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# How to Import a Surveyor's or Architect's File

In this chapter, you'll learn about the process to follow when given a digital file by a surveyor or an architect or when you've downloaded one from a mapping source. You'll also learn about some of the potential pitfalls of dealing with digital files and how to avoid them!

If you're used to hand-drawing, your surveyor will have produced the survey and printed it for you at the scale you requested. You will then have traced the details you wanted and drawn the design over the top. If you wanted to work in a different scale, you would need to ask the surveyor to print it again for you—or rescale it yourself using your scale ruler.

Now that you're working with Vectorworks, you can ask your surveyor to send you their electronic file. This will usually be in either DXF or DWG format. Similarly, you can purchase mapping data from various online sources. I get mine from a company called Promap, where I can specify the client's postal/zip code and the select the area I want to include. I can then download a boundary map and optionally level data.

## Importing an Existing Survey File or Map in DXF/DWG Format

One *very important* thing you need to know about the DXF/DWG file you are importing is the *unit of measure* in which it was created—so that you import its contents at the correct size.

The scale of the DXF/DWG is immaterial, as you can change the scale yourself once the import is complete. So, you need to change your thoughts from scale (important, of course, when receiving a printed survey) to unit of measure. Find out what your friendly surveyor uses. Mine uses meters. Vectorworks can make a good guess based on the information it can read from the DXF/DWG file, but I find it's best to know. You can also use a process of elimination. Once you've imported something, measure a door or window. If it's 1000 meters (833' 4") wide, you can probably guess that you set the unit of measure wrong. You'll learn how to rectify the situation in this chapter too.

For files downloaded from a mapping service, you'll need to check with their staff as to which unit of measure applies to their content. Most surveyors in the UK work in meters (but not always!), and architects are harder to predict!

DXF files are usually imported with a number of classes already setup to organize the information for you. You'll learn all about classes in this chapter.

## Exercise Nine: Importing Surveyor's or Architect's Files

### Start with a Blank File

It's really important to start with a blank document—starting with a file that already has information in it is not recommended. You then use the File > Import menu to bring up a list of different formats from which you can import. There are two options for importing DXF/DWG

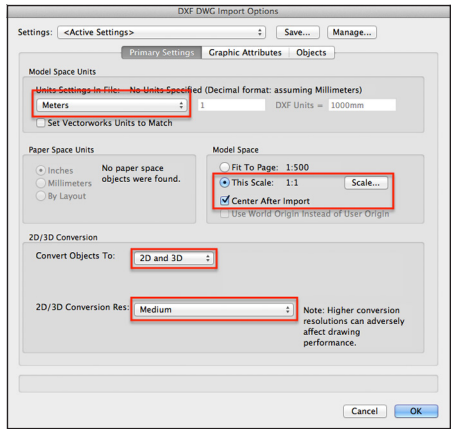
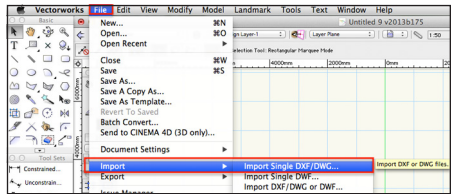
files. If you have just one file, you can use Import Single DXF/DWG file. However, it's possible that you may have more than one file. If that's the case, you need to import them all at the same time in which case you use the first option on the menu, Import DXF/DWG. This allows you to choose a set of files rather than just one. This chapter provides exercises covering both scenarios.

1. Select **File > New** and create a file from the template you created earlier.
2. Ensure the file is set up as you want it. Make a mental note of the scale of any Design Layers currently in the file.
3. Choose **File > Save**, and name your file **MySurveyImport.vwx** (because it's always a good practice to name and save your file as soon as you start working on a new project.)

### Import a Single DXF/DWG File

Use this step if your surveyor or architect has provided you with a single file.

