Creating an Island with SBuilder V1.06a.

By Jeffrey Stanyer, May,2004

This Tutorial will show you how to create an Island in the middle of the Ocean and near to the Coast.

Also suggested are **Scasm 2.91**, **CellGrid_2004a** and **TCalc2004**, freeware programs available from major Flightsim websites to aid you in your project.

You will need to obtain "**CellGrid_2004a by Richard Ludowise**" available from www.avsim.com (do a search in the download section for "**cellgrid2004a.zip**"), Scasm is available from www.scasm.de

TCalc2004 is used to find the exact Lat and Lon required for your project and is included with **CellGrid_2004a.**

With these tools you will be able to create a grid on a captured screen shot of the area you will be working with in this tutorial that will help with calibration of your map that you will use and also the Latitude and Longitude that will also be required.

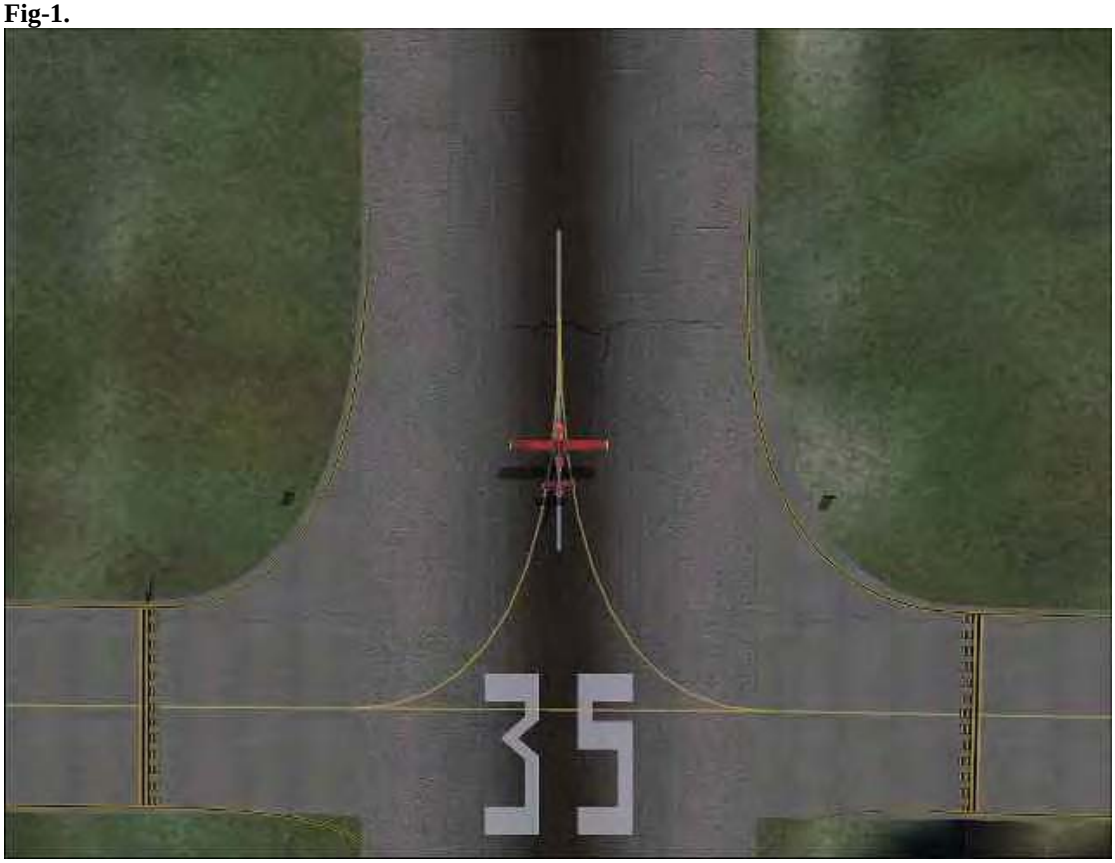
You may also wish to download from the same website, an updated version of **TCalc2004** that will run in conjunction with FS9 whilst the game is running and the data you require will update as your Aircraft moves within FS9. This file is called "**tcalc_0.zip**", again, available from www.avsim.com .

Starting your Project:

To start your first project we will start up FS9 and we will choose "Create a New Flight". We will then select the default "Cessna 172" for our aircraft and next we will select "Selected Location".
Once we have opened Selected Location, place this code in the "Airport Id", YMPC (this will place you at "Point Cook, Victoria, Australia) and click OK, from the next screen, and click "Fly Now".

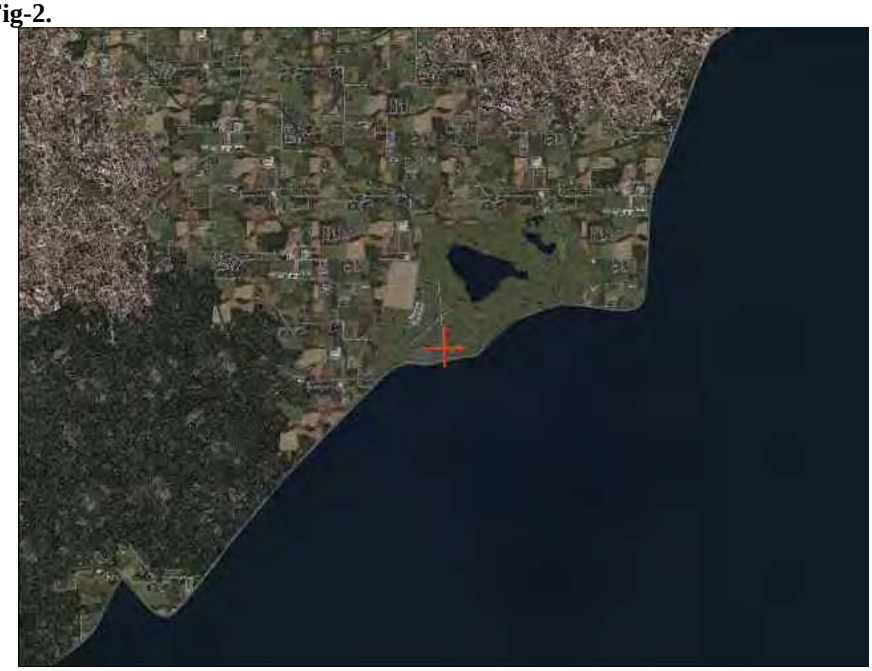
Your Aircraft should be sitting on the active RWY at Point Cook. We now need to select within the Sim, Top-down View.

Fig-1.



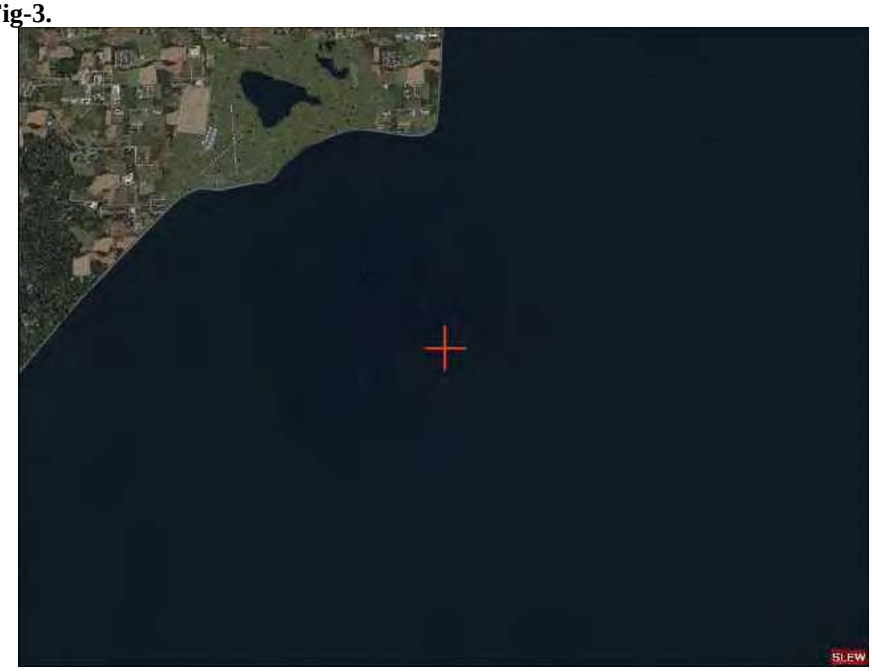
Next, press the **“– “** (minus) key on your keyboard to zoom out until you can see a clear body of water.

Fig-2.



You will also see a Red Cross, this is the location of your aircraft (Fig-2). Now hit the Y key to place your aircraft in Slew mode. Using your Joystick (preferred method) or by use of the cursor keys, slew your aircraft approximately to the lower right of the above image (Fig-3).

Fig-3.

