An Approach to Content Creation for Trainz

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Part 3

Creating Textures

(Updates and sample files available from http://www.44090digitalmodels.de)

Creating Textures

It is necessary to have a program capable of editing bitmaps (textures) such as PaintShop Pro or PhotoShop to create and edit textures.

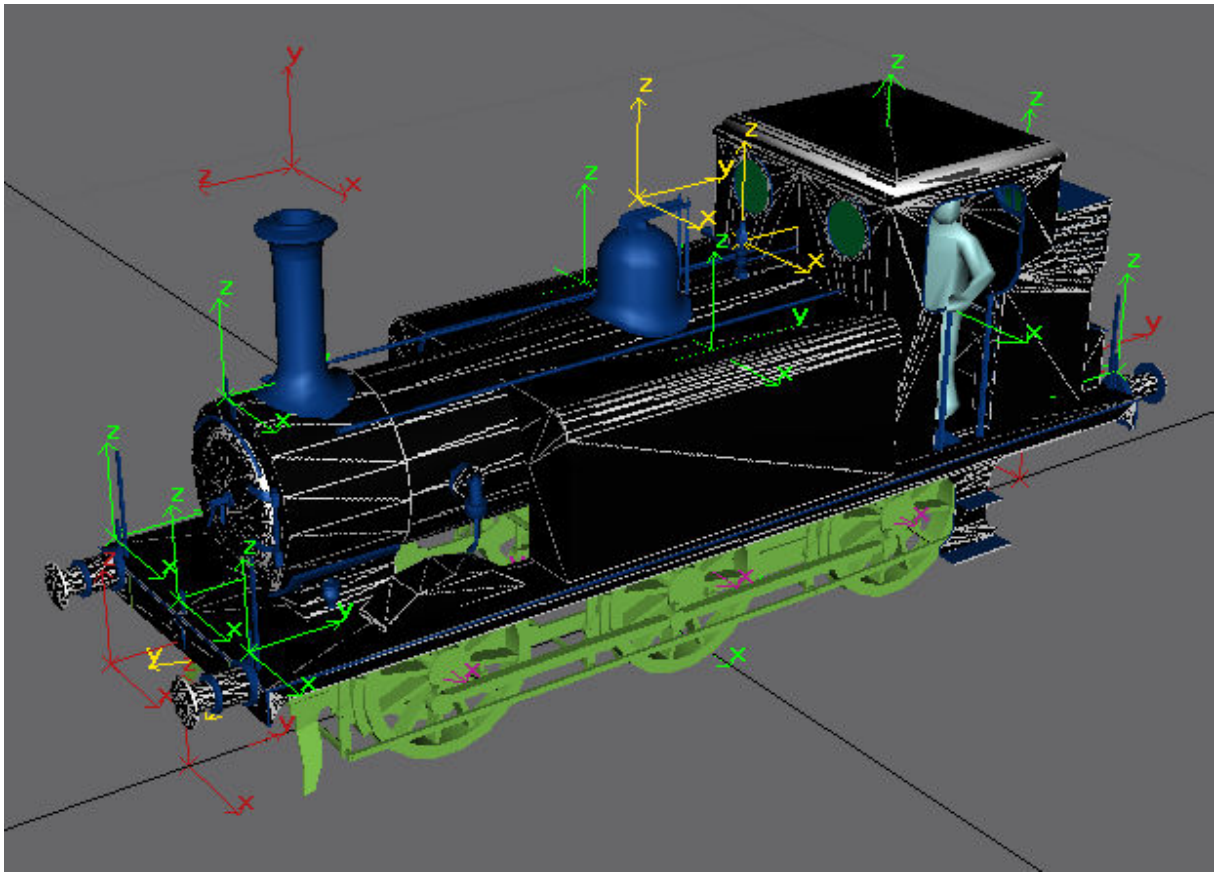
There are many other programs that are free for this purpose – such as the GIMP – but as I have no experience of them I shall be using PaintShop Pro for this tutorial. It is also not necessary to use the latest and greatest version of PaintShop Pro, earlier versions are cheaper and more than capable of producing a good result. For years I used PSP 7, which I have now upgraded to version 9 for about ten pounds (well worth it in my opinion, version 9 is much better although version 10 is apparently better still).

I'd also recommend PhotoShop Elements as a very good editor, which is sometimes given away as part of the software bundle with a camera or a scanner.

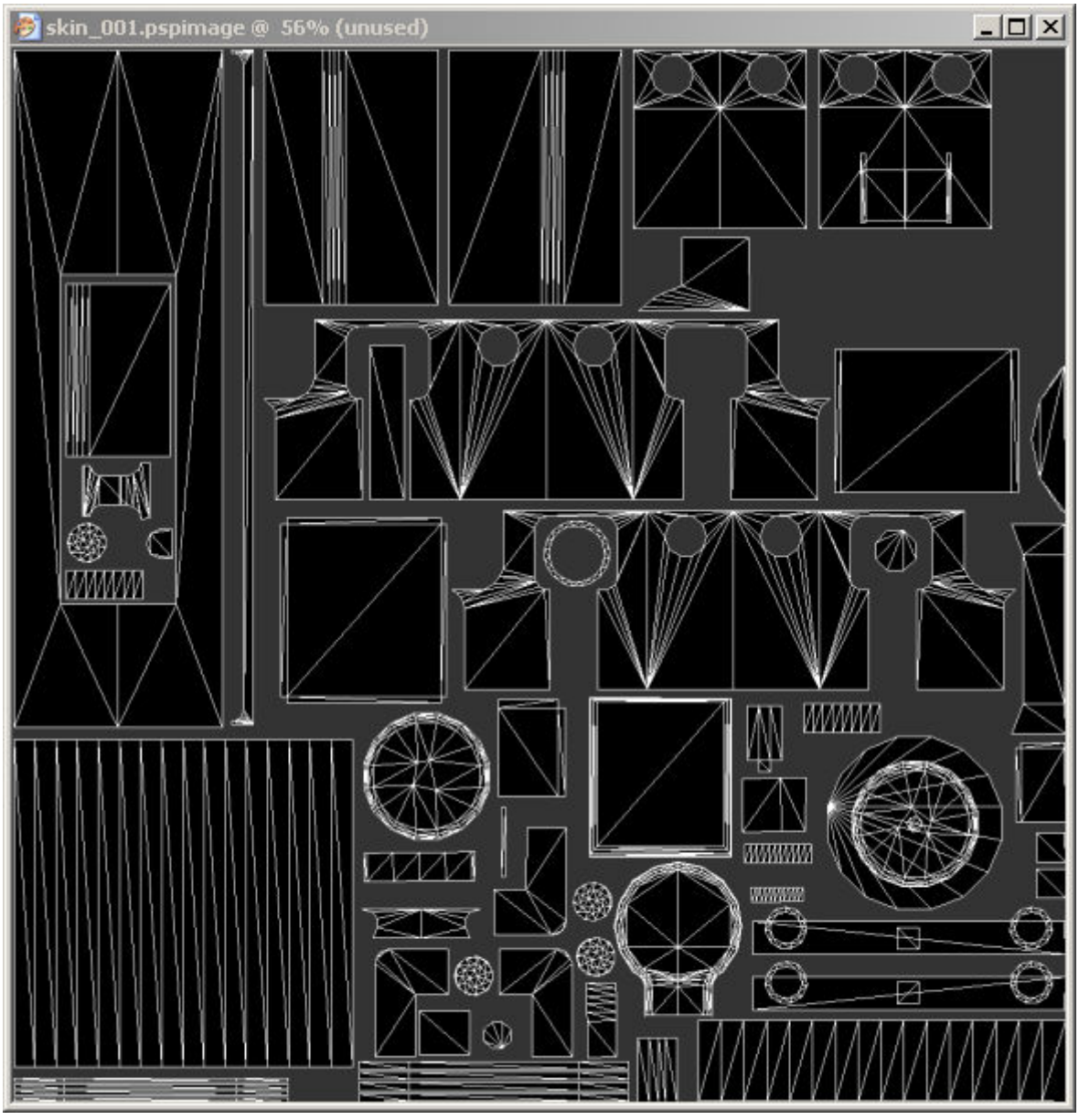
The main thing to watch out for is that the graphics program is capable of working with layers, which may not be the case for very simple freeware programs.
Assuming the basic texture file has been created as described in Part 2 (or the hard way) it's now time to actually create a skin.

To remind you we left the short bunker Terrier with the mapping and the basic texture applied.

I've just mirrored over the bits and pieces that I only Chilliskinned on the left side. The blue parts of the mesh have not been mapped yet.



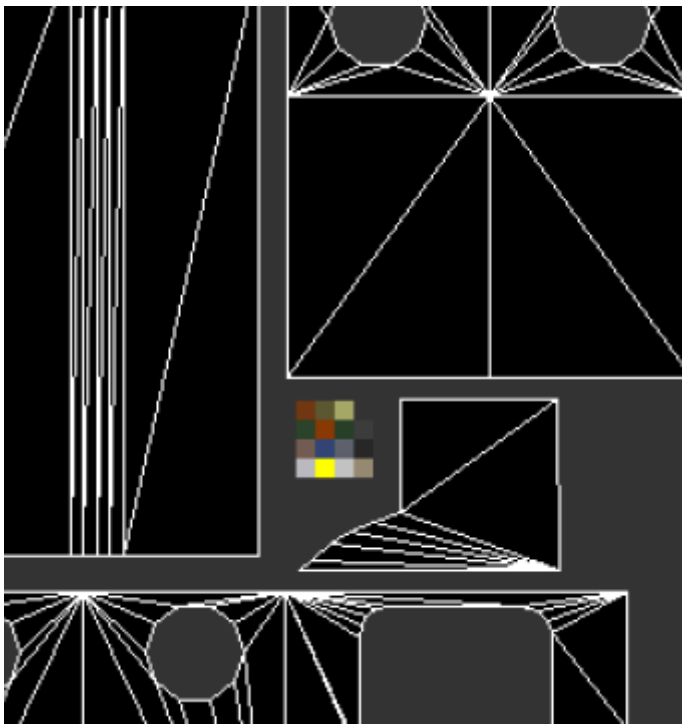
The skin texture after the steps described in Part 2 itself looks like this at the moment, and the first thing to do is to add some very small colour patches to this for the ‘unimportant’ bits – i.e. parts that can be textured with a single block colour. It’s not a good idea to use separate textures for this as each extra texture has the impact of around 200 extra polys in the model according to Auran.