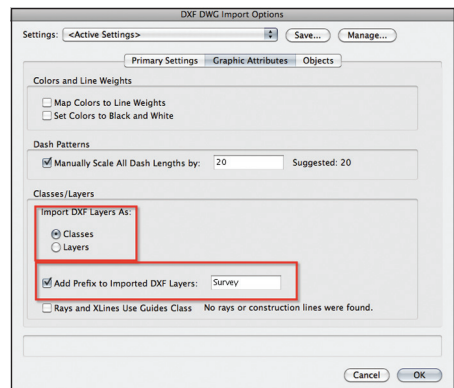
1. Select **File > Import > Import Single DXF/DWG**.
2. Locate the file **Survey.dwg** among the exercises supplied with this book, select it, and then click **Open**. The DXF/DWG Import Options dialog box will be displayed.
3. Under Model Space Units, change Unit Settings in File to **Meters**. This piece of information is *critical* to the correct sizing of the imported drawing. "Model Space" is the AutoCAD equivalent of Vectorworks Design Layers. This is the bit where you need to know which unit of measure the surveyor or architect has used in their file. Vectorworks can try to work it out from the information provided, but in my experience, it's good to find out for sure. So, here in the UK, my starting guess would be meters if working with a surveyor.



4. You have a choice now of whether to set your Vectorworks drawing to the same unit of measure. I prefer to work in millimeters, so I don't change this, but this is a matter of personal preference.
5. Moving down the screen, there is a section on Paper Space Units. Paper Space is the AutoCAD equivalent of Vectorworks Sheet Layers and your surveyor or architect may have

set up Paper Spaces for you if he/she was intending to print the DXF/DWG file for you. If there are paper spaces detected, the recommended setting here is By Layout. In this example file, there are no paper spaces.

6. On the Model Space section of the dialog box, Vectorworks is suggesting a scale to use if you want to fit this drawing onto your page. If you don't want it to fit on the page, you can click the scale button to specify the scale you want. Remember, you can change the scale of a drawing at any time so what you choose now isn't set in stone. Select 1:1 (as this is how most AutoCAD drawings are created). You will rescale later.
7. If you wish to move the site onto the drawing area, check **Center After Import**. However, bear in mind that the survey may contain "real-world" coordinates. If you don't check this option, the incoming survey could be placed some way from your page area. It actually doesn't matter—although when you are new to CAD I know this can be a disconcerting concept. Whichever method you choose, the coordinates of the objects remain constant. When you choose to Center After Import, the origin (0,0) is moved off the page to preserve the coordinates. So, if you are working with other professionals and need to ensure the file remains at the same coordinates, you can be reassured that it will (you could also read more about Georeferencing in the chapter on Setting Up the Drawing Board).
8. Under 2D/3D Conversion, set Convert Objects To: **2D and 3D**. This is the safest option, as Vectorworks can then determine what is sensible to import as a 2D object and what is sensible to import as a 3D object.
9. Set 2D/3D Conversion res to **Medium**. Lowering this value will result in a smaller Vectorworks file than if you use a high value.
10. Click on the **Graphic Attributes** tab at the top of the dialog. On this screen you can define what happens to incoming line weights (older versions of AutoCAD handle line weights with a separate color table that the user maps to line weights). As you have not created the AutoCAD file yourself, I would suggest you uncheck this box as you won't yet know which colors relate to which objects. (If you do know the intended mapping of line weights to colors, leave the box checked and see step 15 below.)

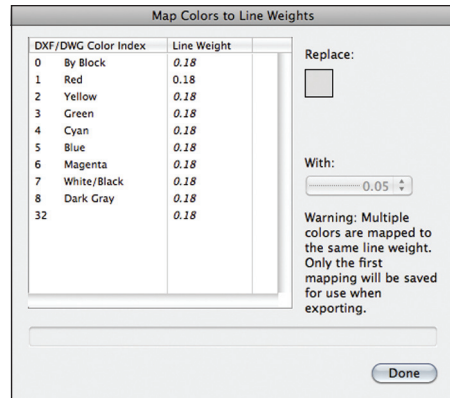


11. Below Dash Patterns, you will see a suggested scale factor for dashed lines included within the incoming file. I recommend you use Vectorworks suggestion—in this case, enter 20.
12. Ensure DXF Layers will be imported as classes (which are the most appropriate equivalent to AutoCAD layers).

