



# AIRFIELD PLATES FOR BEGINNERS

with thanks to All Aircraft Arcade

## CONTENTS

- 2 What to Download
- 3 Setup
- 8 Static file
- 11 Gmax
- 14 Creating a plate
- 30 What are LODs

# WHAT TO DOWNLOAD

All the downloads are free, but Gmax needs registration before you can receive the activation code.

This is what you need -

Gmax

<http://www.turbosquid.com/gmax>

Buggy\_Buggy\_IL2\_Exporter

<http://allaircraftarcade.com/forum/viewtopic.php?t=10492>

This is how your Downloads folder should look -



gmax12.exe

03/03/2010 23:21



Buggy\_Buggy\_IL2\_Exporter\_V2\_52a...

04/03/2010 09:43

WinRAR archive

# SETUP

In this tutorial I am going to show you how to make the airfield plates in the picture below.



To speed things up I have provided the textures for the plates & the correct files & folder structure. All you will need to do is make the plate itself & position the texture onto it using Gmax.

Making plates like this is very easy & quick once you know how. The problem is that Gmax is a very complex program & takes a long time to learn.

Plates are treated differently to buildings by the game & can't be placed on a map in the regular game. You need to change your game to the map building version.

To change your game to the map building version remove or rename the file in your game folder called **bldconf.ini** & replace it with the one that came with this tutorial.

I explain fully what to do in my Map Building tutorial which is available here -

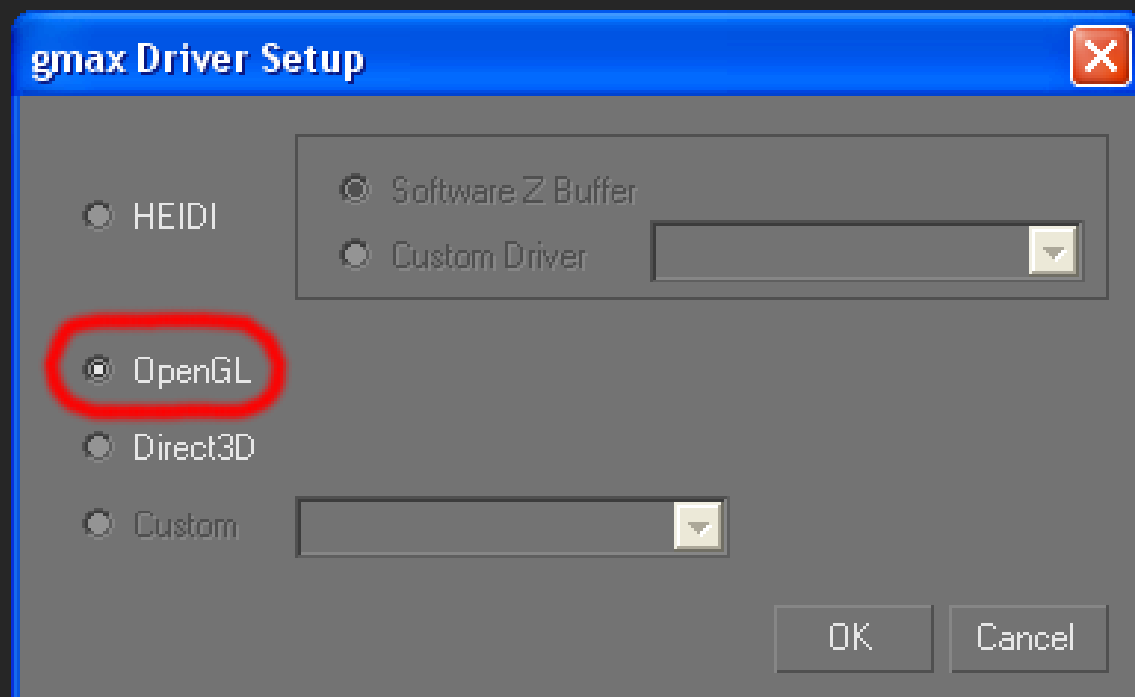
<http://allaircraftarcade.com/forum/viewtopic.php?t=14643>

You can also put plates on a map (without changing it to the Map building version) by using the MOD called **FMB+** which is available here -

<http://allaircraftarcade.com/forum/viewtopic.php?t=9482>

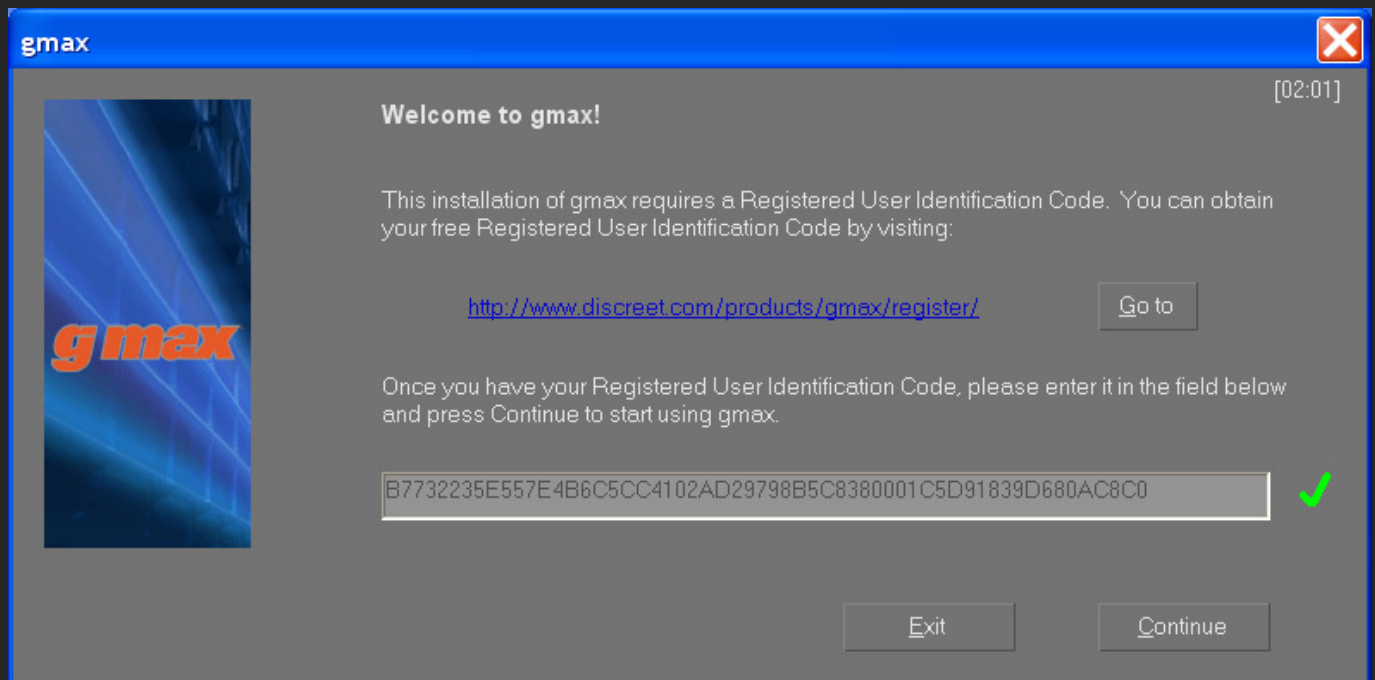
## Installing Gmax

Install Gmax onto your computer & then run it. When the Driver Setup window appears, select **OpenGL** & press OK.



A window will appear directing you to the registration web site.

When you have filled out the Gmax registration pages you will be given your activation code. You need to copy & paste the code into the **Welcome to gmax** window. You should see a green tick appear at the right end of the box.



If there is no green tick it means there is something wrong.

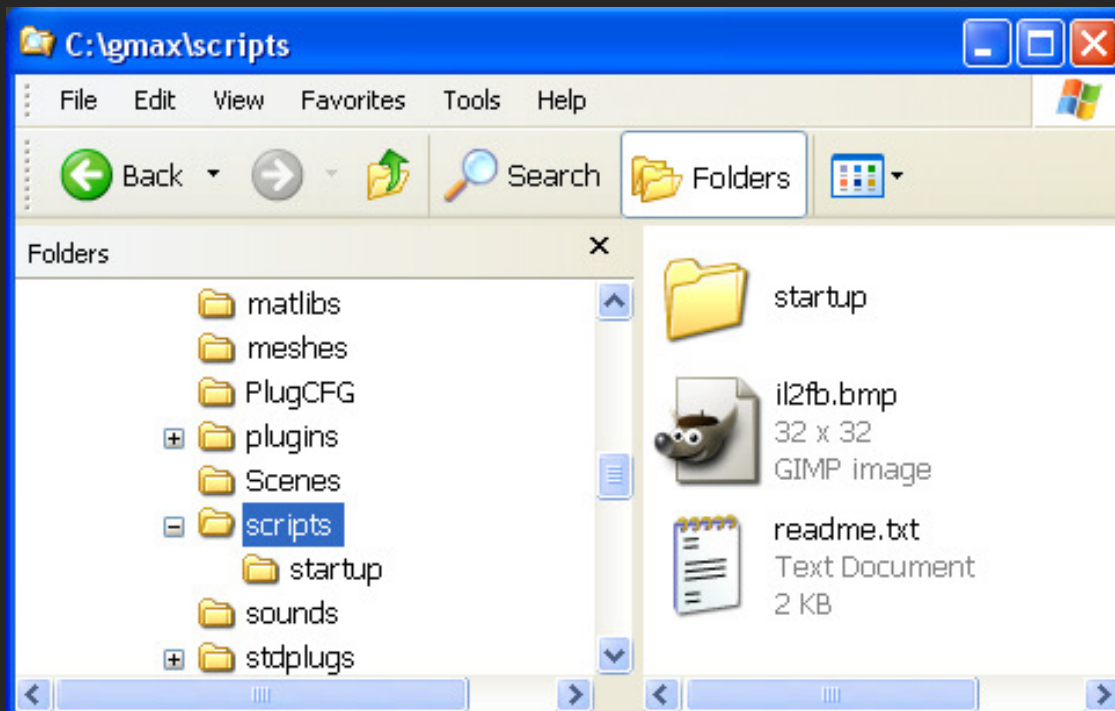
If it doesn't work, try the **Registration workaround** by following the instructions on this web page -

<http://www.turbosquid.com/Forum/Index.cfm/stgAct/PostList/intThreadID/15975>

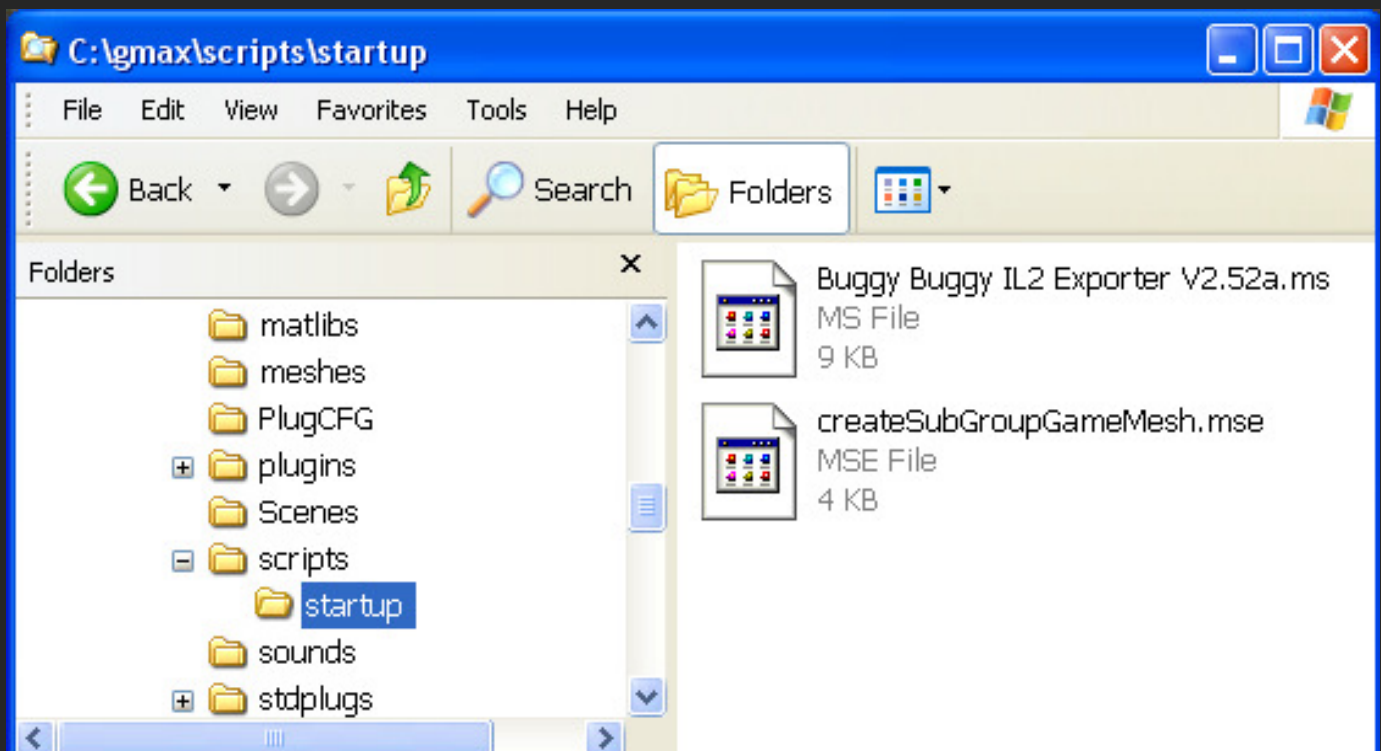
Before you start using Gmax you need to put the files & folders that came with this tutorial in their correct places.

