

*Using Adobe Photoshop to generate a fully focussed single image from images generated using a Nikon camera system, a StackShot controller, Zerene Stacker software and Adobe Photoshop CS6.*

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**A user guide for editing  
seed and seedling images in  
Adobe Photoshop.**

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## **Using Adobe Photoshop to generate a fully focussed single image from images generated using a Nikon camera system, a StackShot controller, Zerene Stacker software and Adobe Photoshop CS6.**

### **Overview**

This user guide describes how to achieve high quality images after editing in Adobe Photoshop CS6 from a series of images each with a different focal point using a Nikon camera and lenses, a StackShot controller for moving the camera remotely and Zerene stacking software.

The final image is composed of many individual frames which have been put together (stacked) using the Zerene Stacker software package.

Final editing using Adobe Photoshop CS6 to correct any colour aberrations and to edit the background before adding a scale and a copyright complete the process. To describe the editing process in CS6 the use of screen shots is used to illustrate each process.

Image resolution is always important and a compromise with the file size that websites can currently easily use, see page 19 for details.

**This guide is written by me using my experience and any opinions expressed in this guide are my own personal opinions. All the equipment is my own, I take nature and wildlife photographs and also work on a contract basis delivering training or taking and editing images of seeds. Any camera system, stage controller and stacking software package can be used and although I use Adobe Photoshop CS6 this guide should be applicable for use with Adobe Photoshop CC now available by subscription from Adobe.com.**

### **TIPS ❖**

Throughout this guide I have included tips that I have found by my experience to be useful, these are shown by the accompanying symbol ❖, hopefully you will find these useful.

- ❖ *Always take a few test images before embarking on a whole series to test out the lighting.*
- ❖ *Include with these images some shots with a measurable scale, such as a ruler for later reference.*
- ❖ *A scale can be added to the image during editing in CS6.*
- ❖ *Save often and make a copy of the final image*

**Note:** *All the software programs and process are written for a Windows PC.*

## 1.0 Editing in Adobe Photoshop CS6

**ALWAYS** duplicate the image as a precaution to an unrecoverable error before editing and change the file name to avoid overwriting your original image. This is simple if using Adobe Bridge as there is a Copy and Duplicate function. Click on the image file to highlight it, right mouse click and the drop down menu includes the options to Duplicate, Copy or Copy to.

**Note:** Abbreviations used in the following text

Photoshop CS6	CS6
Left and right mouse (buttons)	LHM and RHM
Central scroll (wheel) on mouse	CSM

CS6 is an excellent editing program. One of the strengths is that all editing can be non-destructive by working in Layers and with Masks. Working in layers also makes it easy, for example, to change the background colour or add text, such as a scale and copyright. If the edited image is saved as a TIFF or PSD all the layers are preserved in the file format making it easy to make changes later if necessary.

- ❖ I keep two copies of my completed images (as well as a copy of the unedited original), one as a TIFF and one as a JPEG.

**The default Zerene file naming format for a completed stacked image uses both the date and time in the file name, for example 2019-06-17-11.08.58 ZS PMax. It can be opened only once in Photoshop. Any subsequent editing that you complete within CS6 will not be saved unless the file name is changed to a more conventional format after opening the file in Photoshop for the first time, for example, renaming to chive\_01 will allow the file to be saved and reopened as normal.**

- ❖ I save the image generated by Zerene as a TIFF file and as the Zerene default file package.

## 1.1 Getting started in CS6

There are usually several methods in CS6 for getting to the same point, for example there are at least two ways of making a layer. The methods used here are the ones I find the easiest to use. There are probably many ways of getting to the same point.

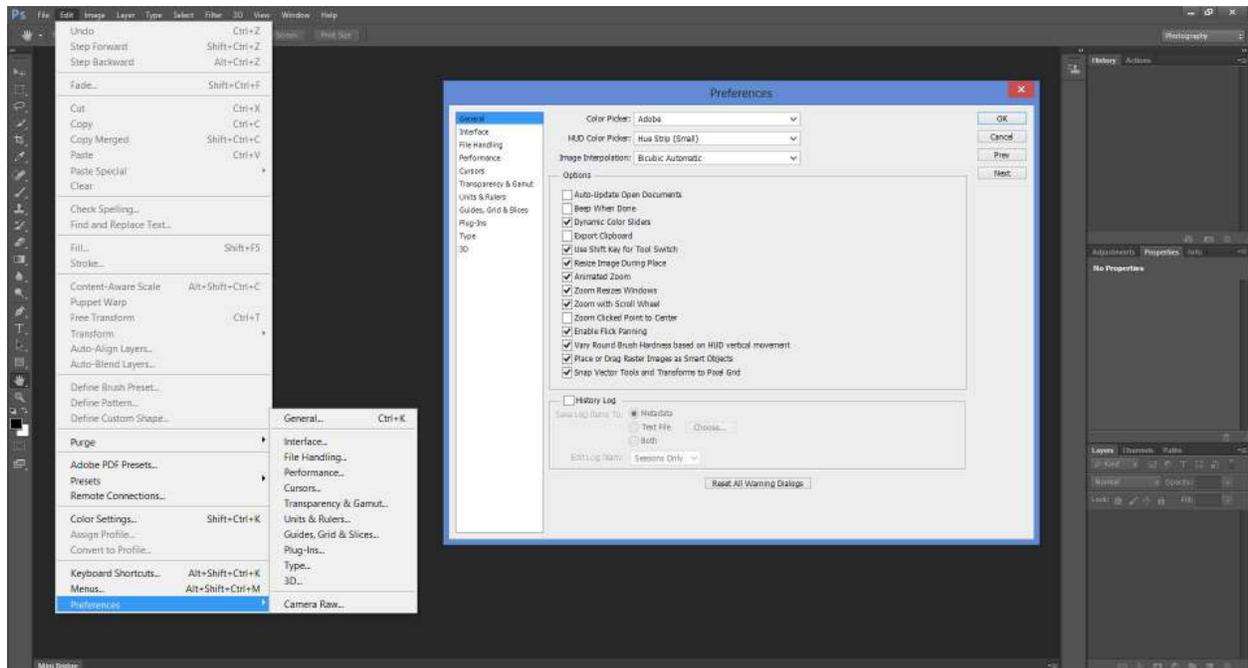
- ❖ **SAVE** often. You never know when or if a data disaster will strike.

The editing process will now be shown using screen shots of editing images of a flowering *Allium* taken and stacked together using the Zerene software.

Double click on the Photoshop icon to open the program to set your preferences. To amend and apply some preferences Photoshop may need to be restarted.

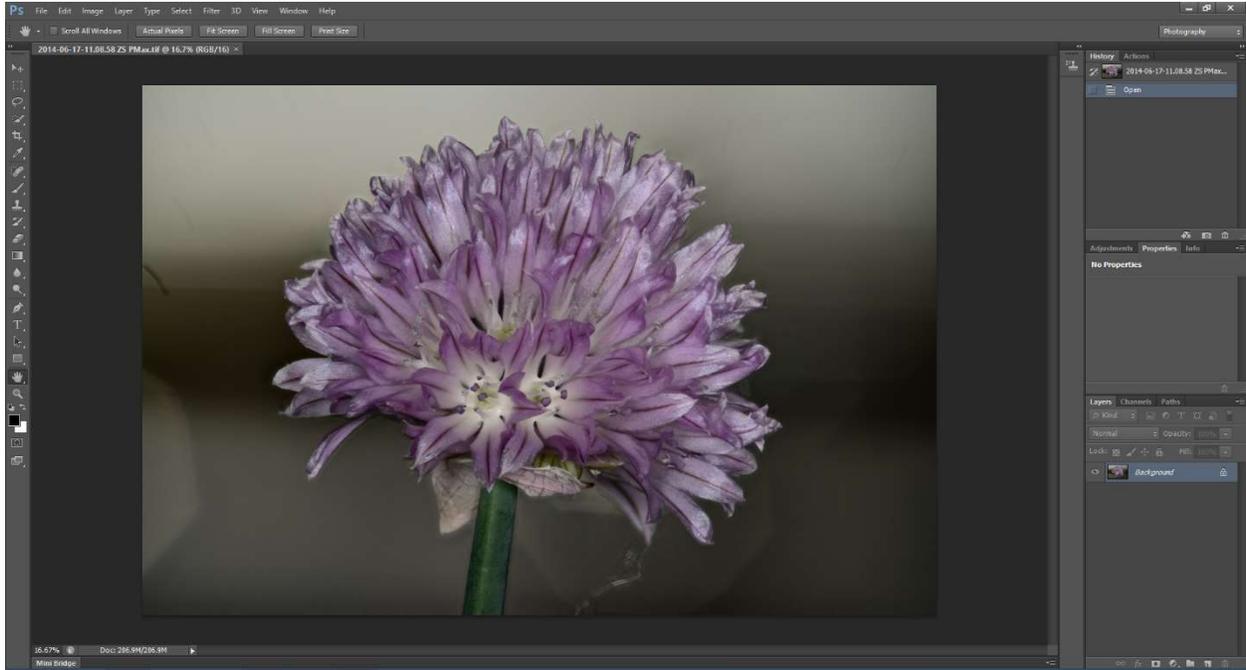
It is important to set your preferences for file handling and editing. Figure 1 shows the main screen and some of my preference selection for editing, selected by LHM Edit > Preferences

Figure 1. Main screen in Photoshop CS6 showing my main preferences for editing in CS6.



