

MapMaker Manual

written by

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Contents

Introduction	5	Layer Effects	29
What's in this Manual	5	Set Map Patterns	30
What Makes a Map	5	Modify Map Patterns	30
What's New	5	Use New Map Patterns	31
The Basics	6	Draw Map	32
Getting Started	6	Use Bitmap Underlays	32
Launch MapMaker	6	Area and Line Layers	36
Open Map	6	Layer Notes:	36
Save Map	7	Area / Line Object Notes:	36
Close Map	7	Draw Area / Line Objects	39
The User Interface – A Quick Tour	8	Modify Individual Points	40
Map Window	8	Navigate Points	41
Scroll	9	Split Lines / Areas	41
Zoom In and Out	10	Move Object to Different Layer	42
Grid	11	Known Area Selection Bug Under Vista	43
Show / Hide Layers	12	Crossings	43
Toolbar	13	Embankments	46
Tools	13	Text	47
Layer List	13	Select / Deselect Map Objects	48
Menus	14	Move Map Objects	49
File	14	Prepare Map for Use	50
Edit	14	Calculate Terrain Tables	50
Draw	15	Spot Heights	50
Map	15	Check Terrain Data	51
View	16	Unintended Map Islands	51
Window	16	Intended Map Islands	52
Help	16	Roads and Rivers	53
The Guide	17	Generate Map Cache	54
Create New Map	17	Save Your Map	54
Start from Scratch	17	Annex A - Keyboard Shortcuts	55
Crop an Existing Map	19	Annex B – Map Making Sequence	56
Extend Existing Map	21		
Join Two Existing Maps (Import Map)	22		
Set Base Layer To	26		
Set Map Name	26		
Set Map Effects	27		
Import Map Effects	27		
Generic Effects	28		

Introduction

Welcome to the Command Ops (CO) MapMaker. The MapMaker is used to create and modify CO maps. You can also use it to access data about the movement and visibility effects of the different map objects. These are summarized though in the Terrain Effects Chart at Annex E of the Game Manual.

It is a standard Windows type application with a menu bar at the top. This includes the standard File menu that allows you to open, close, create new maps, save and save as existing maps.

This manual is organised along functional lines and in a sequence that most users will employ when creating a map. If you want to know how to do a specific thing, look up the table of contents.

Please note that this manual uses screenshots from the original Airborne Assault:Conquest of the Aegean MapMaker. While the name has changed and in some places there are a few cosmetic changes, the details depicted remain the same. Where there has been a material change, then new graphics have been substituted.

What's in this Manual

This manual is organised in two parts – the Basics and the Guide. The Basics provides an overview of the user interface. The Guide walks you through the steps for creating and modifying maps. It starts with creating a new map completely from scratch; if you want to start by editing an existing map, just jump in at that section. If you want to know how to do a specific thing, look up the table of contents. Annex A provides a sequence of steps for designing a map.

What Makes a Map

A Map is made up of two main types of data:

Map Objects – These are the different areas and lines used to represent the different terrain features such as woods, towns, roads and rivers. Map Objects are arranged in layers, being drawn one on top of the other. Altitude layers (representing the height of the ground) are drawn first, then the different terrain areas are drawn (as pattern filled polygons) and finally the roads and other line features.

Map Effects – These control the Visibility and Movement rates specific to your map. Each layer has its own effects.

What's New

You can now cut and paste objects between layers of the same type - ie from one line layer to another line layer or from one area layer to another area layer or from one altitude layer to another altitude layer. Simply copy the object (Control-C), then select the new layer from the layers list and paste (Control-V) See [Move Area / Line Object to Different Layer](#).

The Basics

Getting Started

Launch MapMaker

To launch the MapMaker application:

 Select the MapMaker program from the game launcher menu

 Double-click the MapMaker application icon in the game directory



Open Map

To open a map file:

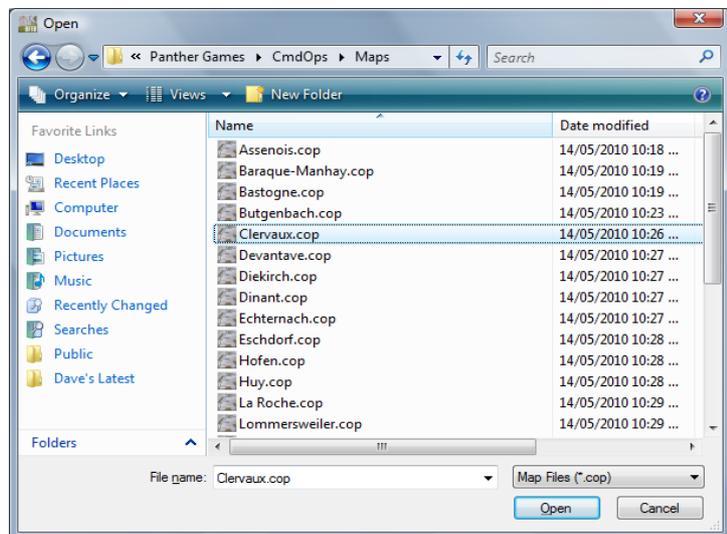
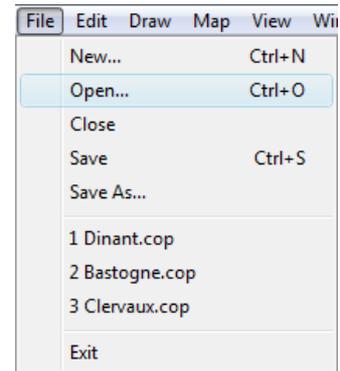
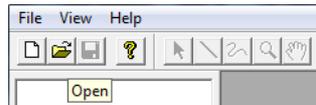
 Select Open from the File menu (Ctrl + O) or

 Click on the Open button of the toolbar

This will open the Open window displaying a list of map files within the Map directory, which is part of the Game directory.

 Select the desired map file from the list

 Click on the Open button



COMMAND OPS 2

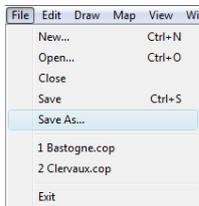
Save Map

To save a map file under the same name:

 Select Save from the File menu (Ctrl + S) or

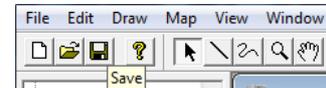
 Click on the Save button of the toolbar

To save a map file under a different name:



 Select Save As... from the File menu

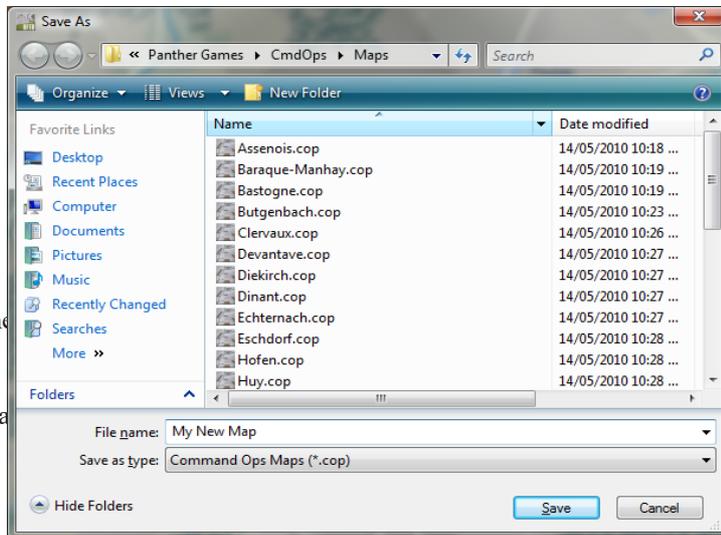
This will open the Save As window displaying a list of map files within the Map directory.



 Enter the desired name

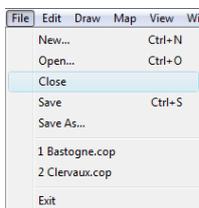
 Click on the Save button

Note avoid saving over the top of one of the original maps provided. It is recommended that after opening one of these, you do a Save As and give it a different name before modifying it.



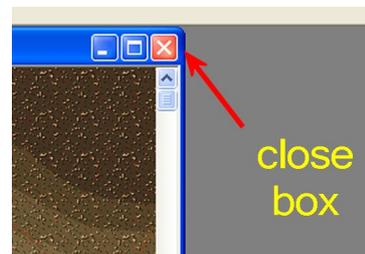
Close Map

To close a map file:



 Select Close from the File menu or

 Click on the Close Box at the top right of the map window



The User Interface – A Quick Tour

With a map file open, the main screen displays a map window, a layer list in the sidebar on the left and a toolbar underneath the menus at the top.



Map Window

The map window behaves like a normal Windows window. It has the standard Minimize, Maximize and Close buttons at the top right and can be resized by grabbing an edge or a corner and dragging it. It can be repositioned by grabbing the title bar and dragging it. Multiple map windows can be open at once and these can be cascaded and tiled using the items of the Window menu.

The map window displays the various areas and lines which make up the map. These can be selected using the Selection or Arrow tool. It uses the graphics from the Map Pattern files located in the Game/Graphics/Map/Default directory to draw and fill the map objects. These can be changed – see [Set Map Patterns](#).

COMMAND OPS 2

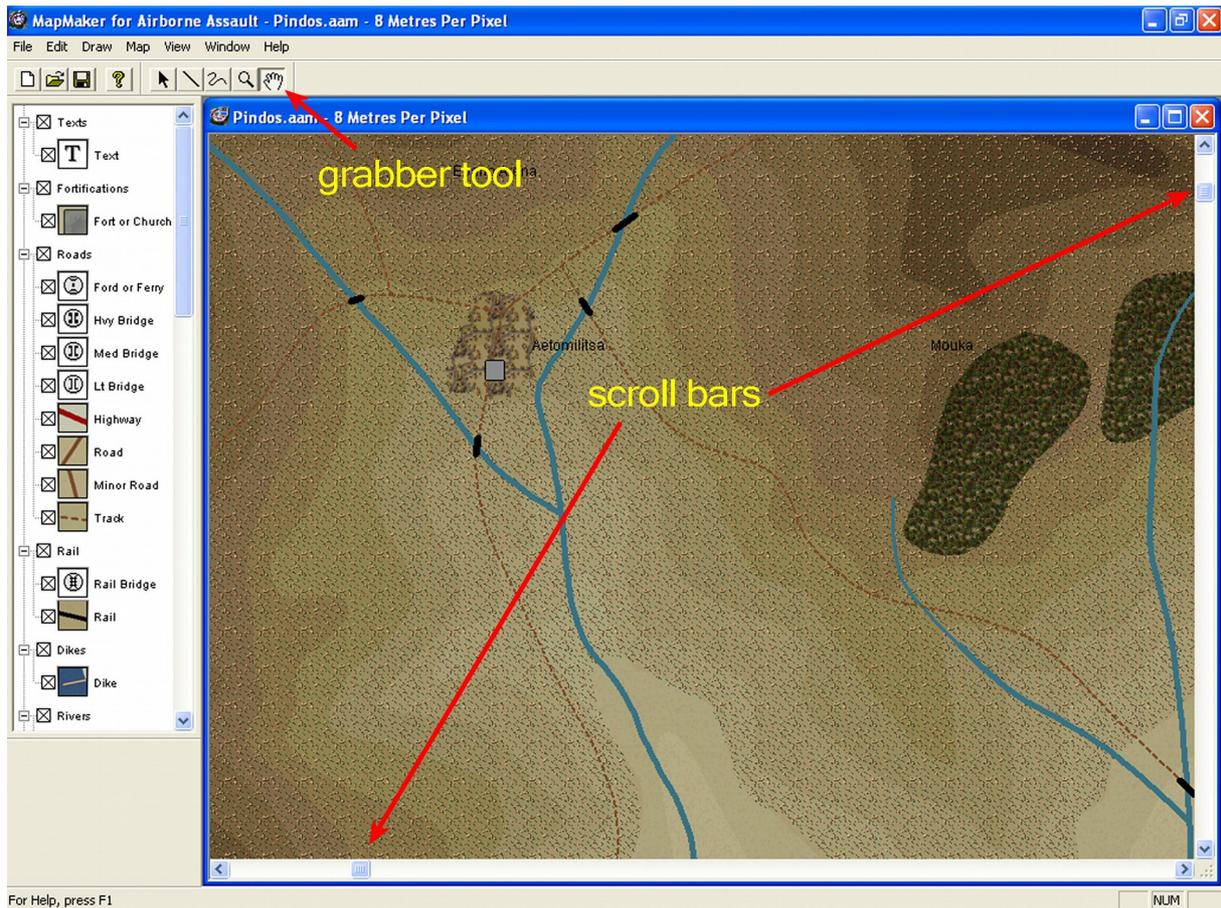
Scroll

To scroll the map:

 Use the horizontal and vertical scroll bars or

 Select the **Grabber** tool  and click the left mouse button and drag or

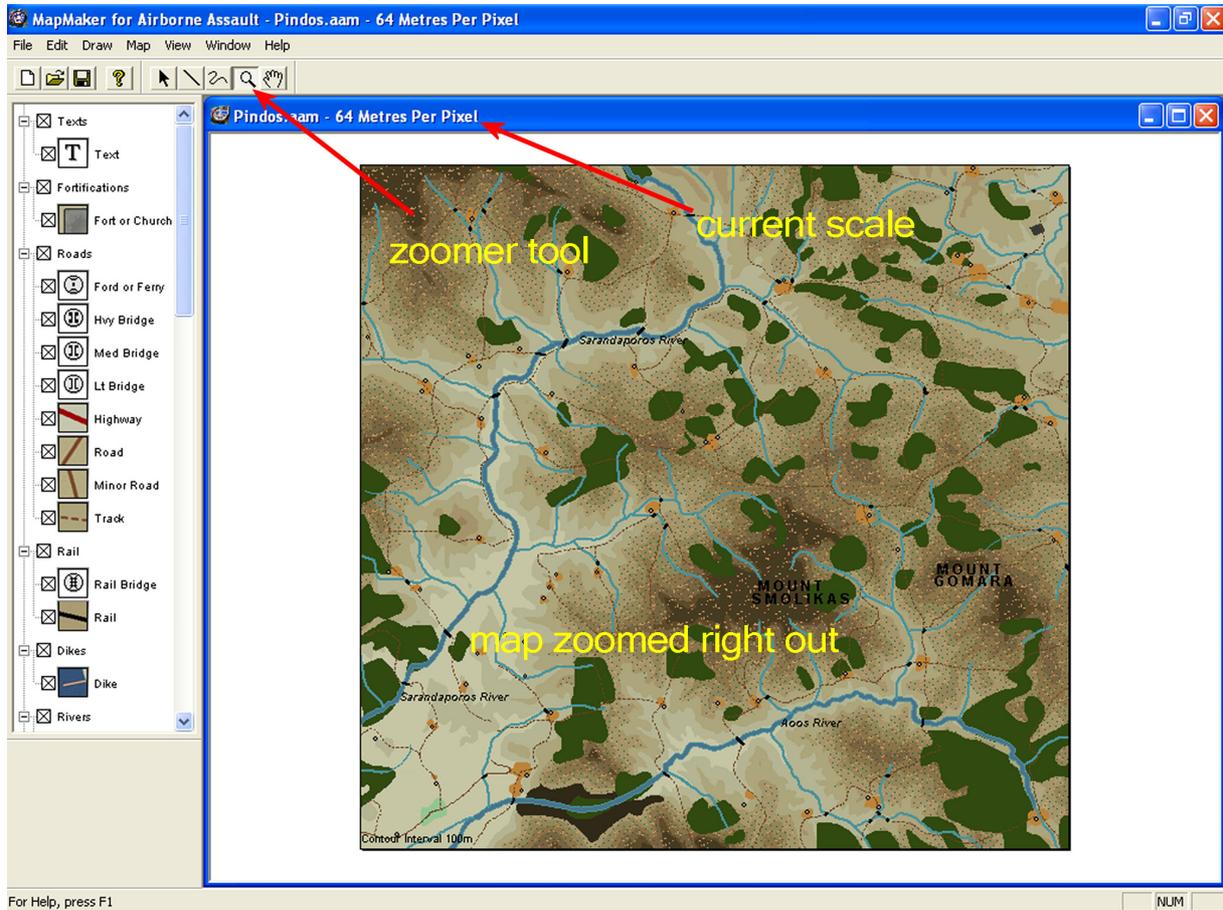
 While holding the Space key down, left-click and drag the map



MAPMAKER MANUAL

Zoom In and Out

The map can be viewed at a number of scales ranging from 2m per pixel to 64m per pixel.



To zoom in on the map:

-  Choose **Zoom In** from the **View** menu, or
-  Press the **Ctrl + Page Down** keys, or
-  Select the **Zoomer** tool  and left click on the map or
-  Scroll the mouse scroll wheel towards you

To zoom out on the map:

View	Window	Help
Zoom In		Ctrl+PgDn
Zoom Out		Ctrl+PgUp
Display All Layers		Ctrl+E
Hide All Layers		Ctrl+H
Show Grid		Ctrl+G
64 Metres Per Pixel		Ctrl+1
32 Metres Per Pixel		Ctrl+2
• 16 Metres Per Pixel		Ctrl+3
8 Metres Per Pixel		Ctrl+4
4 Metres Per Pixel		Ctrl+5
2 Metres Per Pixel		Ctrl+6
✓ Toolbar		
✓ Status Bar		
✓ Tools		
✓ Layers		

COMMAND OPS 2

-  Choose **Zoom Out** from the **View** menu, or
-  Press the **Ctrl + Page Up** keys, or
-  Select the **Zoomer** tool  and Ctrl-click on the map or
-  Scroll the mouse scroll wheel away from you

View	Window	Help
Zoom In		Ctrl+PgDn
Zoom Out		Ctrl+PgUp
Display All Layers		Ctrl+E
Hide All Layers		Ctrl+H
Show Grid		Ctrl+G
64 Metres Per Pixel		Ctrl+1
32 Metres Per Pixel		Ctrl+2
• 16 Metres Per Pixel		Ctrl+3
8 Metres Per Pixel		Ctrl+4
4 Metres Per Pixel		Ctrl+5
2 Metres Per Pixel		Ctrl+6
<input checked="" type="checkbox"/> Toolbar <input checked="" type="checkbox"/> Status Bar <input checked="" type="checkbox"/> Tools <input checked="" type="checkbox"/> Layers		

To display the map at a particular zoom level or desired scale:

-  Choose the desired scale (e.g. **64 Meters Per Pixel**) from the **View** menu, or
-  Use the keyboard shortcuts – **Ctrl + 1** to **Ctrl + 6**

View	Window	Help
Zoom In		Ctrl+PgDn
Zoom Out		Ctrl+PgUp
Display All Layers		Ctrl+E
Hide All Layers		Ctrl+H
Show Grid		Ctrl+G
64 Metres Per Pixel		Ctrl+1
32 Metres Per Pixel		Ctrl+2
16 Metres Per Pixel		Ctrl+3
8 Metres Per Pixel		Ctrl+4
4 Metres Per Pixel		Ctrl+5
• 2 Metres Per Pixel		Ctrl+6
<input checked="" type="checkbox"/> Toolbar <input checked="" type="checkbox"/> Status Bar <input checked="" type="checkbox"/> Tools <input checked="" type="checkbox"/> Layers		

Grid

To show / hide a 1km grid:

-  Select **Show Grid** from the **View** menu, or
-  Press **Ctrl + G** keys

View	Window	Help
Zoom In		Ctrl+PgDn
Zoom Out		Ctrl+PgUp
Display All Layers		Ctrl+E
Hide All Layers		Ctrl+H
Show Grid		Ctrl+G
64 Metres Per Pixel		Ctrl+1
32 Metres Per Pixel		Ctrl+2
16 Metres Per Pixel		Ctrl+3
8 Metres Per Pixel		Ctrl+4
• 4 Metres Per Pixel		Ctrl+5
2 Metres Per Pixel		Ctrl+6
<input checked="" type="checkbox"/> Toolbar <input checked="" type="checkbox"/> Status Bar <input checked="" type="checkbox"/> Tools <input checked="" type="checkbox"/> Layers		

The light grey lines are every 1km. The dark grey lines every 10km.



Show / Hide Layers

To display all layer types:

 Choose **Display All Layers** on the **View** menu or press Ctrl + E keys

To turn off all layer types:

 Choose **Hide All Layers** on the **View** menu or press Ctrl + H keys

Note that the Underlay Bitmap will still be drawn if it is currently being displayed.

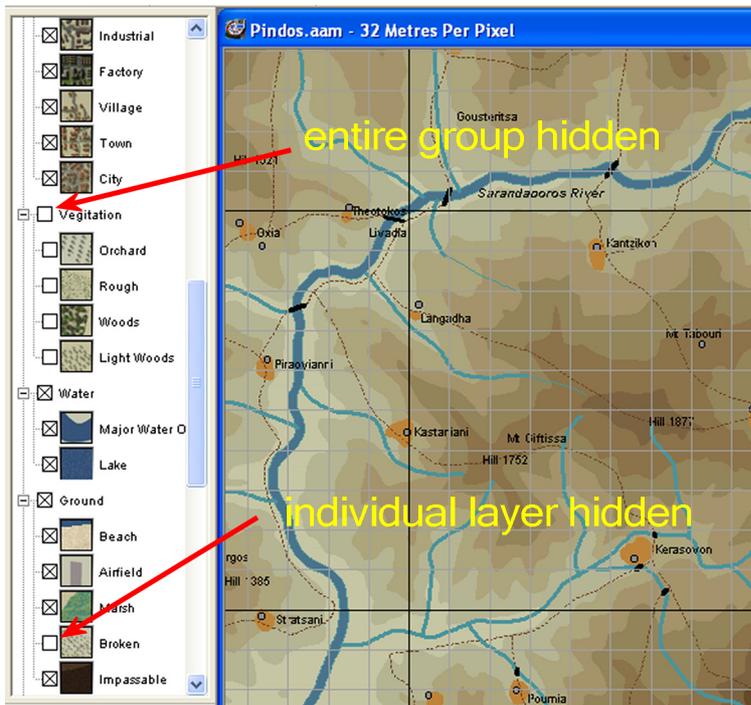
To show / hide individual layers or groups of layer:

 Check or uncheck the check boxes in the Layer List on the Sidebar.

Note that when you check/uncheck a group all layers within that group are automatically checked/unchecked and shown/hidden.

View	Window	Help
Zoom In		Ctrl+PgDn
Zoom Out		Ctrl+PgUp
Display All Layers		Ctrl+E
Hide All Layers		Ctrl+H
<input checked="" type="checkbox"/> Show Grid		Ctrl+G
64 Metres Per Pixel		Ctrl+1
• 32 Metres Per Pixel		Ctrl+2
16 Metres Per Pixel		Ctrl+3
8 Metres Per Pixel		Ctrl+4
4 Metres Per Pixel		Ctrl+5
2 Metres Per Pixel		Ctrl+6
<input checked="" type="checkbox"/> Toolbar		
<input checked="" type="checkbox"/> Status Bar		
<input checked="" type="checkbox"/> Tools		
<input checked="" type="checkbox"/> Layers		

View	Window	Help
Zoom In		Ctrl+PgDn
Zoom Out		Ctrl+PgUp
Display All Layers		Ctrl+E
Hide All Layers		Ctrl+H
<input checked="" type="checkbox"/> Show Grid		Ctrl+G
64 Metres Per Pixel		Ctrl+1
• 32 Metres Per Pixel		Ctrl+2
16 Metres Per Pixel		Ctrl+3
8 Metres Per Pixel		Ctrl+4
4 Metres Per Pixel		Ctrl+5
2 Metres Per Pixel		Ctrl+6
<input checked="" type="checkbox"/> Toolbar		
<input checked="" type="checkbox"/> Status Bar		
<input checked="" type="checkbox"/> Tools		
<input checked="" type="checkbox"/> Layers		



COMMAND OPS 2

Toolbar



Located below the menu bar, the toolbar consist of four buttons as follows:

New – Create a new Map

Open – Open an existing map

Save – Save the Map

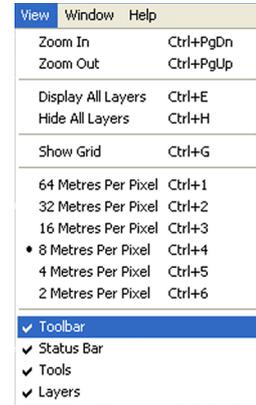
About – Display the About Box

To show/hide the Toolbar:

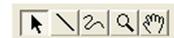


Select Toolbar from the View menu

When the Toolbar is displayed there will be a tick next to the menu item.



Tools



Located below the menu bar, the tools consist of five buttons as follows:

Arrow – Select objects on the Map, Areas, Lines, Text

Draw – Draw Area and Line points and to add new Text items

Trace – Rapidly draw multiple points

Zoomer – Zoom In, Zoom Out (when holding Ctrl key down) the Map

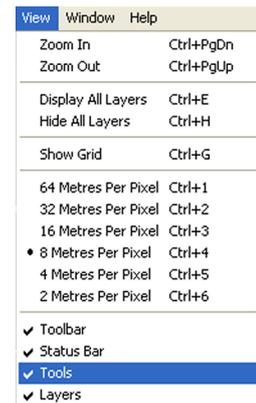
Grabber – Grab the map and scroll around

To show/hide the Tools:



Select Tools from the View menu

When the Tools are displayed there will be a tick next to the menu item.