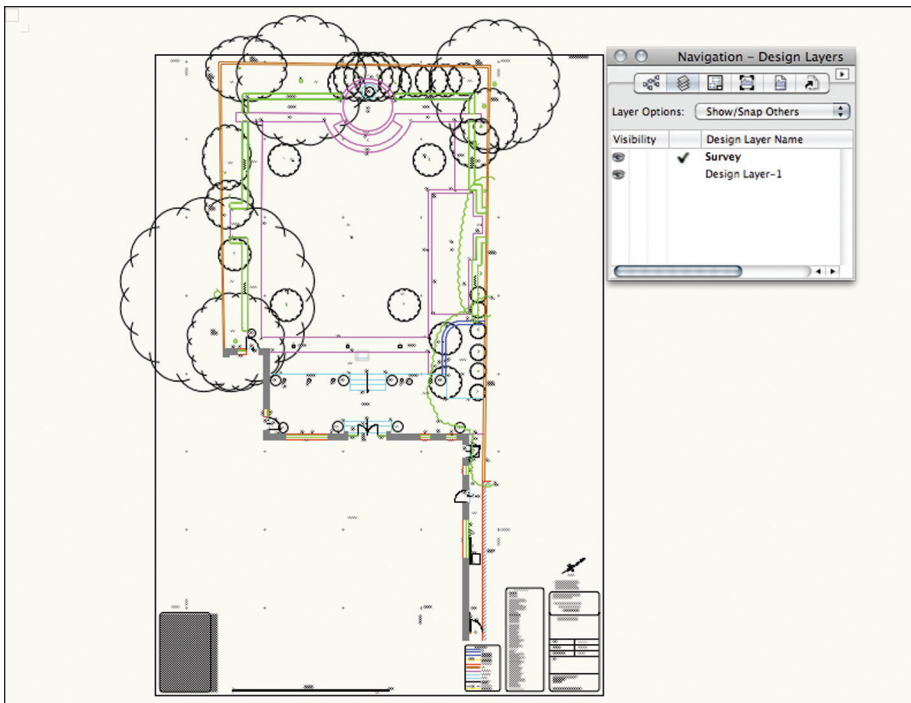
13. At the top of the dialog, there is an option to save these settings so that you can recall them each time you import a survey. Ensure Custom is displayed in the Use Settings field, click **Save As**, and then enter a name for your import settings. Click OK.

14. Click OK to start the import process.

15. If you do know the intended mapping of lineweight to color and left Map Colors to Line Weights checked, the next dialog box displayed will ask you about mapping colors to line weights. The DXF/DWG process usually assigns colors to denote different line weights in the source file. You can change the line weights for different colors of you wish. Click Done.



16. Finally, Vectorworks will point out any fonts that exist in the DXF/DWG file that you do not have on your system and ask you which fonts you would like to use instead. In this example, there are two fonts, which by default, Vectorworks will change to Arial or Geneva. Click on each font and change to a font you prefer. Once set, these font





mappings are remembered by Vectorworks for each session and you will not be prompted to do this again until you import a file with another font that your system doesn't recognize.

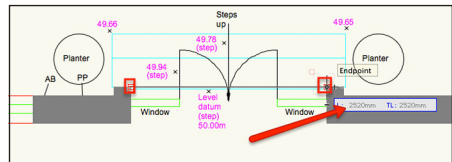
- Click OK to continue the import process. Click **Fit to Objects** on the **View bar** (the top of the screen.) As you imported at 1:1, the drawing is as large as the site is in the real world, so will not fit on the page, but we'll deal with that later in this chapter. If you wish, you can save your file now. You can also review my file called **Import Survey-Completed.vwx**.

## Check the Size of Objects in the Imported File(s)

As I've tried to stress in this chapter, the scale of the imported file(s) is immaterial. Knowing the unit of measure for the incoming file is crucial. Sometimes, it's not possible to know for sure, in which case you need to check the size of the objects you've imported. Find an object in the garden about which you know the size (or approximate size) or can make an educated guess. If there are doorways marked on the plan, that's a good starting point. Otherwise, look for a gate or a path and measure its width.

- From the **Dims/Notes** tool set, click the **Tape Measure** tool.

- Click on the left of the French doors in the center of the house. Then click on the right of the doorway. The Tape Measure tool displays the length of the doorway in the data bar. In this example, my Vectorworks units are set to millimeters, so this doorway is 2520 mm wide (see the blue figures to the right of the door inside the blue box or "data bar"). This seems a reasonable size for French doors. Later in this chapter, we will look at rectifying the situation if the imported file is not the correct size.