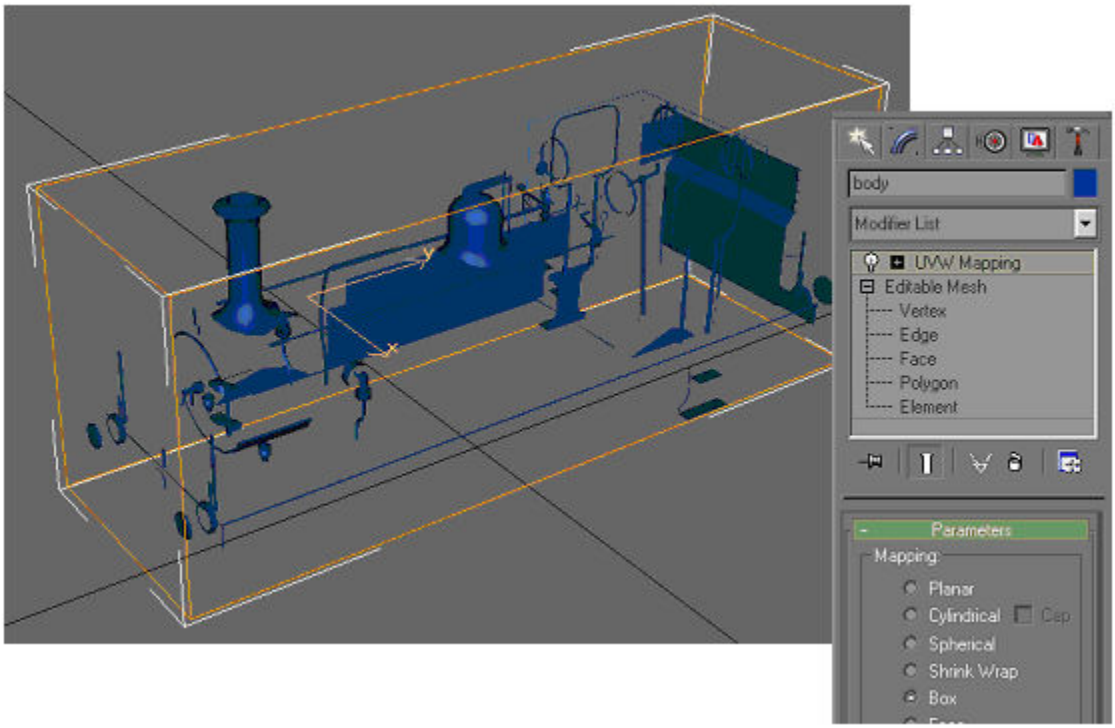


These ‘block colour’ patches can be very small indeed, theoretically 1x1 pixels will do, but I usually make them 4x4, as there is plenty of space on the texture for them.

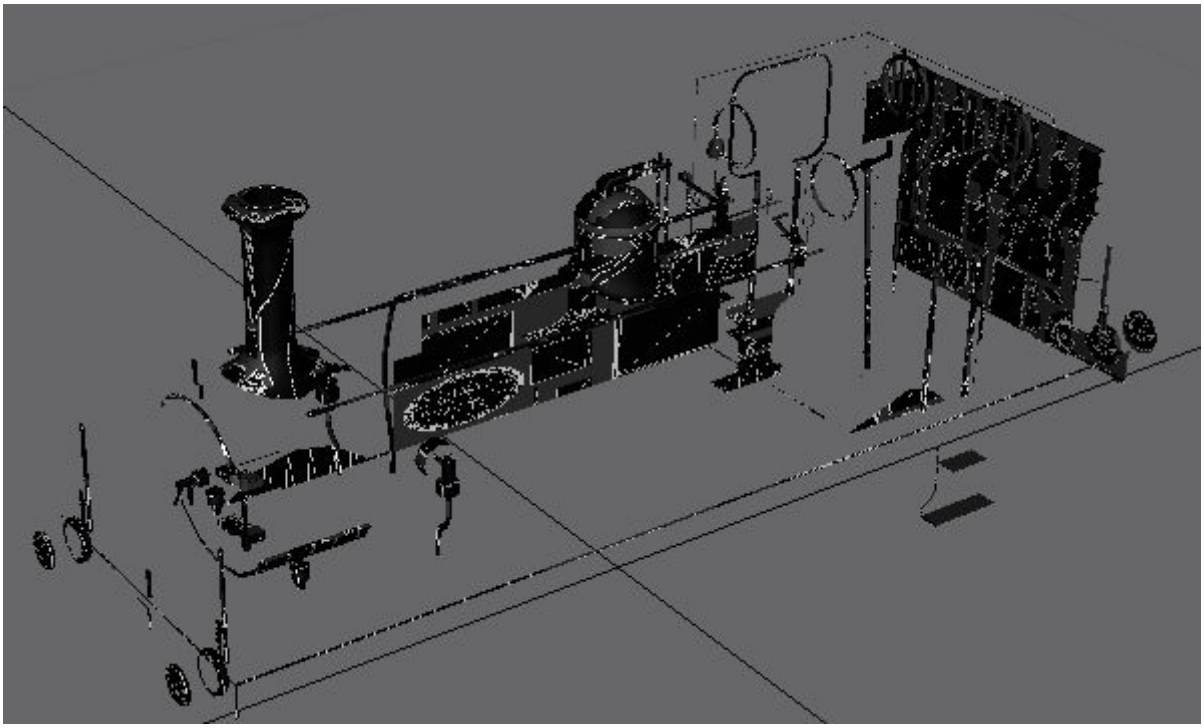
This particular loco has one of the most complicated liveries possible so it should be a good example. Most locos will be considerably simpler to skin though.

Here I've added the colour blocks to the main skin on a separate layer.

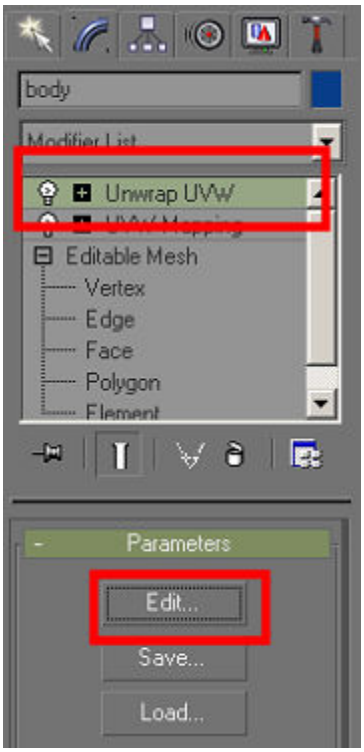




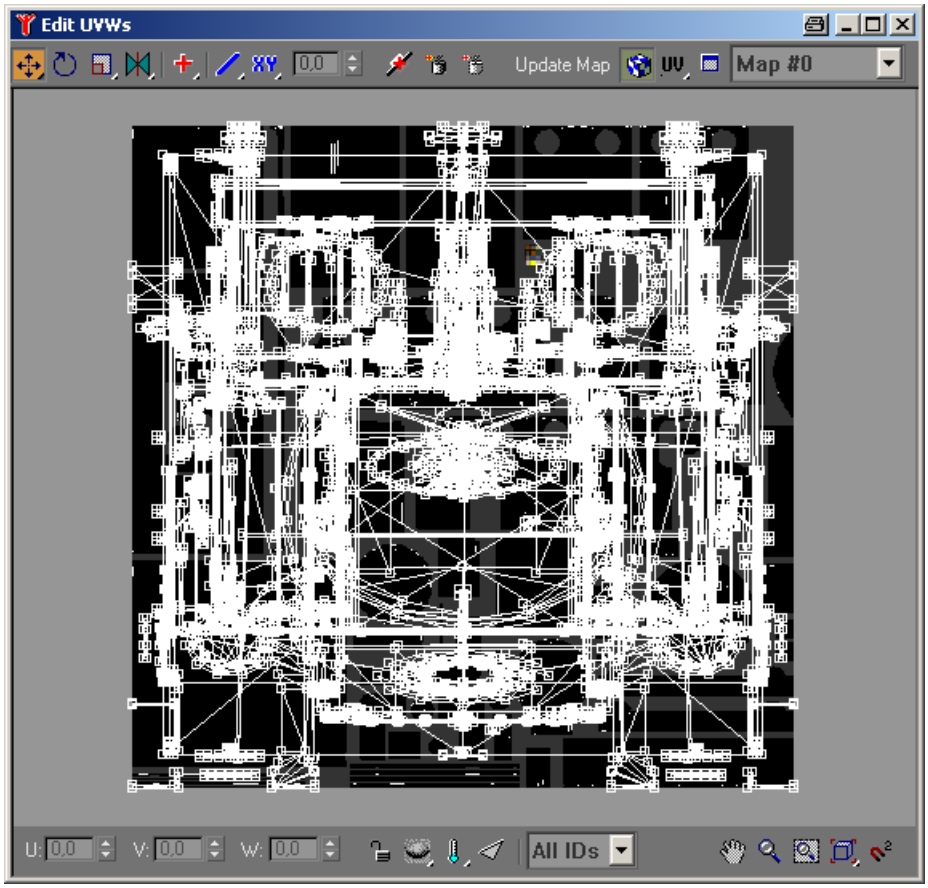
Here I've hidden everything but the 'body' mesh and applied a box mapping to it. Applying the texture that we have prepared results in the following (rather messy) mapping:



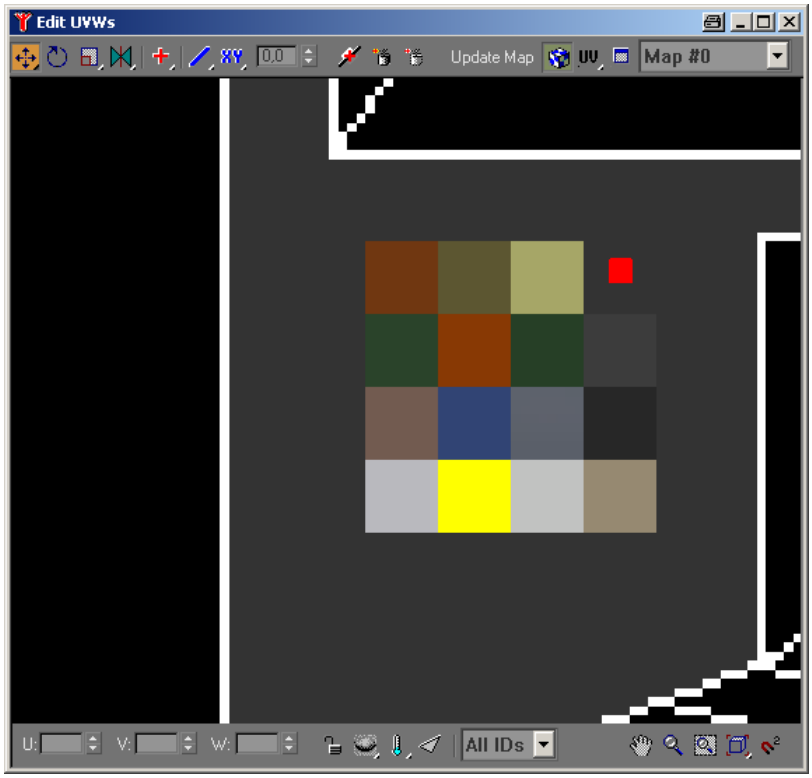
Now we have to change the UVW mapping so that all of these polys are mapped to one of the colour patches in the skin instead of the whole skin. Add an ‘Unwrap UVW’ modifier and choose ‘Edit’