Layer List

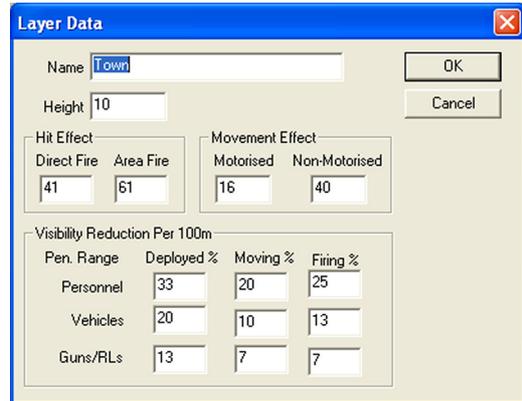
The Layer List occupies the sidebar on the left. It is a tree list with an entry for each terrain layer type. Each entry is identified by an icon and name. To the left is a checkbox used to show/hide objects of that type on the map – see [Show/Hide Layers](#). The entries are grouped – eg roads, vegetation, ground, altitude. To the left of each Group name is a +/- box used to expand/collapse the tree node.



To access the data for a given layer:

Double-click the layer in the list

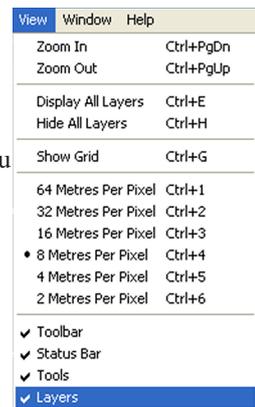
This opens the Layer Data window where you can edit the various hit, move and visibility effects – see [Layer Effects](#).



To show/hide the Layer List:

Select Layers from the View menu

When the Layer List is displayed there will be a tick next to the menu item.

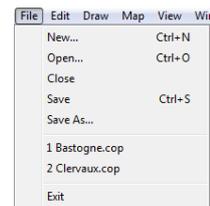


Menus

The menu bar is at the top of the window and consists of the following menus.

File

Provides standard Windows application File menu features – New, Open, Close, Save, Save As, recent files and Exit.



Edit

Undo (Ctrl + Z) – Supports multi level undo

Redo (Ctrl + Y) – Supports multi level redo

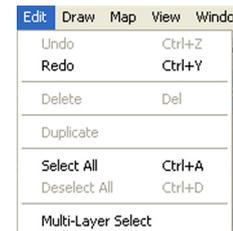
Delete (Del) – Delete the currently selected object

Duplicate – make a copy of the current selected objects

Select All (Ctrl + A) – Select all objects of the current layer

Deselect All (Ctrl + D) – Deselect all currently selected objects

Multi-Layer Select – Select the object directly under the cursor no matter what layer it belongs to.



COMMAND OPS 2

Draw

Corner Points – Points added to Lines / Areas will be corner points, produces straight Lines and Area borders

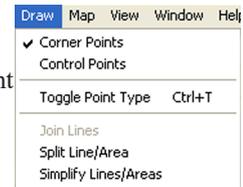
Control Points – Points added to Lines / Areas will be control points, point acts as a Bezier control point producing a curved Line or Area border

Toggle Point Type (Ctrl + T) – Toggle the type of the currently selected point between Corner and Control

Join Lines – Join two selected lines

Split Line / Area – Select a non end point of a line / area and use it to break the line / area in half.
Warning: Areas cannot be joined

Simplify Lines / Areas – Remove points of a Line / Area in an attempt to reduce their complexity, tends to straighten Lines and Area borders. This can help make map drawing faster when there is no cache available.



Map

Map Name – see [Set Map Name](#)

Map Data (Ctrl + R)– used to resize and reposition the map size and to change the metres per altitude – see [Create New Map](#)

Map Effects (Ctrl + M) – see [Generic Effects](#)

Import Map – see [Join Two Existing Maps](#).

Import Map Effects – see [Import Map Effects](#).

Layer Data (Ctrl + L) – Edit current Layer's Movement and Visibility Effects – see [Layer Effects](#)

Line Embankment – see [Embankments](#)

Calculate Terrain Tables – see [Calculate Terrain Tables](#)

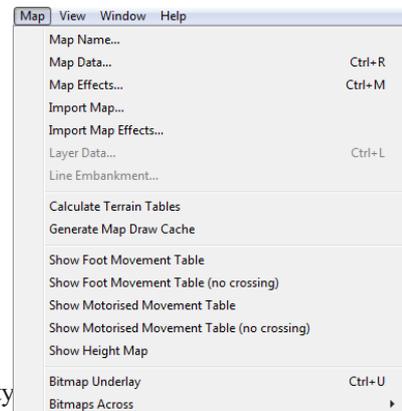
Generate Map Draw Cache – See [Generate Map Cache](#)

Show Movement Tables – see [Check Terrain Data](#)

Show Height Map – see [Spot Heights](#)

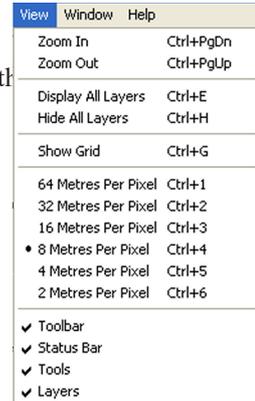
Bitmap Underlay (Ctrl + U) – see [Use Bitmap Underlays](#)

Bitmaps Across – How many files in the Underlay, 1, 4, or 16 – see [Use Bitmap Underlays](#)



View

This menu contains items to zoom the map, show/hide layers, map grid, and the various interface elements (toolbar, tools etc).



Zoom In (Ctrl + Page Down) – see [Zoom In and Out](#).

Zoom Out (Ctrl + Page Up) – see [Zoom In and Out](#).

Display All Layers (Ctrl + E) – see [Show / Hide Layers](#).

Hide All Layers (Ctrl + H) – see [Show / Hide Layers](#).

Show Grid (Ctrl + G) – see [Grid](#).

64 Meters Per Pixel (Ctrl + 1) – see [Zoom In and Out](#).

32 Meters Per Pixel (Ctrl + 2) – see [Zoom In and Out](#).

16 Meters Per Pixel (Ctrl + 3) – see [Zoom In and Out](#).

8 Meters Per Pixel (Ctrl + 4) – see [Zoom In and Out](#).

4 Meters Per Pixel (Ctrl + 5) – see [Zoom In and Out](#).

2 Meters Per Pixel (Ctrl + 6) – see [Zoom In and Out](#).

Toolbar – Show / Hide – see [Toolbar](#).

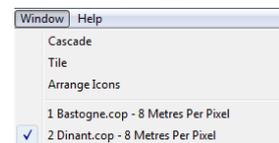
Status Bar – Show / Hide the status bar at the bottom of the map.

Tools – Show / Hide – see [Tools](#).

Layers – Show / Hide – see [Show / Hide Layers](#).

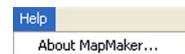
Window

Provides standard Window menu features



Help

Shows the About box.



The Guide

Create New Map

There are a number of ways to create a new map:

-  Start from Scratch
-  Crop an existing map
-  Extend an existing map
-  Join two existing maps.

Starting from scratch is hard work. You will have to create each and every map object from scratch. It's easier to modify an existing map by cropping it, extending it or joining it up with another map.

Start from Scratch

-  Select **New** (Ctrl + N) from the **File** menu

Alternately,

-  Press the **New** button on the tool bar

This opens the New Scenario dialog.

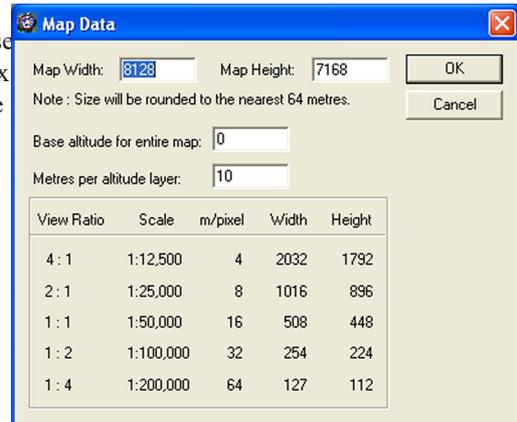
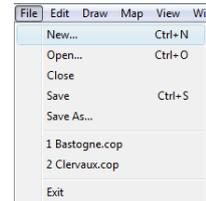
-  Set the map width and height

Note that this will be rounded to the nearest 64 metres. Please do not create a map bigger than 2000 square kilometres (40 x 50). The larger the map, the more time required to determine routes and hence the slower the game play.

-  Set the Base Altitude

The default is zero – ie sea level. Only change this if you need to. See the discussion below.

-  Set the metres per Altitude Layer



MAPMAKER MANUAL

Altitude layers equate to contour intervals drawn on a topographic map. So in effect you are setting the contour interval being used for the map. The default is 10m. The value can be set between 1 and 200 metres. Remember that you only have 15 Altitude layers, plus the 0m base, to play with. Thus setting the value to 10 with a base altitude of 0 provides you with the following altitude layers:

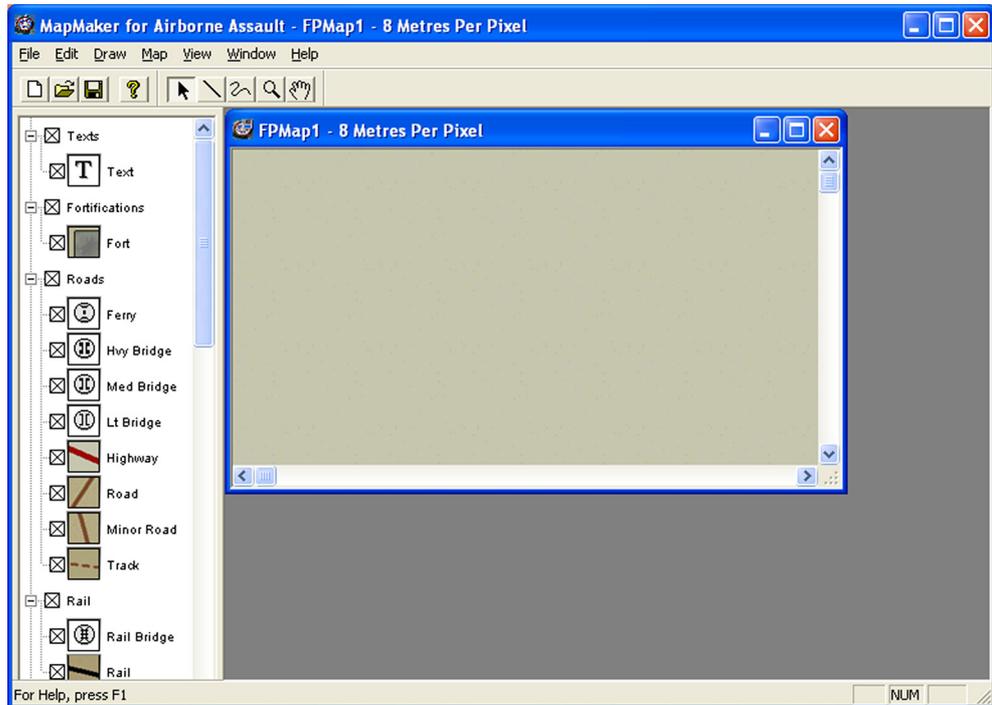
0, 10, 20, 30, 40, 50, 60, 70, 80, 90, 100, 110, 120, 130, 140 and 150 meters.

If you want to ascend higher than 150 meters you have three options. First you can set the base altitude higher (eg setting it to 100 would allow you to reach 250m). Second you can set the metres per altitude layer higher (eg at 20m per layer you can cover from 0 to 300m). Thirdly you can set both the base altitude and the metres per altitude layer higher (eg base = 250 and metres per alt layer = 50 would allow you to cover from 250 to 1000).

 Select the **OK** button.

The screen should now look like this, with a new map window.

The new map is perfectly flat, like a billiard table - a fresh canvas, for you, the map maker.



 Save the new map – see [Save Map](#).

 Save early, save often!

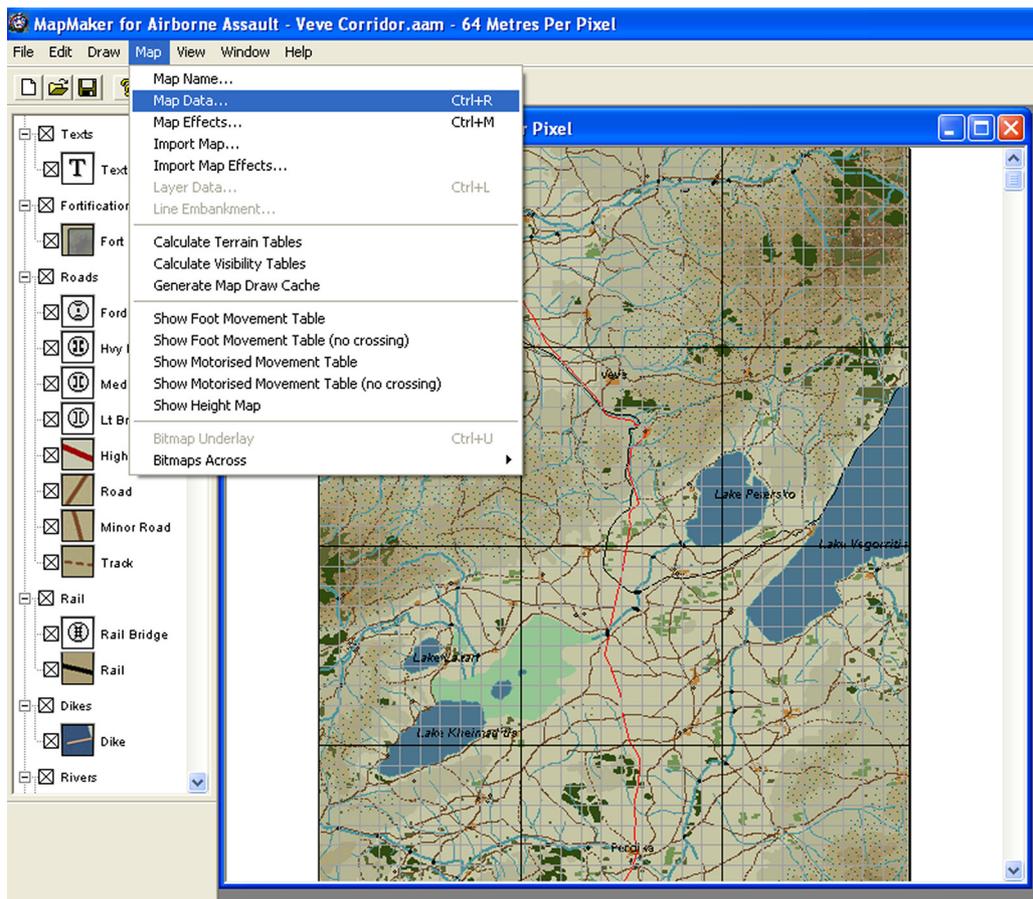
COMMAND OPS 2

Crop an Existing Map

If you want to make a smaller scenario focussing on just one particular area of an existing scenario, you can create the map for it by cropping the original larger map.