Extract the contents of "[Buggy\\_Buggy\\_IL2\\_Exporter](#)" & move the files to the [Gmax/scripts](#) folder.

The scripts folder should look like the picture below

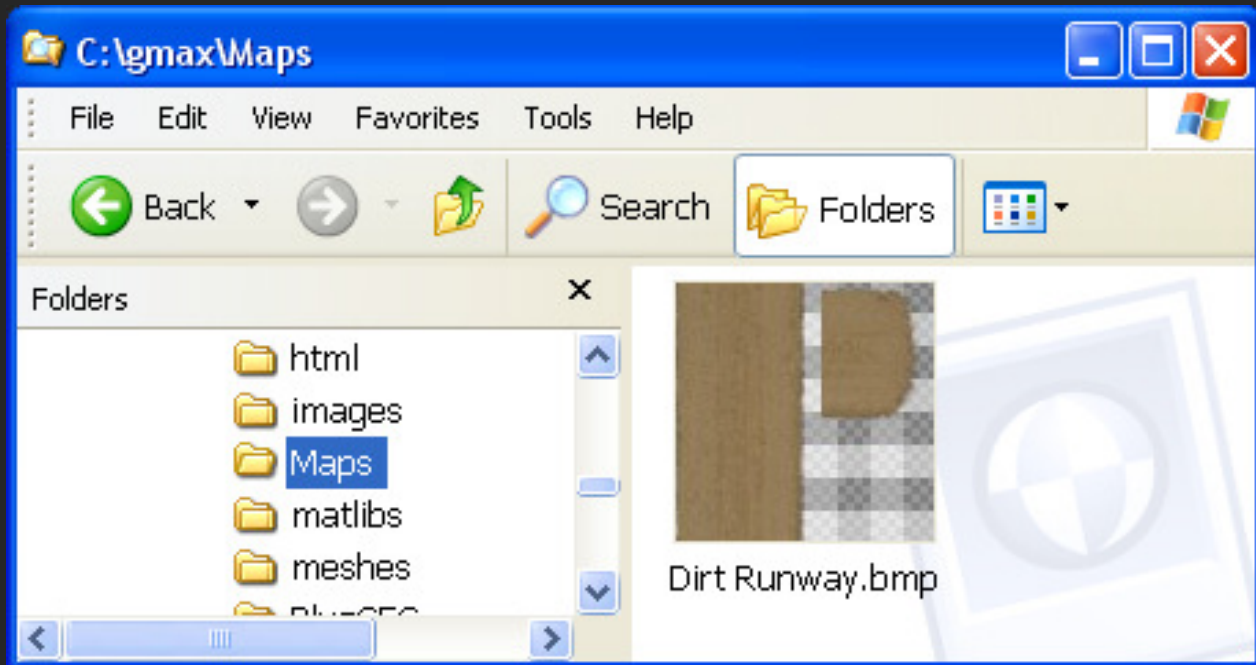


& the [startup](#) folder should look like this -

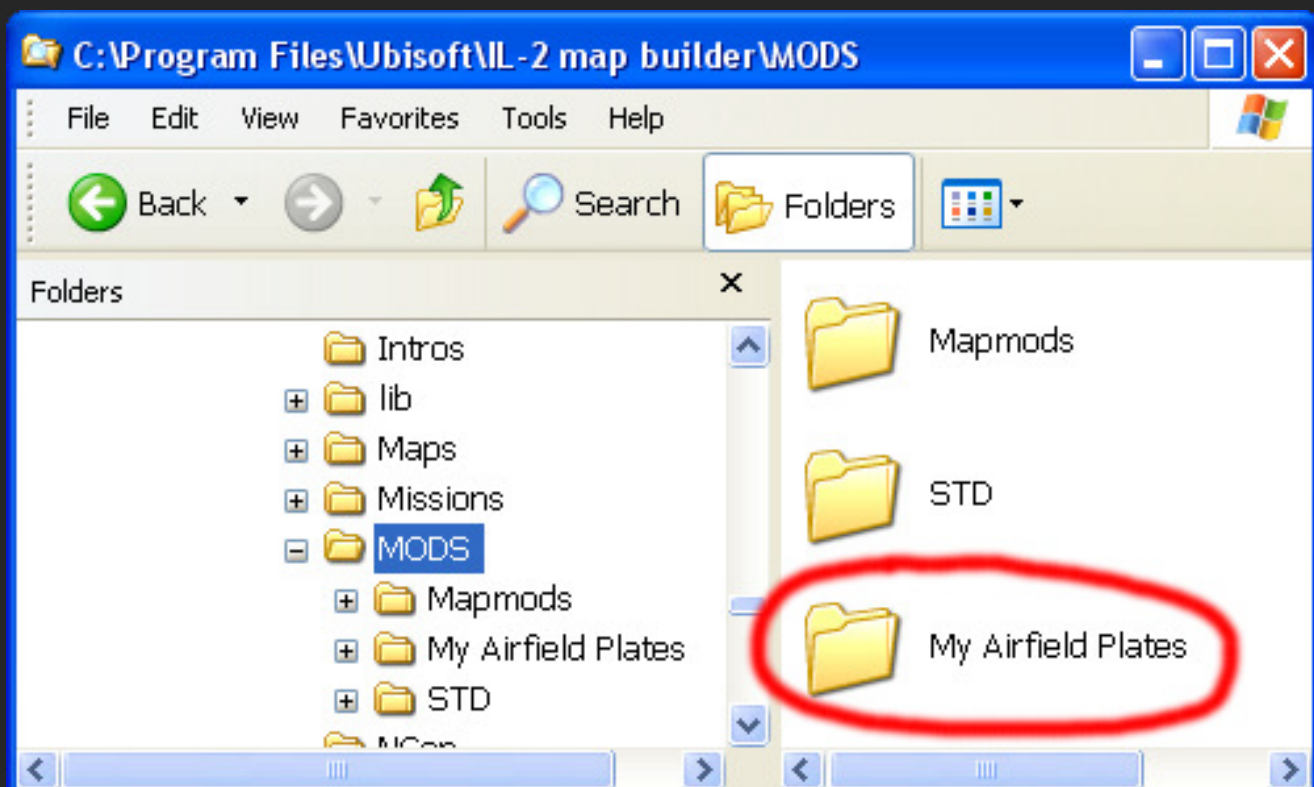




Next go to the [Gmax/Maps](#) folder & put into it the texture file that came with this tutorial called [Dirt Runway.bmp](#). This is the same texture as the file called [plate0.tga](#) (which will be used for the texture in the game). The difference is that I added a checkerboard design under the texture to help position it accurately in Gmax.

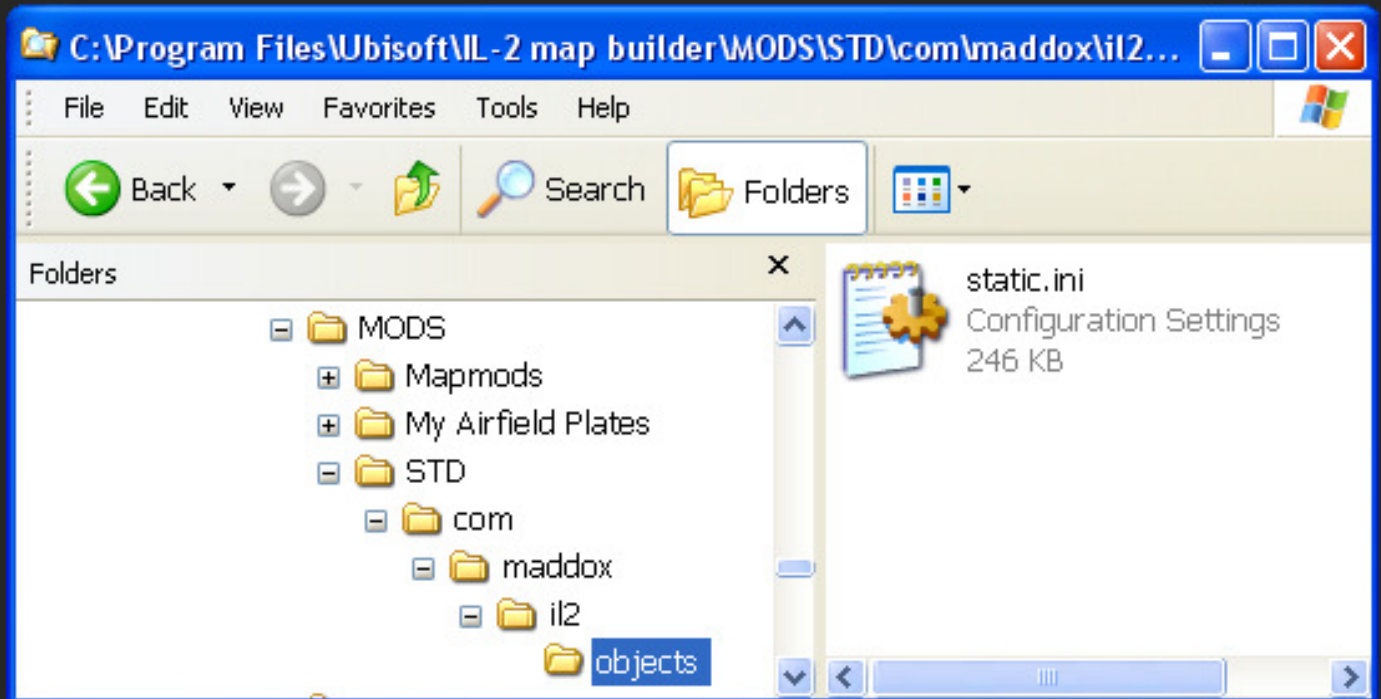


The [My Airfield Plates](#) folder that came with this tutorial needs to be placed in the [MODS](#) folder of your game.

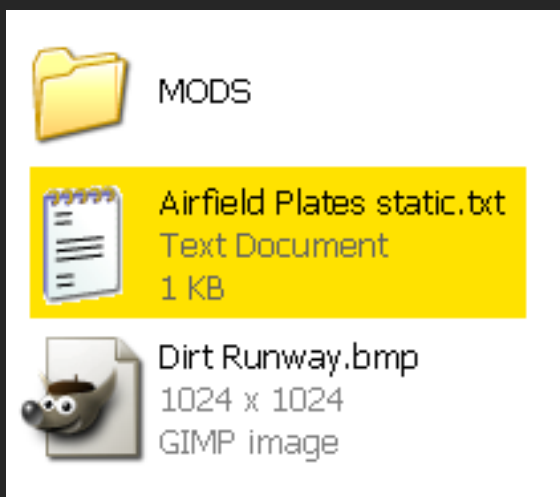


# STATIC FILE

You need to add the correct text to the end of the [static.ini](#) file. The [static.ini](#) file is buried in the [STD](#) folder.



I have provided the correct text in the file that came with this tutorial called [Airfield Plates static.txt](#).



If your game hasn't got an STD folder, then use the one that came with this tutorial. It contains a default static.ini for [IL-2 v409m](#)



This is the text that needs to go at the end of the static.ini file.

```
//=====
=====
[***]
Title My Airfield Plates
//=====
=====

[buildings.Plate$MyPlates_Dirt_Runway]
Title      Dirt_Runway
Mesh       3do/airfield/MyPlates/Dirt/Runway/mono.sim
```

The dashed lines above & below the the Title don't do any thing, they are just to help the programmer see the title more clearly.