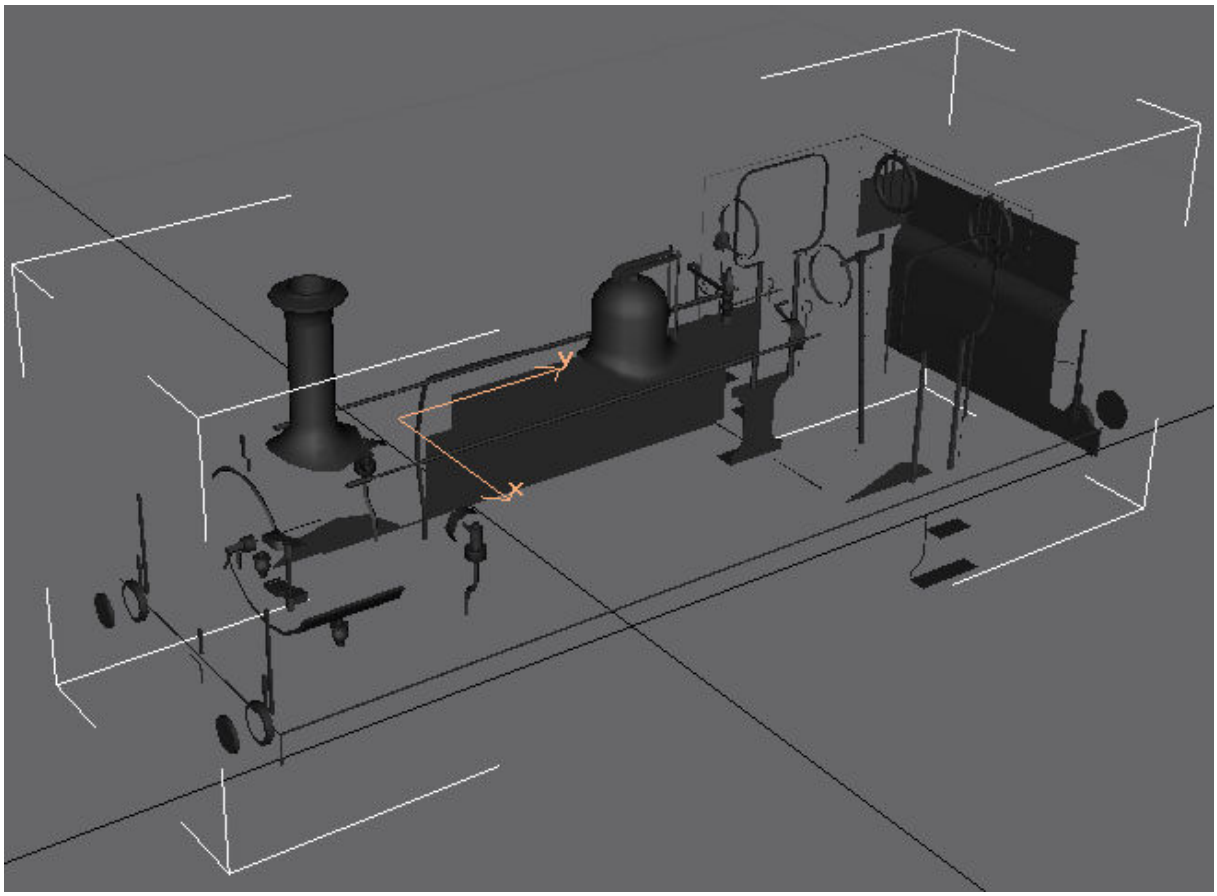
The following window opens:



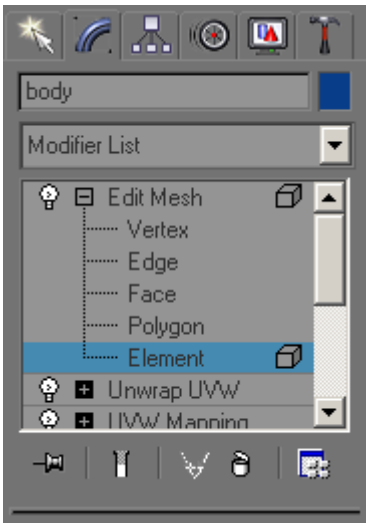
Drag-Select the whole mapping and choose ‘Uniform Scale’ (the third icon from the left at the top of the window) and scale everything down and move it until it all lies within the dark grey colour block on the skin (never use pure black or white in a skin)



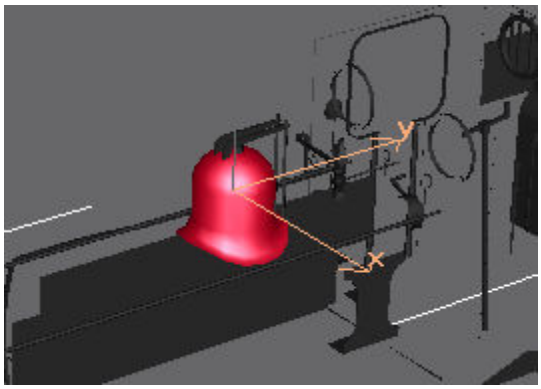
The whole mesh has now been textured with the dark grey colour block.

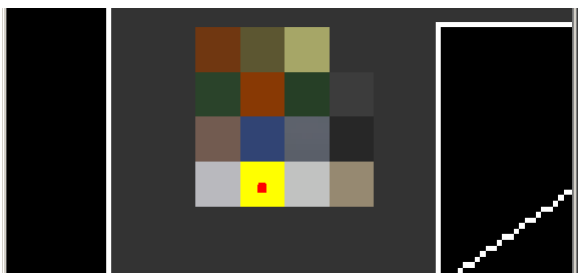


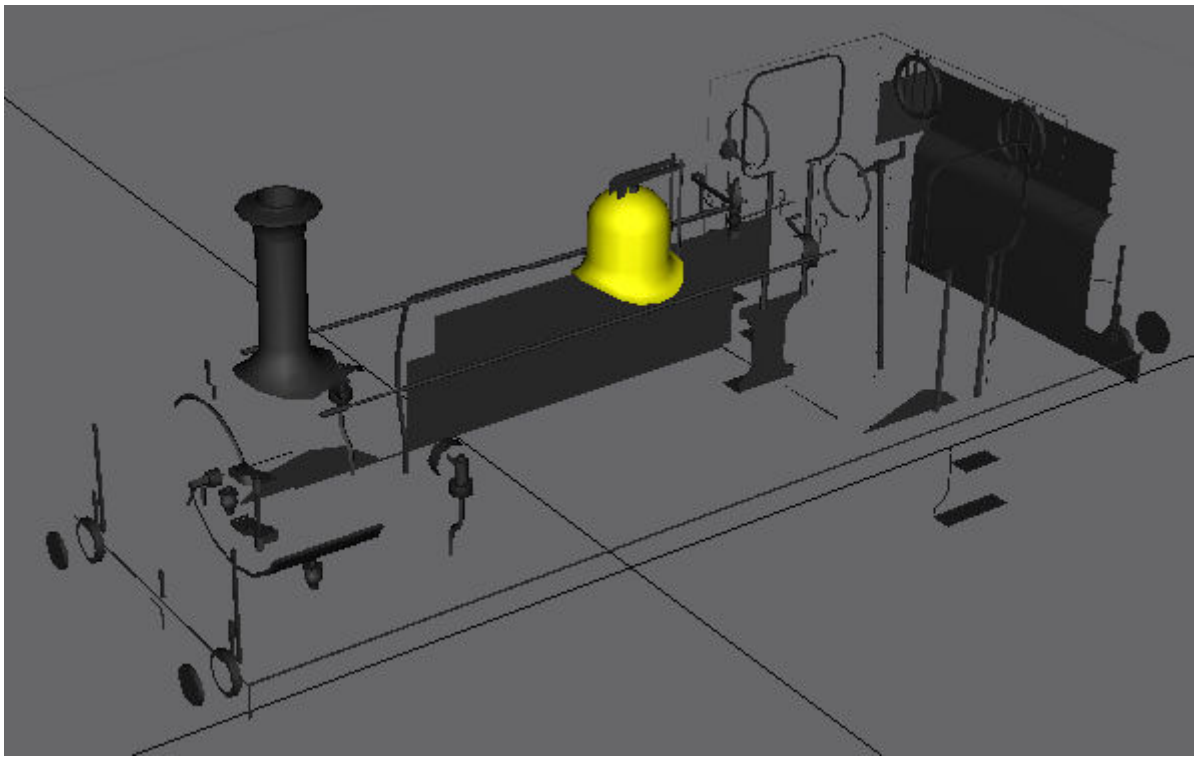
A few parts need to have another colour though, such as the dome, which should be yellow. Add an ‘Edit mesh’ modifier and select the dome element.



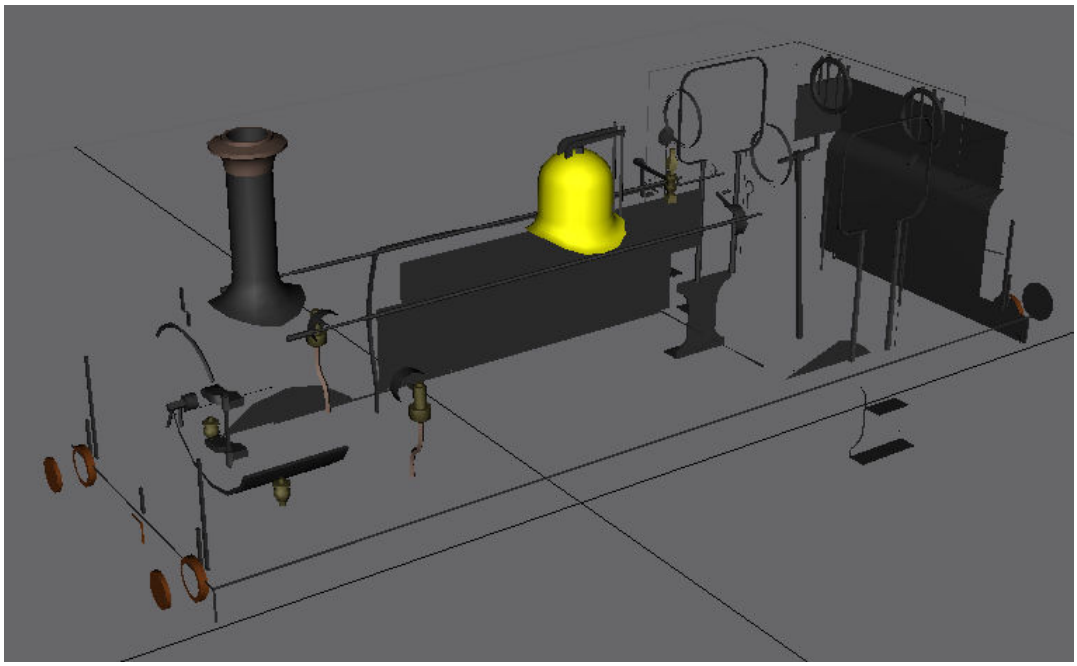
Now add another ‘Unwrap UVW’ modifier to the stack and scale and move the mapping coordinates so that it lies in the yellow square of the colour blocks.