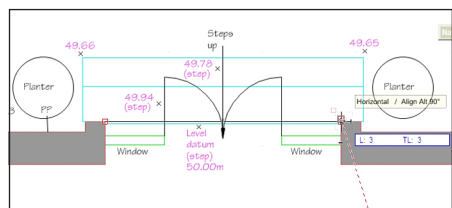


- Click on the **Selection** tool.

## How Will You Know if the Unit of Measure was Wrong?

Had I set the unit of measure incorrectly, it wouldn't necessarily be immediately apparent. In the example image below, I imported the file with a unit setting of millimeters instead of meters and set my scale to be 1:50 at import. Alarm bells started to ring (in my head!) when I clicked **Fit to Page** in the **View bar** and couldn't see anything. However, using the **Fit to Objects** button on the **View bar** helped me to find the property.

Great! The whole garden appeared to be in proportion. However, when I repeated the tape measure step above, this is what I saw. My unit of measure in the Vectorworks file is millimeters and so this doorway is 3 mm wide (Vectorworks has rounded to the nearest millimeter)! If I hadn't checked, and then



started designing shapes by eye rather than by specific dimensions, I could have gotten myself into a mess.

## Reviewing the Layers and their Scale

In this section of the exercise, we're going to look at the layer structure of the drawing and ensure that the scales are correct for our page. There are two types of layer:

- **Design Layers:** where you draw your designs. Design Layers are transparent, allowing you to see objects drawn on layers beneath them. I like to think of them as overlays that you use to build up your design. Anything you draw in Vectorworks lives on a Design Layer. Design layers can also be used to set specific levels within 3D space.
- **Sheet Layers:** where you combine different views, details at different scales, etc., ready for printing. They are not transparent and represent a physical piece of paper. They show only what you want them to show from the design layers.

You'll learn much more about sheet layers later in the book in the chapter on preparing to print. For now, all you need to know is that they are like a presentation layer and are at a scale of 1:1. You can draw on them, but they are not the place for you to do your design work.

To understand the benefit of using multiple design layers, think about the design process when hand-drawing:

- Receive the survey printed by your surveyor, or draw up your own survey.
- Produce the draft plan: Trace the house, boundary, etc. Then add your design proposals.
- Produce "Setting Out" and "Hard Landscaping" Plans: Trace the house and boundary and hard landscaped areas. Then add dimensions.
- Produce "Planting Plan": Trace the house and boundary and the planting beds.

I think I've made my point. How many times did we trace the house? Design layers are like transparent pieces of paper. If we put the house and boundary on its own layer, then we do not need to re-draw it. We can place another layer over the top for each stage in the design process. You can control whether layers are visible or not. For example, you might want to show the house and boundary with the planting but not with the hard landscaping. You can make the hard landscaping layer temporarily invisible.

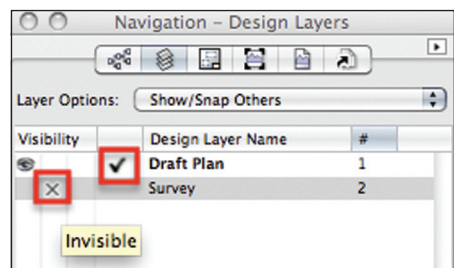
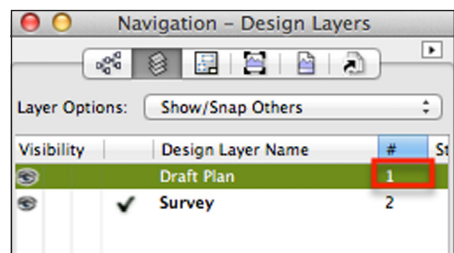
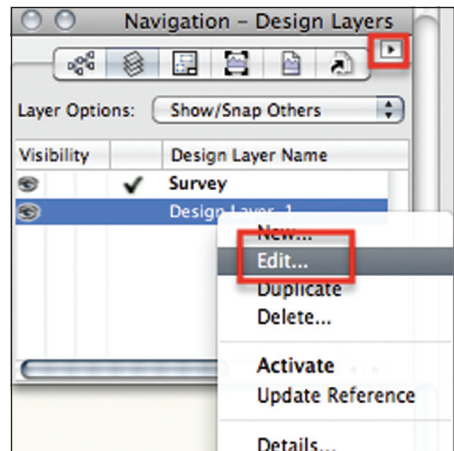
## Review the Design Layers

Design Layers are managed on the Navigation palette, which you'll find to the right of the screen. If you have inadvertently closed it, you can open it again from the **Windows > Palettes** menu.