Open the image file from Bridge by highlighting the file and doubling clicking the LHM. CS6 will open (Figure 2). In order to edit the image an editable layer must be present and when the image is first opened, the background layer is not editable.

Figure 2 Image first opened in CS6.



The following figures (Figures 3 to 18) show the series of editing functions and the process that I regularly follow.

I edit images in Photoshop using Layers, these are non-destructive and the effect of a layer can be easily seen by making that layer invisible. Ellen and Josh Anon in Photoshop CS5 for Nature Photographers describe layers as the following:

*If you place two prints of the same size on top of each other, only one print is visible, although you know it is there. If you make a hole in the top print then some of the bottom print can be seen. The two prints can be regarded as layers and in Photoshop each layer is called a pixel layer.*

Just to complicate things, Photoshop has two kinds of layers, pixel layers and adjustment layers. Adjustment layers do not have any pixels but are the layers used for changing the appearance of a pixel layer. For example the Hue / Saturation adjustment layer can increase or decrease specific colour saturation. This is similar to using a filter (such as a polariser) in front of your lens before taking an image.

If you work in layers then each time an adjustment is made only that layer is altered, each time a pixel is altered it can be 'damaged' and loses quality. Therefore working with layers ensures that this does not happen and your original image remains intact. Layers can be made visible or hidden and 'holes' can be punched, colours adjusted whilst keeping the integrity of the original. Layers are laid on top of another, with the top layer being visible.

When an image is opened for the first time only one layer, the background layer is visible. To enable non-destructive editing another layer must be 'constructed' from this layer.

A Layer must first be made from the Background layer of the unedited opened image. This ensures that all editing will be performed non-destructively on one or more subsequent layers.

To make a layer visible (or to hide it), click on the 'eye' icon next to that layer in the Layers panel. When the 'eye' is seen the layer is visible, when the 'eye' is not visible, the layer is hidden from view.

Make a Layer from Background by either LHM on the Layer tab > New > Layer from Background

Or you can use the Layer symbol,  located at the bottom of the Layers panel (Figure 3).

Figure 3a. Creating a Layer from Background enabling all subsequent editing to be on a non-destructive layer.

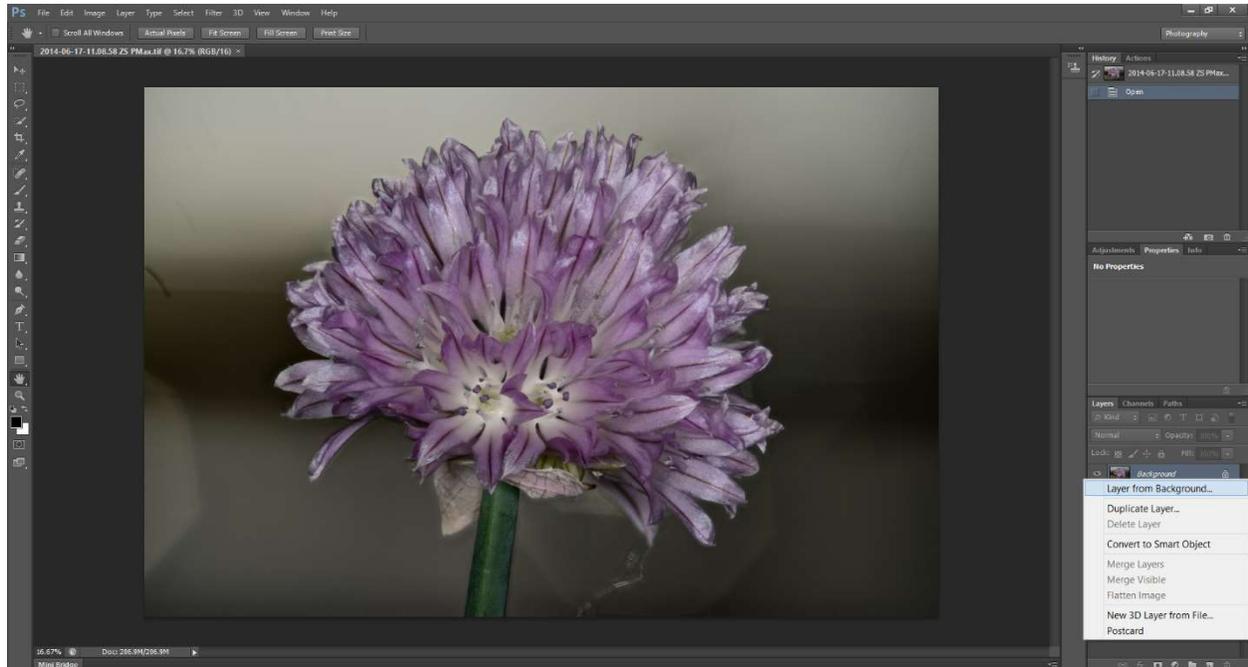
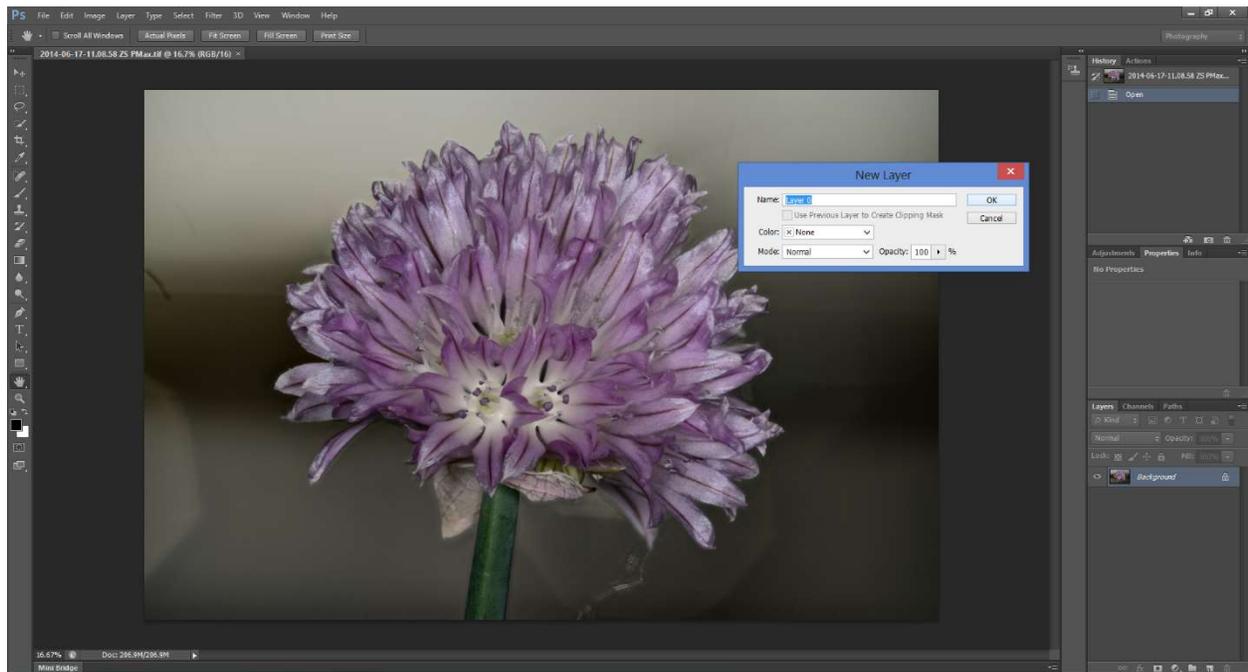


Figure 3b.



Once you have an editable layer you can then correct any colour aberrations by adding a Hue / Saturation Layer (Figure 4).

## 1.2 Adjusting any colour aberrations

Again, as before, either use the Layer tab or the Layer symbol button and the Adjustment Layer menu appears.