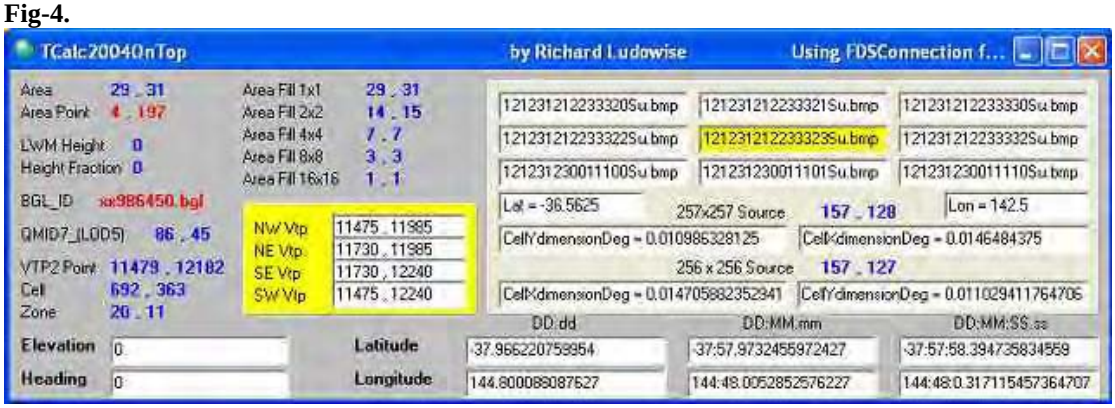


TIP: To orient your view to North, South , Press the Space bar or The Brake Trigger on your Joystick.

Next, press the **;** keys to save your Flight for future reference ("*SBuilder*" is a suggestion for the saved flight name).
Now we will get **TCalc2004OnTop** up and running, as per the readme file within the Zip, you will need to place the "**FDSConnection.dll**" file in your Flightsim Modules Folder to allow **TCalc2004OnTop** to interact with your Flightsim.

With your Flightsim running as per the previous screenshot, start up **TDCalc2004OnTop.exe** and you will see this window appear (Fig-4).

Fig-4.



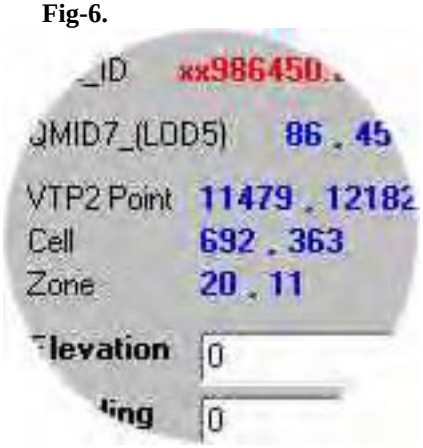
This is **TCalc2004OnTop** running and contains a wealth of information that will not be covered in this tutorial, we will only use the information required for this topic.

As per the above image, you can see that there are Latitude and Longitude in three formats that are available to you (Fig-5).

Fig-5.

You will also see the Cell that your Aircraft is currently in (Fig-6)
.

Fig-6.



This Information will be used in conjunction with **SBuilder** and **CellGrid** to create Reference Lines for your image and to scale your image within SBuilder.

We have FS9 open at our saved position above the water near to Point Cook Airfield and we have now opened **TDCalc2004OnTop** to obtain our information for this tutorial.
When we look at the **TCalc2004OnTop** window, we will see some information regarding the Cell that our Aircraft is occupying (***Refer to Fig-6.***) and we can see that this Cell is "**692, 363**", note this set of numbers as we will now create a txt file of information that will create a set of grid lines in your Flightsim to help you align your Map that you will create for use in **SBuilder** by also using **CellGrid**.

Example of the TXT file we will create with MS Notepad (A Basic Text Editor).

****

Include Cell_Grid_2004a.inc

CellDefine **692, 363**

****

This is the body of text you have just created in MS Notepad with the Cell Co-ordinates obtained from **TCalc2004OnTop**. Save this File as **MyTutorial.txt** in the **CellGrid2004a** folder you created when you unzipped the **CellGrid2004a.zip** file.

In the **CellGrid2004a** folder you will see two folders, Scenery and Texture; you will also see an icon called BGLC.EXE (Fig-7).

Fig-7.

Using your mouse, Drag the MyTutorial.txt file over the BGLC.EXE icon and you will create a *MyTutorial.BGL* file (Fig-8).

Fig-8.

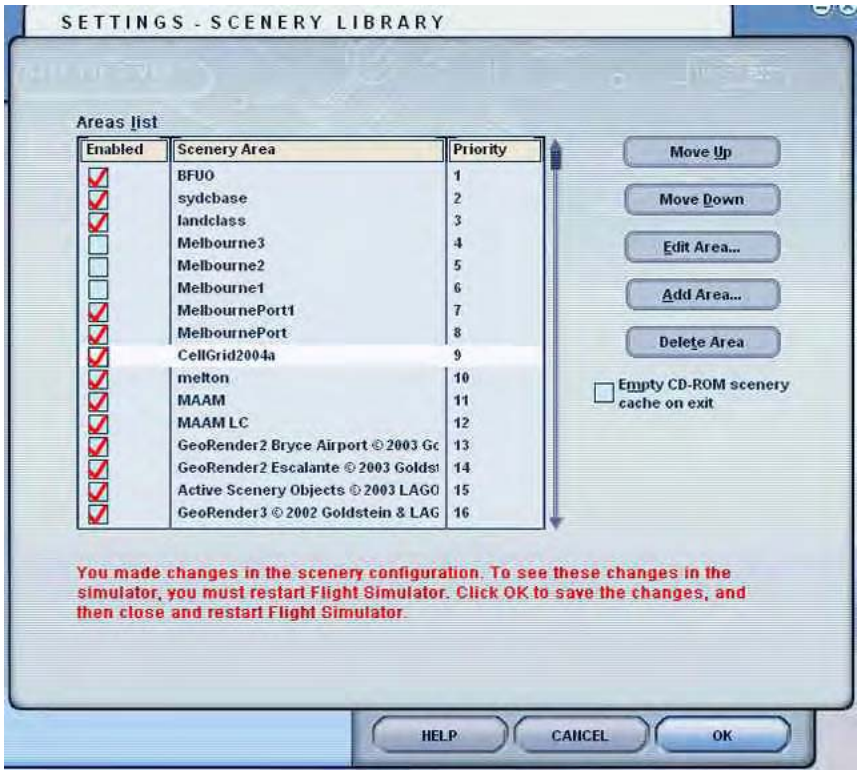
Now Cut and Paste this file into the Scenery Folder with in your CellGridD2004a.

X:\CellGrid2004a\scenery (*X is the hard drive that you unzipped your CellGrid files into*).

Now, you must close and re-open your Flightsim and activate the CellGrid\Scenery Folder in your Settings, Scenery, and Scenery Library in FS9 as per (Fig-9).

Like any additional 3rd party scenery you install, you will need to close FS9 and restart FS9 to activate this new scenery addition.

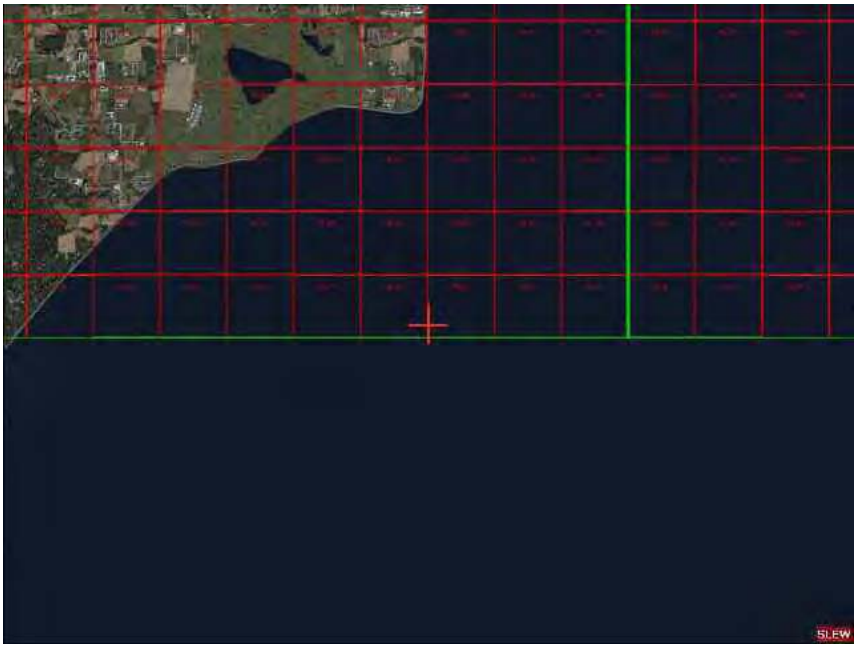
Fig-9.



Once you have clicked **OK** and then closed your FS9, **Restart** FS9 and choose **Select a Flight** and choose where you saved the Flight to (SBuilder).

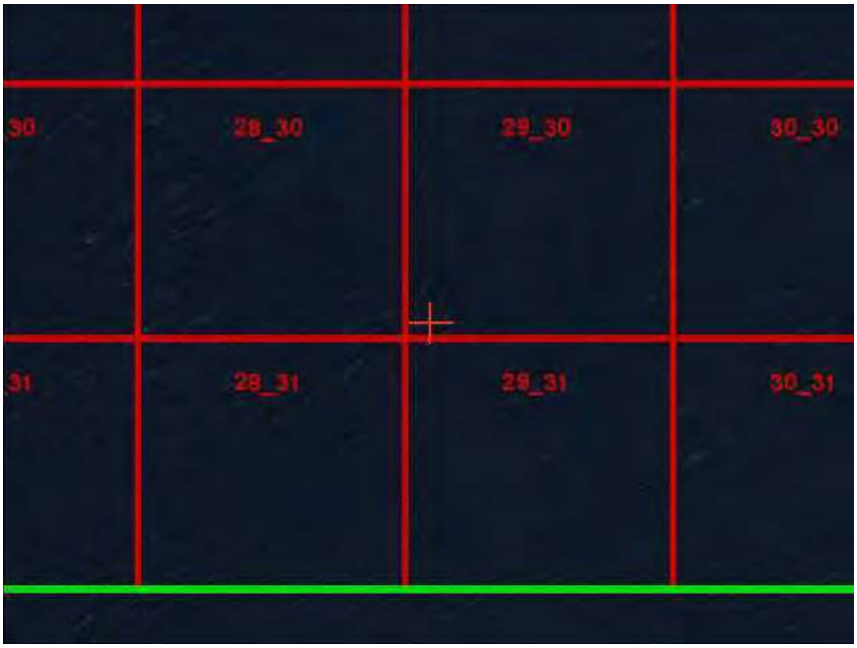
Once your FS9 opens up at the Saved flight, your screen should look like this (Fig-10).