To crop an existing map:

-  Open the existing map – see [Open Map](#).
-  Turn the map grid on - see [Grid](#).
-  Select **Map Data** from the **Map** menu or press Ctrl + R



This opens the Map Data dialog, which will display the current map width and height.

MAPMAKER MANUAL

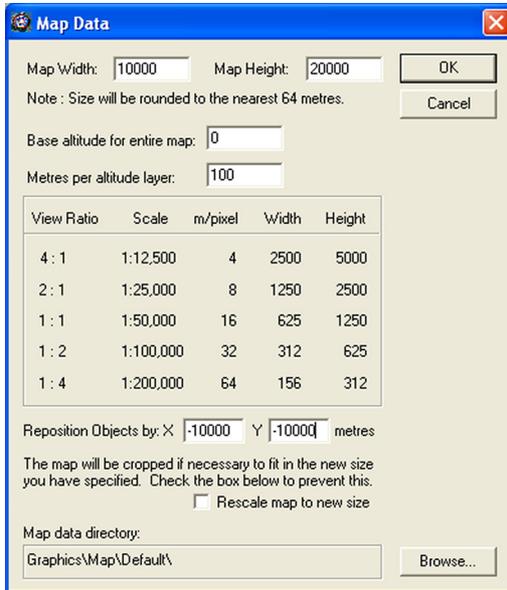
To resize the map:

 Enter the desired Map Width and Height

Note the size will be rounded to the nearest 64 metres.

To reposition the map objects:

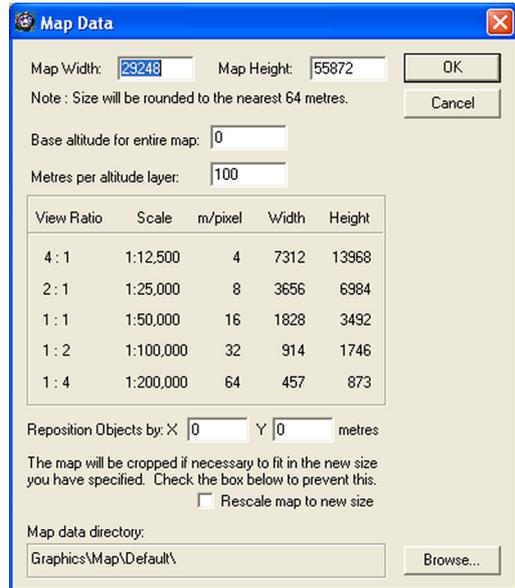
 Enter the desired X, Y offsets in metres



Note that in the adjacent example we are resizing the map to be 10 x 20km (rounded to the nearest 64m) and we are repositioning all the objects 10km to the left and 10km up. This will in effect make the top left of the map 10km right or east of where it is now and 10km down or south of where it is now.

 Press the **OK** button to save and close the dialog

A warning message dialog will ask you to confirm.



 Press **Yes** to confirm.

The map should now be cropped.

 Save the map under a new name – see [Save Map](#).

 **WARNING** – Ensure you choose **Save As** rather than **Save**, or you will overwrite the original map.

After modifying the map it is **very important** to recalculate the terrain tables and if required to regenerate the map cache (this draws the map faster in the game).

 Recalculate Terrain Tables – see [Prepare Map for Use](#)



COMMAND OPS 2

 Regenerate the map cache – see [Generate Map Cache](#)

 Save the map

Extend Existing Map

To extend an existing map:

 Open the existing map

 Determine the desired extra map width and height

Eg. if you want to add 5km to the top and another 3km to the bottom, then the extra map height would be 8000.

 Select **Map Data** from the **Map** menu or press Ctrl + R

 Note down the original map width and height

 Determine the new map width and height

Ie. new height = original height + extra height

 Enter the new Map Width and Height

 Enter the desired X and Y offsets in metres

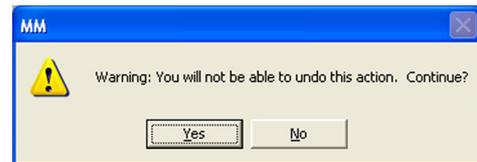
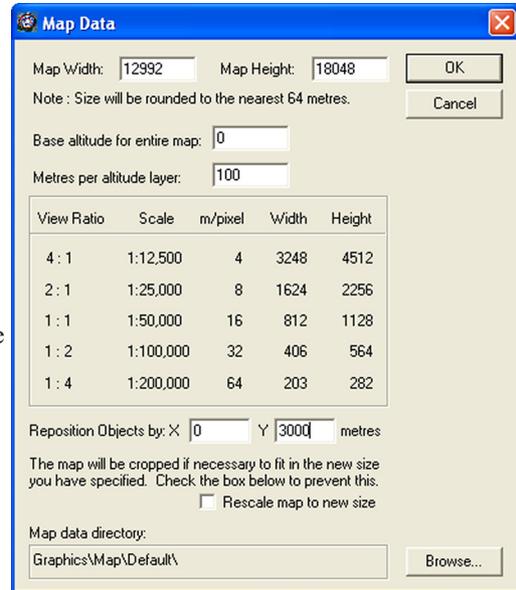
In the above example we have taken the Platamon map and added 8000m to the height. We are going to reposition the map objects by 3000m from the top. This will effectively add 3km to the top and 5km to the bottom.

 Press **OK**

A warning message dialog will ask you to confirm.

 Press **Yes** to confirm

The map should now be extended.



 Save the map under a new name – see [Save Map](#).

 **WARNING** – Ensure you choose **Save As** rather than **Save**, or you will overwrite the original map.

After modifying the map it is **very important** to recalculate the terrain tables and if required to regenerate the map cache (this makes drawing the map faster in the game).

 Recalculate Terrain Tables – see [Prepare Map for Use](#)

 Regenerate the map cache – see [Generate Map Cache](#)

 Save the map



Join Two Existing Maps (Import Map)

This can be useful where you have an existing map and have created a separate map for an adjoining area and you now want a single combined map. For example, let's say you want to create a map that follows the road from Veve to Ptolamais inclusive. You would need to join the Kleidi Pass map with the Amyntaion map.

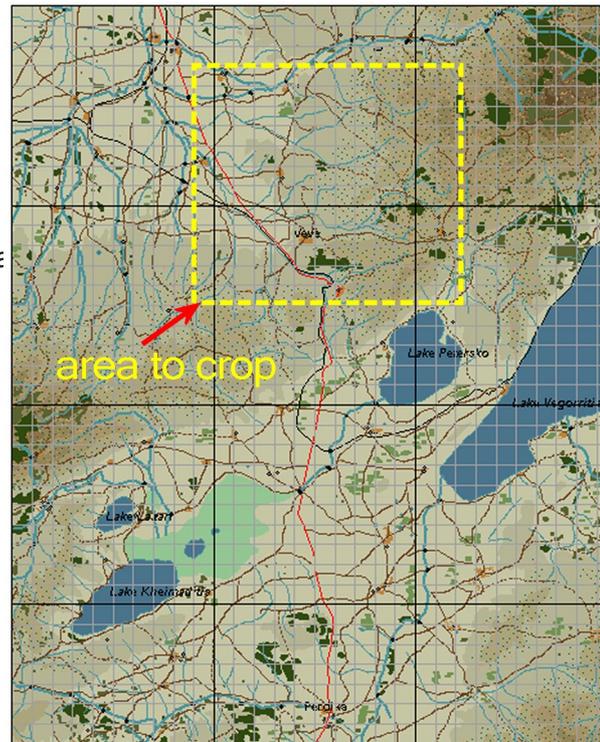
 **WARNING** – don't join maps that have a different metres per altitude layer

They can have a different Base Altitude, however any resulting excess altitude layers will be lost - see below.

 In some cases it may be best to crop each map before joining, in other cases this can be done after joining.

In our example, we will first crop the wider Kleidi Pass map as indicated.

 Crop maps as required – see [Crop Existing Map](#).



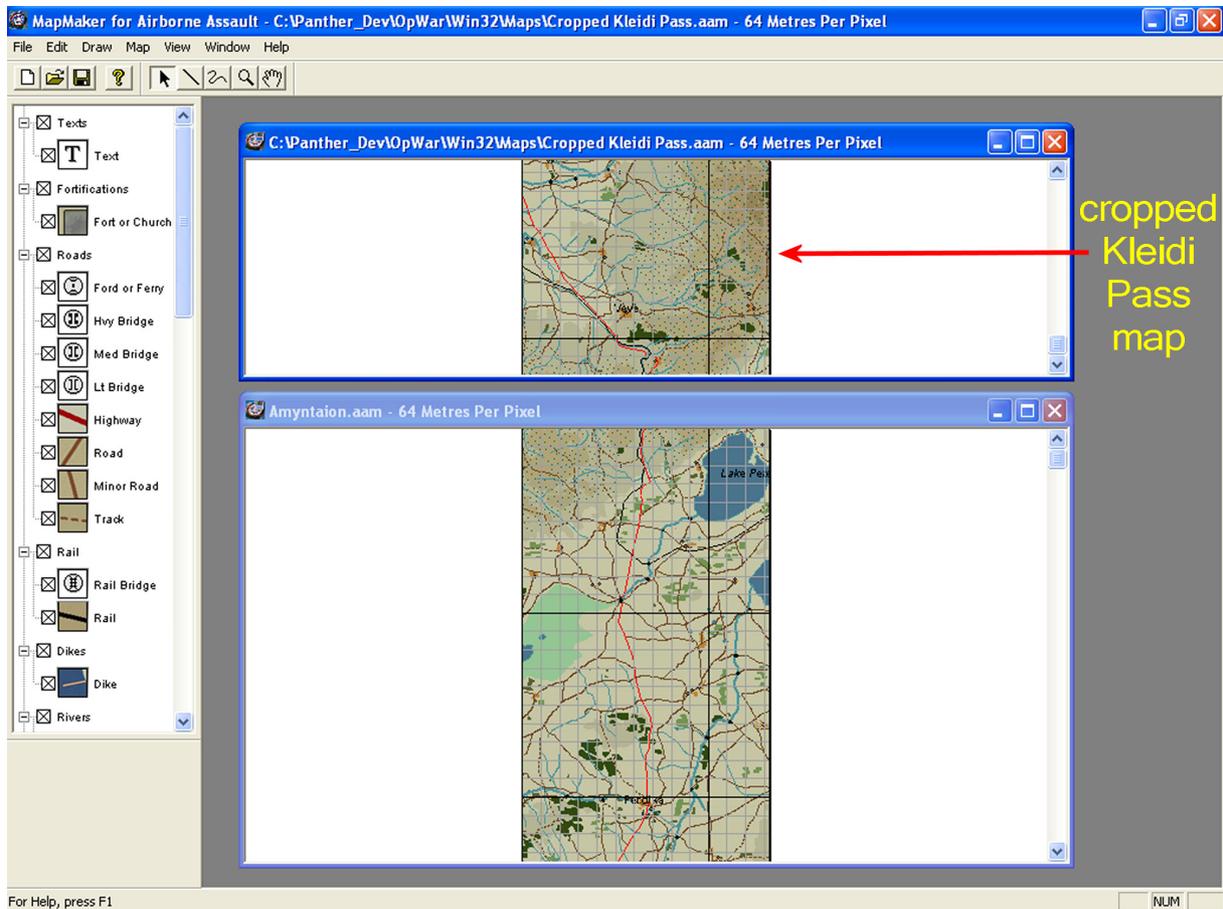
COMMAND OPS 2

Note the new cropped section is the same width as the Amyntaion map and aligned such that it will fit directly on top of it. Now it's time to join them together.