Figure 4a. Hue / Saturation for colour adjustments

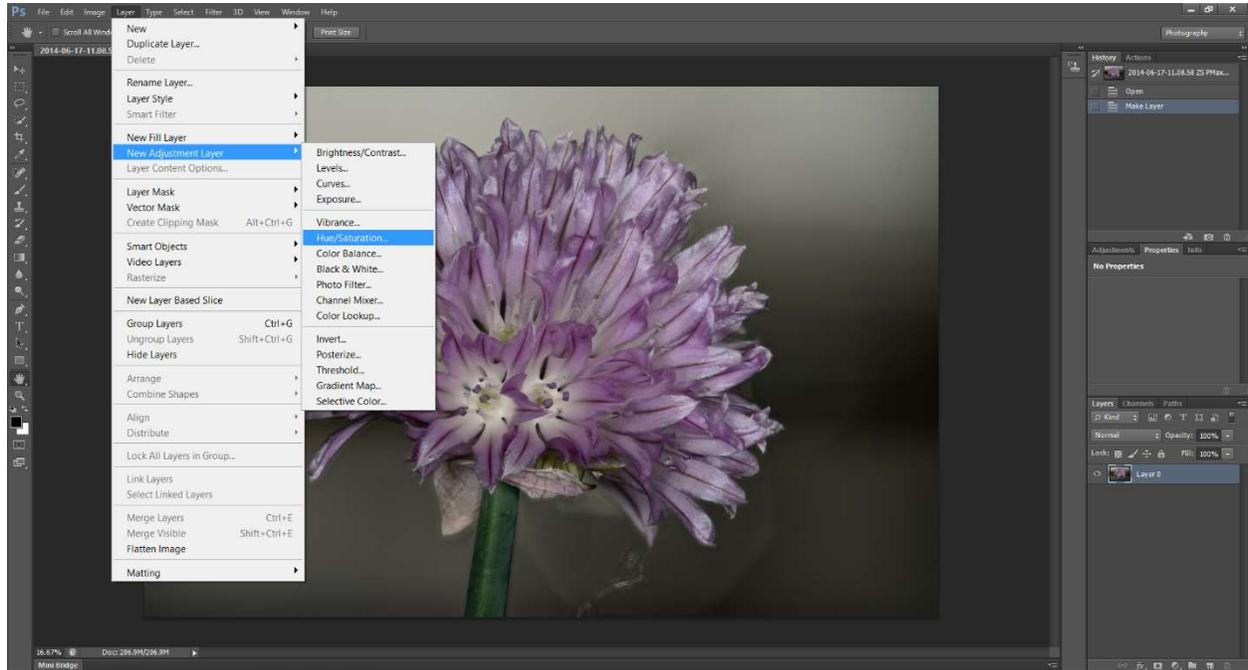
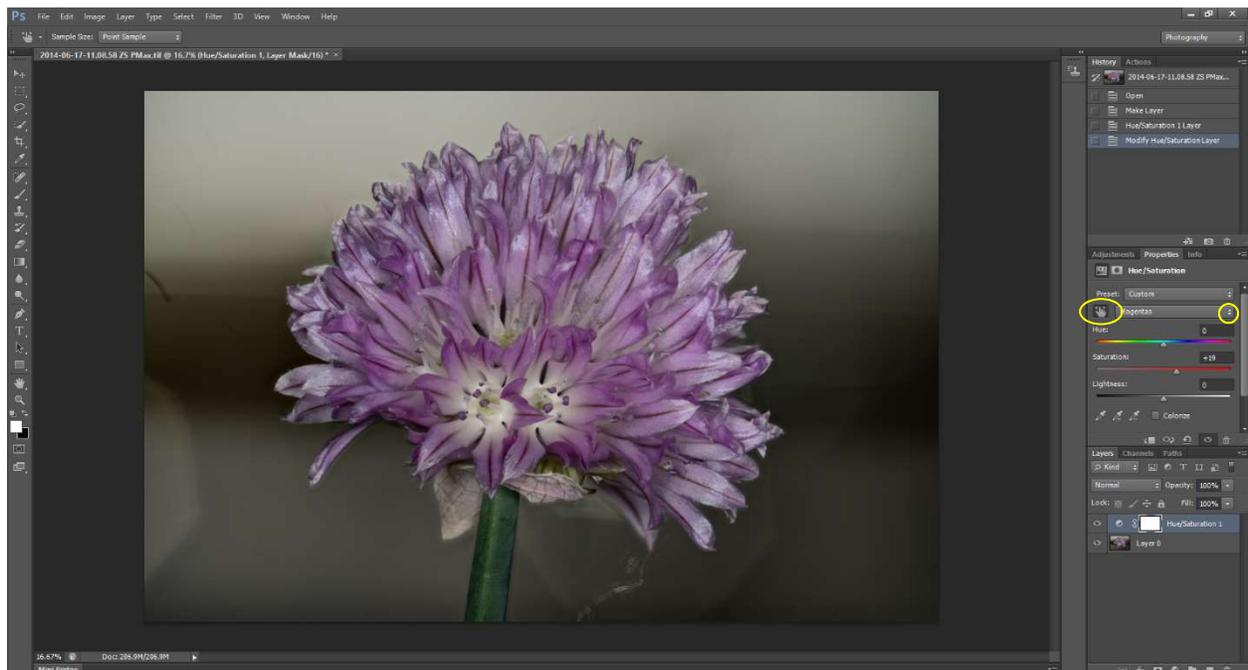


Figure 4b. Use the hand / finger symbol to select the colour you wish to correct, use the LHM to increase or decrease the saturation as required moving it to the left or right whilst holding it down.



After any colour correction the background may need to be changed. One process for completing this is outlined in the following figures (Figures 5 to 12).

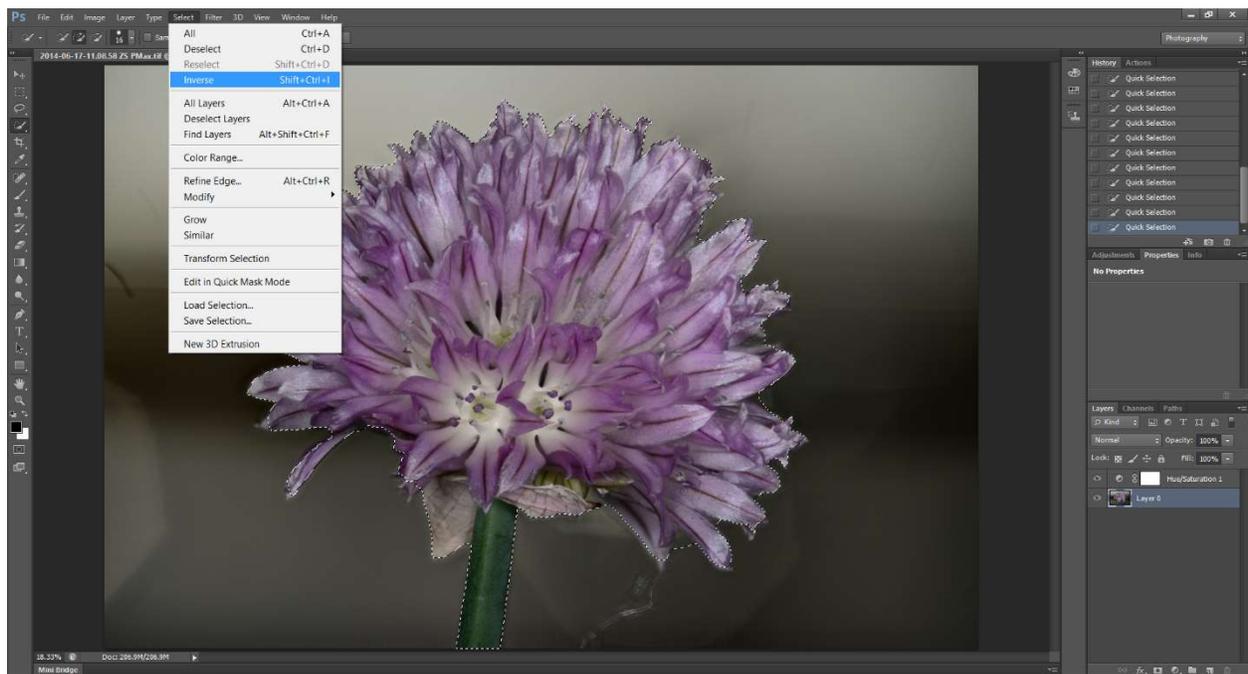
### 1.3 Editing the background

Firstly use the Quick selection tool (fourth tab down on left vertical tool bar) to draw an outline around the subject. The brush size in pixels can be changed in the tab that appears when the brush is in use. A small brush will take longer but is more accurate. Care taken to draw around the image can save time in later editing steps.

Go to  Select on the main tool bar and using LHM click on Inverse (Figure 5).

When inverse is selected the object around which you used the selection tool will not be edited, it is therefore literal in that it is the *Inverse* of your selection.

Figure 5. Quick selection tool and invert image



Click on  Refine Edge in the second row tool bar from the top of the page.

The Refine Edge box appears (Figure 6). In the View Mode box the user can change the appearance of how the image looks whilst editing in Refine Edge mode.

- ❖ My preference is to Show Overlay and have the Radius showing. The values for radius, smooth, feather, contrast and shift edge may vary for each subject. My default output is always a New Layer with a Layer Mask.