You can see there are two titles, the first one appears in the top window of the **Object box**. The second one appears in the window underneath.



[buildings.Plate\$MyPlates\_Dirt\_Runway]

The part which says **MyPlates\_Dirt\_Runway** is the unique title of the object. It has to be different from any other title in the static file because it's what the game looks for when it's loading the objects from the **actors.static** file.

When you start making your own plates you need to put your own name or prefix wherever I have written the word "**My**".

**Mesh      3do/airfield/MyPlates/Dirt/Runway/mono.sim**

The line above is the path the game follows to find the **SIM** file which contains the instruction to load the file called **Body.msh**. The **Body.msh** contains the details of the size, shape & position of the plate, also what material file to use & the position of the texture on the plate. It also contains the information on how far away it can be seen.

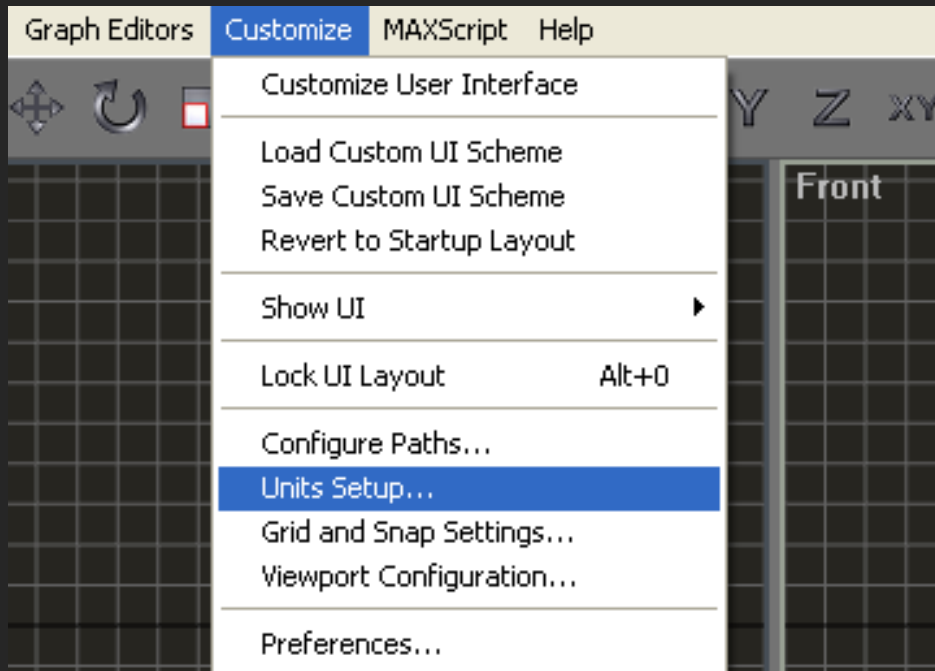
When you are ready to make your own plates you will want to create your own folder structure & will need to write it in a similar way.

There is no rule (as far as I know) on how few or how many folders you should have or what their names should be.

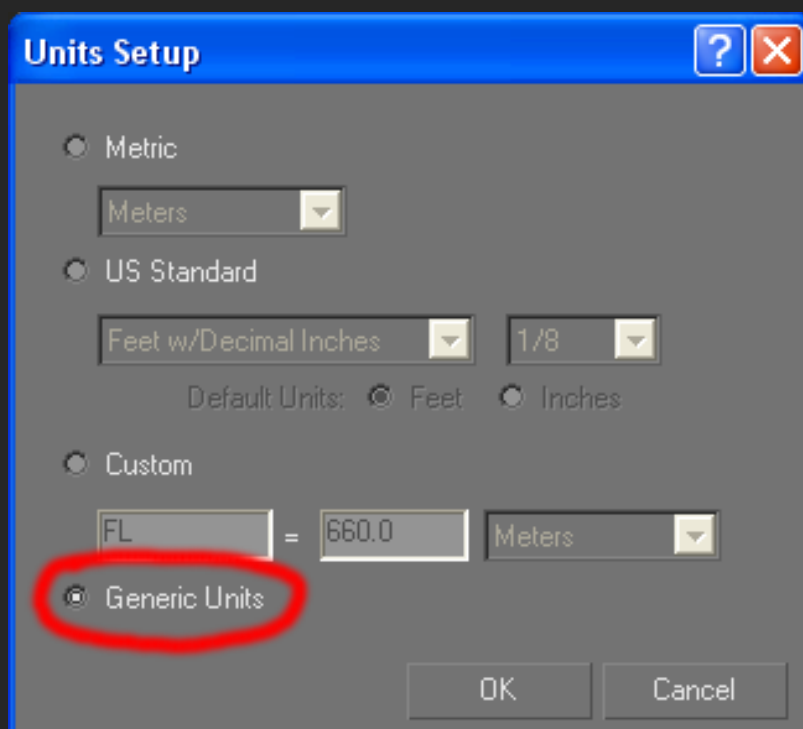
# GMAX

Now run Gmax. The first thing to do is check that you are using the right units.

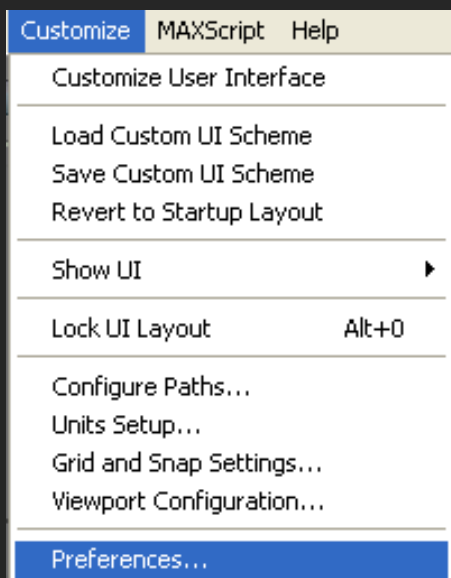
Press the **Customize** button on the Menu bar & click **Units Setup**



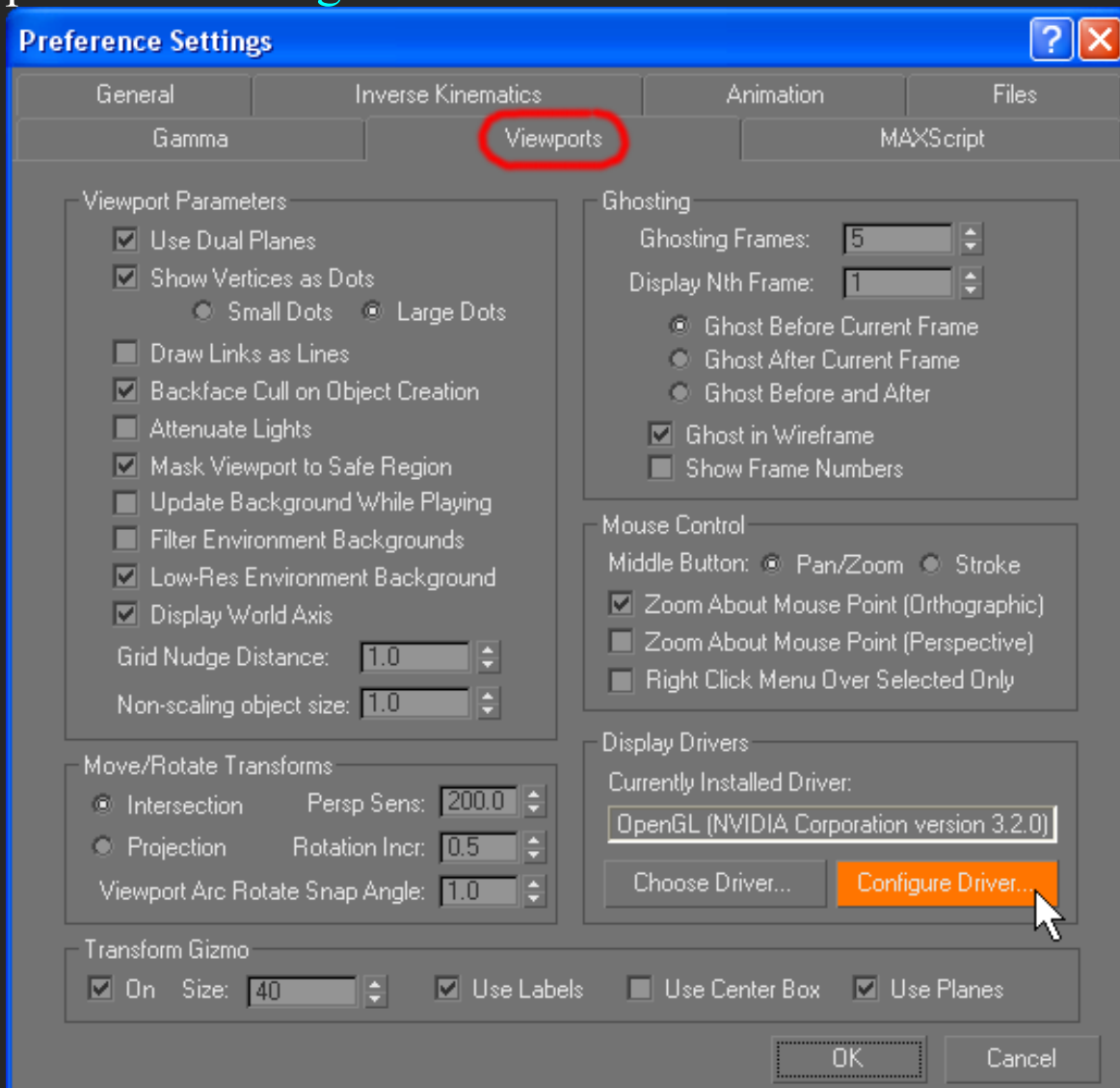
Make sure **Generic Units** is selected.  
In IL-2 each generic unit is equal to 1 metre.



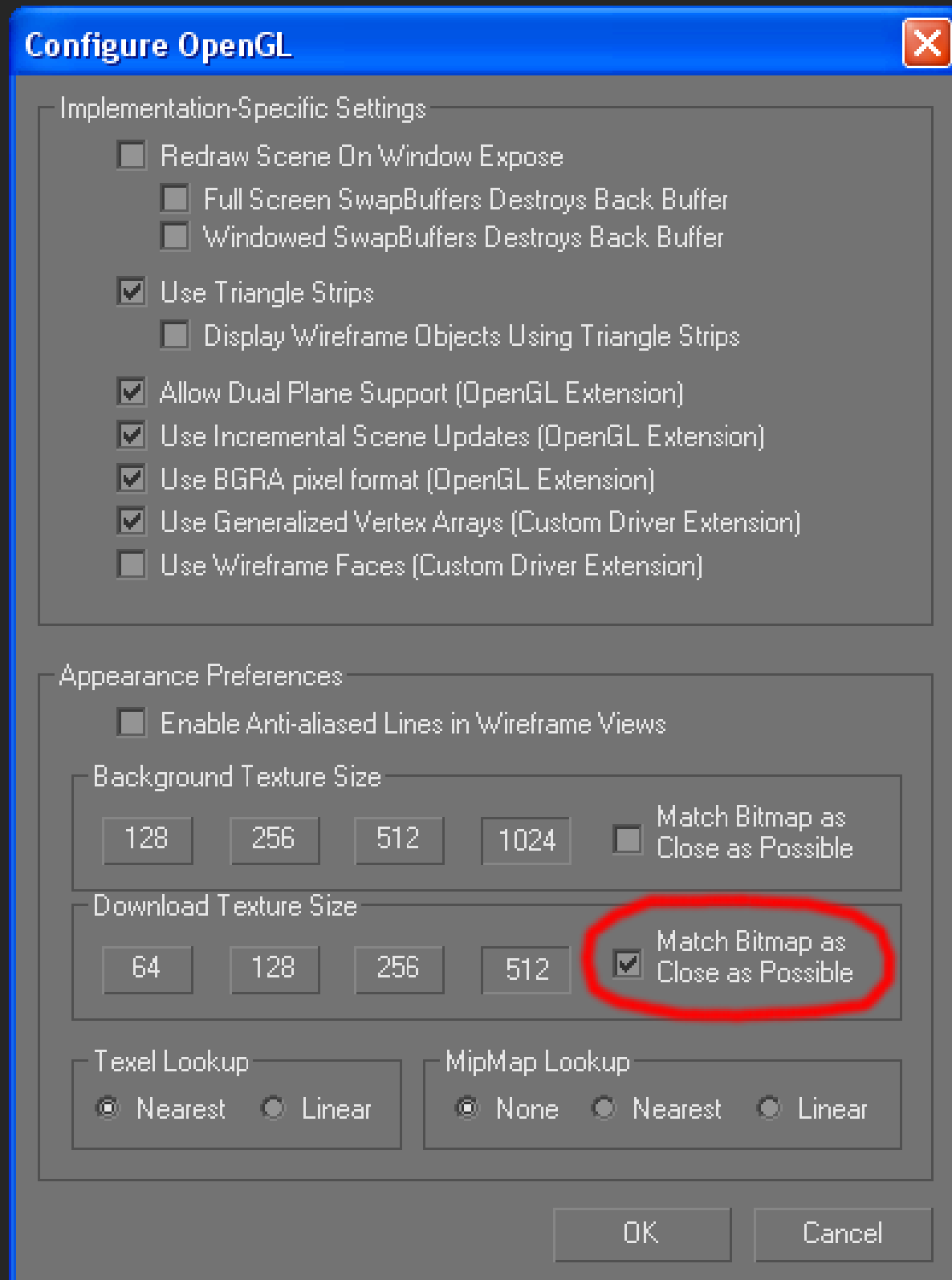
Next I suggest you change the quality of the textures as the default setting is too crude. Press the **Customize** button on the menu bar & select **Preferences**.