Fig-10.



You will see that your Aircraft is now at the lower part of the grid if you zoom in by pressing the "+" (Plus)key.
Press the + Key a couple of times to zoom back in and move your aircraft further into the grid area as per the next screen shot (Fig-11).

Fig-11.



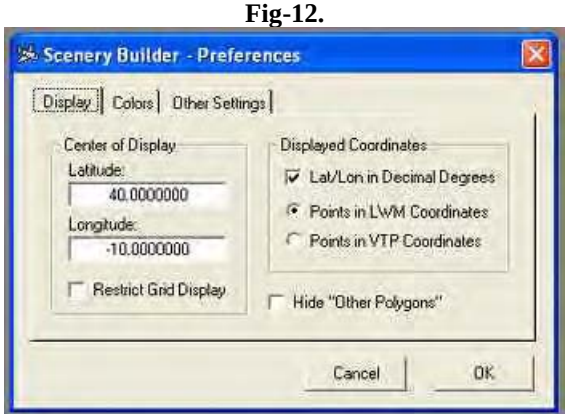
Now to capture this screen shot to create a map in SBuilder, Press **Print Screen** on your Keyboard.

Then, open an Image editing program, *MS Paint* will suffice and choose *Edit* and *Paste* to place your screen capture into your Image editing program. Once you have placed the screenshot into the *eg: MS Paint*, save this as a BMP files and call it **MyTutorial.BMP** (place this into your folder that you are using to create this tutorial scenery).

Note that the main Grid squares we can see are **28_30, 29_30** and **28_31, 29_31** this is where we will scale within SBuilder and Create our Island.

Now we will Restart FS9 an select our saved flight (*SBuilder* flight) and make sure you are in Top-Down View.
Then open **SBuilder**, select from the Tool bar, **Options**
then from the drop down menu, select **Preferences** (Fig-12).
Click on the **Display Tab** and select **Displayed Coordinates** and place a tick in the box for **Lat/Lon in Decimal Degrees** and **Points in LWM Coordinates** and press OK.

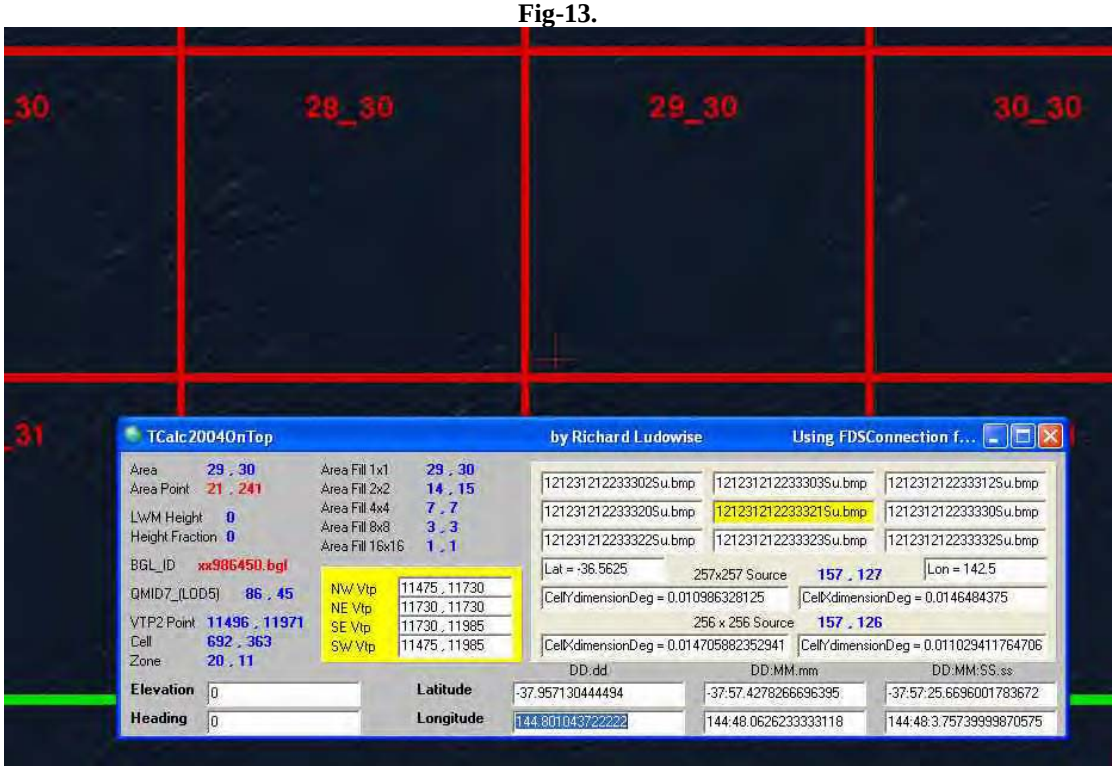
Fig-12.



Now press **NEW** from the tool bar and name your project then click on the heading **Class Scenery**.

Next, open **TCalc2004OnTop.exe** and switch to your FS9, this will display your flight (whilst in Slew mode) and the **TCalc2004OnTop** will be sitting over the display, Note that in the area of Lat/Lon you will see the types of coordinates. These are **DD.dd** , **DD:MM.mm** and **DD:MM:MM.ss** as we want to use Decimal we will choose the **DD.dd** set of numbers (Fig-13).

Fig-13.

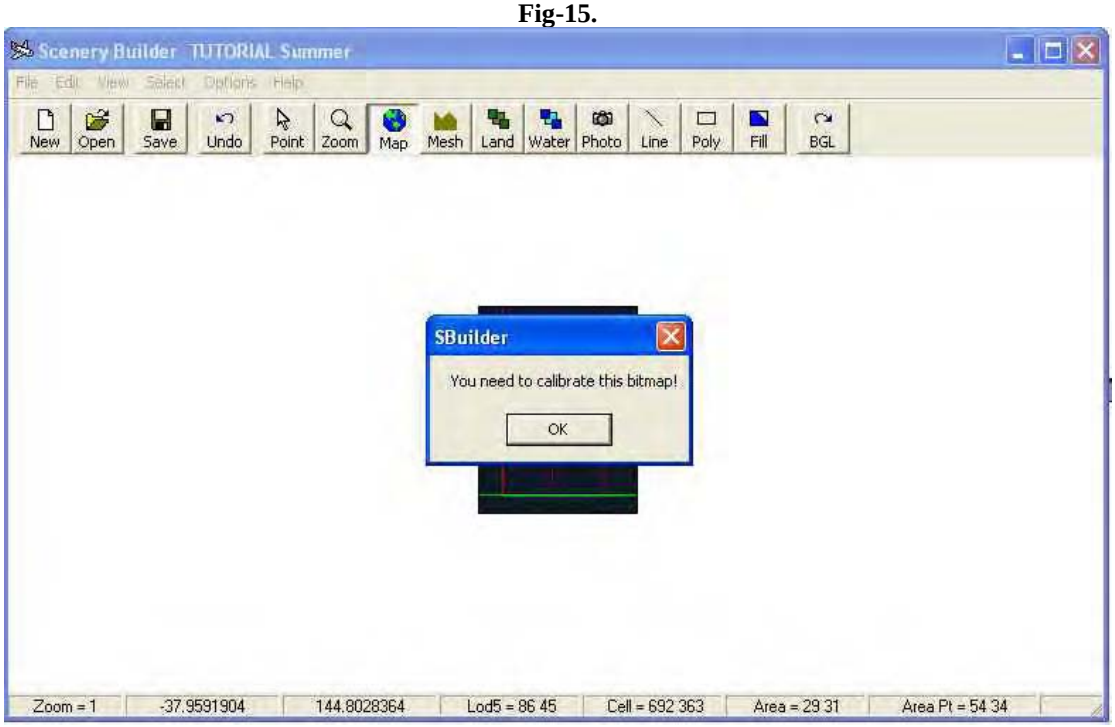


Copy and **Paste** the **Decimal** Latitude and Longitude coordinates from TCalc2004 into your Project Properties setting (Fig-14).

Fig-14.