I prefer to see the features of the refine edge tool clearly, try out the options and find what works for you.

Figure 6a. Refine Edge section parameters with the output image as a new layer with a layer mask.

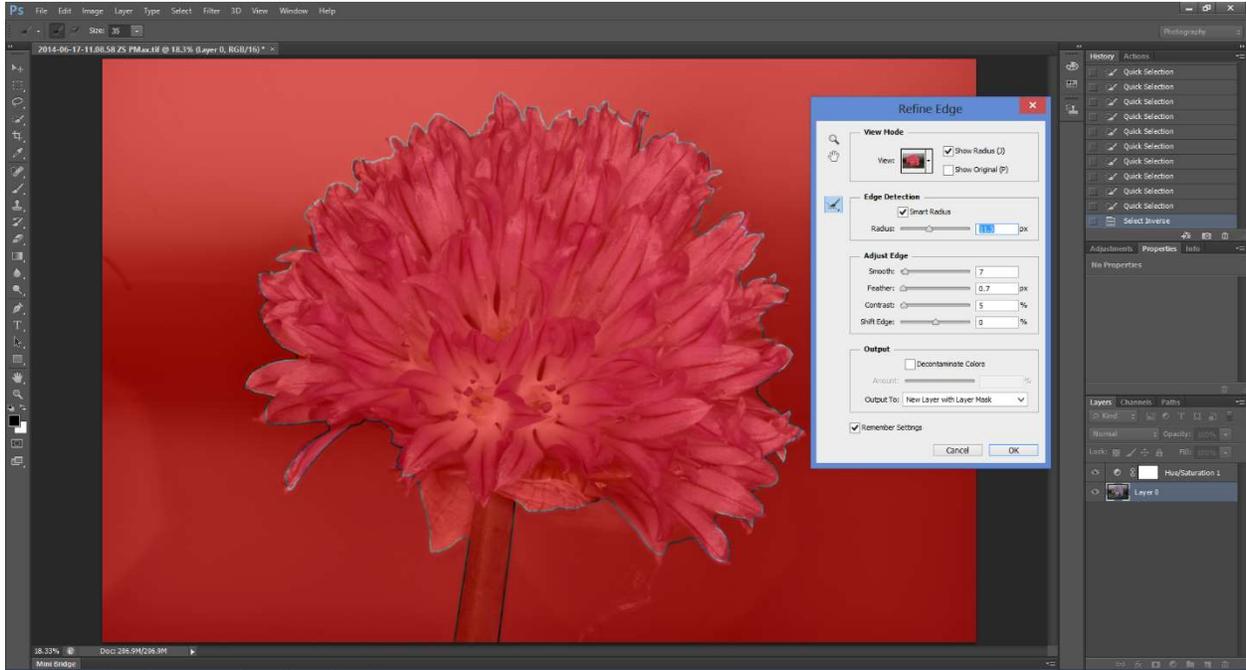


Figure 6b. After further refinement using the Edge Detection and Adjust Edge functions only the outline drawn by the Quick Selection tool can be seen but the subject is still there, it is hidden from view. In the Layers panel the image plus a black and white silhouette is visible.

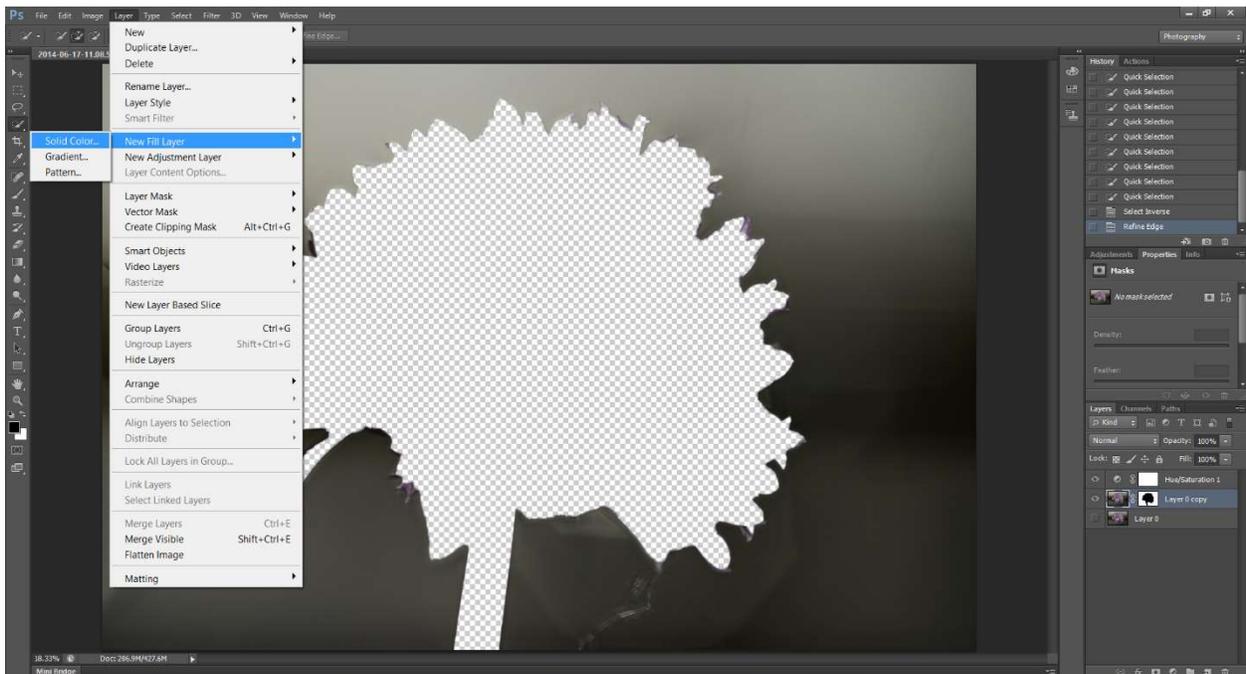


The next step is to choose the background colour and put this in place behind the subject (Figure 7).

The outline drawn by the Quick Selection tool can be seen but the subject is still there, it is hidden from view. In the Layers panel the image plus a black and white silhouette is visible. Layer 0 containing the subject is not selected and therefore not visible yet.

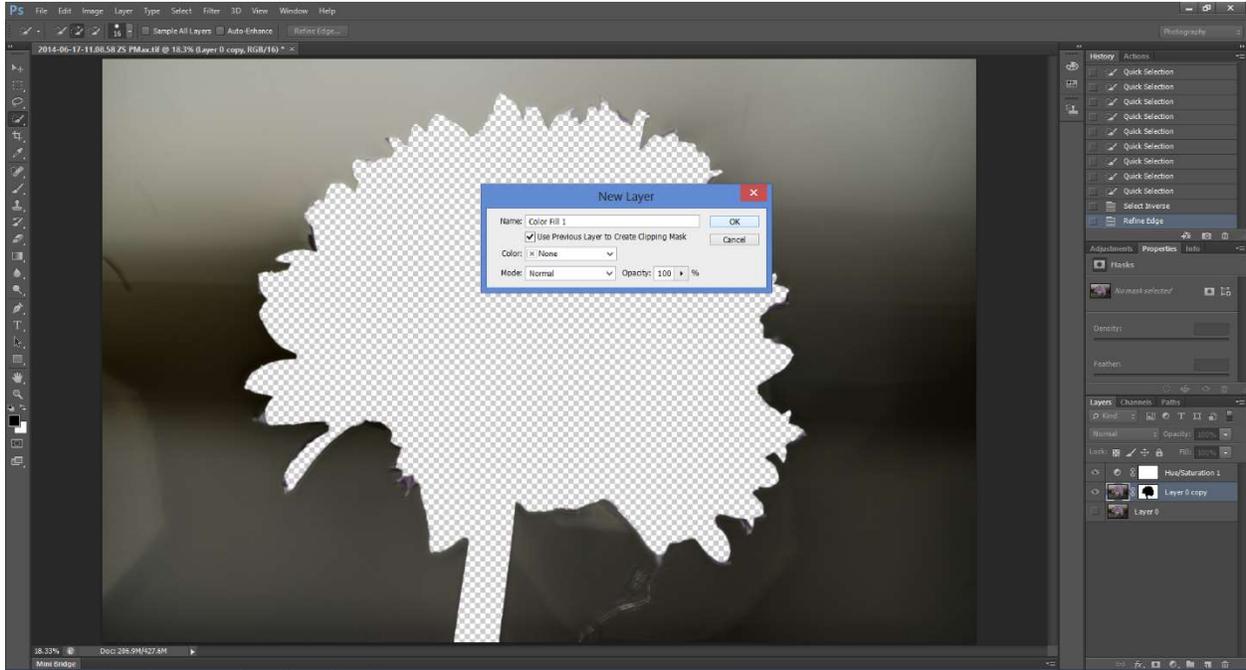
On main tool bar Click Layer > New Fill Layer > Solid colour

Figure 7. Adding the background colour layer.