In the **Preference Settings** window click the **Viewports** Tab & then press the **Configure Driver** button



In the **Download Texture Size** section, tick the box which says **Match Bitmap as Close as Possible** then press OK.



Gmax has to be restarted for it to take effect.

# CREATING A PLATE

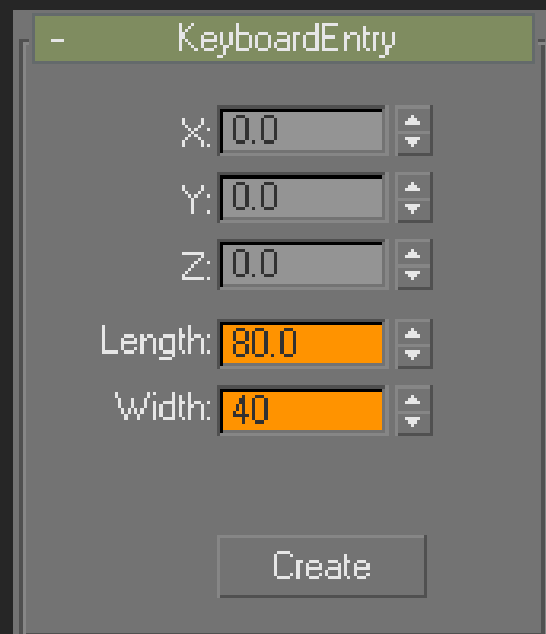
An Airfield plate is made from an object called a Plane. Look over to the right of the Gmax screen where it says **Object Type**. Press the button which says **Plane**.



There are two ways of creating an object in Gmax. One way is to draw it directly on the screen using the pointer, the other is to enter the dimensions using the keyboard. I prefer the keyboard. Click on the + sign next to the word **KeyboardEntry**

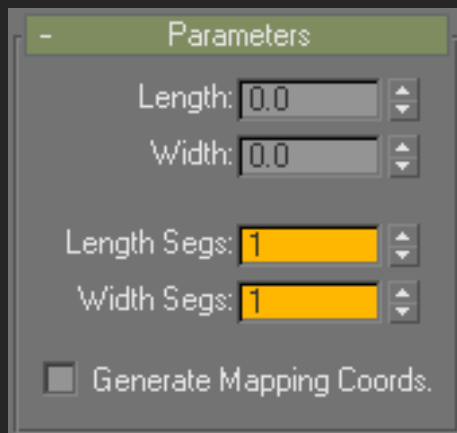


Then enter the size of the plane. Make the size **80m x 40m**.

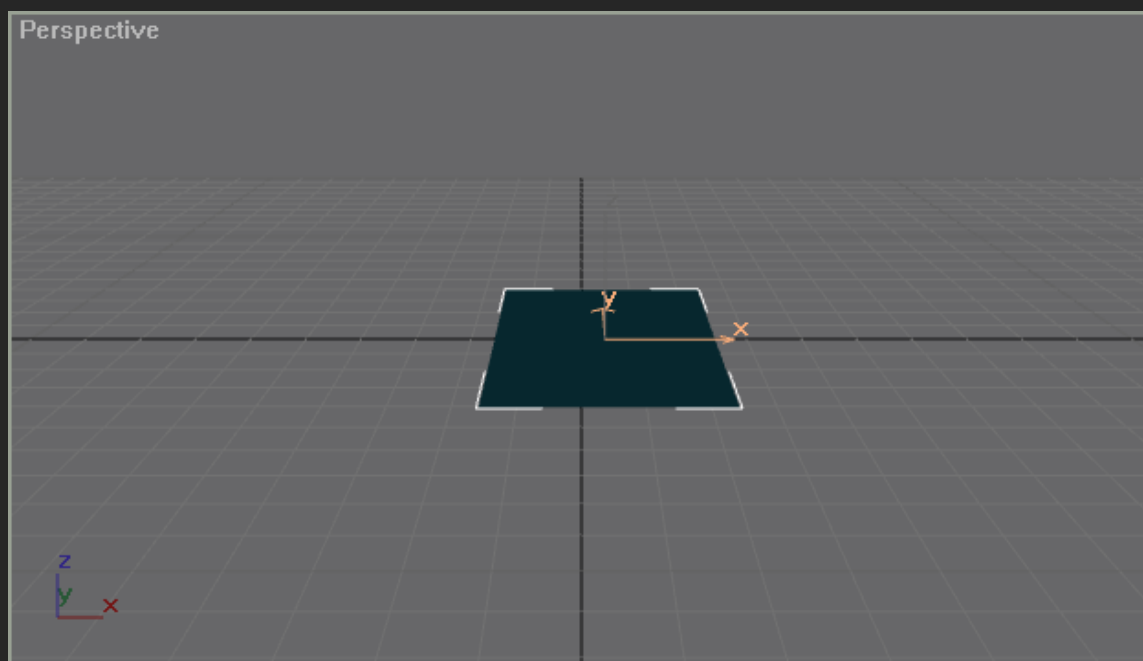




Before you press the Create button, go down to the **Parameters** section & change the **Length** & **Width** Segments to **1**, otherwise you will have a plate made of 16 polygons when it only needs to be 1 poly.



Now press the **Create** button.



To get a larger view, go down to the bottom far right corner of the Gmax screen & press the **Min Max** toggle button.

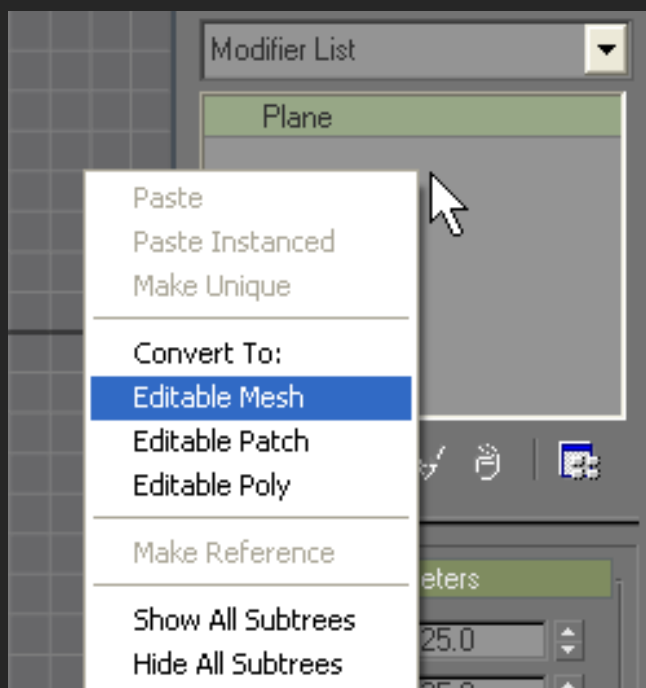


The Plane needs to be converted into something called an **Editable Mesh** before you can do anything with it.

Go to the top right of the screen & click the **Modify** Tab (it has a picture on it that looks like a blue rainbow).



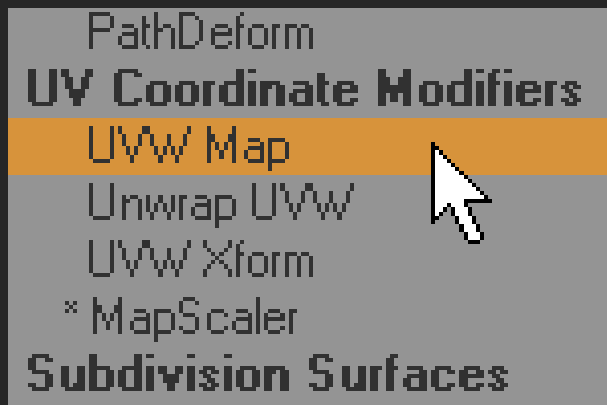
Now **Right Click** on the box which has **Plane** written at the top & choose **Editable Mesh** from the menu that appears.



To apply the texture to the plate you need to add an extra layer (or Modifier) to it called a **UVW map**. Press the button on the right of the **Modifier List** to open a drop down menu.

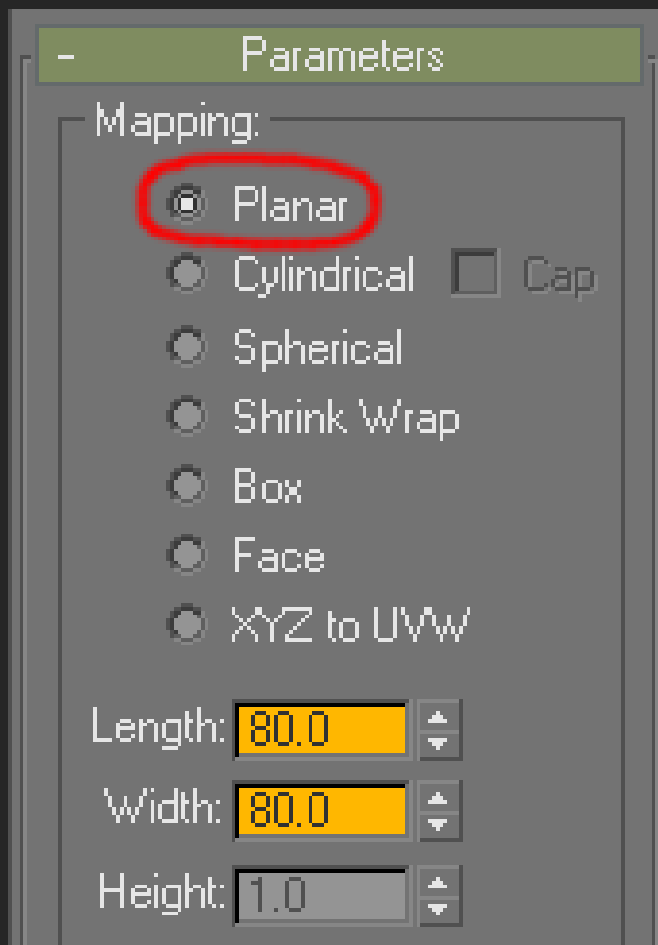


On the Menu that drops down, select **UVW Map**.

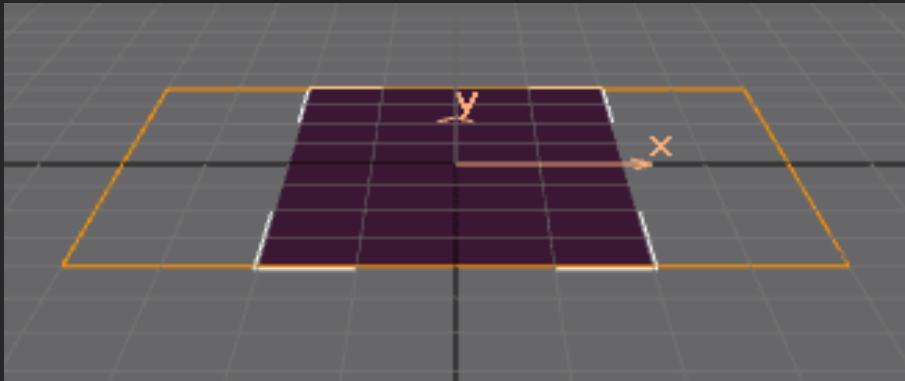


The **Parameters** section will open out & you should see that **Planar** mapping is already selected (which is what you want).