To join two maps:

 Open both maps

 **It is essential that both be opened.**



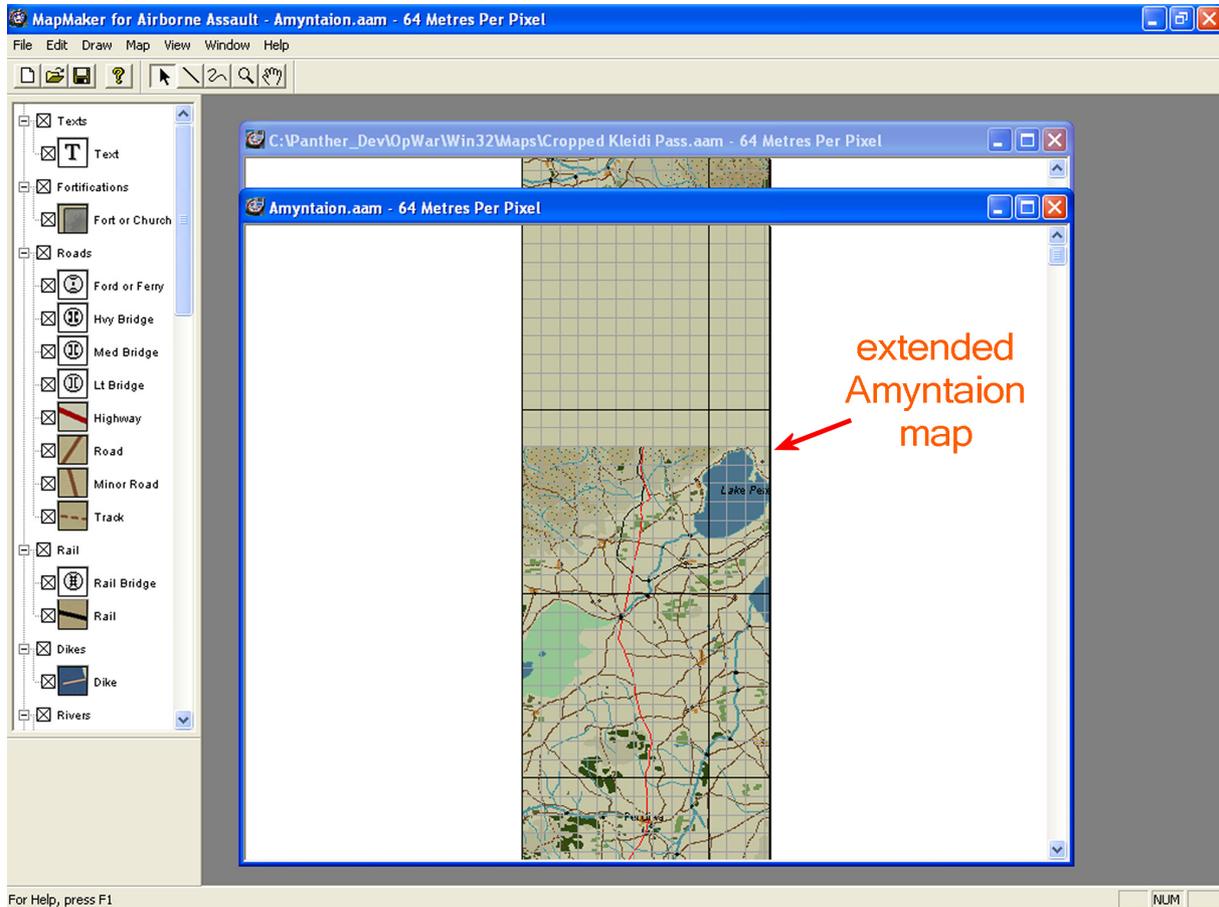
 Note the map height and width of the map to be imported

 Resize the “destination” map so it will be big enough for the imported map to fit into it – see **Extend Existing Map**

MAPMAKER MANUAL

In our example we will extend the existing Amyntaion map.

 Select **Import Map** from the **Map** menu



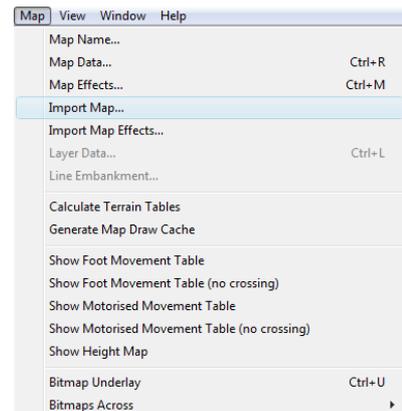
This opens the Select File to import window, which displays a list of opened files.

 Select the desired file

 Enter the top left offset

Note in our example the imported map needs no offset as it is to be positioned at the top.

If the base altitudes of the maps are different then:



COMMAND OPS 2

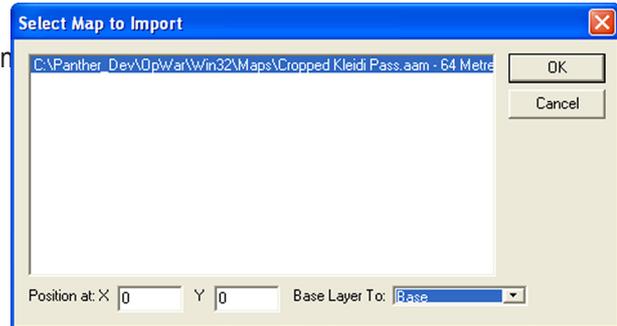


Set the imported map's Base Layer to the matching altitude layer of the destination map.

In our example they are the same, so this field is left at the default setting – ie “Base”. For details on what to do when they are different see [Set Base Layer To](#).



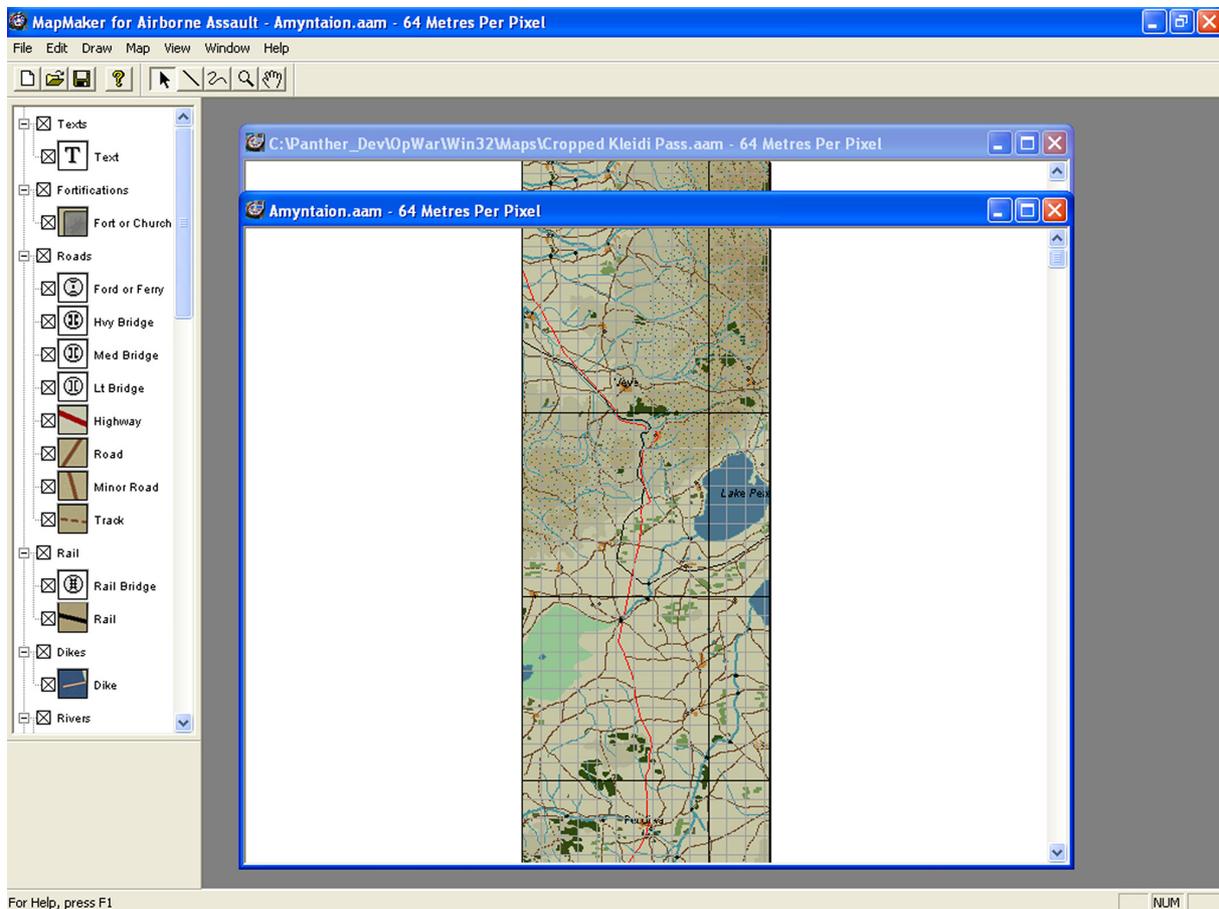
Press the **OK** button



Hey presto – the maps are combined. You may need to spend some time editing the map objects along the join to ensure they are aligned correctly.



Edit map objects along join (if required). See [Draw Map](#)



 Save the map under a new name – see [Save Map](#).

 **WARNING** – Ensure you choose **Save As** rather than **Save**, or you will overwrite the original map.

After modifying the map it is **very important** to recalculate the terrain tables and if required to regenerate the map cache (this makes drawing the map faster in the game).

 Recalculate Terrain Tables – see [Prepare Map for Use](#)

 Regenerate the map cache – see [Generate Map Cache](#)

 Save the map

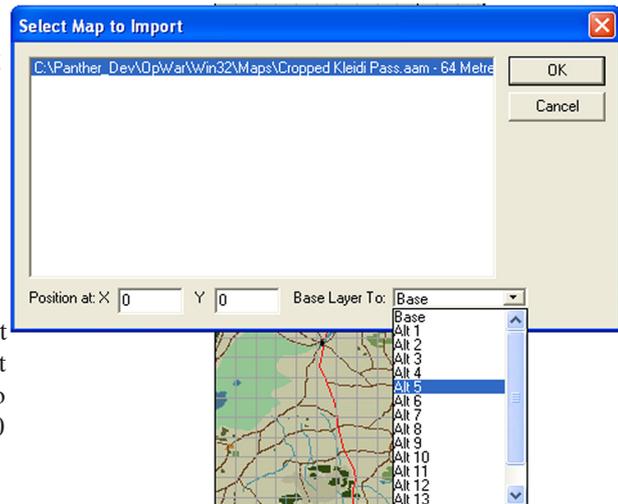
Set Base Layer To

When the base altitudes are different you need to set the imported map's Base Layer to the matching altitude layer of the destination map.

 Note that where base altitudes are different import the map with the higher value.

 This may result in loss of data.

Eg. If the metres per altitude layers is 10m and the base alt of the imported map is 50m while that of the destination map is 0m, you will need to set the "Base Layer To" field to "Alt 5". This will in effect add the Alt 0 layer of the imported map into the Alt 5 layer of the destination map; Alt 1 to Alt 6 and so on. Because there are only 16 altitude layers (Alt 0 to Alt 15) the last five layers of the imported map will not be imported.



Set Map Name

When a scenario is listed in the Scenario Selection window of the Game, it is prefixed with a map name. In this way scenarios are grouped according to their map. To specify the map name used in the Scenario Selection window:

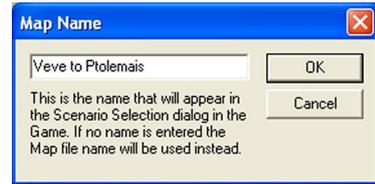
 Select **Map Name** from the **Map** menu

COMMAND OPS 2

 Enter the name

 Press **OK**

 Save the map



Note that if this is left blank, the Map file name will be used. By convention all cropped maps should bear the name of the map from which they were cropped.

Set Map Effects

The Map file contains various effects. Some are generic and some are specific to each Map layer. Probably the easiest way to set the effects is to import them from another map. Otherwise you need to set them from scratch.

Import Map Effects

To import the map effects from one map to another:

 Open both maps

 **It is essential that both be opened.**

 Select Import Map Effects... from the Map menu

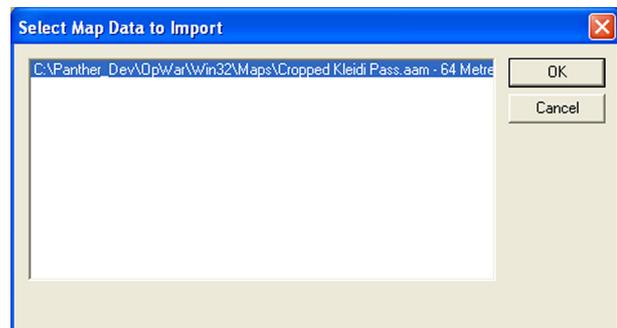
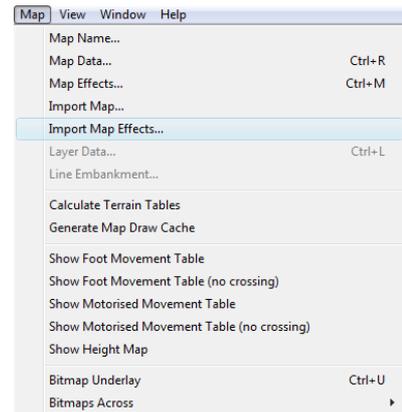
This will open the Select Map Data To Import window.