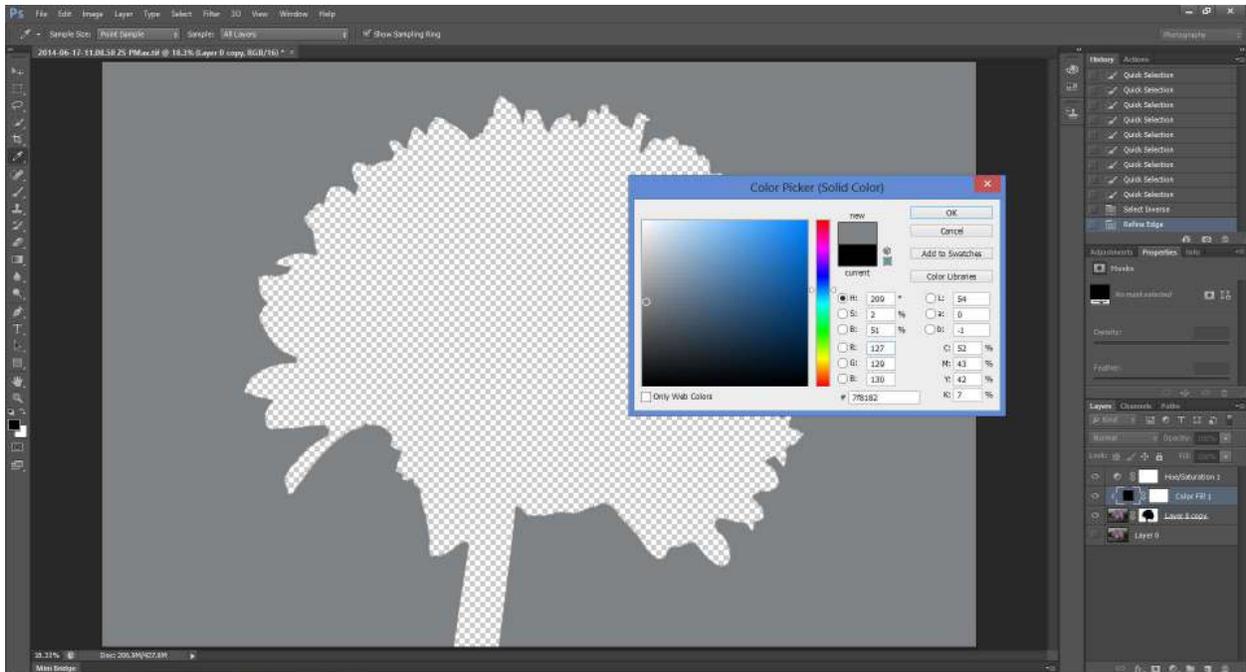
The New Layer box appears > click on the box to Use Previous Layer to Create Clipping Mask (Figure 8).

Figure 8 . New Layer box with Use Previous Layer to Create Clipping Mask.



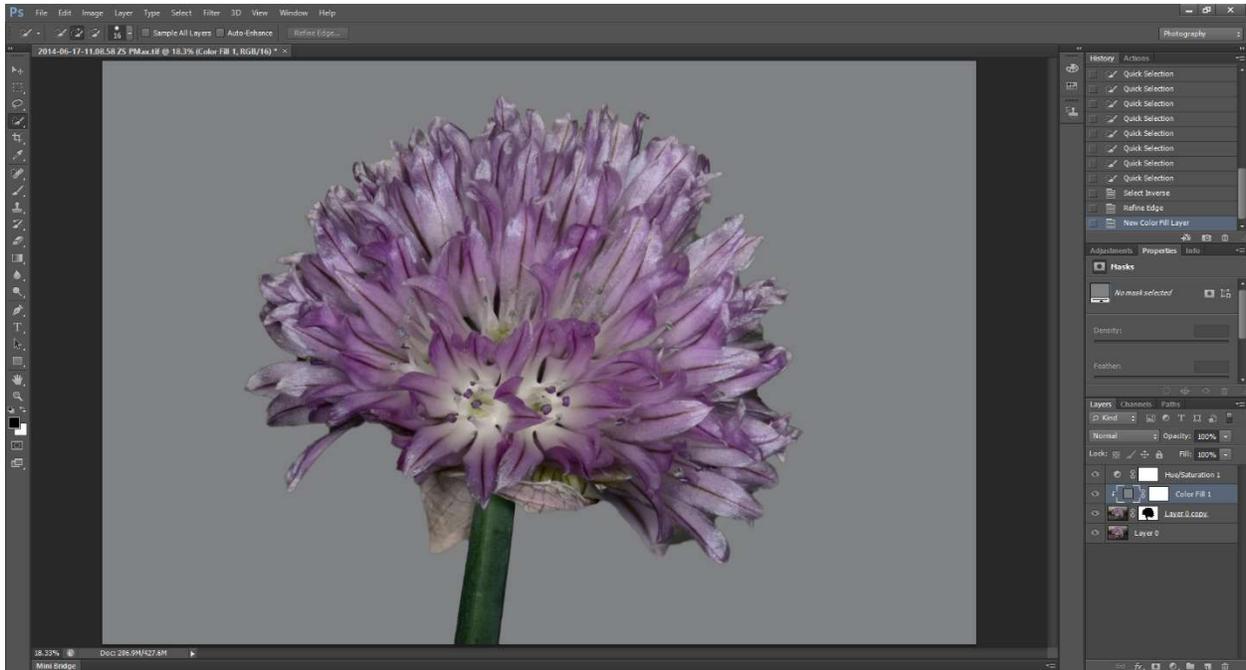
After clicking OK the Colour Picker box appears, this is where you can choose any colour for the background (Figure 9).

Figure 9. Colour Picker box showing a wide selection of colours.



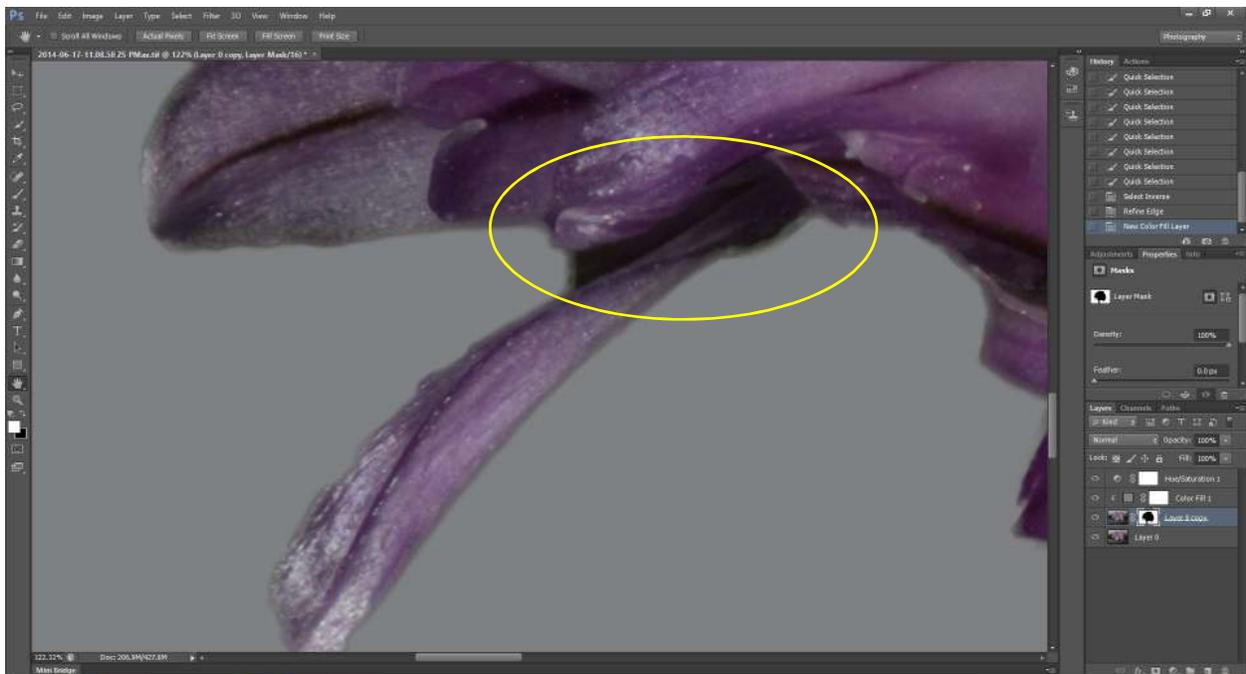
The resultant selection is shown in Figure 10 and after selecting Layer 0 in the Layer panel.

Figure 10. Uniform colour background added now with subject visible after selecting Layer 0.