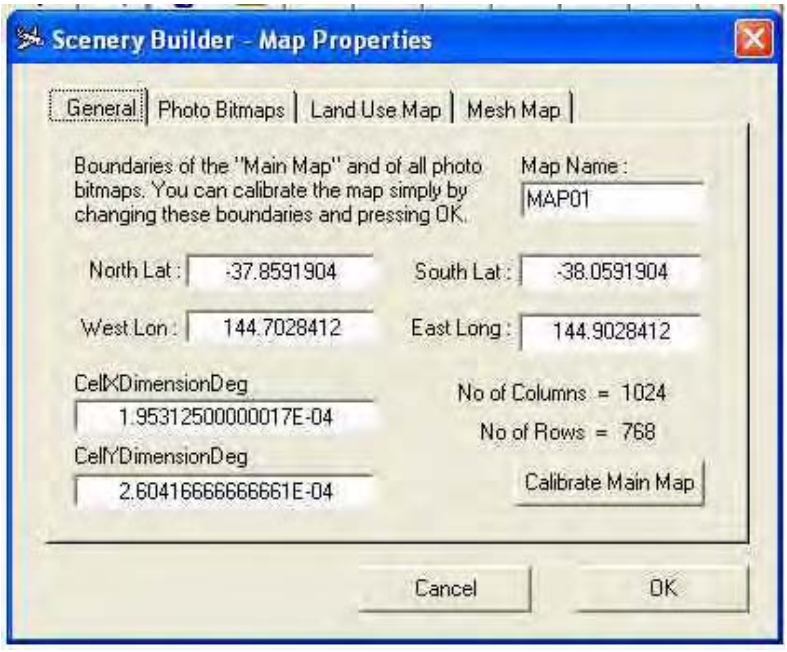
Press **OK** and then choose **File,** Save As**, *Tutorial.SBP*** .
Next, from the menu buttons at the top of the screen, select the *MAP* icon, Click on the centre of the screen and a window will open, prompting you to select a BMP image for your map, browse to the folder where you saved your screen capture and insert the **MyTutorial.BMP** file.
You will see a small image appear with a message box asking you to calibrate the bitmap (Fig-15), press **OK**.

Fig-15.



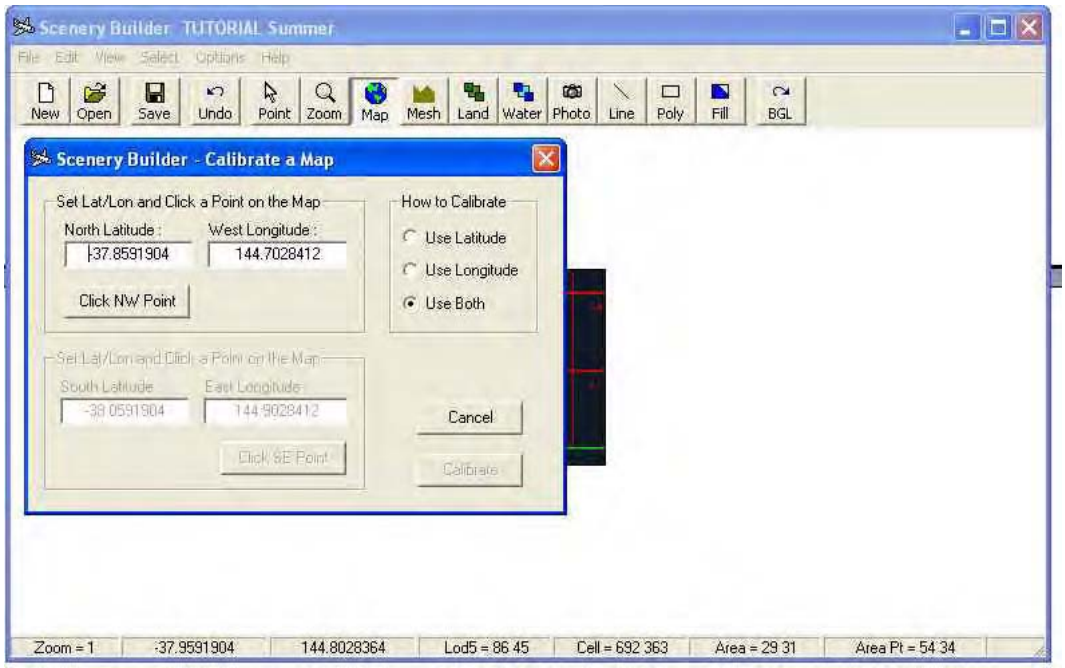
A new message box will appear prompting you to enter the required Lat Lon for calibration (Fig-16).

Fig-16.



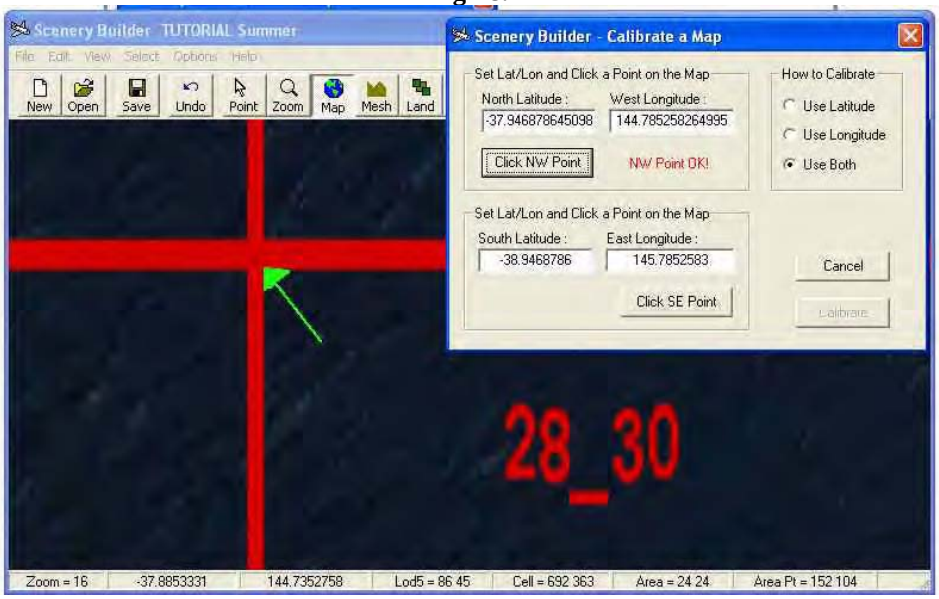
Click on the button " **Calibrate Main Map** " and you will see this new message box open (Fig-17).

Fig-17.



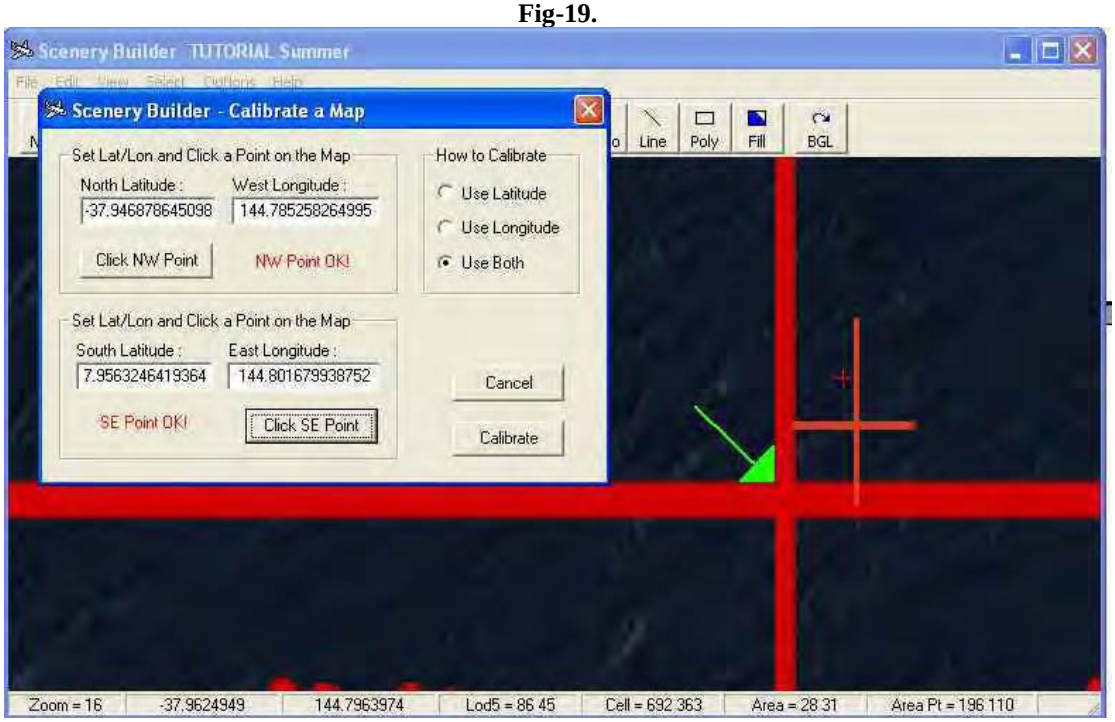
From your Windows Taskbar, select your FS9 and ensure that **TCalc2004** is also displayed.
Slew your Aircraft to the Top Left corner of the Grid Ref **28_30** , now refer to the **TCalc2004** and note the *Lat Lon* in the **DD:dd** part of the display, Copy and Paste these two sets of numbers to the North Latitude and West Longitude of the Message Box (Calibrate a Map) in your **SBuilder**.
Once you have copied and pasted these two coordinates, click on the "Click NW Point" button.
You will see your Map Image as a small display that is difficult to read, to overcome this you will need to use the Scroll Button of your mouse to Zoom in to the Image to be able to read it clearly.
You will also find that as you Zoom in, you will not be able to see the correct location that you wish to click on to set your North – West point. To Pan across your Display, Press and Hold the Scroll Button or Wheel of your Mouse *DOWN* and drag your Map Image so that you can see the correct area that you wish to click on.
Press the **M** key on your keyboard and Click the Upper Left part of the Grid Square **28_30** and you have Set your N-W reference point (Fig-18).