Because the texture I have given you is for a section of runway 80m long & it's a square texture, that means the width is also going to be 80m. So enter the size into the Length & Width boxes as **80 x 80**.

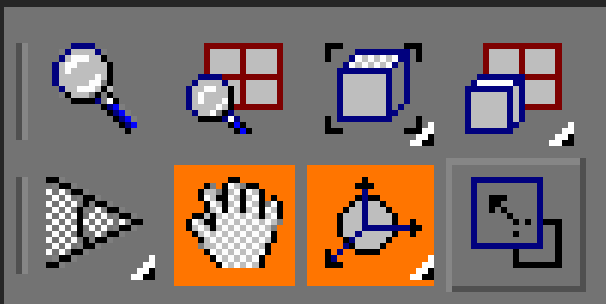


The plate should now look like the picture below. The orange lines are the edges of the UVW Map.



If your mouse has a wheel you can press it & move the mouse to move your view point. Also you can press the wheel while holding down the [Alt](#) key to rotate your view point.

If you don't have a mouse wheel then you will need to click the [Hand](#) icon or the [Rotate](#) icon in the bottom right corner of the screen.

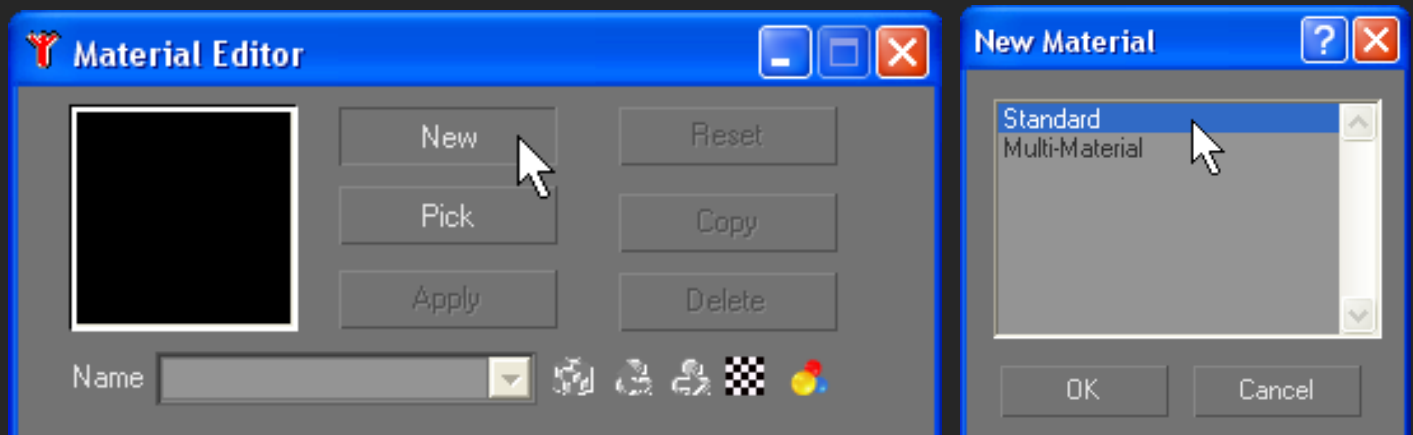


Now to apply the texture. This is a lengthy process involving 4 different windows & about 13 mouse clicks.

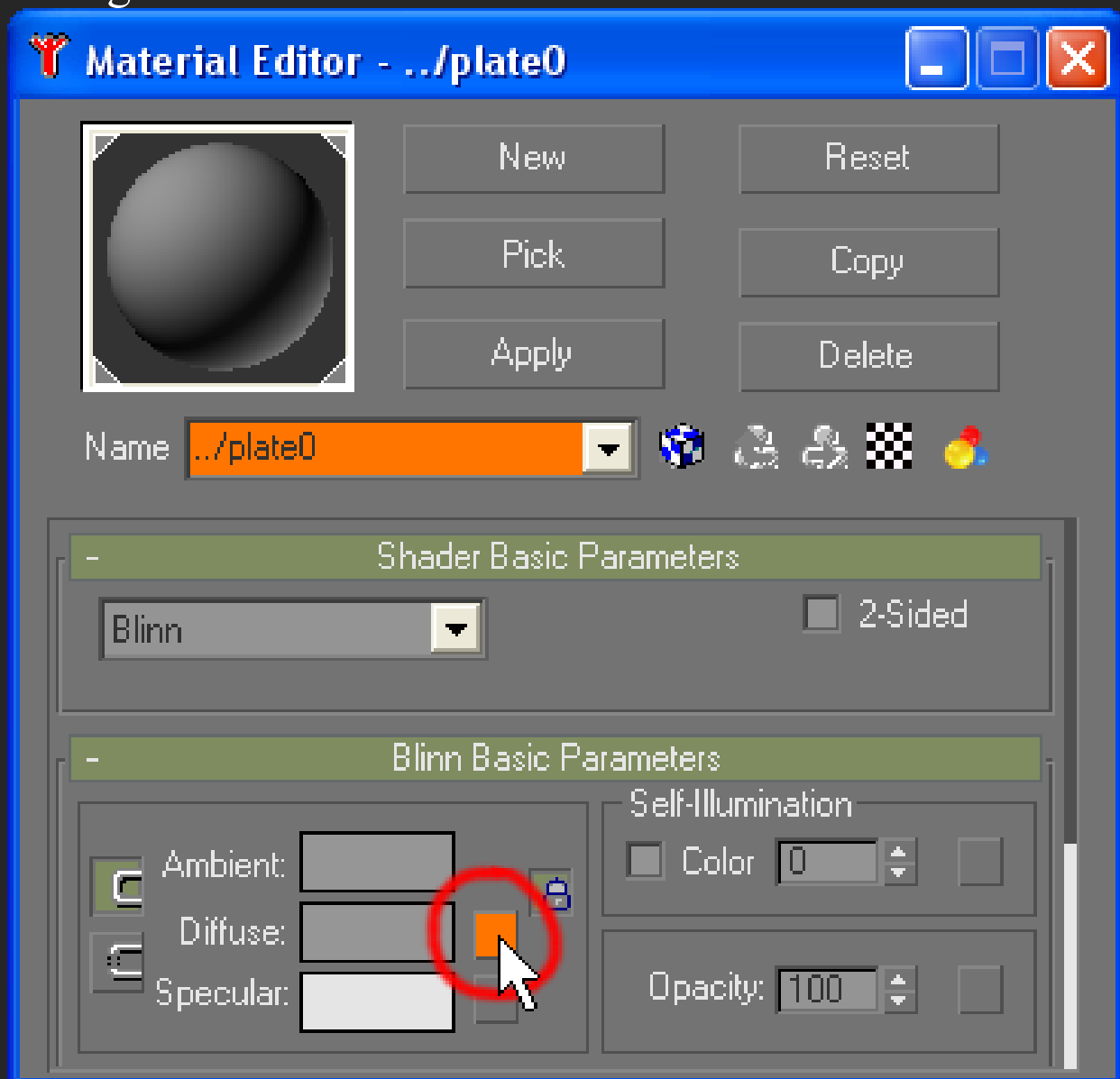
First, open the [Material Editor](#) by clicking the red ball on the Tool bar.



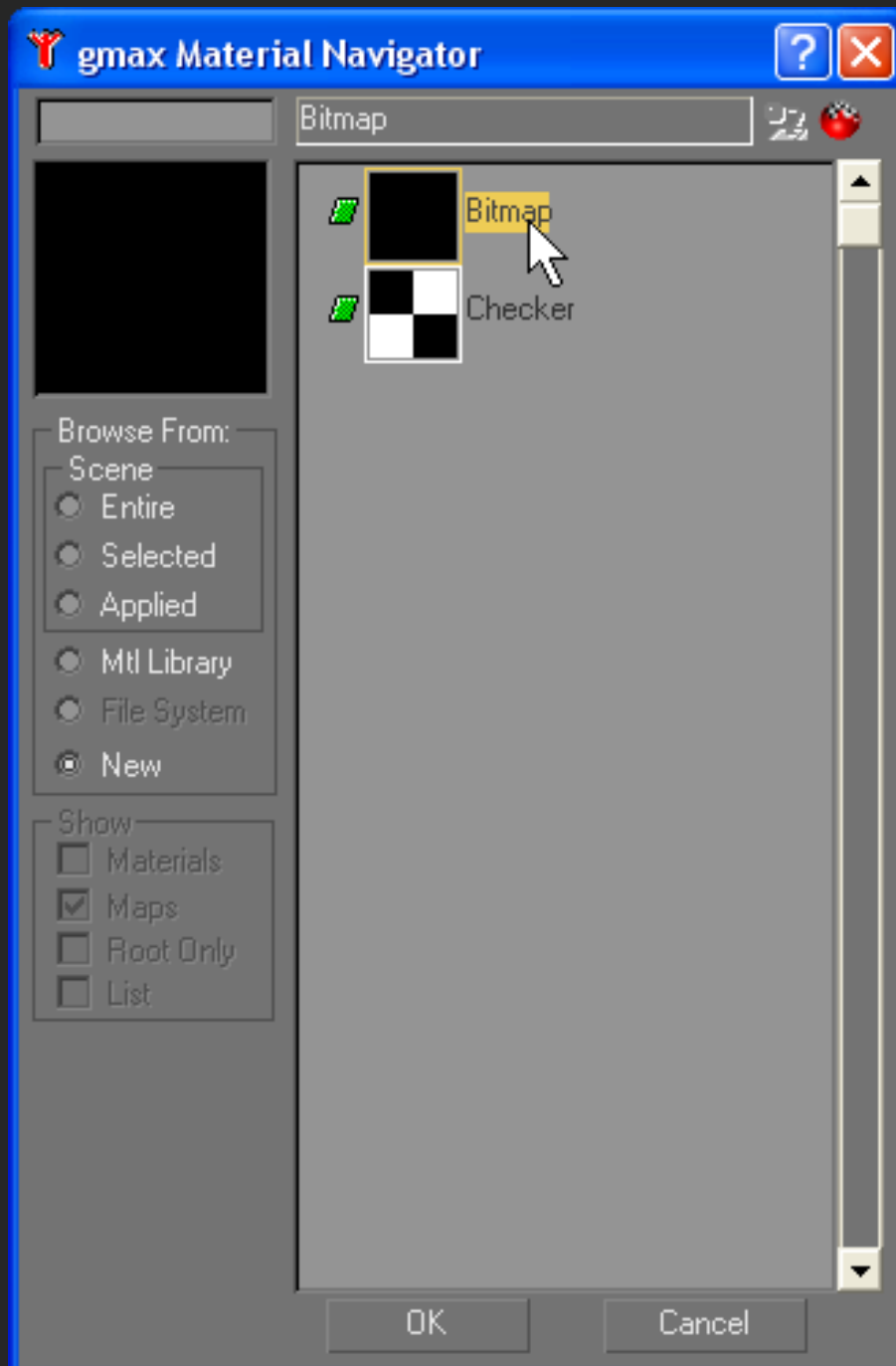
In the **Material Editor** press the **New** button. In the **New Material** box that appears select **Standard** & press OK.