Using the hand function (left hand vertical tool bar) and CSM to zoom in closely, there may be some further editing to tidy up around the edges. Figure 11 shows a dark area that should not be in the final image.

Figure 11. An area where further editing is required before the image is completed.



The tidy-up around the edges is achieved easily now that we can use the Layer Mask option (our output from Refine Edge, Figure 6). This allows us to paint around areas using just black and white, white paints on the background colour of whatever colour option was chosen and black reveals the image underneath.

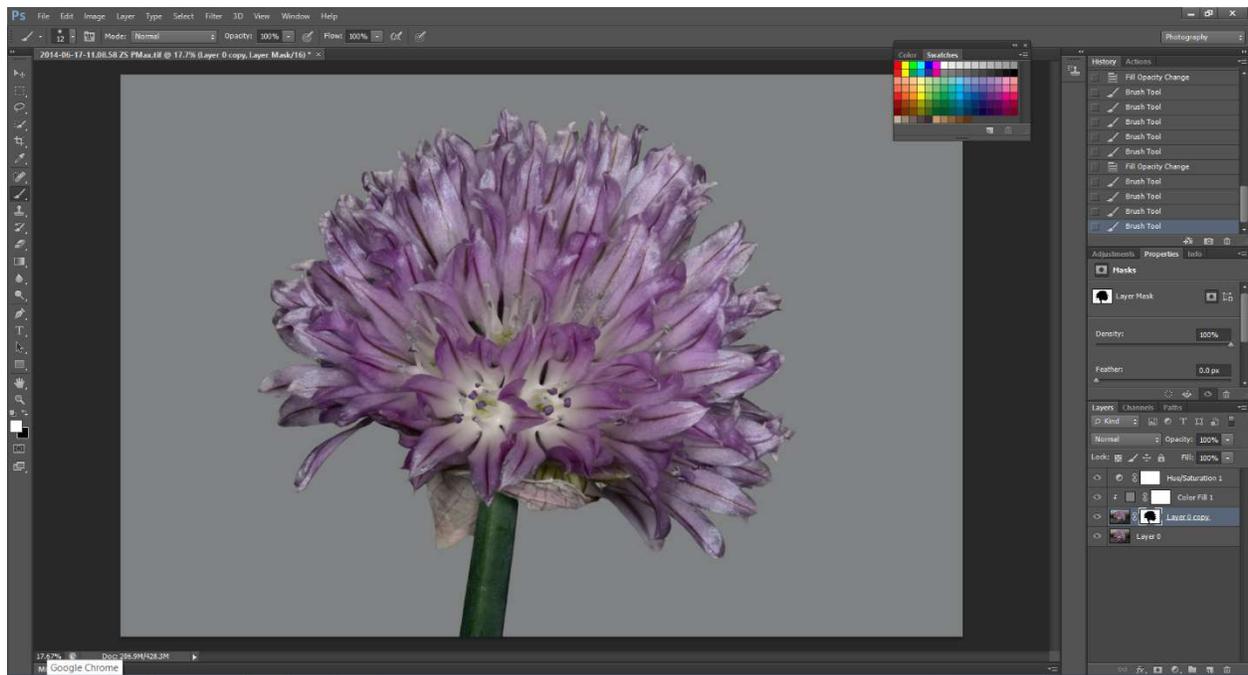
LHM on the Layer Mask (black and white silhouette)

Click on the Brush tool (left hand vertical tool bar)

Click on Windows (main tool bar) > Swatches

After the use of the black and white colours to paint around the edges or where it is necessary, Figure 12 shows the completed image. Again brush size (and shape) can be selected from the brush selection at the top.

Figure 12. Completed image.



## 1.4 Sharpening the image

All that is required now is to Sharpen the image slightly, although this may not be required. Go to Filter (main tool far) and LHM Sharpen. There are several methods to choose from, all have merits but I use Smart Sharpen. If you tick the Preview box then the effect of your sharpening can be seen. Adjust the values as for amount and radius as required (Figure 13).

Figure 13a. The Smart Sharpen box is selected from the Filter menu on the main tool bar.

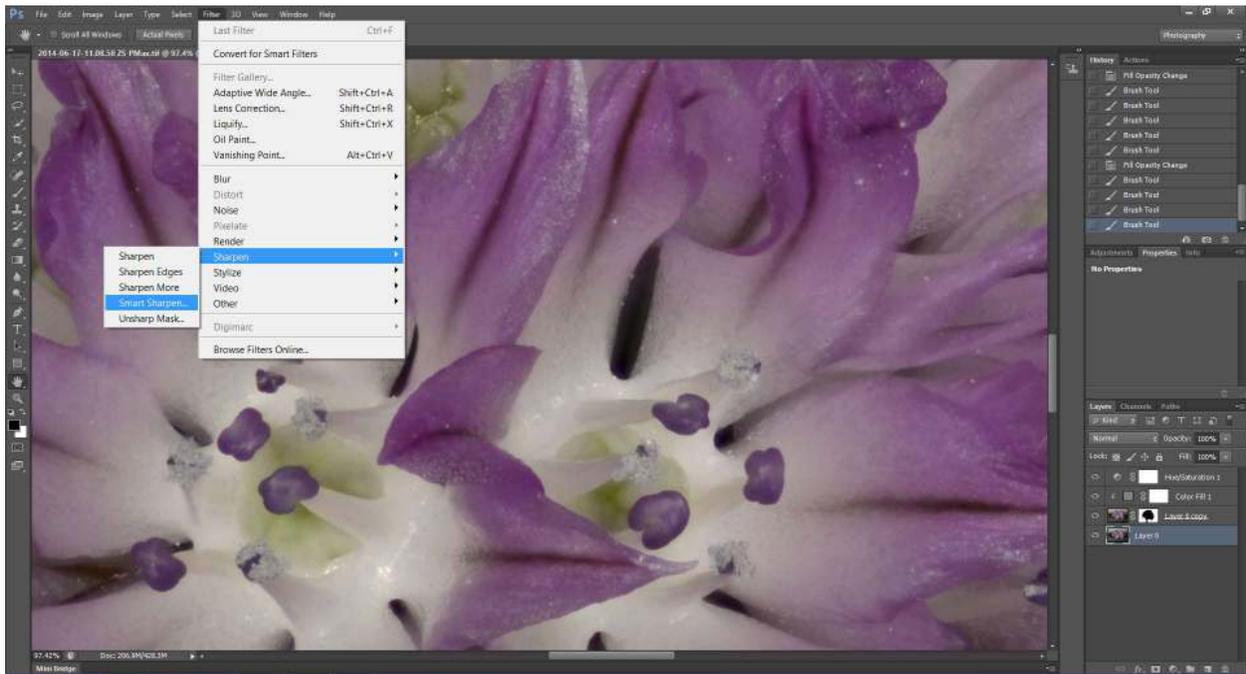
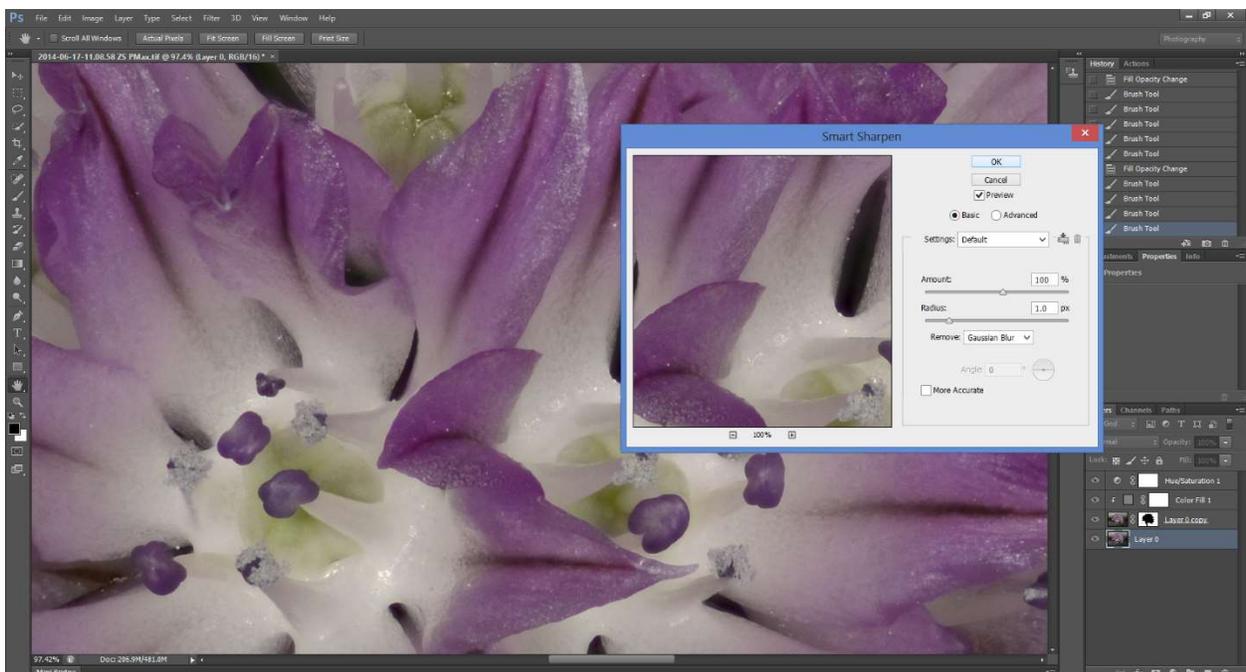