Fig-18.



Now we need to set the South East point for our Map Calibration. With your FS9 active, slew your Aircraft to the Lower Right of the Grid Square **28_30** and Copy the **DD.dd** Lat / Lon coordinates from **TCalc2004** and paste them into the relevant part of the "SBuilder, Calibrate A Map" for your S.E. Point. Click on the "Click SE Point" of Grid Square **28_30** and then Pan to the lower corner of the Grid **28_30** and click on the Map Image (Fig-19), Press the **M** key on your keyboard and click to set this Calibration Point.

Fig-19.



Now click on the button marked Calibrate !

[Note you may see an additional window open after you have clicked on your NW and SE Points and also after you have clicked on Calibrate, just press OK]

You will now see a Calibrated Map for your project so press **SAVE** (we don't want to loose this work), now that the hard part is over we can build our Island.

Building the Island.

Create the Shoreline:

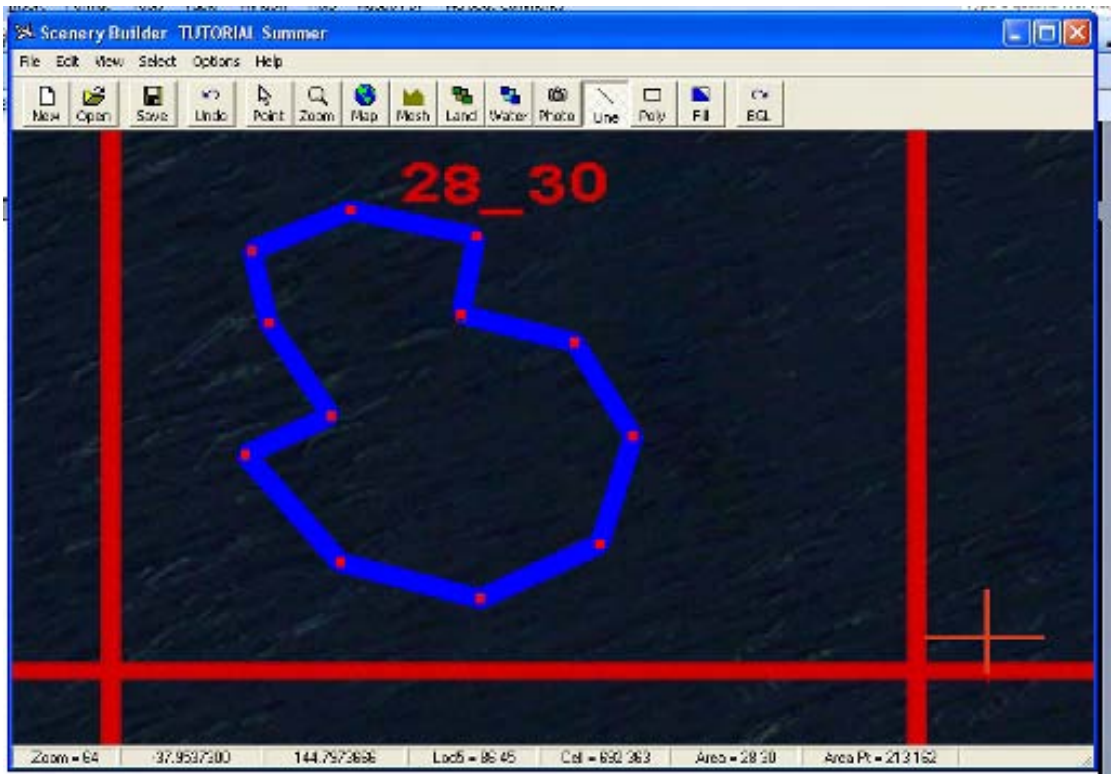
As we no longer require TCalc2004 we can close this program, we can also close FS9 as this also is no longer required.
From here we will be working within **SBuilder** itself.

At this point we are working close to a Coastline and therefore we will create our island with this procedure to ensure that we gain the desired results as open water away from the coast will require a different method of construction.

This is because the way a land mask is created within the Lod Tile by FS differs in the two areas.

In **SBuilder**, open your tutorial project and click on the Line Icon in the taskbar, and draw a shape to create a shoreline for the Island (Fig-20).

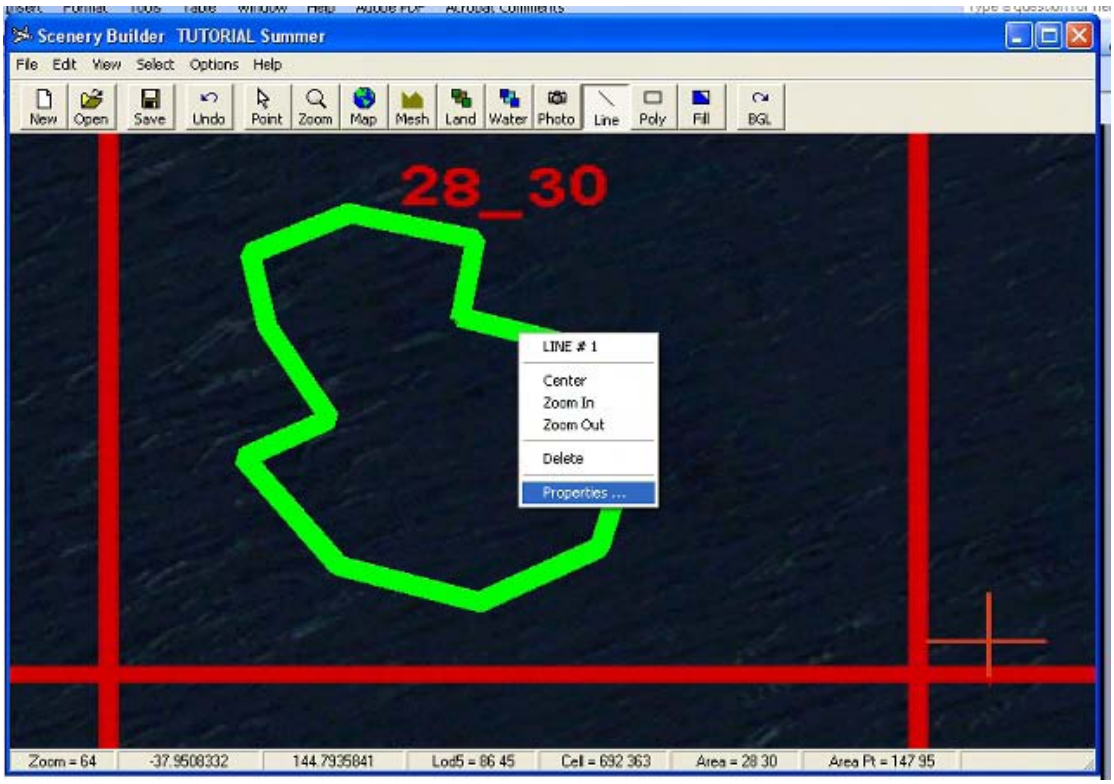
Fig-20.



We have now created the shoreline but still need to set some attributes for the required result.

To do this. Place your cursor on a part of the Line between the Red Dots and click the Right Mouse Button. This will make the Line active as a selection and also open up a dropdown menu (Fig-21).

Fig-21.



From the menu , select Properties (Fig-22).

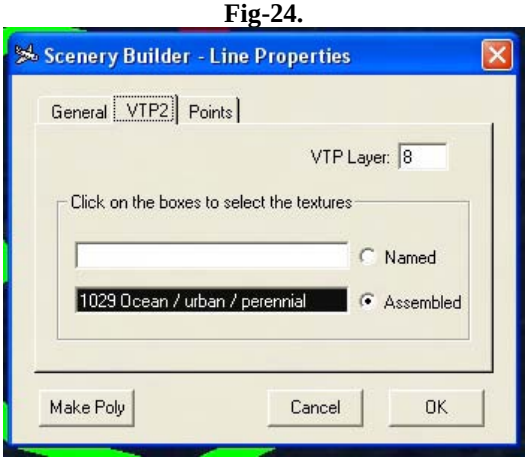
Fig-22.

You will now see another Window where you will tick the VTP2 Part under the General Tab (Fig-23).

Fig-23.

From the same Window, now click on the heading tab “VTP2” and you will be presented with a new window page, from here , in the Area named “VTP Layer:” , insert the number 8 (this is the default layer for shorelines), place a tick next to the word *Assembled* and in the portion to the left of where you placed your tick , double click your Left mouse button to bring up the shoreline selection menu and select your shoreline (Fig-24).

Fig-24.



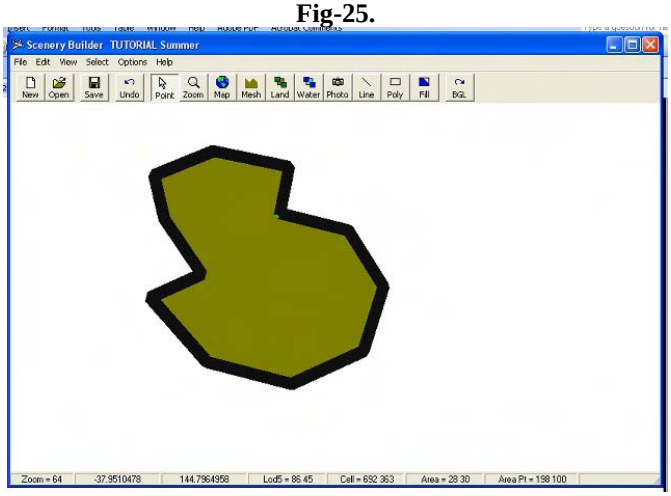
We have now created our shoreline and set its type, Save your project !

