quickly trace the rectangular interior rooms and create only the needed walls. This mode works just like the Rectangle tool; the only difference is that the Control Line mode set for the Wall tool determines whether we trace the exterior or interior wall lines. In this case the Left Control Line mode is still active, so we will trace the exterior line of these walls.

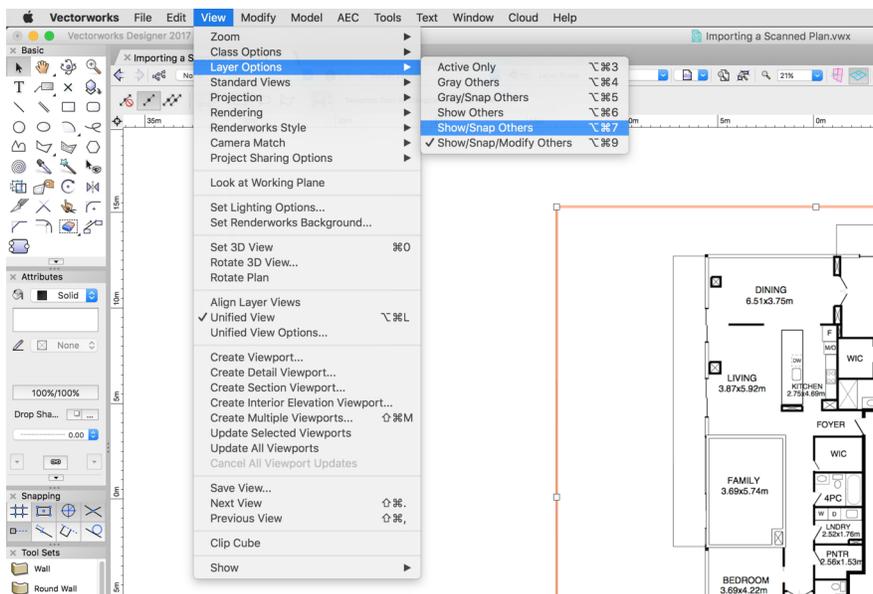
As we create these walls, they automatically join to existing walls and do not create duplicate, overlapping walls. Using these methods, you can quickly trace all of the walls in this imported plan.



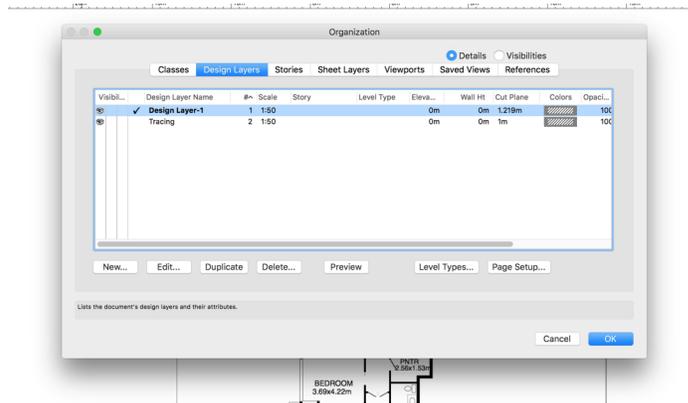
There are a few more techniques that will make the process of tracing these walls much easier. First, you will normally want to place your imported image or PDF on a separate design layer.



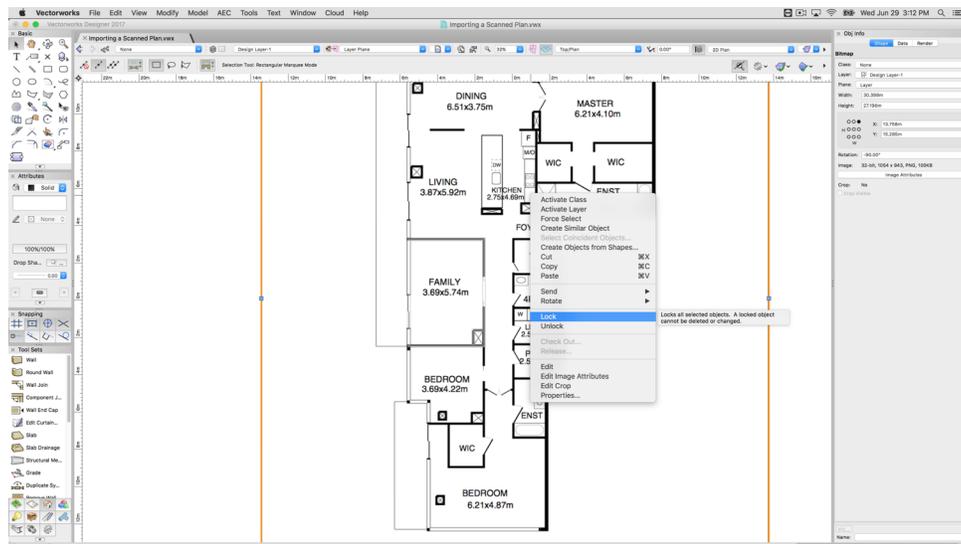
This will allow you to keep the objects you create separate from the imported plan. It also helps avoid accidentally moving the imported image or PDF while tracing overtop of it. You can set your Layer Option in the View menu to Show/Snap Others.



This will allow you to see the imported image or PDF on the other design layer but not select it. You will want the design layer with the imported plan to be stacked below the Layer you are drawing the walls on. The Stacking Order can be edited in the Organization dialog, found in the Tools menu.



You can also lock the Bitmap or PDF by right-clicking on the object and choosing Lock. This will prevent you from moving the object inadvertently.



Finally, a great way to still see what you are tracing overtop of is to give the design layer you are drawing the walls on an opacity. If you right click on the layer in the Navigation palette and choose Edit, you can adjust the Layer Opacity, allowing you to see through the walls to the plan below. This makes it easy to place doors and windows once the walls are complete.