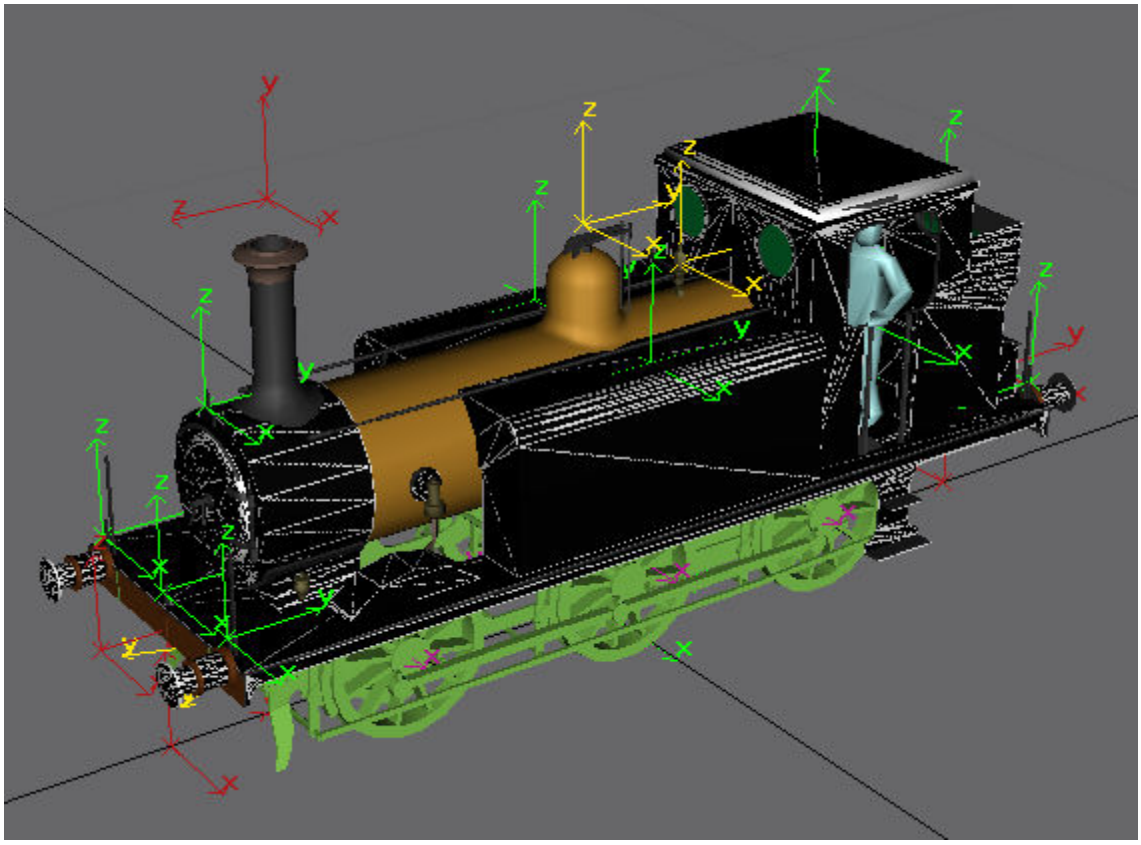
The yellow is a bit bright but we'll tone that down later. In the following picture I've recoloured the pipes and chimney cap in copper and the buffer beam parts in faded red. This was just a matter of repeatedly adding 'Edit mesh' and 'Unwrap UVW' to the stack and then moving the mapping coordinates to the required colour block on the skin. The Wantage Tramway Nr 5 'Jane' from http://www.rail-sim.co.uk was completely mapped like this.



A little later and I've found a picture showing the shade of 'Stroudley Improved Engine Green' I was looking for on the web and I've replaced the original bright

yellow in the colour block with it. This automatically changes the colour of ay meshes that are mapped to this area of course.

I've then sampled this colour and filled the boiler area of the skin with it and filled the buffer beam areas with faded red.



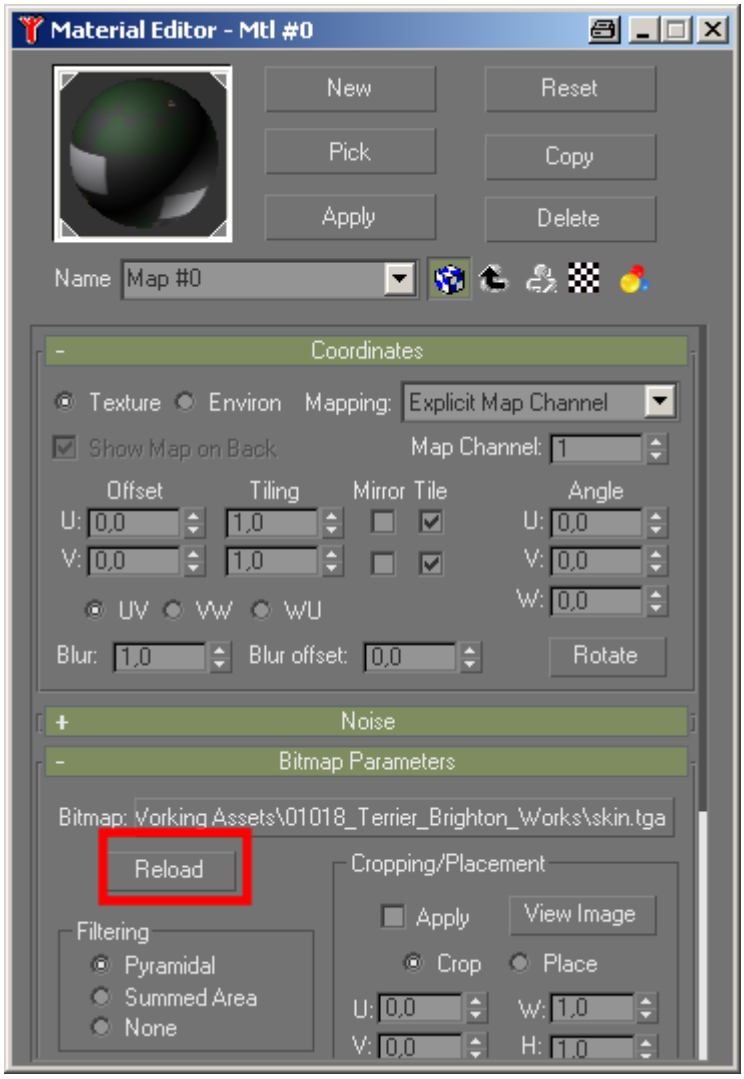
It's staring to look quite reasonable now. I've decided to keep each of the main colours on separate layers – this makes selecting them later easier. PaintShop Pro has a Magic Wand tool that allows you to choose areas of the skin that have a particular colour or areas of a layer that have been coloured. This makes it very easy to select each part of the mapping layer and apply colour to it.

You will probably have problems working out where each object is mapped to on the skin – just add an 'Edit mesh' modifier followed by an 'Unwrap UVW' one and then edit the UVW map. You will then be able to see which bit of the skin the object is mapped to. Collapse the stack frequently when doing this.

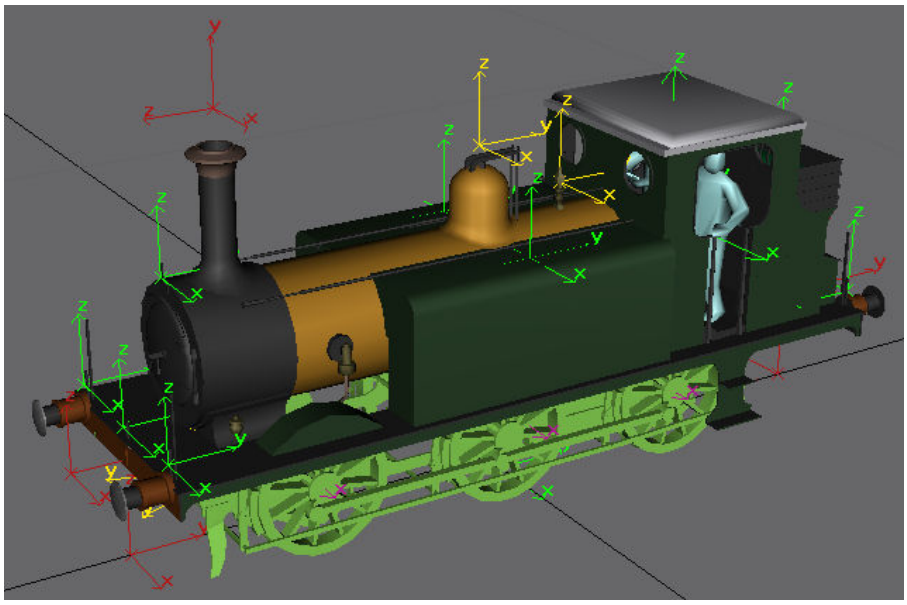
As you work on the skin have GMax open as well, that way you can save the *.tga file and reload it GMax to see the effect of the changes. To do this open the Material Editor and click on 'Reload'.

Don't forget though to save the layered PSP file now and again though, the key to skinning is the use of layers and a *.tga file doesn't have any!