The next step will create a surface for our island, it is important to note, as we are close to a landmass that we will need to create our island with THIS method for success. The reason why will be showed later in this tutorial.

Create the Island Surface Method 1:

To create the Land for our Island we will need to Open the properties part of our Shoreline as shown in creation of the Shoreline, however, we will take a shortcut and click on the tab “General” and at the bottom left of the menu you will see the words “Make Poly”. Click on this button, this will create a polygon for your Island Surface. Press OK and you will see your surface as per (Fig-25)
(*The Map has been turned of from within the View menu in the SBuilder taskbar for clarity*).

Fig-25.



If we were to save and compile our project now, we will have our Island but with only a shoreline and No surface. To complete our surface we need to edit the Polygon we have created.
In the taskbar, select the View menu and un-tick every item Except “All Polygons” so we will just view the Polygon .
Next, with your Right mouse button, click on the Polygon and again choose Properties from the PopUp menu and in the Next window, under the “General” Tab (Fig-26), choose LWM , then click on the Tab LWM Poly and in the LWM Type, click on the Land Mask part (Fig-27).

Fig-26.

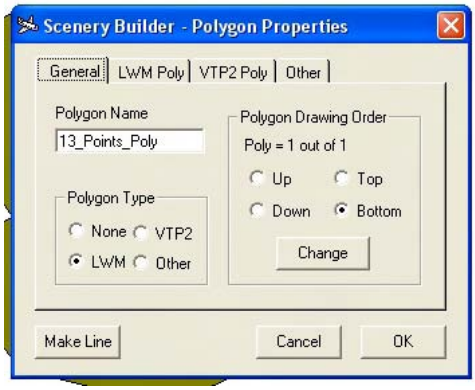
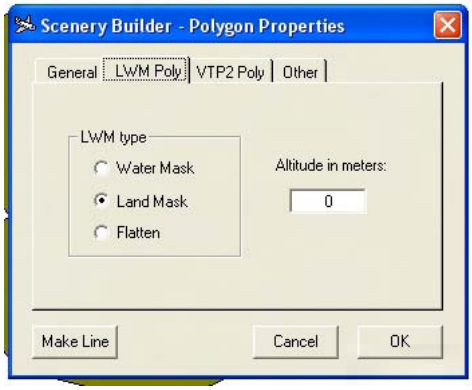


Fig-27.

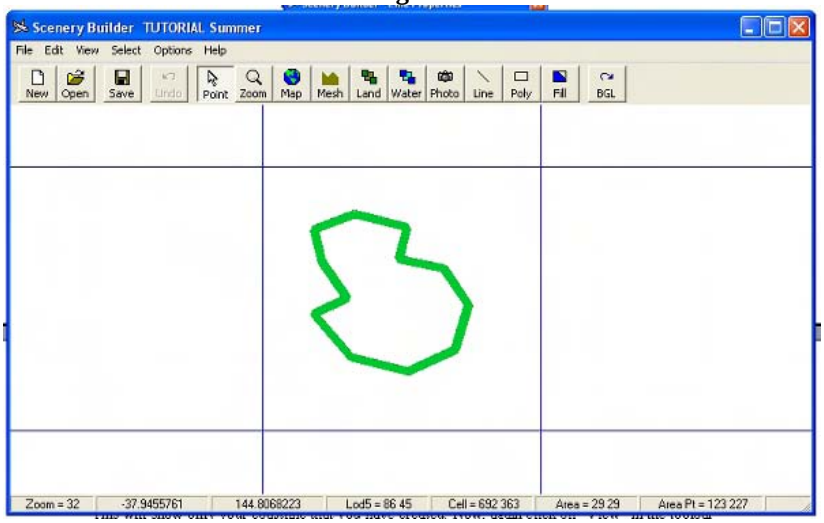


This will create a hard surface for your island and will reflect the surface of the land class of the coastal land you have built your island next to.
Again, if you were to view this scenery in FS9 you will see that your shoreline is very thin , almost non existent and you will still be missing the land.
To correct this, we need to click on the View tab in the SBuilder taskbar and ONLY select “All Lines”, we now only see the shoreline that we created previously.
Click on the shoreline with your Right mouse button and bring up the Properties menu again and this time, click on the Tab marked “Points”.
In the “Set Width” part, enter the number “65” under the “All Points” (Fig-28) and then click on the button marked “Change”. Press OK and Save your Project !, this will give you a shoreline similar in width to the default FS9 shorelines (Note that you can alter each Point of the shoreline for varying widths by changing the values in the “Progressive Width Setting”).

Fig-28.

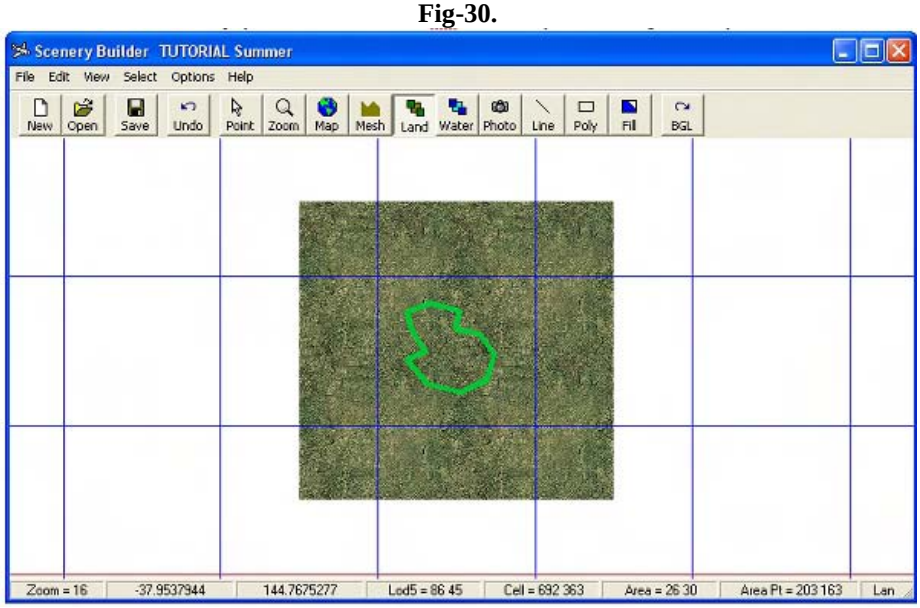
We also need to create a Land Class file so that our LWM Polygon will break the Water Mask and show the applicable land class that we will now create.
To do this, on your toolbar for SBuilder, choose “View” and make sure that only “All Lines” is ticked. This will show only your coastline that you have created. Now, again click on “View” in the toolbar and click on “Display Grid” and choose “Grid Lod 13 F3” and you will see a grid line in your SBuilder.
This is a Lod 13 Grid and we need to place our Land class tiles to create our Land class (Fig-29).

Fig-29.



Next, click on the “Land” icon in the toolbar and select a land class. Next, click at the 4 intersections of the Grid Square surrounding your coastline to place the land class (Fig-30).

Fig-30.



Now, Click on select and make sure All Land Classes is selected, then, click on the BGL button and create the land class BGL file.

*** **Important note:*** when you place your land class BGL file into your Add-on Scenery Folder, you MUST create a separate folder for this file without a texture folder**.**

You will have two sets of scenery folders for your project,
First you will have a folder “MyProject” with the following
X:\Flight Simulator 9\Addon Scenery\MyProject\scenery and X:\Flight Simulator 9\Addon Scenery\MyProject\texture and a folder called Landclass.

For your Land Class, I would suggest you create a folder within your Addon Scenery Folder called "Landclass" where you will create a subfolder called "Scenery".
****** DO NOT CREATE A SUB FOLDER CALLED TEXTURE******
Eg: X:\\Flight Simulator 9\Addon Scenery\Landclass as this will create a memory leak within FS9 and eventually your Flightsim will crash.