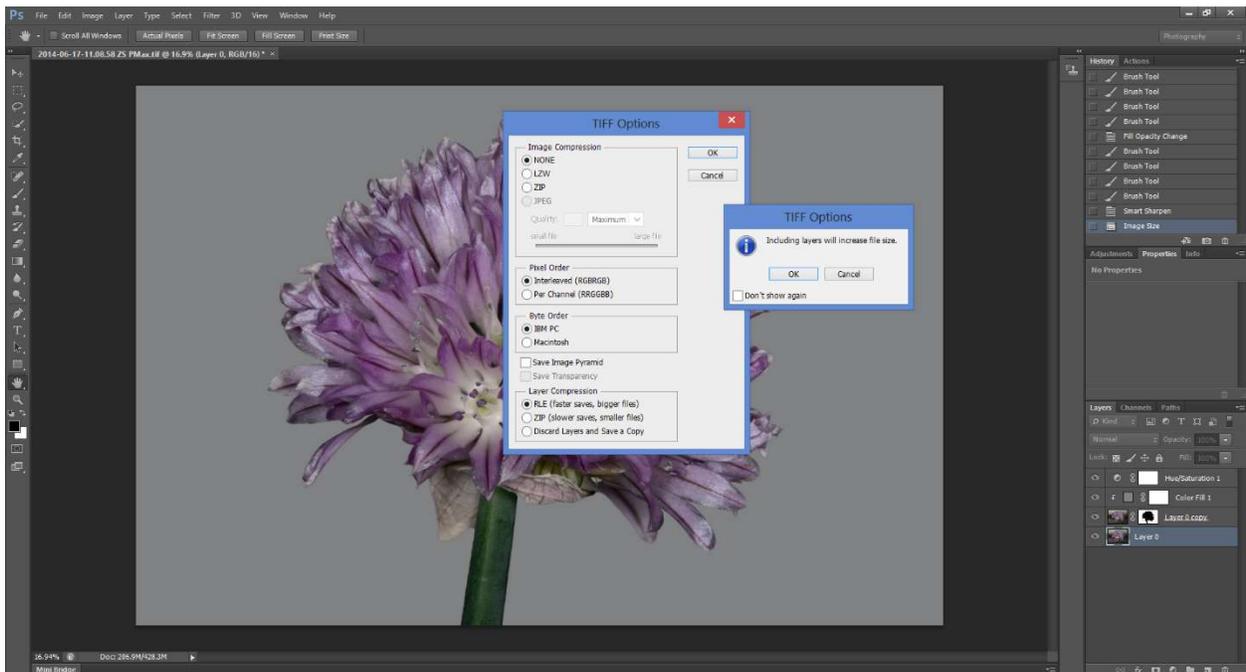
Figure 13b.



After Sharpening the only functions left are to add a scale and a copyright (if needed). Before adding any text I would strongly advise that the image is saved as a TIFF (Figure 14) with layers. It is possible that for a future use the addition of a scale and copyright are not needed, if you have two versions saved then you do not need to start again. It is also easy just to provide the version required without any ambiguity.

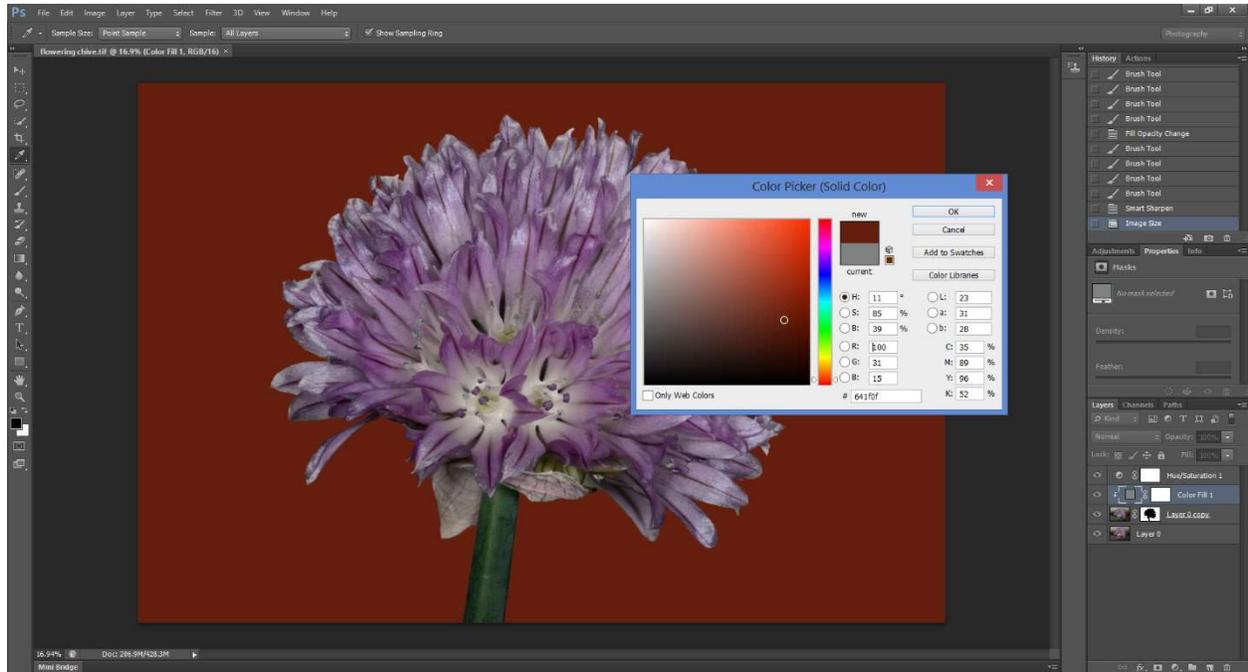
**Note:** When using layers you can select and deselect layers so that they are visible so saving two versions may not absolutely necessary.

Figure 14. Saving as a TIFF with layers will result in a large file but all data is available for future edits.



The advantage of saving as a TIFF with all the layers intact is that maybe you wanted to change the background colour for a poster. It is easy to do so by just LHM on the colour panel of the Colour Fill layer. A new colour picker box appears, choose your colour and the background is changed instantly (Figure 15).

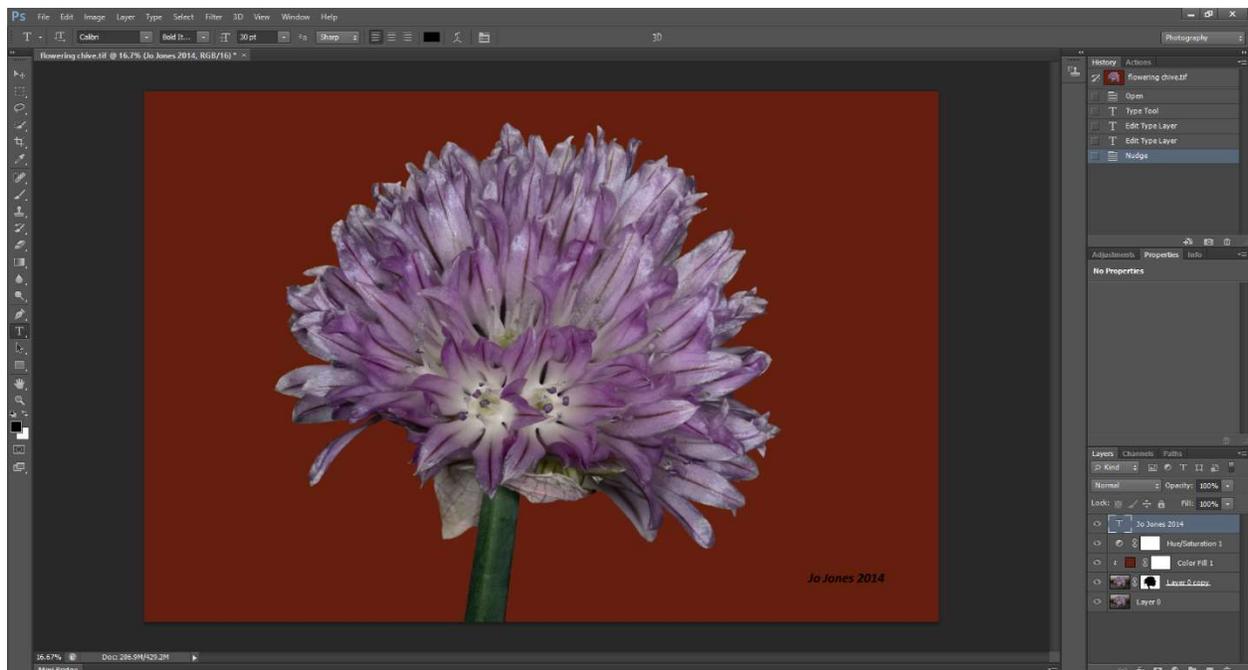
Figure 15. Background colour change is easily achieved with a file saved as a TIFF with layers.