 Select the desired map from the list

 Press OK.

After modifying the map it is **very important** to recalculate the terrain tables and if required to regenerate the map cache (this makes drawing the map faster in the game).

 Recalculate Terrain Tables – see [Prepare Map for Use](#)



 Regenerate the map cache – see [Generate Map Cache](#)

 Save the map

Generic Effects

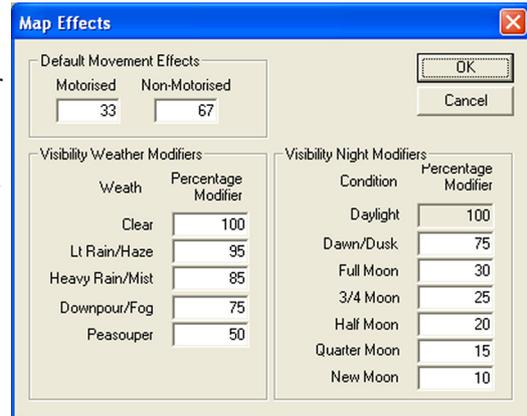
To set the Generic map effects:

 Choose **Map Effects** from the **Map** menu or press Ctrl + M

This dialog controls the non-terrain specific Movement and Visibility effects. Each figure represents a percentage value from 0% to 100%.

 Enter the respective values

Default Movement Effects – The percentage modifiers applying to the normal movement speed of motorized and non-motorised units in open terrain – ie where no other terrain is present.



Visibility Weather Modifiers – Reduces the maximum visibility distance that a unit can be sighted from based on the current in game weather.

Visibility Night Modifiers – Reduces the maximum visibility distance that a unit can be sighted from based on the time of day.

By default the maximum visibility is 10,000 metres. In heavy rain this would be reduced to 8,500m during daylight (10,000 x 0.85) and to 6375m if it were still raining at dusk (10,000 x 0.85 x 0.75).

 Click **OK** to save the new effects settings.

After modifying the map it is **very important** to recalculate the terrain tables and if required to regenerate the map cache (this makes drawing the map faster in the game).

 Recalculate Terrain Tables – see [Prepare Map for Use](#)

 Regenerate the map cache – see [Generate Map Cache](#)

 Save the map

Layer Effects

To set the effects specific to each map layer:

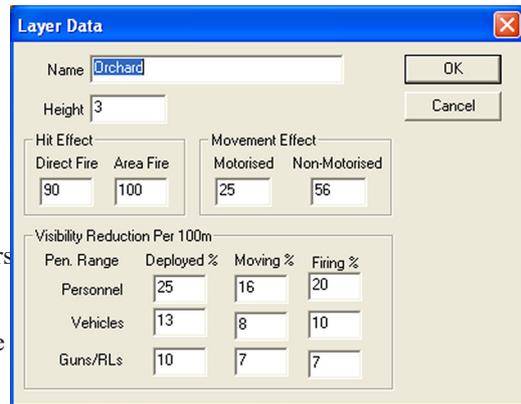
 Select the desired layer from the Layer List in the Sidebar and then select **Layer Data** from the **Map** menu or press Ctrl + L or

 Double-click the desired layer from the Layer List in the Sidebar

The Layer Data window should open.

 The Text and Altitude layers cannot be edited

 **Edit the desired fields**



Name – You can change the name of the Layer. This appears in the game on the Unit Info display of a selected unit.

Height – This is the height in metres of the feature above the normal ground level. When calculating line of sight (LOS) the height at any spot on the map depends on the underlying Altitude layer plus the height of any terrain feature such as tall trees or buildings. So for LOS purposes height = altitude height + object height. Eg. For a city on an altitude layer of 50m, the LOS height would be 64m (50 + 14).

Hit Effect – This modifies the probability of taking casualties when fired upon. Values are a percentage of the standard hit probability; they do not have to be less than 100%, e.g. by default woods have an Area hit effect of 115%, i.e. it is worse to be caught in woods by artillery than in the open (due to air bursts on branches)! Note these are cumulative with other modifiers such as unit effectiveness etc.

Movement Effect – The percentage of a unit's normal movement speed that it can move in this terrain. This overrides the figure entered in the Map Effects dialog but it is cumulative with any effects for Dyke.

Visibility Reduction Per 100m – This is the amount that visibility is reduced for every 100 meters. Visibility starts at 100%, so a reduction amount of 20% has the following affect on visibility:

Reduction amounts can be specified for Personnel (Non-Motorized units), Vehicles (Motorized units) and Guns / Rocket launches (Artillery units). They can also be different depending on whether the unit to be spotted is Deployed, Moving or Firing.

Distance	Visibility
0	100%
100	80%
200	60%
300	40%
400	20%
500	Not Visible

 Press OK

After modifying the map it is **very important** to recalculate the terrain tables and if required to regenerate the map cache (this makes drawing the

map faster in the game).

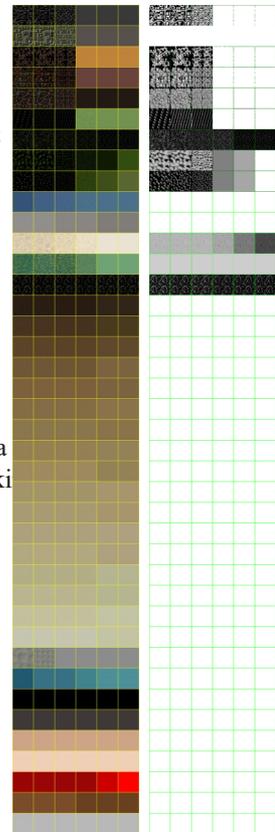
 Recalculate Terrain Tables – see [Prepare Map for Use](#)

 Regenerate the map cache – see [Generate Map Cache](#)

 Save the map

Set Map Patterns

How the map actually looks when it is displayed is determined by the colours and patterns stored in the map pattern files. There are three - MapPat.bmp, MapPatA.bmp and MapKey.bmp. The first file, MapPat.bmp defines the patterns to be drawn for each layer at each zoom level. The MapPatA.bmp file indicates how transparent different areas on each graphic should be. White areas in the MapPatA.bmp file indicate completely opaque areas, black areas indicate complete transparency, and shades of grey indicate partially transparent areas. The MapKey.bmp file contains the graphics displayed in the MapMaker terrain key list and in the Terrain popup used in the Game.



Modify Map Patterns

You can edit these with no special tools; Microsoft Paint is sufficient. It is a good idea to create a backup of your original map graphics files before making modifications, so you can easily go back to the defaults if you want.

Changing the map graphics will have no negative effect on online play.

To modify the graphics used to display different terrain types:

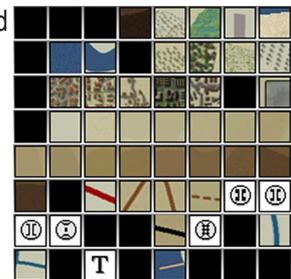
 Copy the Command Ops 2/Graphics/Map/Default directory

 Rename it – eg My Map Graphics

 Open the MapPat.bmp, MapPatA.bmp and MapKey.bmp files, located within the new directory, in your favourite paint program

 Modify them to your hearts content

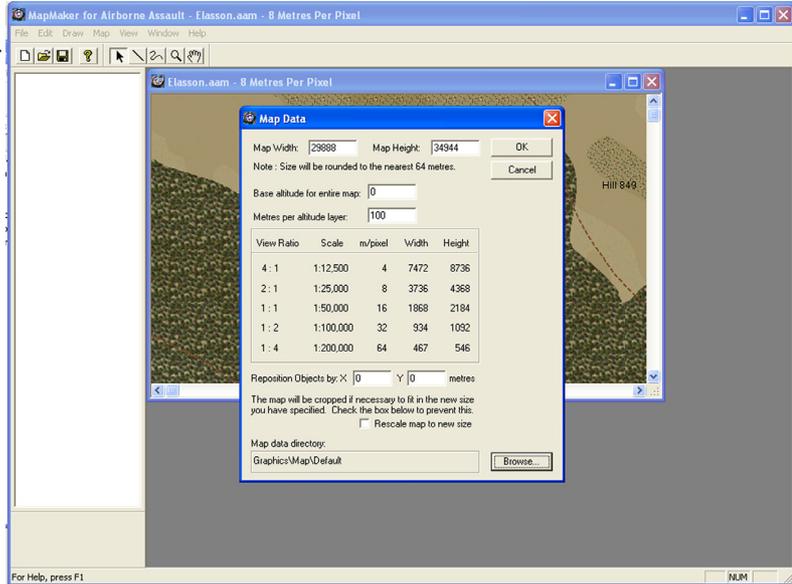
 Save them



COMMAND OPS 2

Use New Map Patterns

-  Open the desired map(s) in the MapMaker application
-  Select Map Data from the Map menu
-  Select the Browse button at the bottom of the Map Data dialog
-  Navigate to and select your new directory
-  Click OK
-  Save the map



Draw Map

Use Bitmap Underlays

There are two ways you can approach drawing a Map, freehand (using your imagination) or using a scanned image of an existing (source) map displayed in the MapMaker as a “Bitmap Underlay”.

When the “Bitmap Underlay” option is activated it will draw the bitmap image of your source map under all the other layers of the map. It is much easier to create your map by tracing over an existing source map image than it is to create a realistic map with no guidance.

To use an underlay:



Scan your source map

You can do this manually yourself using one of the relatively inexpensive desktop scanners. Scan at a resolution of 300dpi. This prints well and provides enough detail. Alternatively, you can purchase scanned images of archival maps from most reference map libraries. We sourced our scans for Greece, Crete and Malta from the Australian National Library. Their map library provided the 300 dpi scans on CD.



Crop, rotate and enhance it till you have an image representing the area you intend to map



IMPORTANT – Crop your map to the actual size of your map in meters. E.g. if the map height and width are 10,000 x 8,000m, make sure that the bitmap underlay is of an area measuring 10,000 x 8,000m

Remember that the MapMaker rounds Maps to the nearest 64 meters. It does not matter how big your bitmap is in pixels, as the MapMaker will scale it to cover the whole of the map’s area. However, having said that, the higher the resolution of the bitmap underlay the more accurate your tracing can be. For the preparation of the original maps used in the Game we scanned the maps at 300 dpi and then scaled them so that each pixel represented 4m.



Save your image as a Windows Bitmap (*.bmp) file. It must be named **MapScan 0.bmp**

Note the space between MapScan and the 0.



If necessary, create a folder called **MapScans** at the root level of your Game folder



Place the **MapScan 0.bmp** file in the **MapScans** folder

If your Bitmap file is large you may find the drawing performance in the MapMaker suffers. To increase performance:

COMMAND OPS 2

 Break up the original scan into four or 16 smaller bitmap files

The options are to break the image into 1, 4 or 16 Bitmap files. The names of these files must be **MapScan 0.bmp**, **MapScan 1.bmp** etc. The numbering starts in the top left hand corner of the map and works its way across then down.