In the **Material Editor** name the material **../plate0** (I explain the two dots & slash in Part 2, page 10) then press the small grey button to the right of **Diffuse**

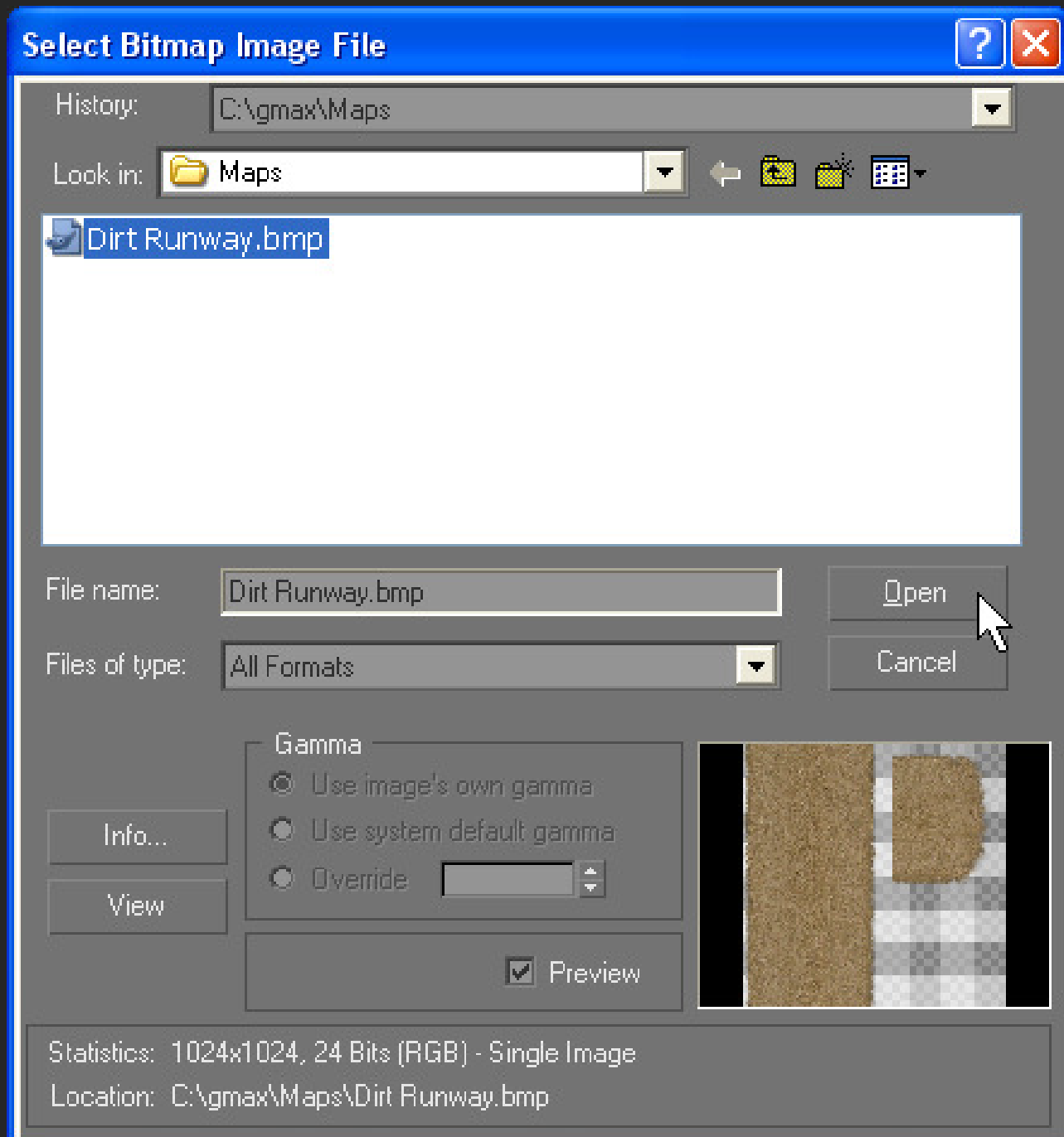


Now a new window appears called the **Material Navigator**. Select **Bitmap** & press OK.

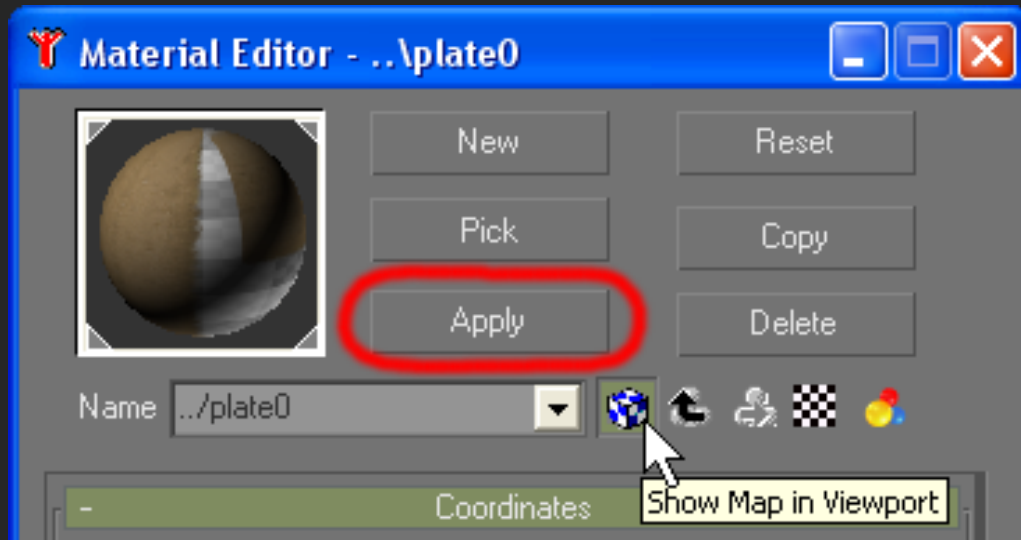




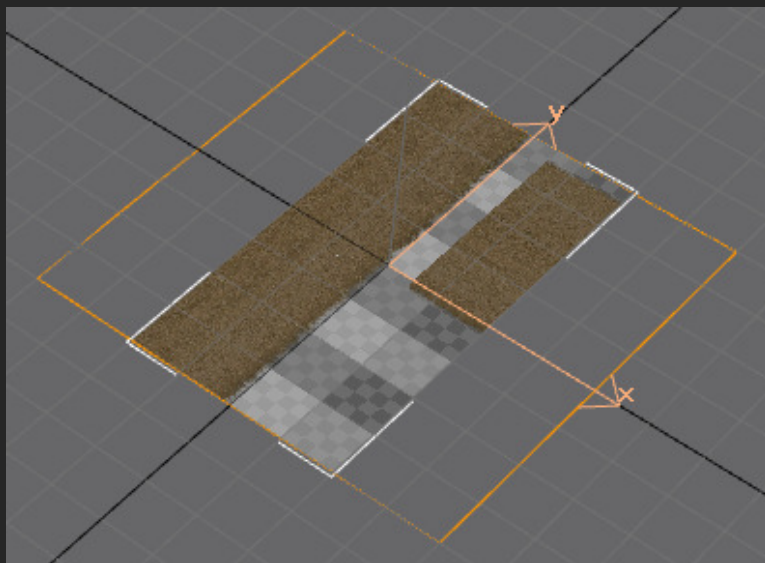
Now finally you have the chance to select your texture.  
Select **Dirt Runway.bmp** & press Open.



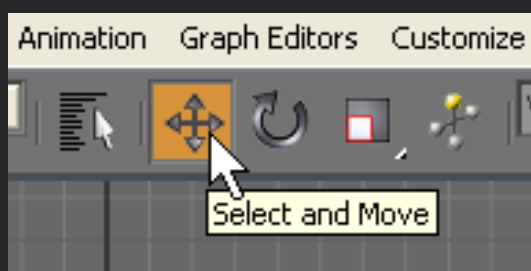
In order to see the texture you have to go back to the Material Editor & press the small **cube icon** & then press **Apply**.



You should now see the texture centred on the plate.



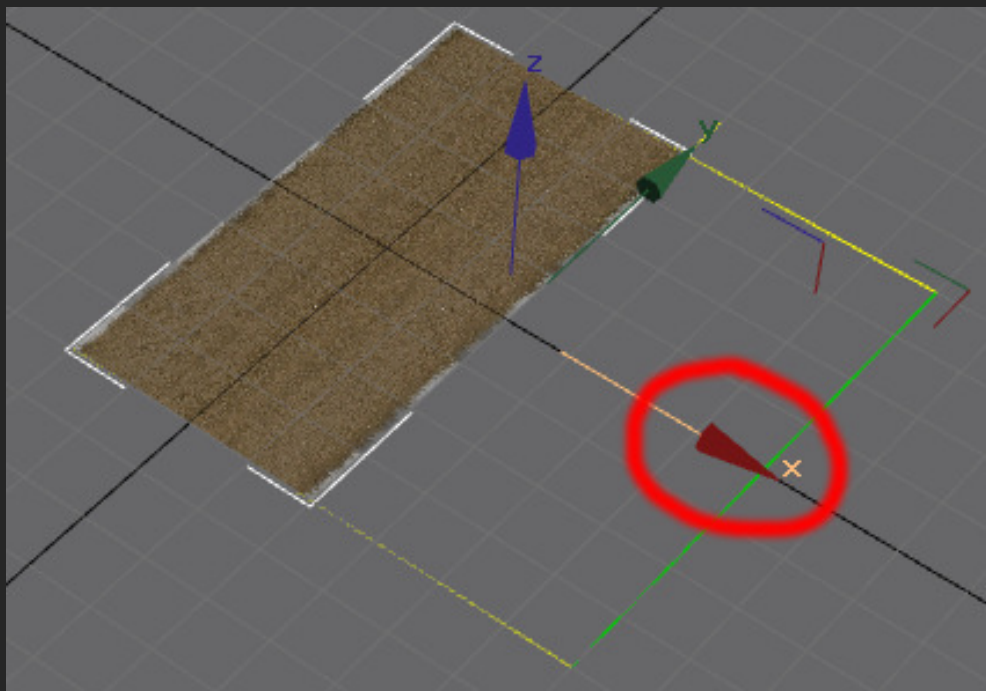
The texture now has to be dragged to the correct position. Go to the top of the screen & press the **Select and Move** button.



It's only the texture you want to move & not the plate. To do this you need to press the small + sign on the **UVW Mapping** modifier to expose a thing called the **Gizmo**, which you then select.



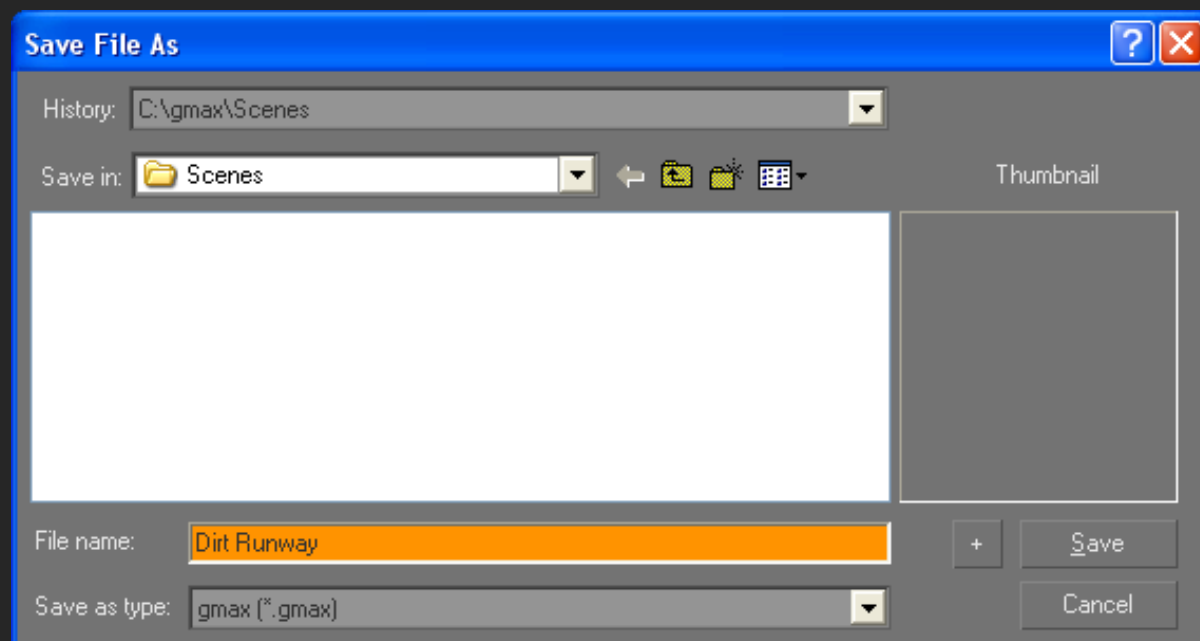
Now you can click on the **X** axis ( red arrow ) & drag the texture to the correct position.



You can position it by eye or you could go to the bottom of the screen where the X, Y & Z coordinates are displayed & type **20** in box **X**. When I made the texture I designed it to be offset by exactly 20m.



Thats it. You have now made an airfield plate.  
Before getting it into the game you should save it. Give it the name **Dirt Runway** & save it in the **Scenes** folder.