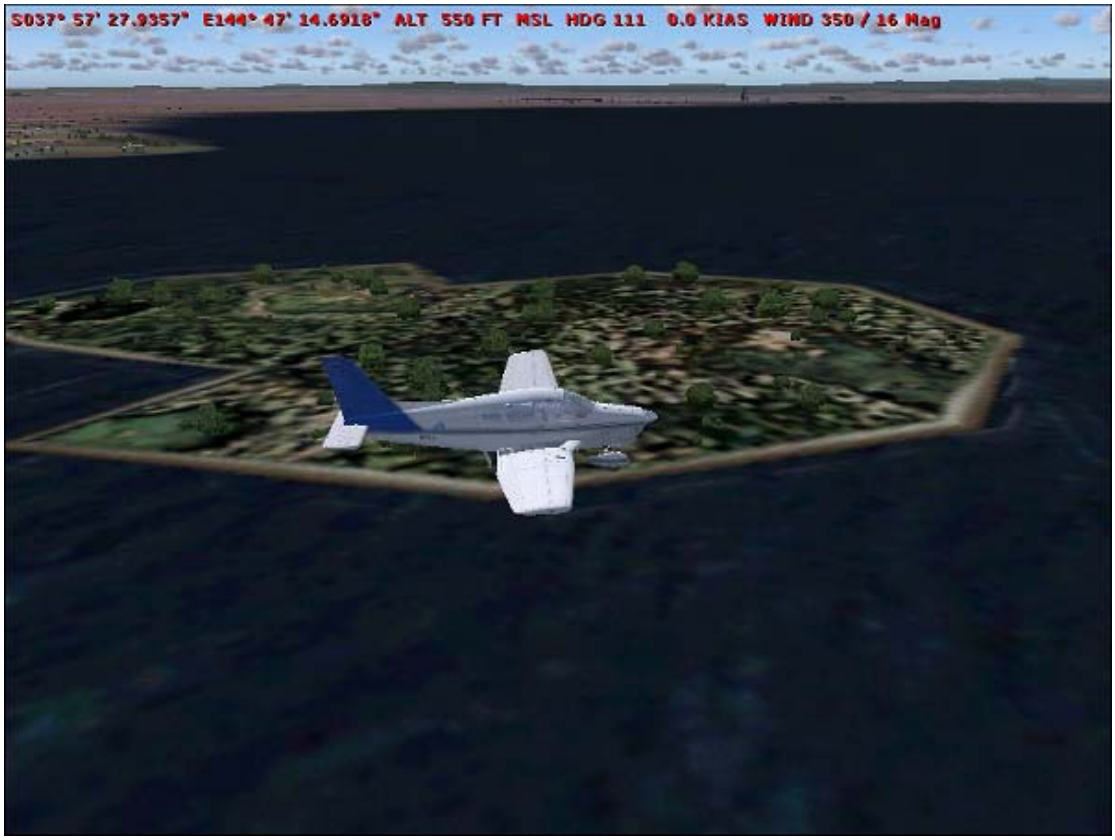
Here you will place the Land Class BGL file that you have created so that when you view your new Island in FS9, you will have a surface to your Island that is hard and will also conform to the style of Land Class you have chosen.

Once you have compiled your Scenery you will have several BGL files that make up your New Island, These are:
VTPLines_tutorial.BGL
LWM_tutorial.BGL

These files are placed in your "X:\Flight Simulator 9\Addon Scenery\MyProject\scenery" folder.

You will also have one other file, "LD_8645.bgl",
This file will reside in your Landclass\scenery folder,
"X:\Flight Simulator 9\Addon Scenery\Landclass".

Now, start FS9 and view your completed Island that you have created with SBuilder.



Create the Island Surface Method 2:

The Reason why we have Two different methods of creating and Island in a body of water is because the FS World is covered with 2 Layers, one being water and the other being land.
These layers are set as Lod13 Tiles , where the Value of the Land mask is “0” FS treats the texture to be drawn as Water and if you were to place a VTP2 polygon with a land texture in this area, you will find that the surface is not hard but acts like water and you will sink through.
However, if the Value of the Land Mask is “1” then FS will not draw a water texture, but will draw the texture assigned to that Lod13 tile resulting in a hard surface which is what you want.
To do this, you need to place a land mask tile at each corner of the Lod13 tile, but, indoing this you will have a square piece of land that will fill the whole Lod13 tile which is not what we want.
How do we overcome this problem? We create two or more LWM Polygons that have a Waterclass assigned to them that protrude outside of the Lod 13 tile yet border up against the seaward side of the shoreline. This will tell FS to Draw a water texture which has no hard surface Over the unwanted portion of Landclass that we have created yet show only the portion of land that is required (the LWM Water Poly MUST be on the ocean side of the coastline).

This following example will show you how to accomplish this second method.

Step1:

Place your Aircraft in a section of ocean that is away from any Land (don’t forget to save this portion of your FS so you may go back to the exact position to obtain your Lat Lon Co-ords and also review your work).

Step 2:

Using **CellGrid_2004a** create another TXT file (Mytutorial2.txt) and convert this into a BGL file. This will again as per *Method 1* give you the required grid lines for your Screen Capture that you will save as a BMP file for your background image. Press Print Screen and create a BMP file from the screen capture

Step 3:

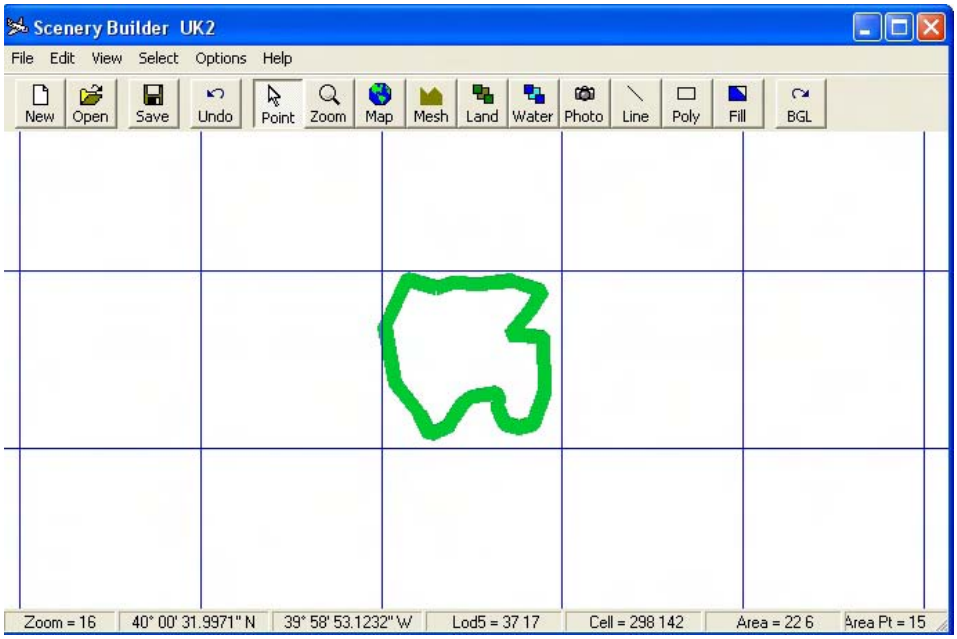
Create a new scenery to construct like you did for *Method 1* of creating an Island.
Next, import your BMP file and calibrate it again as you did in *Method 1*.

Now you are ready to construct your island using **Method 2**.

Step 4:

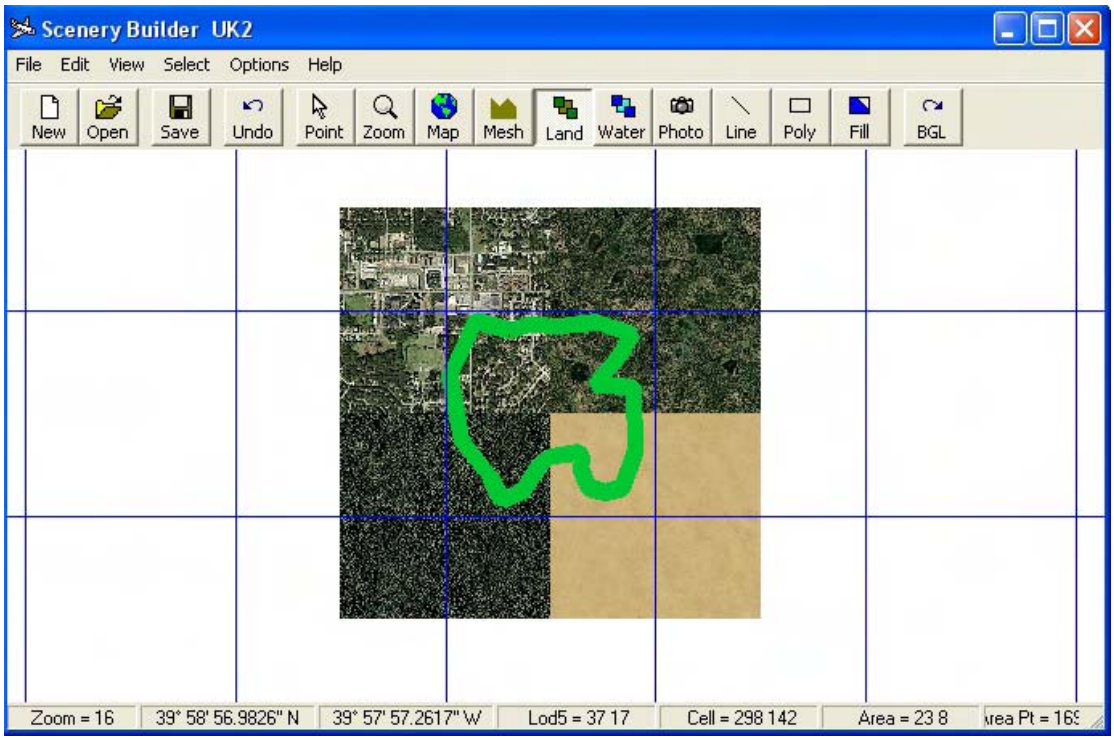
Draw your shoreline for the Island shape you desire. Set the Line Width to approx 75 as per **(Fig 31)**
NOTE that the Map Image is not shown for clarity !!

Fig 31.