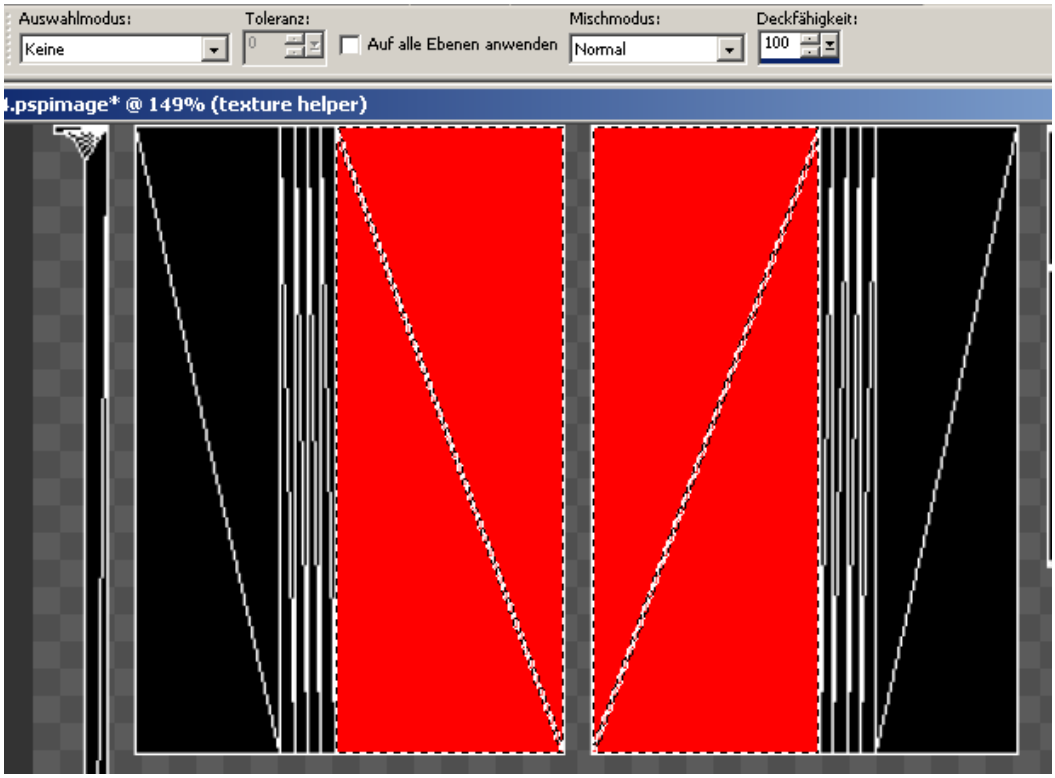
Don't be afraid to save a few extra copies of the PSP file, having just one copy is asking for trouble.



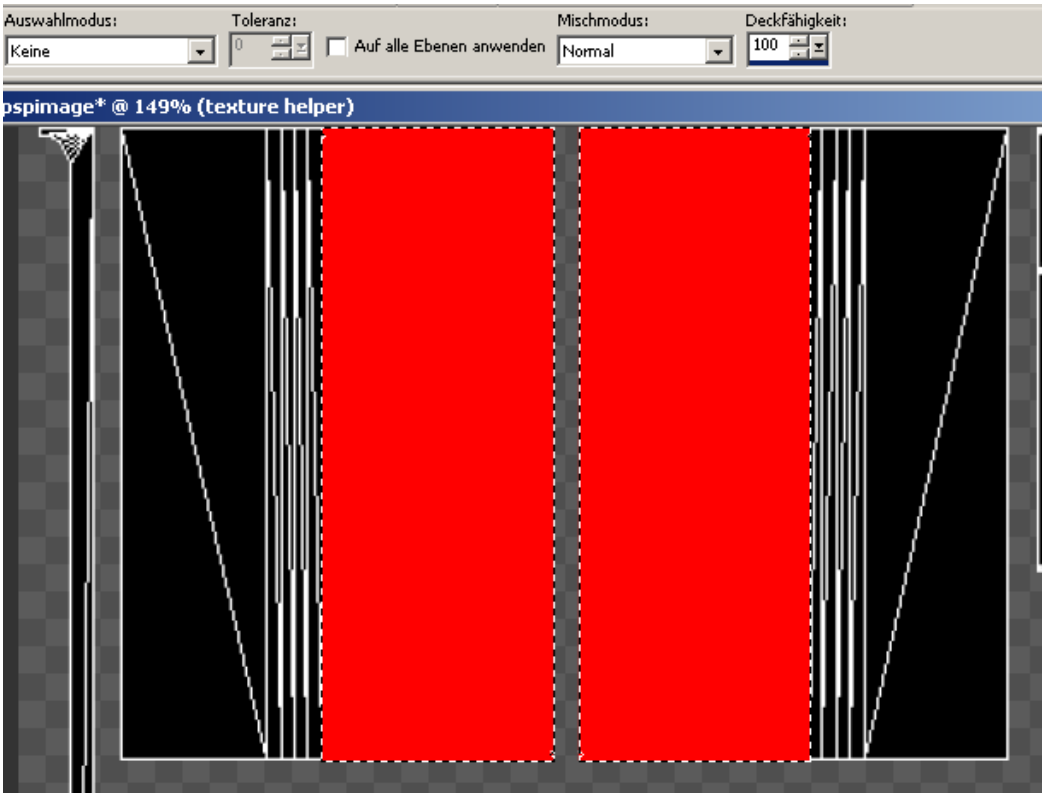
Here's the Terrier with the entire mapping coloured in. Not very convincing so far mainly because the panels on the cab and side tanks still need to be added as well as the lining.



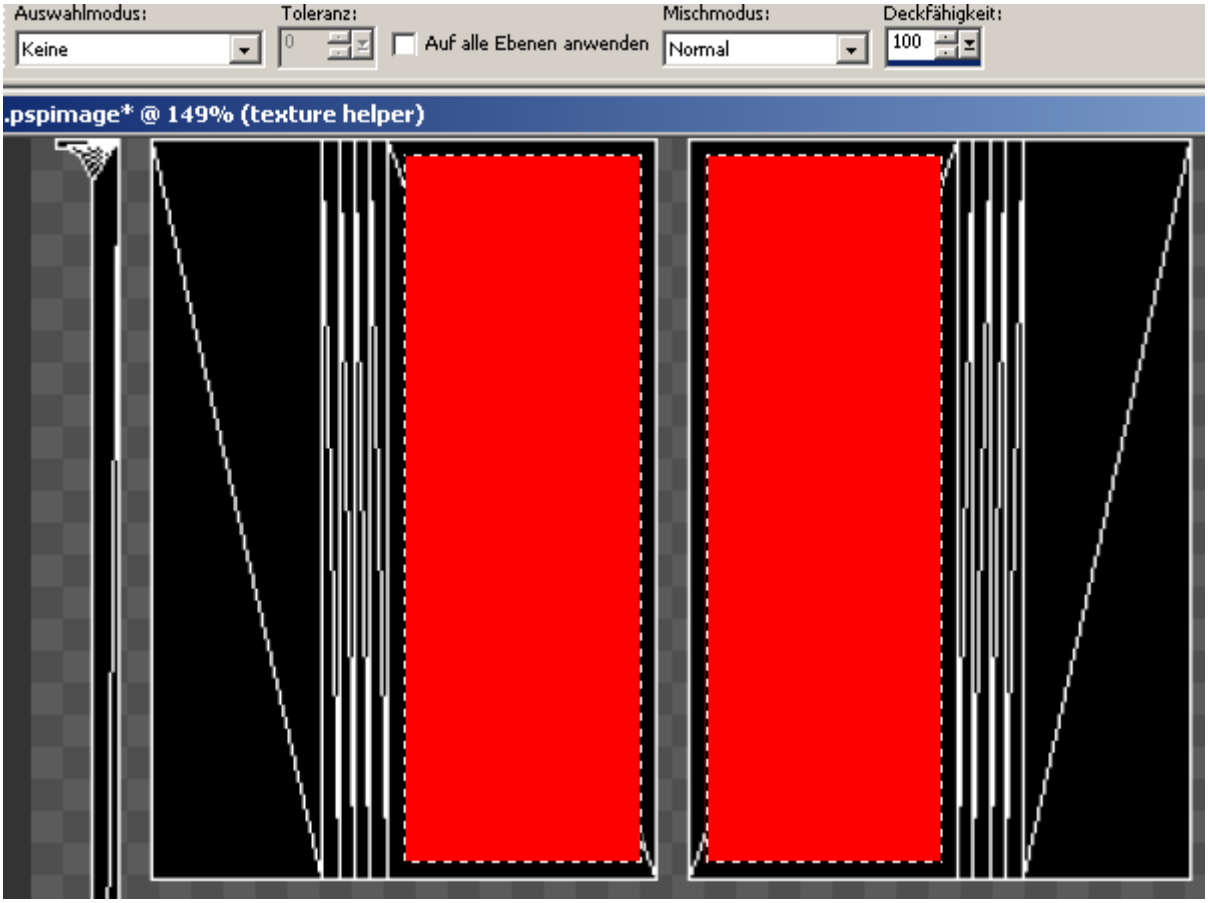
Let's do the tank side panels now, PSP makes this very easy. Using the 'Magic Wand' selection tool set it to 'RGB value' and select the black areas on the side of the tanks.



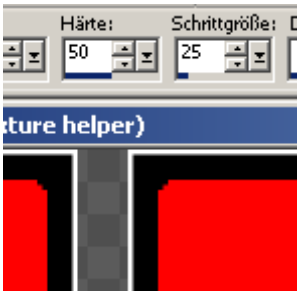
I've filled the area with red (on a new layer of course, I don't want to change the mapping layer) to make things clearer. Now increase the size of the selection by 1 pixel and again the selection has been filled with red.



Now to create the lining panel on the tank side – hit the delete e key to remove the red colouring and then reduce the size of the selection by 6 pixels to create the first border.



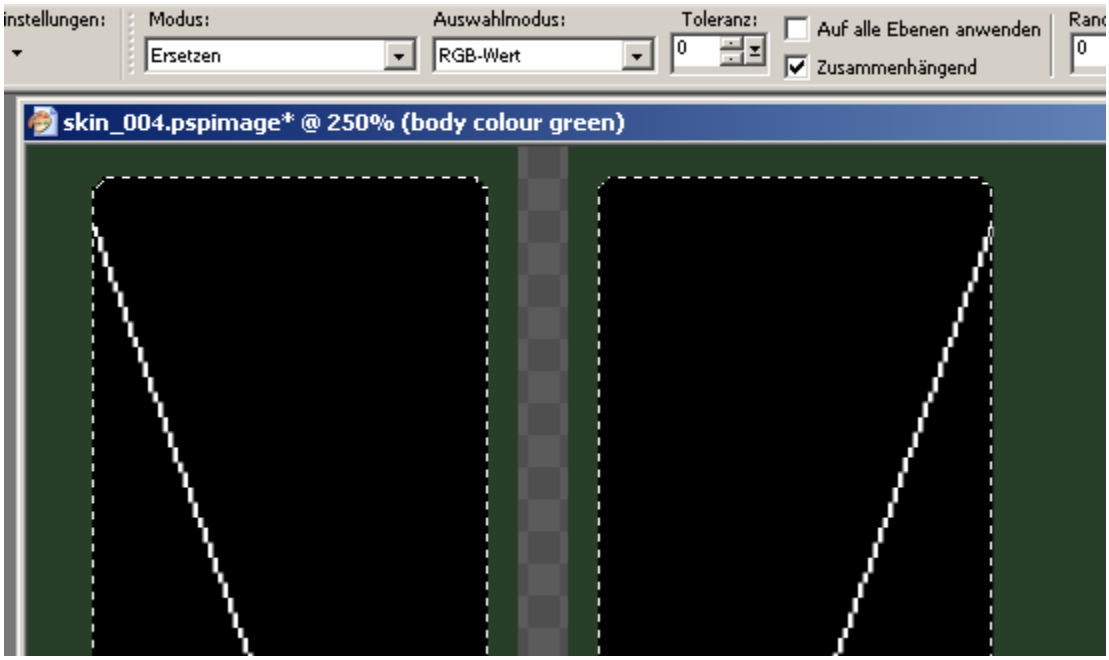
The red colour has been added to a separate layer called ‘texture helper’, this is reserved for block colours that can be selected easily to aid texturing.