One Bitmap File:

0

Four Bitmap Files:

0	1
2	3

Sixteen Bitmap Files:

0	1	2	3
4	5	6	7
8	9	10	11
12	13	14	15

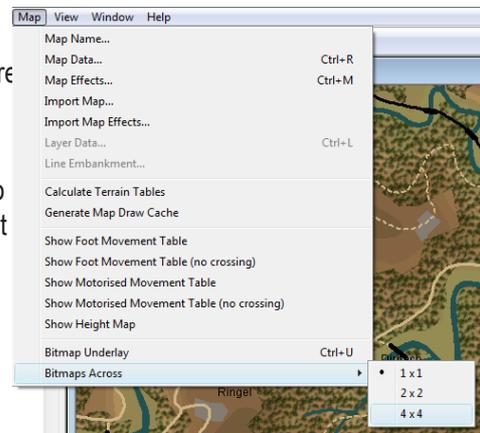
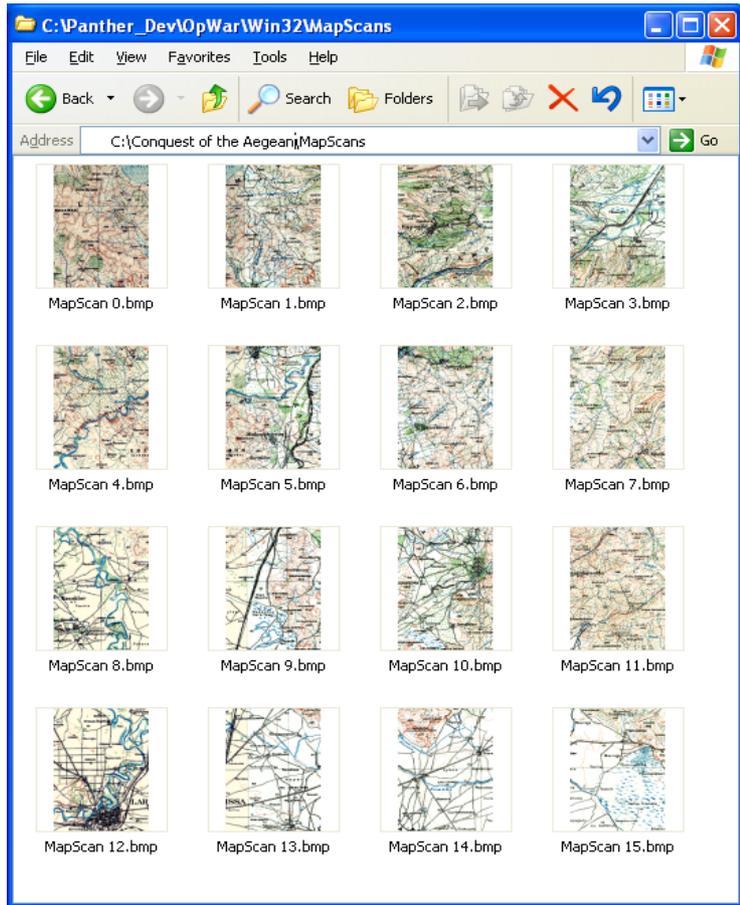
 Some image-editing programs contain tools to automatically slice an image into a number of sections and save each section separately

 Jasc® Paint Shop Pro® and Adobe® Photoshop® are two such programs

 Photoshop will require you to use additional tools to convert and rename the files it generates since it will not save sliced images in bitmap format

Once your Bitmap file(s) are created and in place:

 Set the desired Bitmaps Across (ie 1, 4 or 16)



MAPMAKER MANUAL

 Ensure the map is set to a resolution other than 64 metres per pixel – see [Zoom In and Out](#).

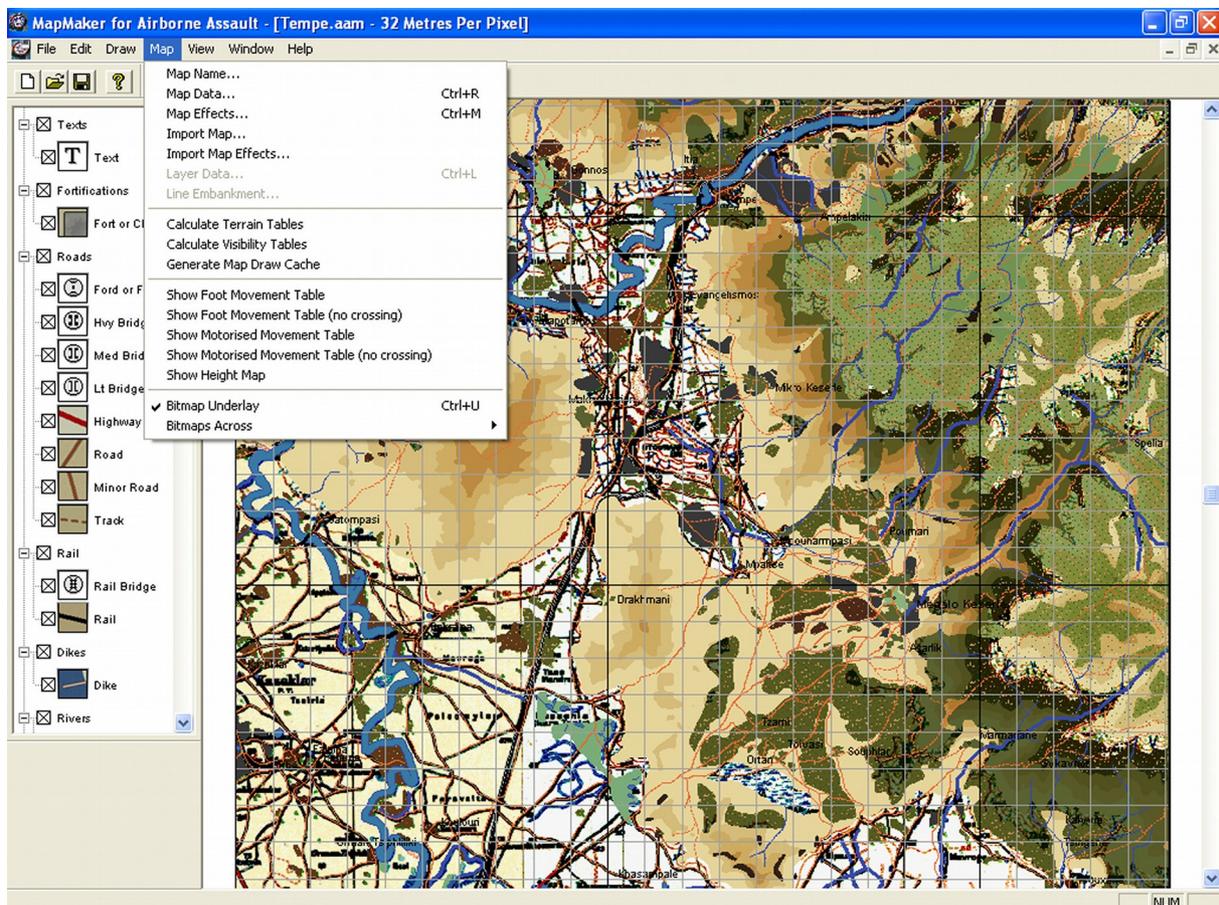
The Bitmap Underlay menu item is only enabled at higher resolutions (ie 2, 4, 8, 16, or 32 metres per pixel).

 Select **Bitmap Underlay** from the **Map** menu or press Ctrl + U to toggle the display of the Underlay Bitmap.

If your bitmaps have been correctly set up the image of your underlay will now appear. If the map remains blank, then check you Folder and File names and ensure the map scale is not set to 64 metres per pixel.

Note that to speed up drawing while using the bitmap underlay, the map objects are drawn using non-textured patterns. So the map will look little different while drawing. However, once the bitmap underlay is turned off they will return to the normal textures. This has no effect on the textures used in the Game.

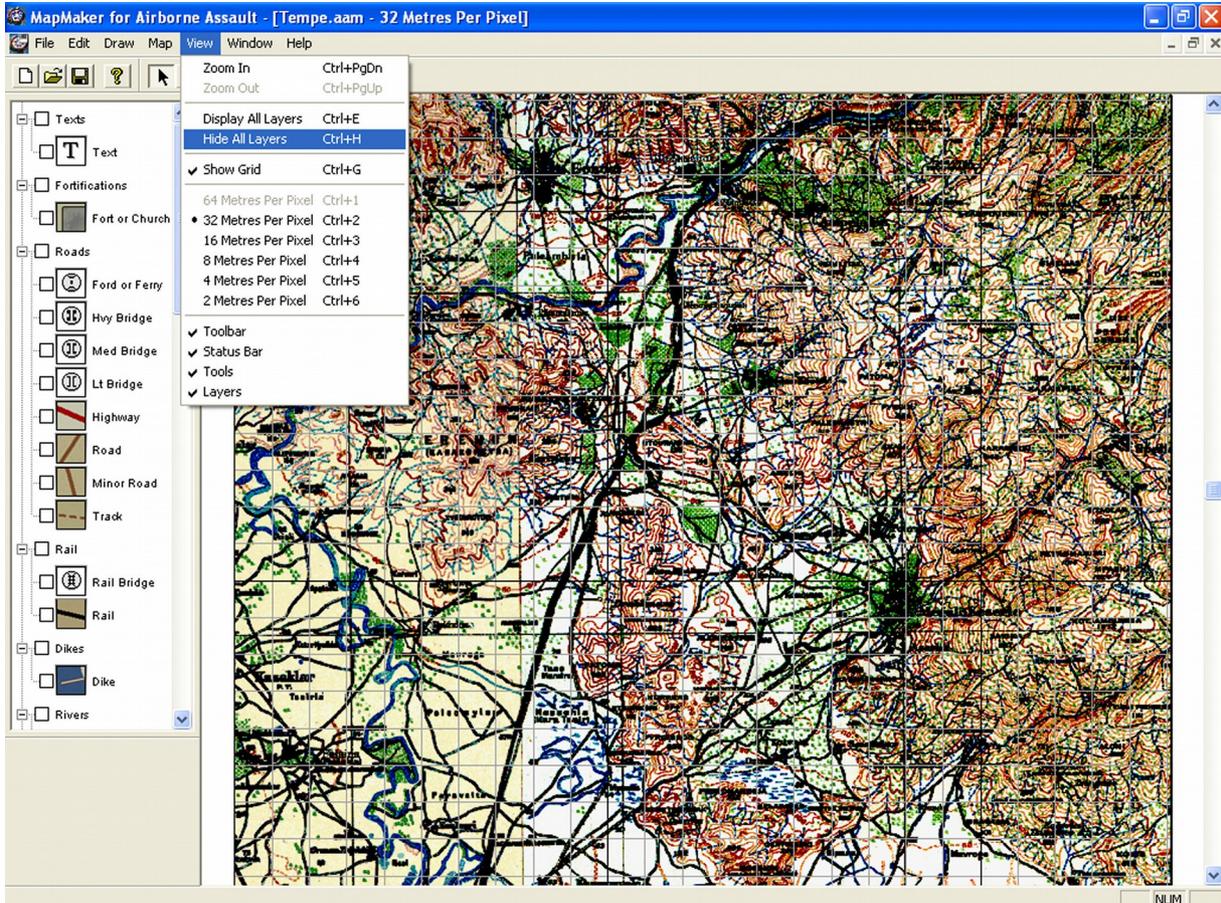
You are now ready to start drawing your map.



COMMAND OPS 2

To view just the underlay:

 Select Hide All Layers (Ctrl + H) from the View menu.



To turn all the layers back on again:

 Select Display All Layers (Ctrl + E) from the View menu.

Area and Line Layers

There are two types of layer, Area layers which are drawn as polygons and Line layers which are drawn as, well, lines.

Layer Notes:

- ⊕ The 0 Altitude layer cannot be drawn, it is the base layer of the map and always covers the whole map
- ⊕ Altitude layers are drawn under all other layers, higher altitudes on top
- ⊕ The height at any location is determined using the highest altitude at that location

A Spot Heights algorithm is used to determine the exact height at a location. Eg a location lying roughly midway between the edges of two altitude layers (40 and 50m) will have a spot height midway between them (45m).

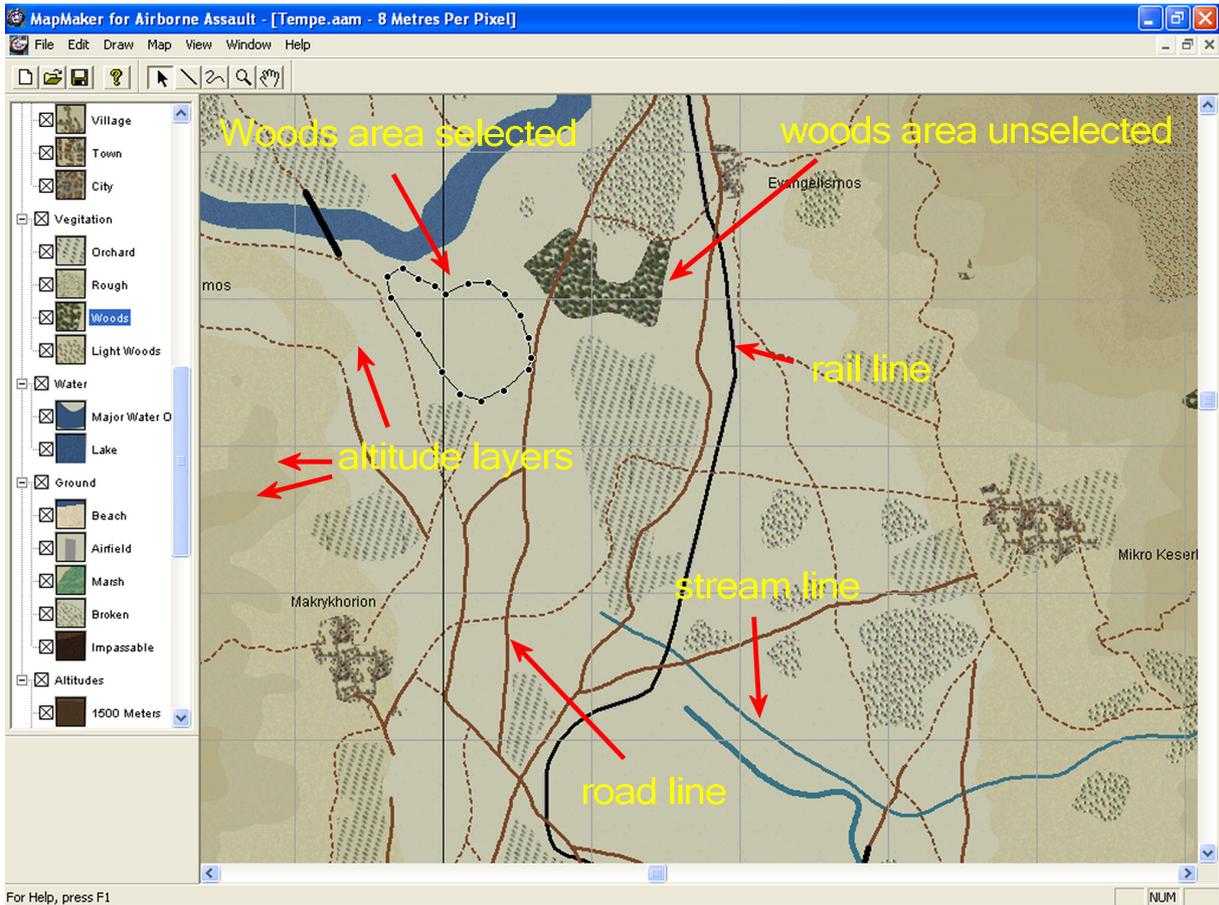
- ⊕ Altitude layers are always drawn as a solid pattern
- ⊕ Other Area layers are drawn using transparent patterns