## 1.5 Adding a text layer

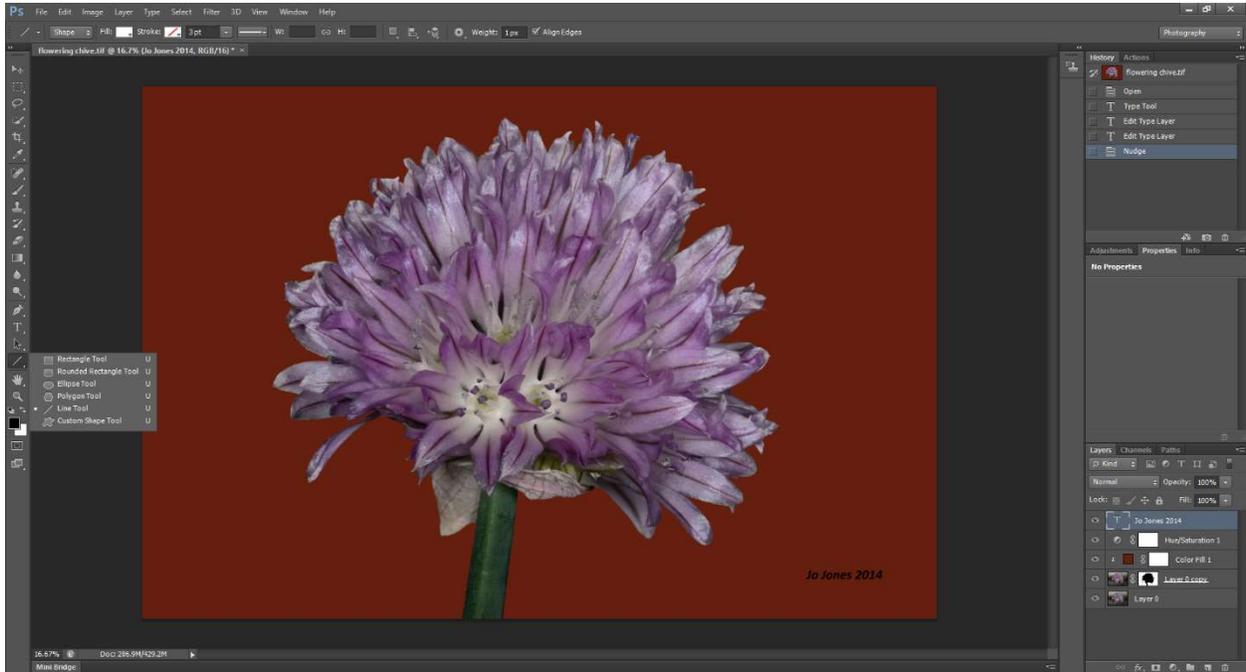
Click on the Horizontal Text Tool (T on the left vertical tool bar), the properties of the text 'brush' can be seen on the second tool bar at the top. These are almost the same as in Word. A text cursor also appears where the mouse is hovering over the image, position the text cursor where you want to add the text and LHM. You can now write in the required text, when finished click on the tick that appears. You can resize the text by highlighting the text and using the box at the top to change the size as in any application that uses text (Figure 16).

Figure 16. Added text on the final image.



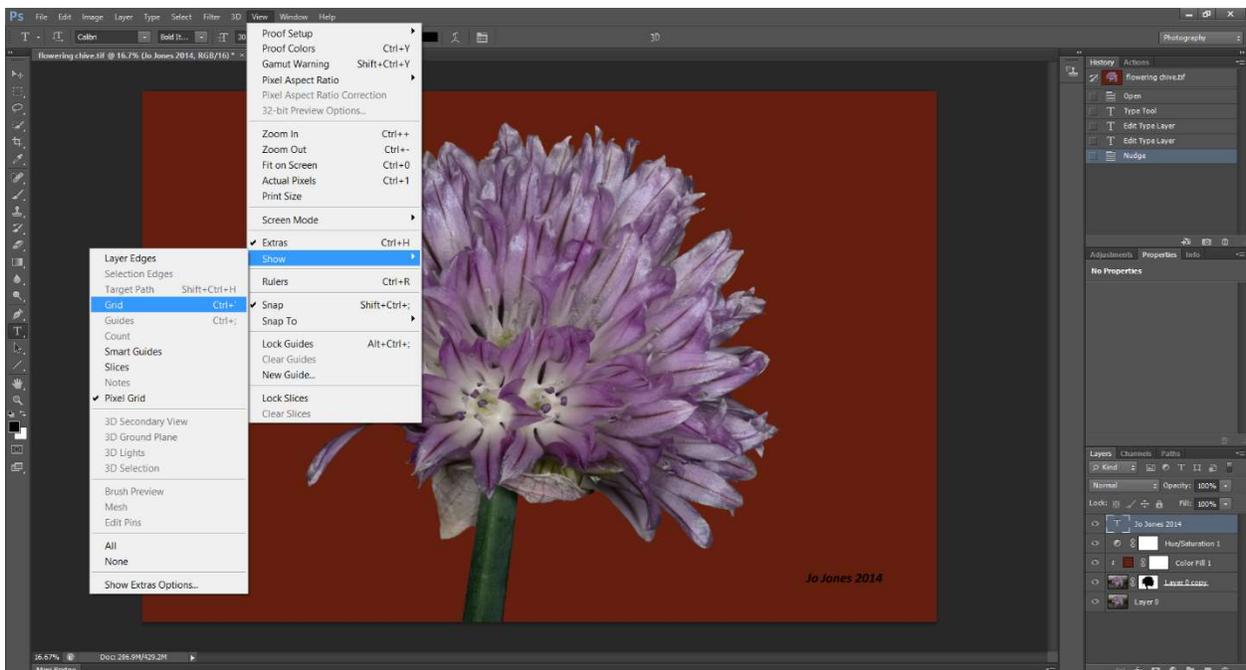
The text layer is seen in the layers panel on the bottom right hand side above the Hue / Saturation layer. Adding a scale is almost identical, with a line drawn instead of the text, although the units of the scale will be added as text. The Line Tool is found just above the Hand on the vertical tool bar (Figure 17). Each line drawn will be shown as an individual text layer, for example a straight line with two indents will result in three text layers.

Figure 17. Line tool on the vertical tool bar located above the hand tab.



A grid is an option that you can use to help draw a straight line and also to calibrate any units. The grid is accessed from the View tab. Properties for the grid are set in the preferences page (Figure 18).

Figure 18. Grid selection to facilitate drawing straight lines for a scale.



After making all your changes **SAVE** the version with a different name / version number. This will ensure that you do not overwrite a version without a scale and copyright.

Before saving your final version check that the file size and resolution are sufficient for your purposes. Both these functions are found using the Image tab on the main tool bar under the Image Size item. For publishing on the web I provide a JPEG file at a resolution of 72ppi (pixels per inch) with the picture size of 600 x 400 pixels. For some websites I provide an 1800 x 1200 pixels image at 72ppi. Other than this I save as a TIFF file at the highest resolution and size possible for my camera (a resolution of 300ppi and my original image size). Although CS6 can 'add' pixels when resizing, and other CS6 PlugIns are available that will resize an image with minimal loss of image quality, it is always better not to.

These are only a few methods for editing in Photoshop. There is no right or wrong way to do anything. I have shown one way to hopefully get you started. Photoshop is complex and extensive and there are several ways to achieve the same objective. It is a complete editing program. This guide only touches the surface of what the program can do and covers the basics for editing. There are many excellent books / manuals that are available both in electronic format and as hard copy.

### ***Useful contacts***

<b>Product</b>	<b>Company</b>	<b>Website (www.)</b>
<b>Adobe Photoshop (software)</b>	Adobe	Adobe.com
<b>Zerene Stacker (software)</b>	Zerene Systems	zerenesystems.com
<b>Nikon camera systems and software</b>	Nikon	Nikon.com
<b>Canon camera systems</b>	Canon	Canon.com
<b>StackShot controller</b>	Cognisys	cognisys-inc
<b>Macrofocusing rails</b>	Novoflex	novoflex.com
<b>Quick release platform, plates, plamps</b>	Wimberley	tripodhead.com

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