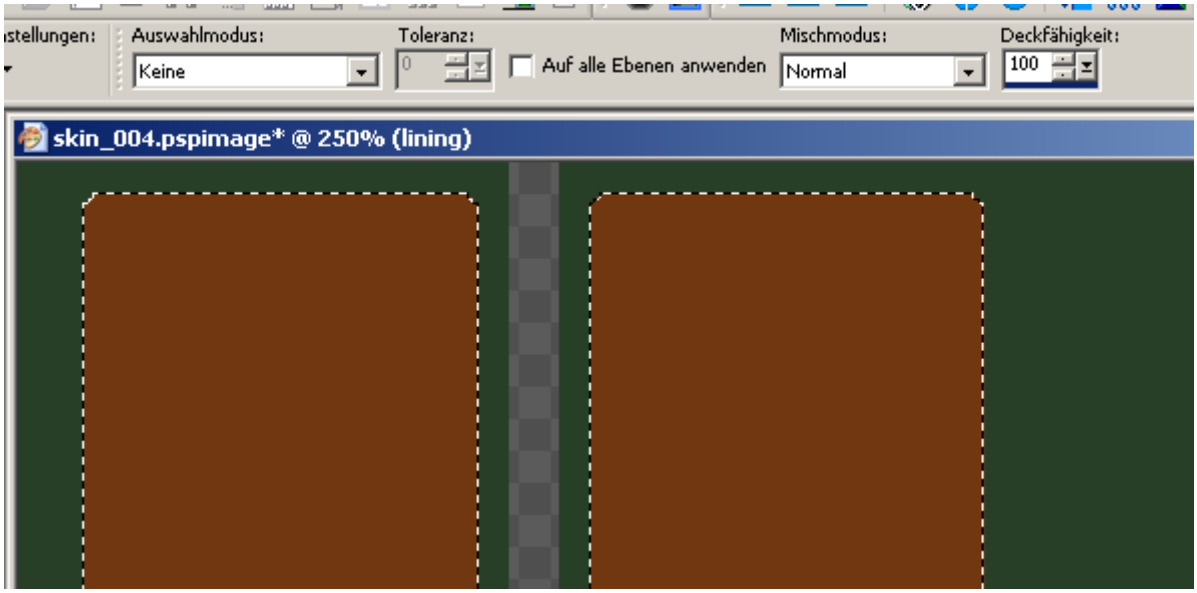
Mr Stroudley didn’t have model makers over a hundred years in the future uppermost in his mind when he developed his locomotive livery, so I’ve simplified the corners of the panels a little (by just rounding them off).

The tank sides should have a green border, a thin red line, a thicker black line, a thin white line and then the yellow panel.

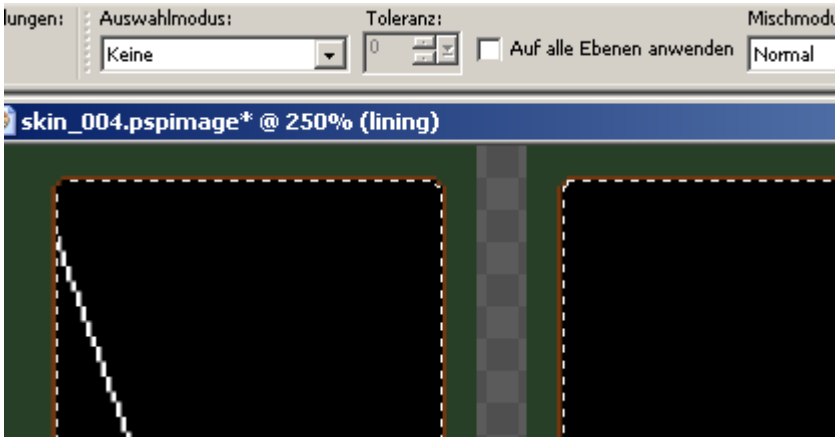
With the red ‘texture helper’ selected, delete the green area of the side tank by making the green layer active and hitting ‘DEL’.



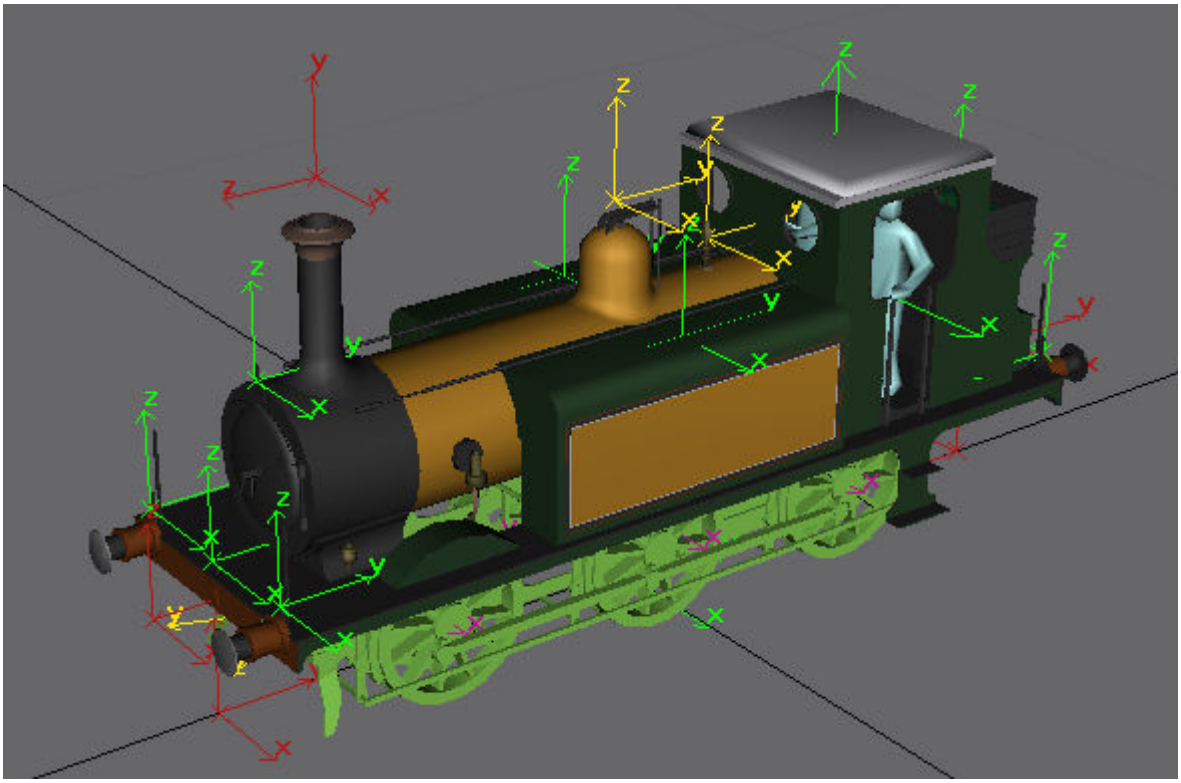
Now fill the selection with the red lining colour (not pure red, that will be too stark).



Now reduce the size of the selection again by 2 pixels and delete the red area for the lining.



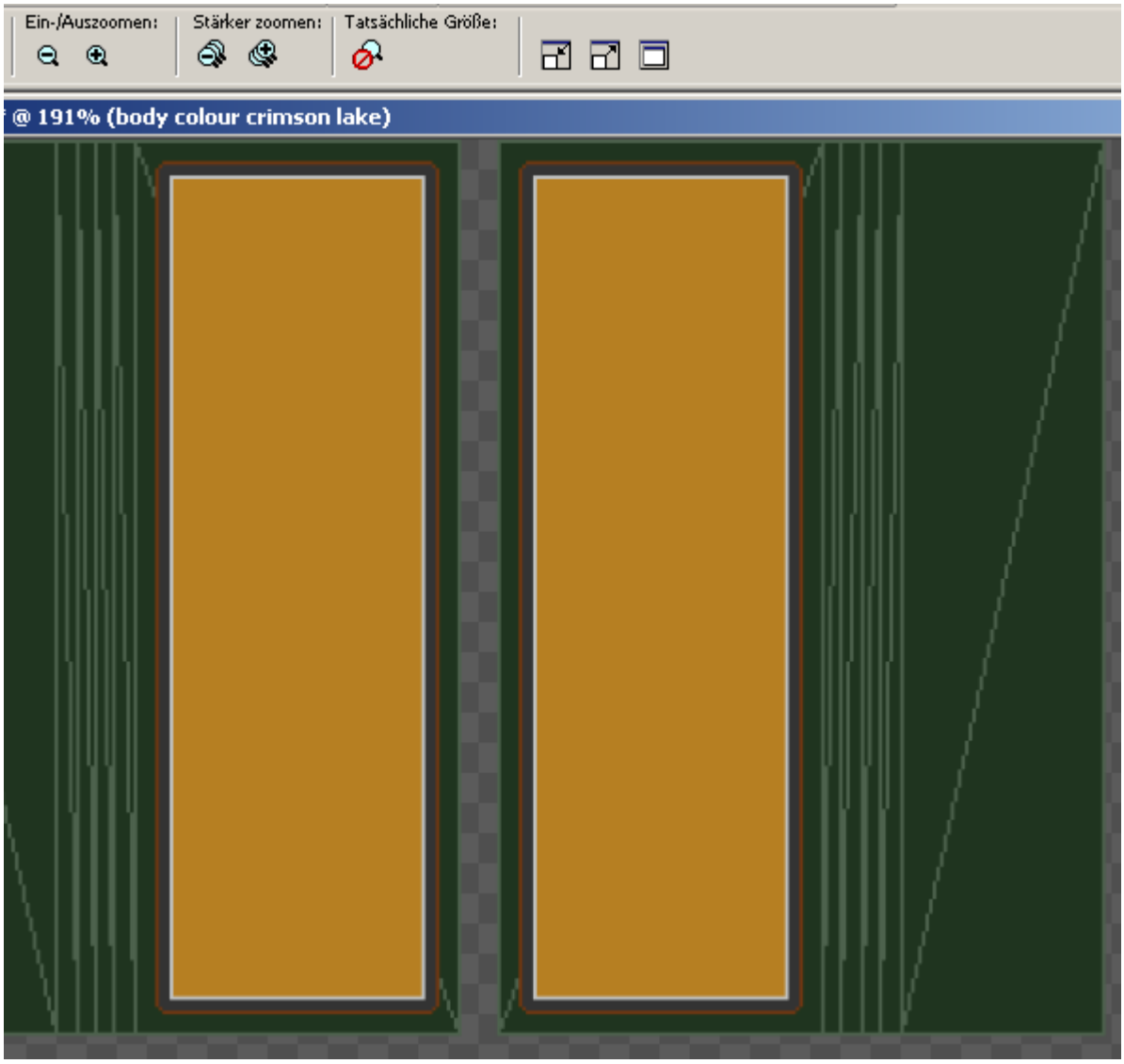
Here I've added the black and white lines as well as the yellow panelling, and here is the result in GMax.