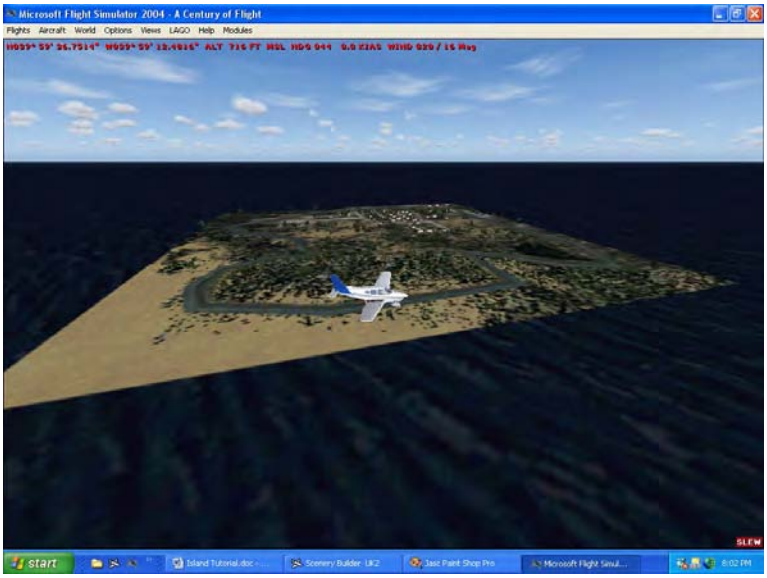
Now add your Landclass Tiles *(these may be of various textures or can be identical but must consist of 4 tiles)* as per **(Fig 32)**

Fig 32.



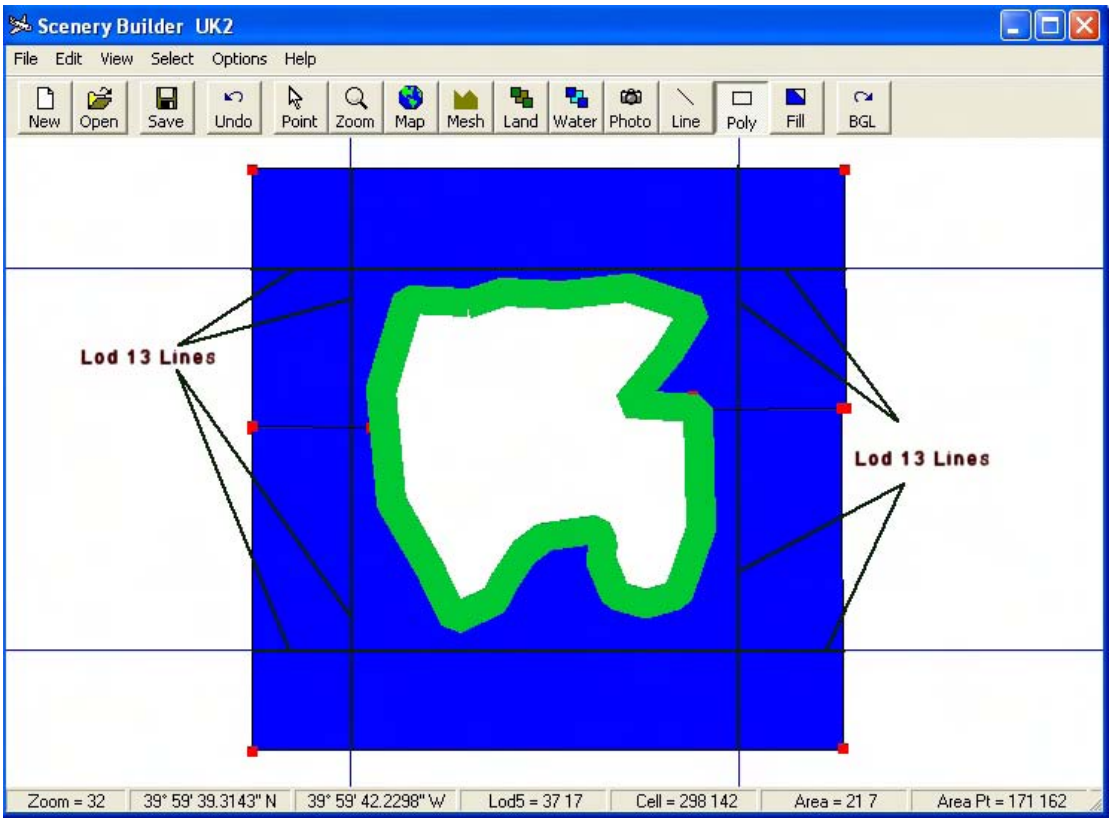
This will now give us a Landclass that is a mix of 4 different textures where as in method 1 we only used 1 texture. If we were to compile this and view it in FS, we will see a coastline in a Square of Land but there will be no water surrounding the Island **(Fig 33).**

Fig 33



As we have changed the Default Watermask into a Landmask, FS does not know that it is required to show a Water texture on the water side of the coastline.
To solve this issue, we need to create two LWM Polygons with a Water Mask, to do this we create the two Water Mask Polygons ensuring that the outer corners of these Polygons extend past the edge of the Lod 13 tile **(Fig 34)**.

Fig 34



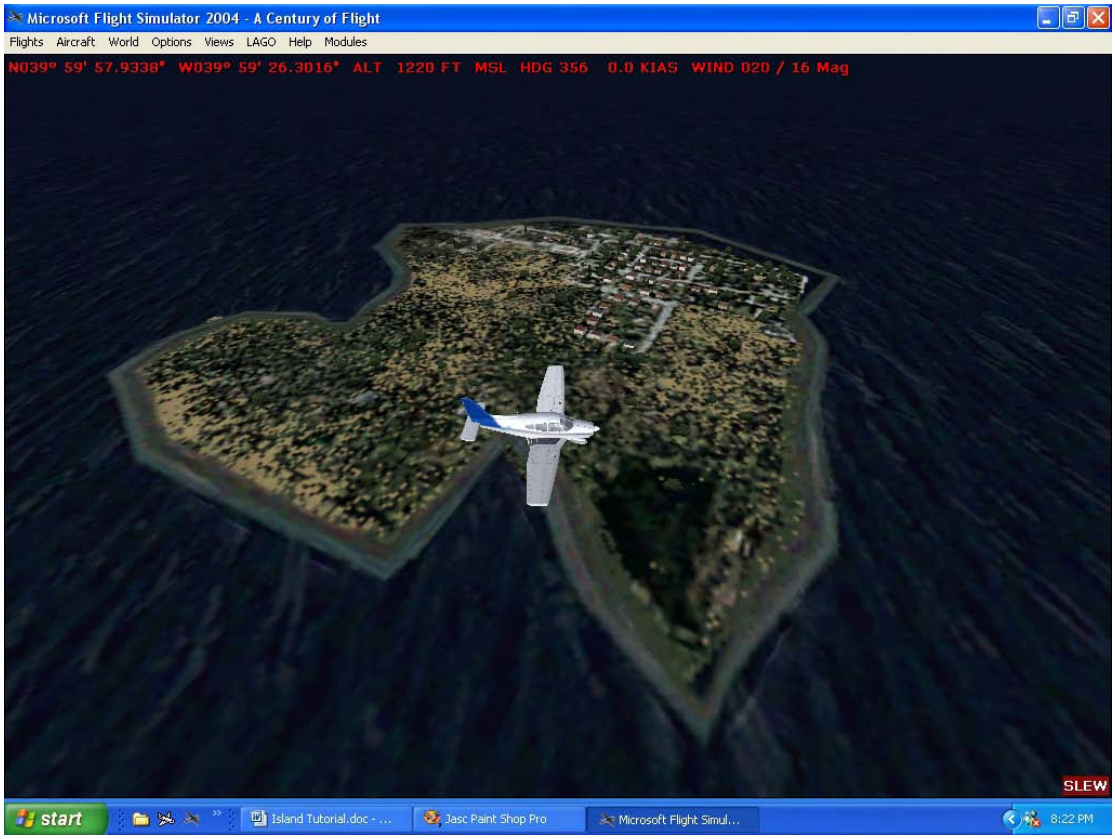
Note that the background image and Landclass Textures are not shown in the diagram for clarity.

Once you have placed your two Polygons and adjusted their properties so that they are LWM polygons with a setting of Water Mask, Save your project.

Now Select All Polygons and with the BGL creation tool, create your LWM_Polygons to add to your Scenery.

When viewed on FS your Island will now show correctly with the Water Mask covering the Unwanted Landclass texture.

Final Result.



Some Important Points to Note.

Any Landclass BGL you generate must be placed into a Scenery Folder that has ***NO*** accompanying Texture Folder.

For your VTP _Lines, LWM and VTP_Polygon BGL files, they will reside in a Scenery folder that ***HAS*** and accompanying Texture Folder

EX:

C:\Games\Flight Simulator 9\Addon Scenery\Landclass
|
Scenery Folder
(this is for Landclass BGL Files ONLY)

C:\Games\Flight Simulator 9\Addon Scenery\SBuilder_Tutorial
|
Scenery Folder
| (VTP and LWM BGL Files)
Texture Folder
(normal scenery textures)

You may want to add VTP Polygons to areas of your Island to change the texture that is shown, this may be a grass area for a runway or a section rocky area or sand.
Just create a Polygon on top of your LWM Polygon (Method 1) or inside of your coastline (method 2) and assign the appropriate texture and Set the Polygon to VTP2 with a Layer number of 7 and compile the Polygon into a BGL File.
This will display an alternative VTP2 textured polygon over your Land Mask texture .
Don't forget to place this VTP2 Polygon in your Normal Scenery Folder, *Not* your Landclass Scenery Folder.

Should you have any difficulty with this Tutorial or SBuilder, please contact the Developer at the SBuilder Forum at www.ptsim.com or email Luis at www.ptsim.com .