1. Continue working on your file *MySurveyImport.vwx*, or you can use the *ImportSurvey-Complete.vwx* file. On the Navigation palette there are a number of tabs.

Hover your mouse over the tabs to see what they show you. Click on the Design Layers tab.

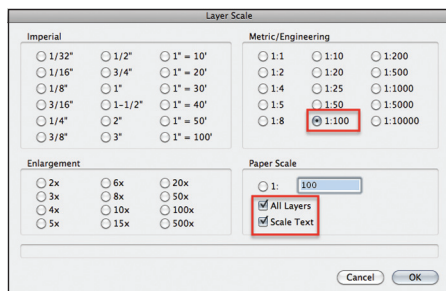
2. In this palette, you can see that there are two layers in this drawing. The first is called Design Layer-1. This is created by default in any new drawing. There is also a layer called Survey, which corresponds with the name of the file we have just imported. Vectorworks created this automatically for you so you could be organized right from the start.
3. With your right mouse button (Windows) or Ctrl+Click (Macintosh), click on the name Design Layer-1 (or you can use the menu button at the top right of the palette). Choose **Edit**. Note also that this is where you can create new layers, copy them, delete them, etc.
4. Change the name of the layer to **Draft Plan**. The Draft Plan layer has a scale of 1:50 (as set in the original template), whereas I imported the survey at 1:1. While Vectorworks will allow you to have layers with different scales, in practice it makes sense that all of our design layers are at the same scale. We'll change it in a moment. You'll learn how to produce different scaled views of your drawings later. Click OK.
5. The Draft Plan layer is currently at the bottom of the pile because it was created first. Hold your mouse over the number 2 to the right of the layer name. Notice the cursor changes. Drag the layer up so that it changes places with the Survey layer. The layer Draft Plan is now on top of the layer Survey.
6. The check mark denotes the active layer. If you were to draw something now, it would be drawn on the Survey design layer. Click just to the left of the Draft Plan layer name. Notice the tick moves to this layer.
7. Notice the tiny eye symbol in the left-most column of the three visibility columns. This denotes that both of these layers are



currently visible. On the Survey layer row, click in the middle column of the visibility section. The eye is removed and a cross is displayed in the middle column. Notice that the survey has vanished! Click in the right-most column, and the survey will be displayed but be grayed out. Ensure that both layers are visible again.

## Change the Layer Scale

1. On the Navigation palette click to the left of each layer in turn, to make it active. Observe the scale on the Layer Scale button displayed on the View bar. The Survey layer is 1:1 because that's what I chose when I imported it. The Draft Plan layer (created in our blank file) used the default settings from our template of 1:50 (1/4"). We need to make the layers consistent, so we are going to change them all to 1:100 (1/8").
2. Click on the **Layer Scale** button on the View bar. Select a layer scale of 1:100 (1/8") and check **All Layers** box. Check **Scale Text**. Click OK. All the layers are now at 1:100 (1/8"), any text on the 1:1 layer has been scaled proportionately, and any new design layers you create will be at the scale of 1:100 (1/8") too.



## Protecting Information on Other Layers

Now that you have your survey and you have another design layer over the top, wouldn't it be nice to have peace of mind? Imagine what a disaster it would be if you accidentally selected and moved the house walls while you were intending to adjust the edge of the paving?

1. Click the **Layer Options** menu on the Navigation palette. It is currently showing Show/Snap Others. This means that you can currently see all layers that are set to be visible, and you can snap to objects on other layers when you draw. But you can't accidentally delete anything, or move the house! This is how I recommend you work most of the time—with the ability to select and edit things on the current layer only.
2. Click the **Layer Options** menu and click each of the other options in turn.
  - Show/Snap/Modify Others: This is the most dangerous, as it means you can change anything on any layer, anytime.