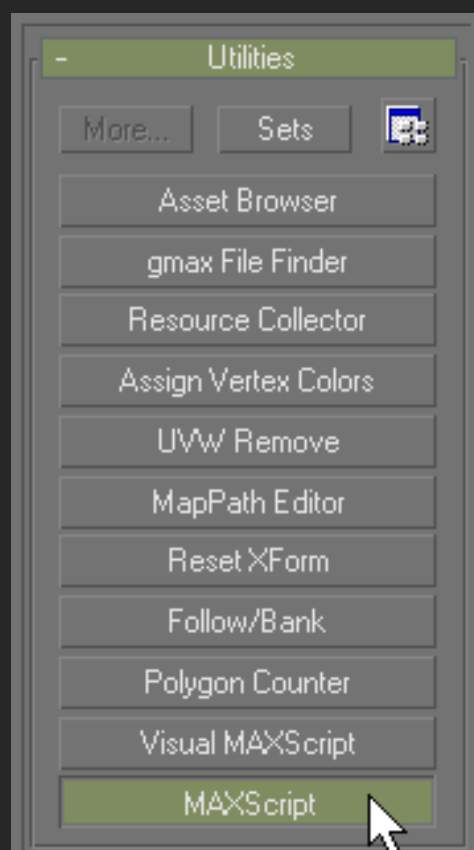


The information in the plate needs to be extracted & transfered to the **Body.msh** file. This is what the Buggy\_ Buggy\_Exporter does.

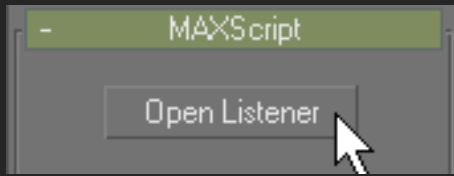
Go to the top right corner of the screen & click the **Utilities** Tab (hammer icon).



The Utilities section will open out.  
Press the **MAXScript** button.

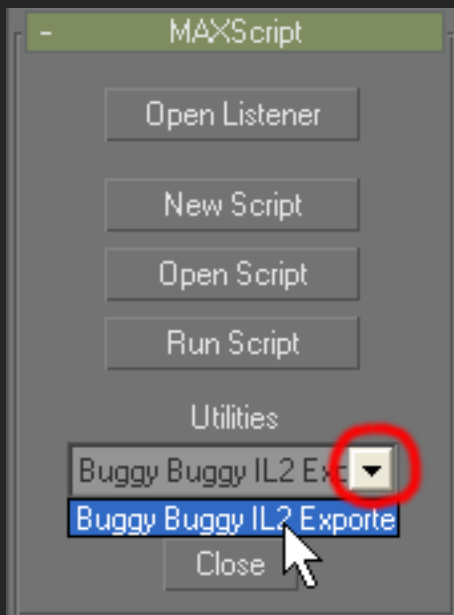


Press the button which says **Open Listener** to open a blank window called **MAXScript Listener**



Under **Utilities** press the white button with the small black triangle on it.

A menu will drop down with only one thing on it. It says **Buggy Buggy IL2 Exporter**. Click the words.

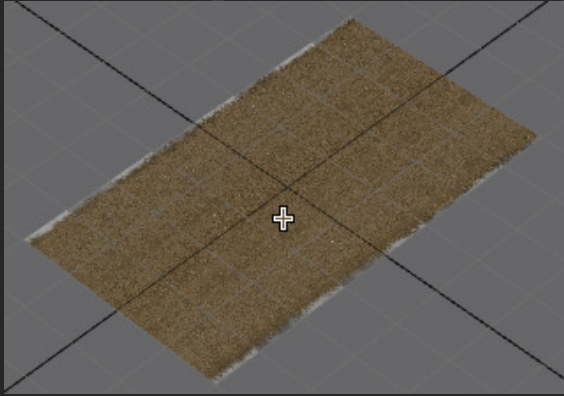


The Exporter section will open.

Press the button which says **Export IL2 .msh(text)**



Place the pointer over the plate & **Left Click**.



The plate information appears in the Listener.

```
MAXScript Listener
File Edit Search MacroRecorder Help

//Export from: IL2 Export V2.5 by Fatduck
//Filename: Plane01.msh

[Common]
NumBones 0
FramesType Single
NumFrames 1

[LOD]
500

[Materials]
../plate0

[FaceGroups]
4 2
0 0 4 0 2 0

[Vertices_Frame0]
-20.0 40.0 0.0 0.0 0.0 1.0
-20.0 -40.0 0.0 0.0 0.0 1.0
20.0 40.0 0.0 0.0 0.0 1.0
20.0 -40.0 0.0 0.0 0.0 1.0
//4 verts

[MaterialMapping]
1.19209e-007 -1.19209e-007
-1.19209e-007 1.0
0.5 0.0
0.5 1.0
//4 UVs

[Faces]
0 1 2
3 2 1
//2 faces
```

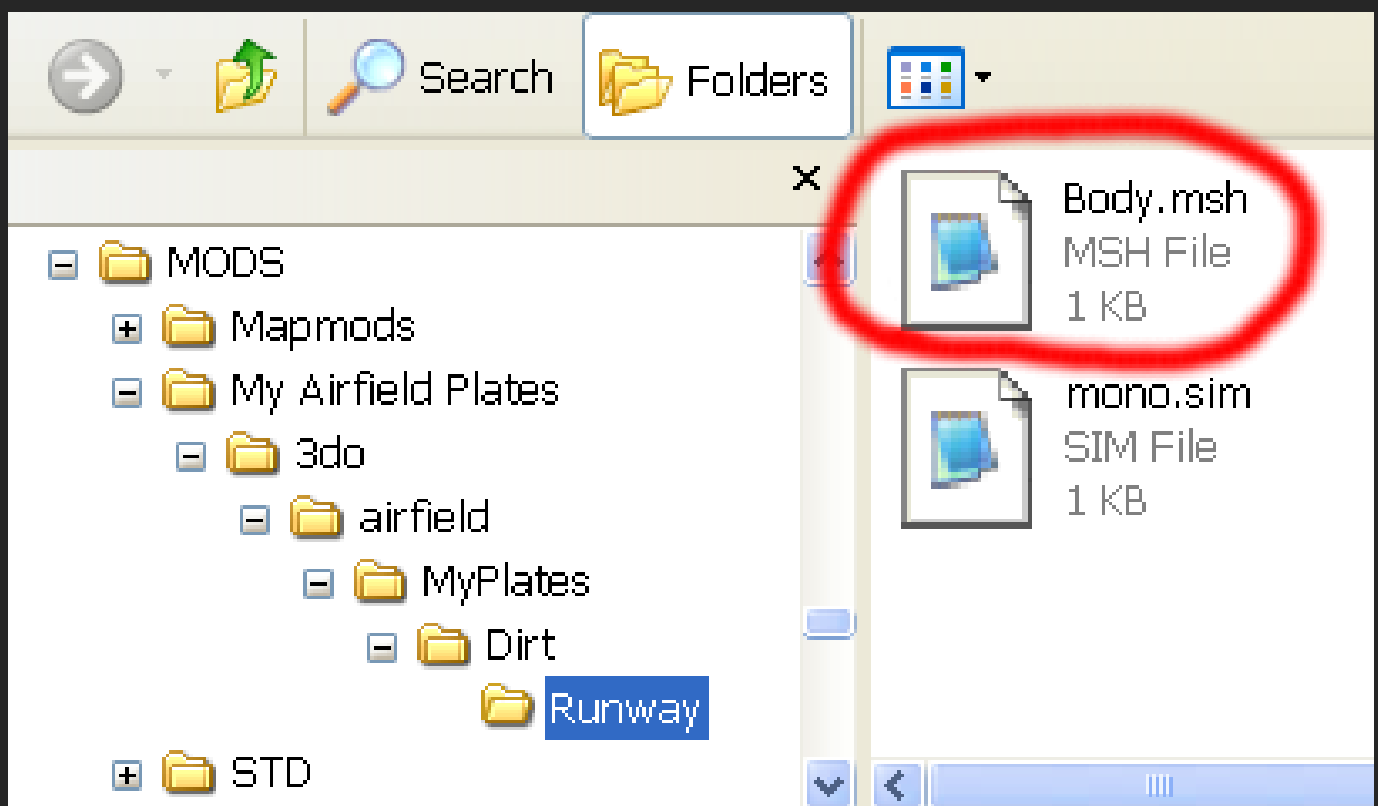


All the text in the **Listener** needs to be copied to the **Body.msh** file.

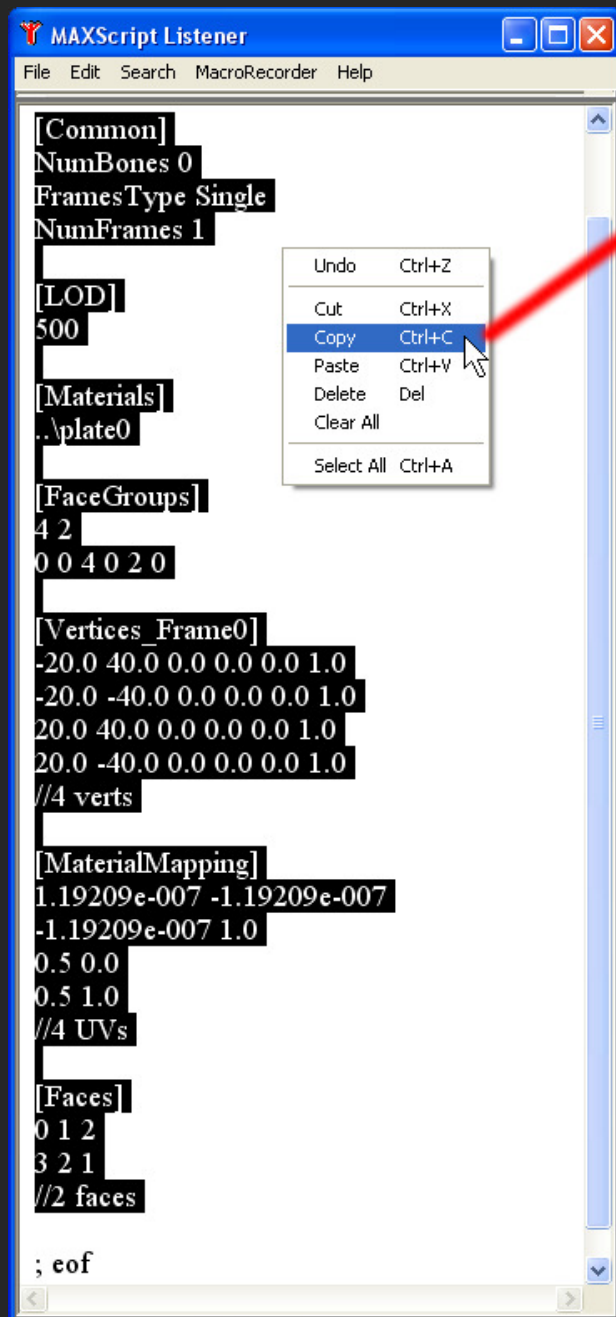
Press the **Restore Down** button at the top right of the Gmax screen to give yourself more space.



Go to your **MODS** folder & then the **Runway** folder. Use Notepad to open the file called **Body.msh**



Copy & paste all the text in the **Listener** (except **; eof**) to the top of the **Body.msh** file & save it.



The MAXScript Listener window displays the following script content:

```
[Common]
NumBones 0
FramesType Single
NumFrames 1

[LOD]
500

[Materials]
../plate0

[FaceGroups]
4 2
0 0 4 0 2 0

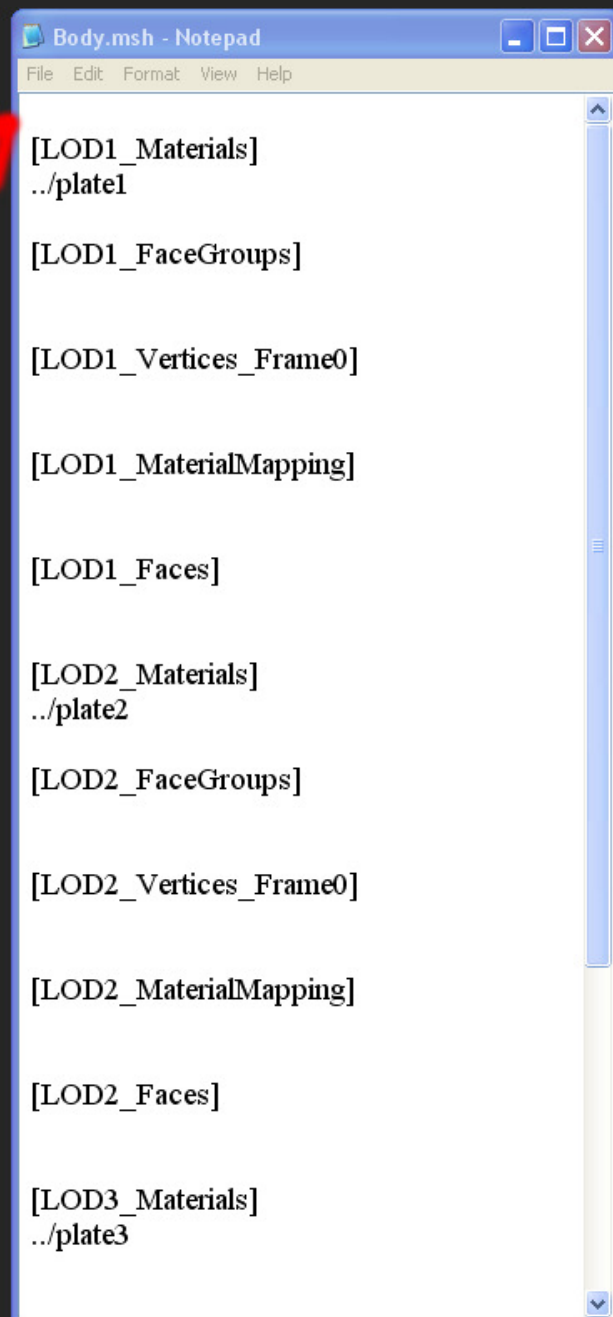
[Vertices_Frame0]
-20.0 40.0 0.0 0.0 0.0 1.0
-20.0 -40.0 0.0 0.0 0.0 1.0
20.0 40.0 0.0 0.0 0.0 1.0
20.0 -40.0 0.0 0.0 0.0 1.0
//4 verts

[MaterialMapping]
1.19209e-007 -1.19209e-007
-1.19209e-007 1.0
0.5 0.0
0.5 1.0
//4 UVs

[Faces]
0 1 2
3 2 1
//2 faces

; eof
```

A context menu is open over the 'Copy' option, with a red arrow pointing from the 'Copy' option to the 'Body.msh - Notepad' window.