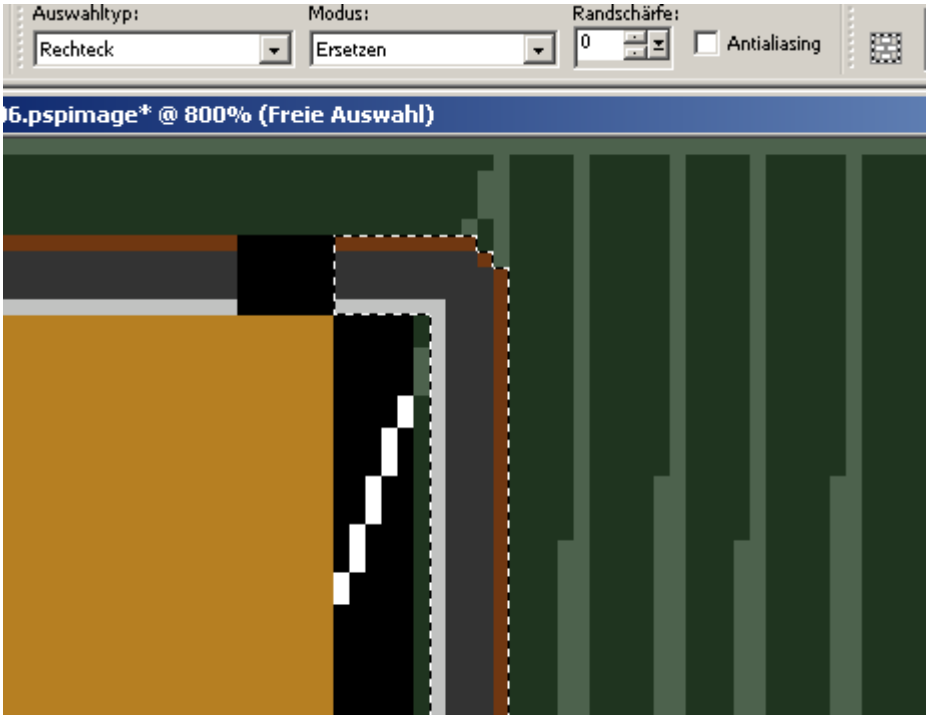
As you can see the simple act of creating a selection, changing the size and filling it with colour can make creating lining which needs to be a constant offset from the edge of the panels is pretty easy.

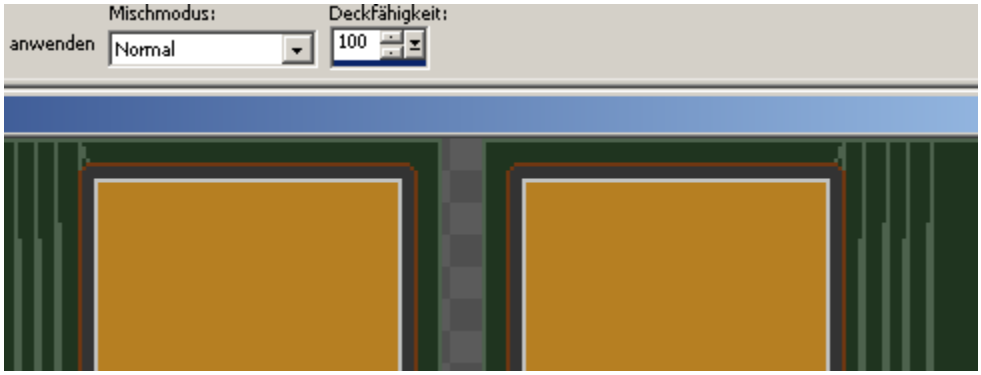
In this case though, comparing the GMax model with photos from the web it becomes obvious that the side tank panels need to be higher. It is no problem to correct this though as we have used plenty of different layers to build the skin.

In the following picture I've reduced the opacity of the green layer to allow the original mapping to show through. I'm going to move the lining so that the red line touches the radius line at the top of the tank side.



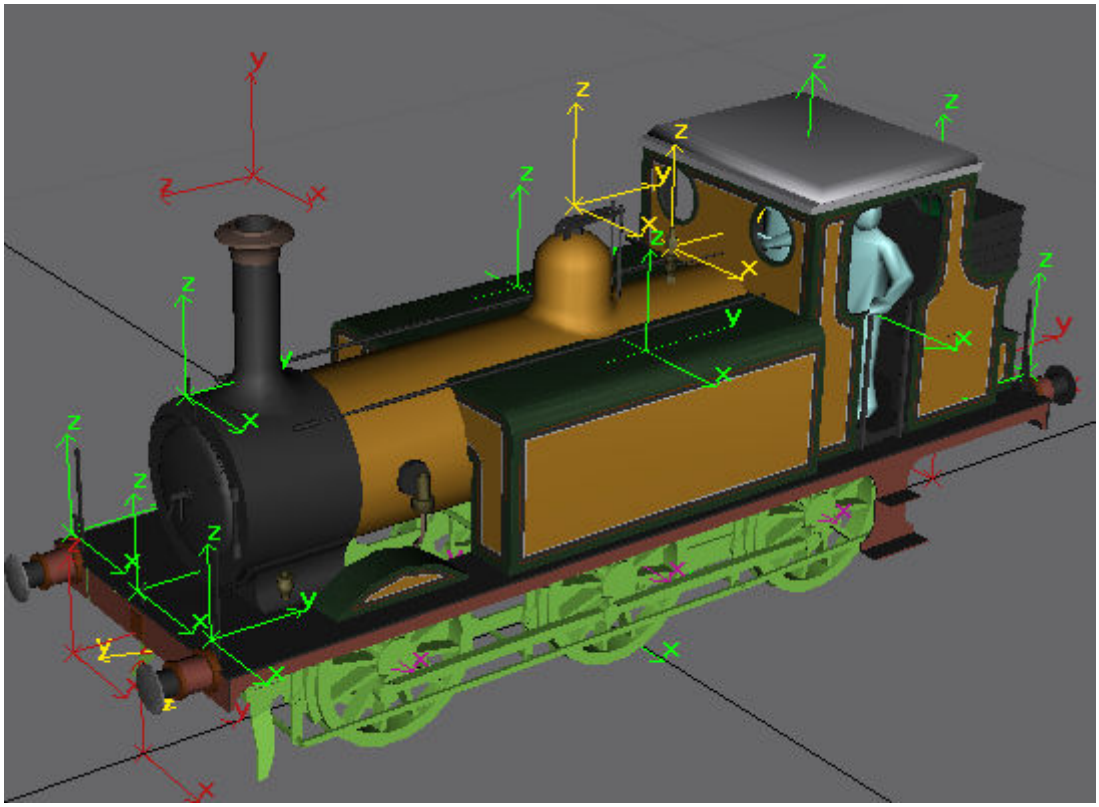
As the lining (red, black and white is a separate layer it is only necessary to make a drag selection and move it over 6 pixels in this case. Obviously we'll need to tidy up the lining layer and the yellow body colour layer afterwards.





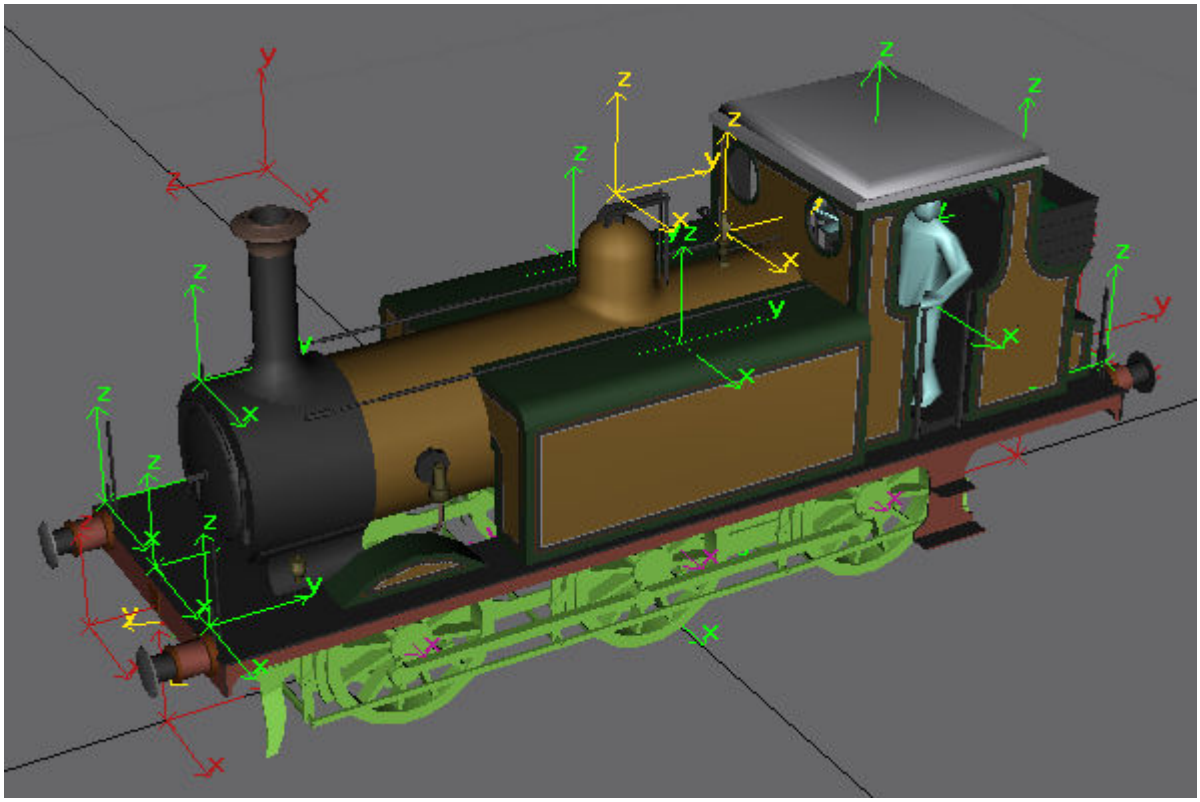
The tidying up can be done by copying and pasting parts of the existing lining as shown.

This is the GMax model with the (almost final) skin applied:



Before we end this part I'd like to point out that a common mistake when skinning is to use colours that are too strong. In this case the bottommost layer in the PSP file is filled with 51,51,51 dark grey. If we hide the mapping layer and reduce the opacity of the yellow body colour layer we can tone down the overall brightness of the skin to create a more natural look.

Here I've changed the opacity of the yellow layer to 60% and that of the lining layer to 70%



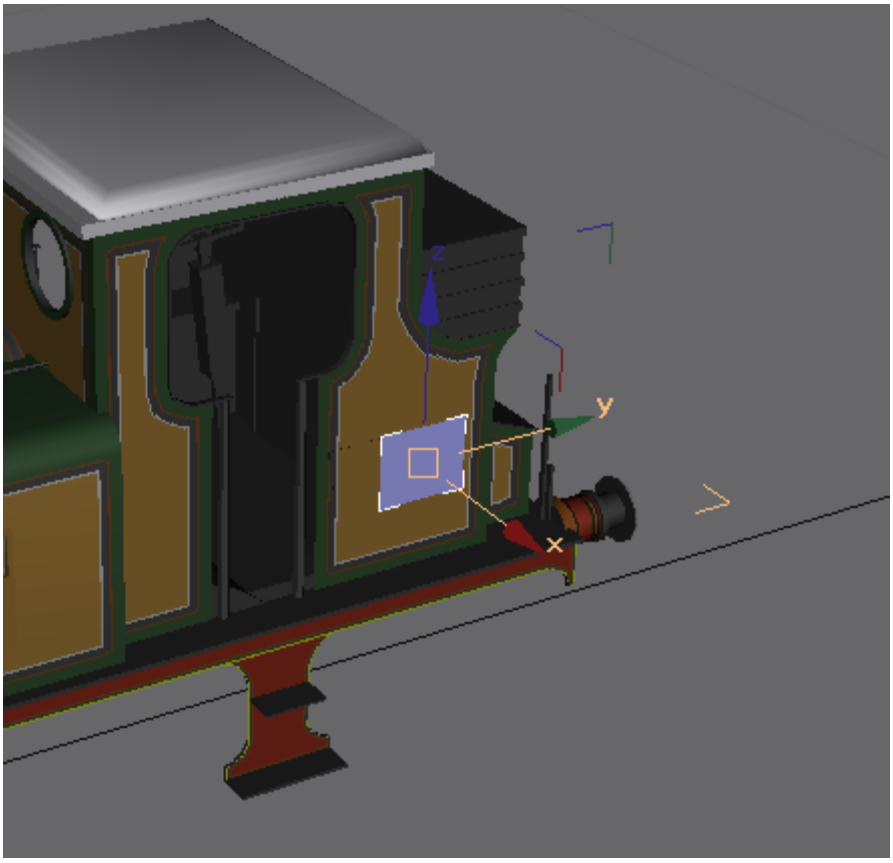
This helps to tone everything down and can of course be easily adjusted in the layered PSP file.

In order to add the numbering and the text on the tank sides we'll create a few planes on the model, which we'll map to part of the skin. It would of course be possible to add the text and numbers directly to the tank and bunker part of the skin, but this would mean that relatively few pixels could be used. By using another part of the texture and separate plans the text can have a higher resolution.

Another advantage is that the planes can be easily moved and rescaled to obtain the desired effect in GMax.

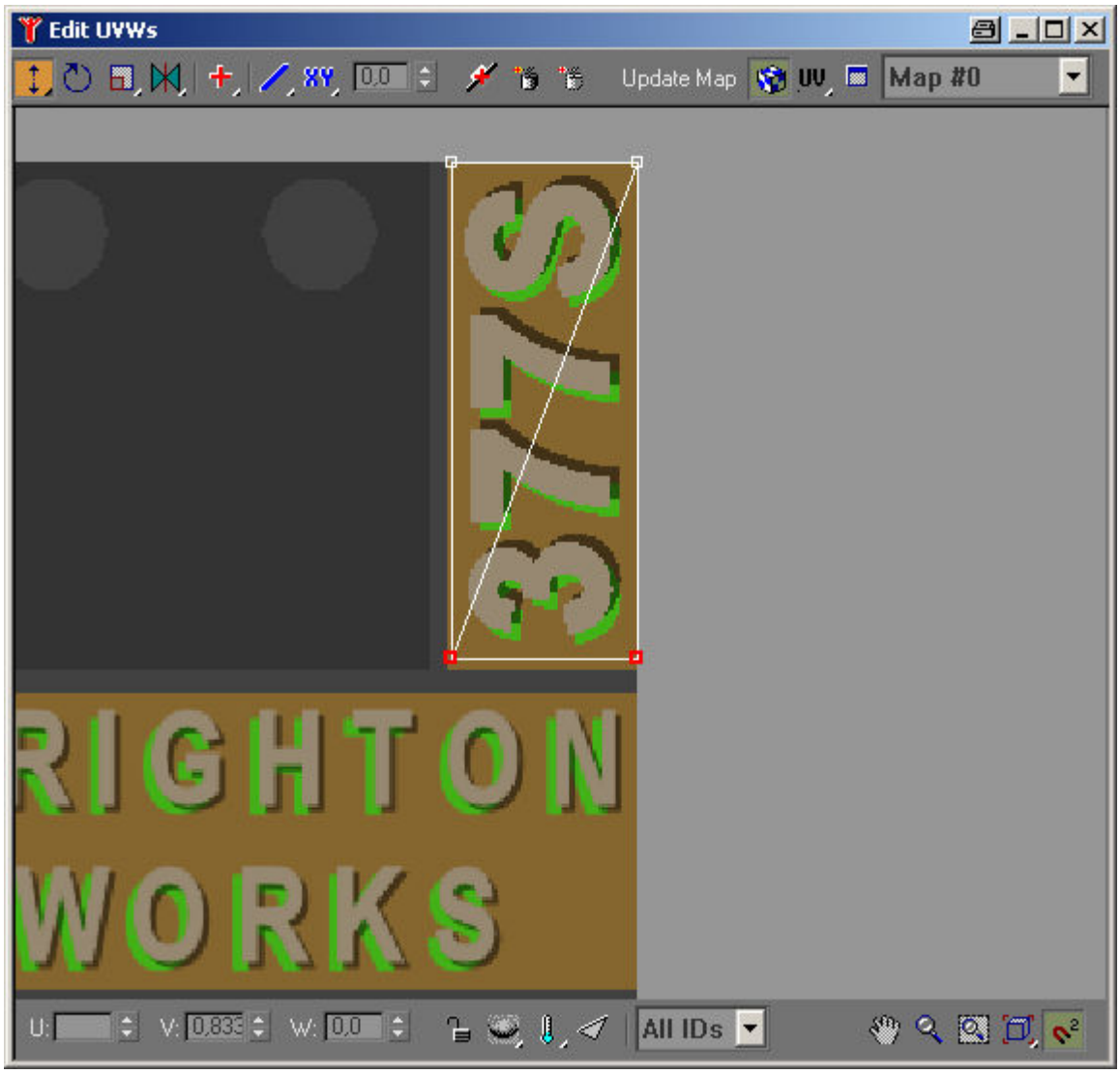
To create the planes in GMax go to the object tab and choose 'Plane', Generate Mapping Coordinates' and 'AutoGrid'. Set the 'Length Segs' and Width Segs' to 1. 'AutoGrid' allows the plane to be positioned directly on an existing surface, which saves having to move the plane into position.

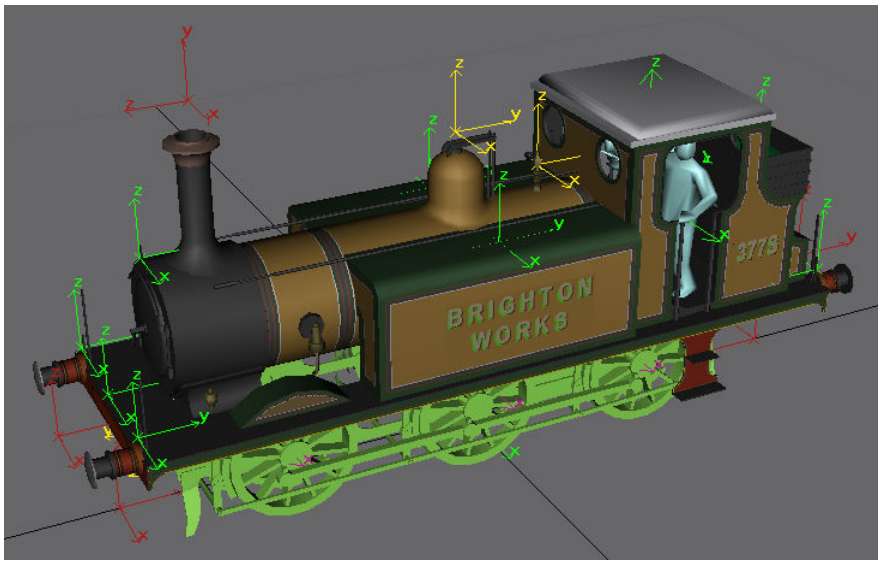
The size of the plane is not too important at this stage as it can be resized later, but it should be moved about 5-6mm away from the existing surface to avoid flickering of the textures.



Here I've added the side tank text and the number to an unused part of the skin in PaintShop Pro.

Back to GMax, apply the skin texture to the plane and add an ‘Edit Mesh’ modifier followed by an ‘Unwrap UVW’ modifier to adjust the UVW coordinates to match the right part of the skin.





The planes can be mirrored over to the other side and the UVW coordinates can also be mirrored to avoid the texture being mirrored as well.

That about covers the techniques for basic skinning, in the next part we'll look at enhancing the skin with highlights, shadows and weathering to help bring out the detailing.

Any questions, requests for more explanation or corrections needed – please mail me at paul.hobbs@web.de