The Body.msh - Notepad window shows the following script content:

```
[LOD1_Materials]
../plate1

[LOD1_FaceGroups]

[LOD1_Vertices_Frame0]

[LOD1_MaterialMapping]

[LOD1_Faces]

[LOD2_Materials]
../plate2

[LOD2_FaceGroups]

[LOD2_Vertices_Frame0]

[LOD2_MaterialMapping]

[LOD2_Faces]

[LOD3_Materials]
../plate3
```

It doesn't need to be converted into computer code, the game can read normal numbers & English.

(**eof** means **End Of File** & is only for the benefit of the file writer).

Run the game & load a map. Select your newly made Runway plate & see if it appears on the map.



If you can place it on the map it will only be visible up to a distance of **912.5m**. After that distance it will disappear. This is because in the **Body.msh** file it says - **[LOD]**  
**500**

500 is the visibility distance but it's not 500 metres.

LOD units are not in metres. Each unit is equal to **1.825** metres which means  $500 \times 1.825 = 912.5\text{m}$

## POSITIONING PLATES

Press the **F1** key to move the plate very slowly.

Press the **F2** or **F3** key to move the plate fast.

Hold down the **F5** key, **Right Click** & move your mouse sideways to rotate the plate slowly, or press the wheel & move mouse sideways to rotate.

# WHAT ARE LODs

LOD stands for **Level Of Detail**.

It is a method for decreasing the workload on the computer by reducing the complexity of an object as the viewer moves further away.

Airfield plates usually have 4 LODs & each LOD has a distance number assigned to it so that when the viewer reaches that distance the plate disappears & is instantly replaced by the next LOD which is a simpler version of the same thing. Because airfield plates are usually only made of 1 polygon the only way to simplify them is to reduce the size of the textures.

Below is an example of how 4 LOD distances would be written in the **Body.msh** file.

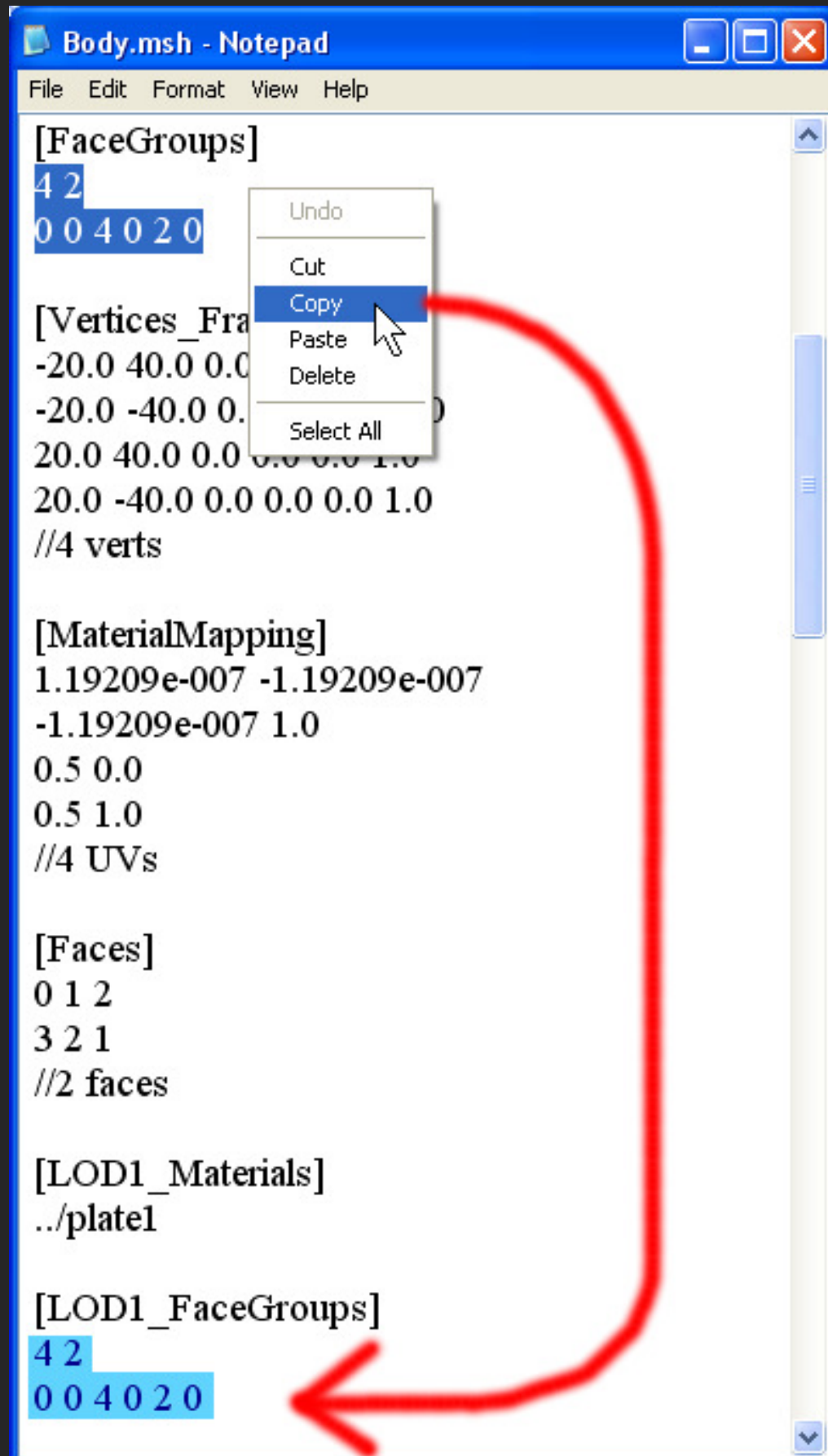
```
[LOD]  
150  
200  
600  
10958
```

Don't write the LOD distance until the LOD it represents is complete otherwise the plate won't load.

As I have already said, each LOD unit is equal to 1.825m so the last LOD in the above example is almost 20000m. The aim is to get to the last LOD in as short a distance as possible but without the change from one LOD to the next being noticeable .

The texture I have provided is **1024x1024** which is maximum size. For the second LOD it is scaled down to **512x512**. Then the next one is **128x128** & the last is **32x32**.

To make the other 3 LODs you need to copy all the numbers from the first LOD to all the other LODs.



This is how the first two LODs should look -

[Materials]

../plate0

[FaceGroups]

4 2

0 0 4 0 2 0

[Vertices\_Frame0]

-20.0 40.0 0.0 0.0 0.0 1.0

-20.0 -40.0 0.0 0.0 0.0 1.0

20.0 40.0 0.0 0.0 0.0 1.0

20.0 -40.0 0.0 0.0 0.0 1.0

[MaterialMapping]

1.19209e-007 -1.19209e-007

-1.19209e-007 1.0

0.5 0.0

0.5 1.0

[Faces]

0 1 2

3 2 1

[LOD1\_Materials]

../plate1

[LOD1\_FaceGroups]

4 2

0 0 4 0 2 0

[LOD1\_Vertices\_Frame0]

-20.0 40.0 0.0 0.0 0.0 1.0

-20.0 -40.0 0.0 0.0 0.0 1.0

20.0 40.0 0.0 0.0 0.0 1.0

20.0 -40.0 0.0 0.0 0.0 1.0

[LOD1\_MaterialMapping]

1.19209e-007 -1.19209e-007

-1.19209e-007 1.0

0.5 0.0

0.5 1.0

[LOD1\_Faces]

0 1 2

3 2 1



This is how the last two LODs should look -

[LOD2\_Materials]

../plate2

[LOD2\_FaceGroups]

4 2

0 0 4 0 2 0

[LOD2\_Vertices\_Frame0]

-20.0 40.0 0.0 0.0 0.0 1.0

-20.0 -40.0 0.0 0.0 0.0 1.0

20.0 40.0 0.0 0.0 0.0 1.0

20.0 -40.0 0.0 0.0 0.0 1.0

[LOD2\_MaterialMapping]

1.19209e-007 -1.19209e-007

-1.19209e-007 1.0

0.5 0.0

0.5 1.0

[LOD2\_Faces]

0 1 2

3 2 1

[LOD3\_Materials]

../plate3

[LOD3\_FaceGroups]

4 2

0 0 4 0 2 0

[LOD3\_Vertices\_Frame0]

-20.0 40.0 0.0 0.0 0.0 1.0

-20.0 -40.0 0.0 0.0 0.0 1.0

20.0 40.0 0.0 0.0 0.0 1.0

20.0 -40.0 0.0 0.0 0.0 1.0

[LOD3\_MaterialMapping]

1.19209e-007 -1.19209e-007

-1.19209e-007 1.0

0.5 0.0

0.5 1.0

[LOD3\_Faces]

0 1 2

3 2 1

Now you need to add the LOD distances. With each new plate I make I usually have to do a lot of testing in the game to discover the best distance for each LOD. The LOD values below are only correct for this plate.

[LOD]

150

200

600

10958

The textures need to be **uncompressed .tga** files. I usually slightly sharpen plate1 after scaling it.

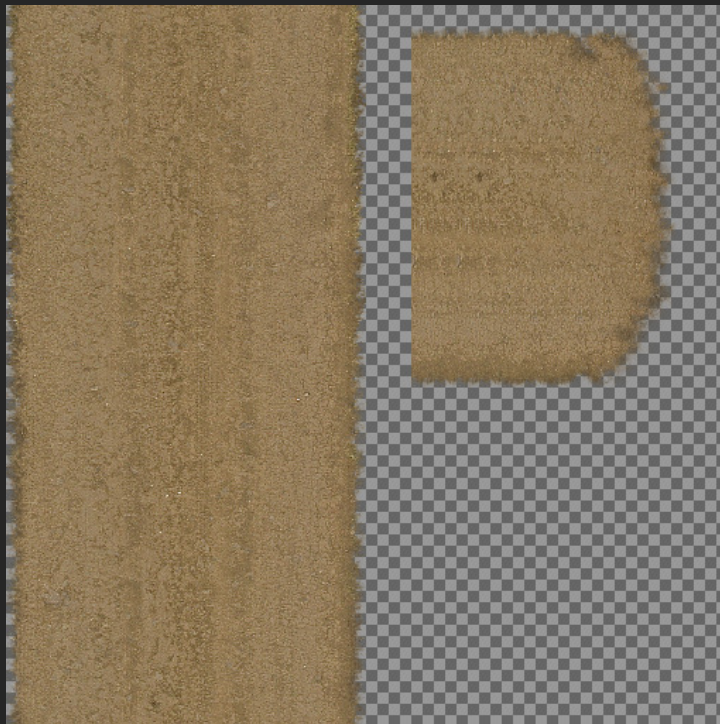


plate0  
4097KB



plate1  
1025KB



plate2  
65KB



plate3  
5KB

The texture sheets can be any shape, the sides don't have to be in multiples of 32 or anything like that but keep the total number of pixels the same.

END