Area / Line Object Notes:

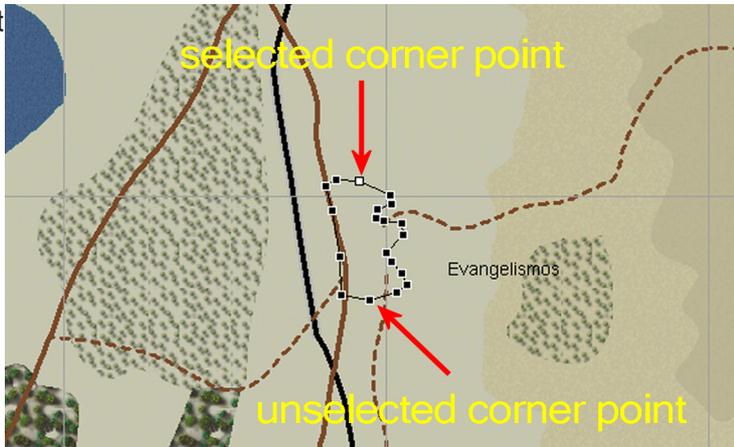
- ⊕ Both types of objects are created as a series of points
- ⊕ These points can be either **Corner Points** or **Control Points**
- ⊕ Use Corner Points for drawing areas and lines with straight edges
- ⊕ Use Control Points for drawing areas and lines with smooth edges or curves

Area Layers		Line Layers
Fort		Ferry
Industrial		Heavy Road Bridge
Factory		Medium Road Bridge
Village		Light Road Bridge
Town		Highway
City		Road
Orchard		Minor Road
Rough		Track
Woods		Rail Bridge
Light Woods		Rail
Major River		Dike
Lake		Stream
Beach		Minor Stream
Airfield		
Marsh		
Broken		
Impassable		
Altitude Layers		

COMMAND OPS 2

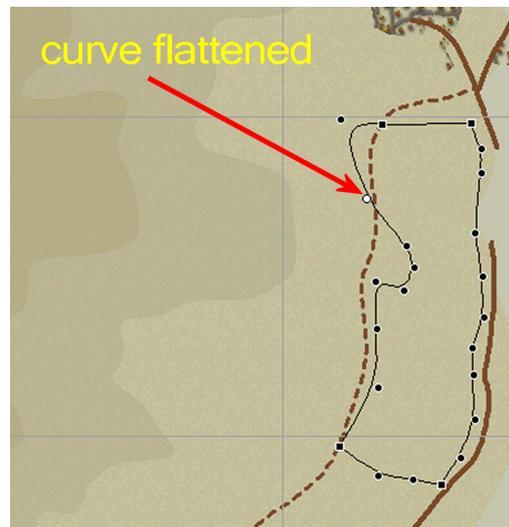
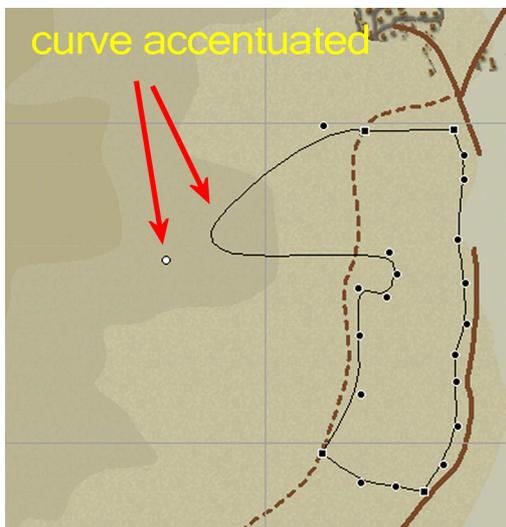
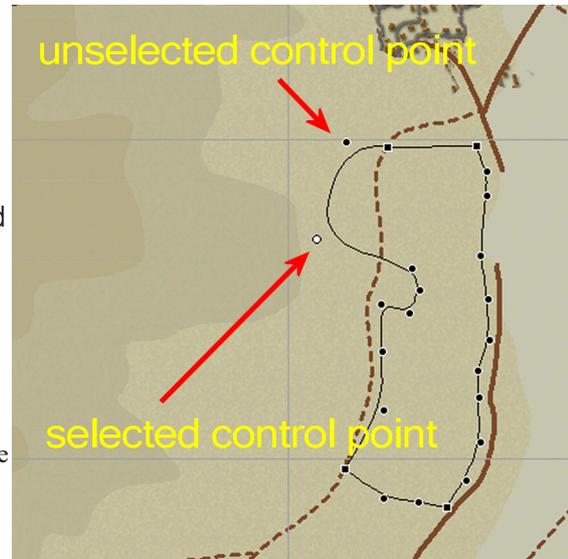


⊕ **Corner Points** are displayed as Squares and result in straight lines and edges



- ⊕ **Control Points** are displayed as Circles and result in curved lines and edges
- ⊕ **Control Points** require more memory and disk space than **Corner Points**

Note that Corner points are always on the line or edge. Control points, however, can be offset from the line or edge. They behave as Beziers. Pulling them in one direction will accentuate the curve, while pushing them the other way will flatten it.



COMMAND OPS 2

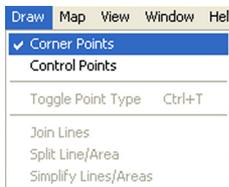
Draw Area / Line Objects

To select the type of object to draw:

 Click on its layer in the Sidebar

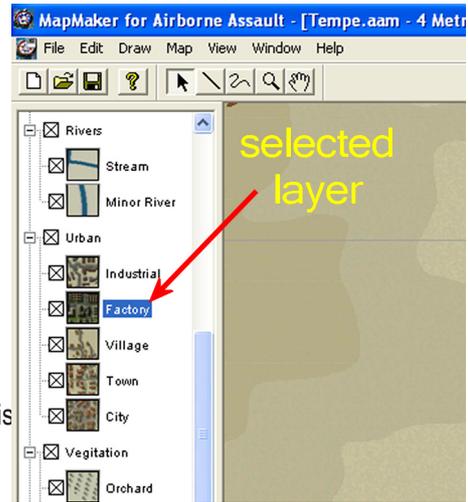
In our example the Factory layer has been selected. Any drawing will draw a new Factory area object.

To set the type of points to draw (Corner or Control):



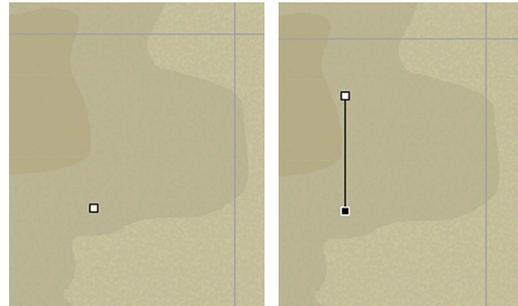
 Choose **Corner Points** or **Control Points** from the Draw menu. The default is **Corner Points**

 Select one of the two drawing tools – ie Draw  or Trace 

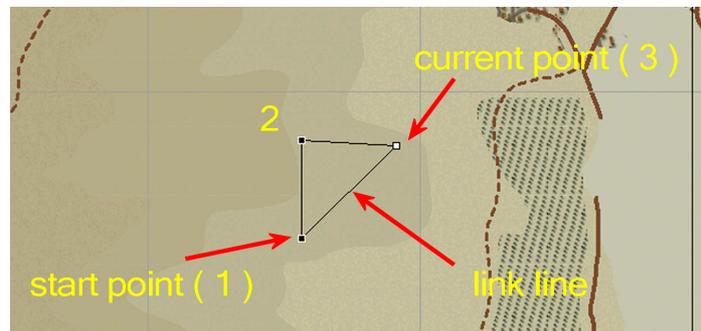


The standard Draw tool adds one more point each time you click on the map. The Trace tool continues to place points as you drag over the map. Hence the trace tool is useful for freehand drawing or tracing of lines and areas of the bitmap underlay.

 Click (or click and drag) until all the points needed for the object have been added



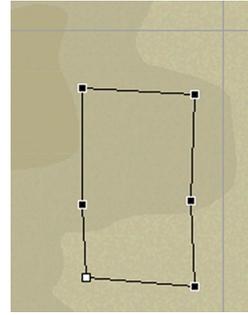
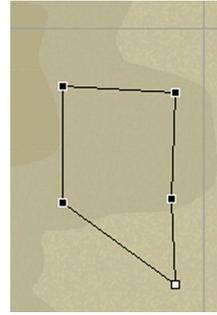
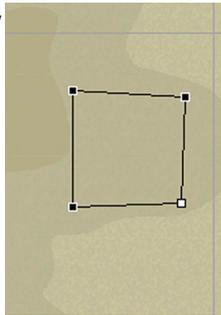
Note that after you place the third point of an area object, it automatically links the start point to the current point as indicated.



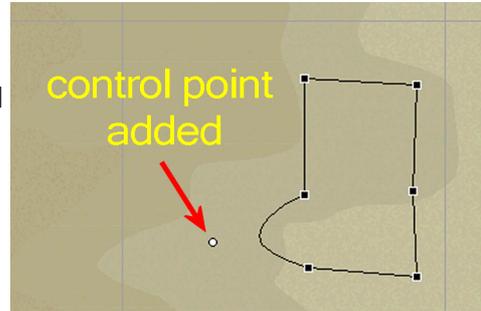


You can hold down the Alt key  while clicking to insert a point of the opposite type to the one selected in the **Draw** menu

Eg if you are currently drawing Corner points, holding down the Alt key will add a Control point.



Press the Enter key (on the numeric key pad) key and the new object will be deselected and drawn as it will appear in the Game and ScenMaker



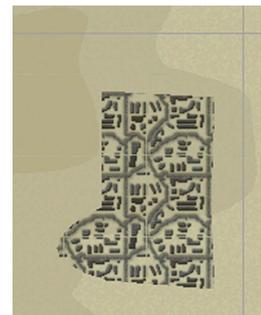
Repeat for each object to be added to the map

Modify Individual Points



Select the Area / Line object to be modified

Note to quickly change from the Draw or Trace tool to the Arrow tool:



Hold Down the Ctrl key

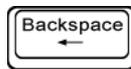


Click on the Point to be modified (it will be displayed as either a hollow square or circle).

To delete it:



Press the Backspace or Delete keys (on the numeric keypad)



or the Del key



To change it's type:



Press Ctrl + T keys



To move it:

COMMAND OPS 2



Drag the point, or



Press the Up, Down, Left or Right Arrow keys (on the numeric keypad) to move the selected point North, South, West or East a small distance or



Press the Home, Page Up, End or Page Down keys



(on the numeric keypad) to move the selected point Northwest, Northeast, Southwest, or Southeast a small distance



Navigate Points

To navigate around the points in an object:



Select a point



Press the Left Arrow key



to select the previous point, or



Press the Right Arrow

key



to select the next point

Split Lines / Areas

To split a line or Area object:



Select the point where you want to split



Select **Split Line / Area** from the **Draw** menu

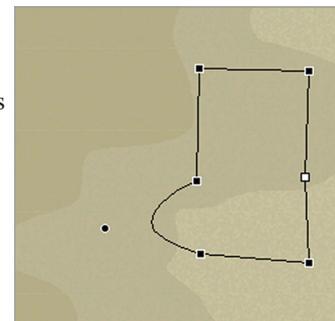
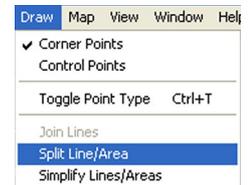
Note that you now have two polygons or lines. Each line segment or polygon will have a point located at the original point – ie there will now be two points there, one for each segment.

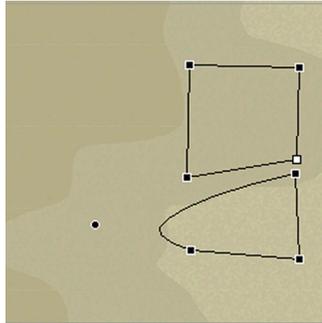
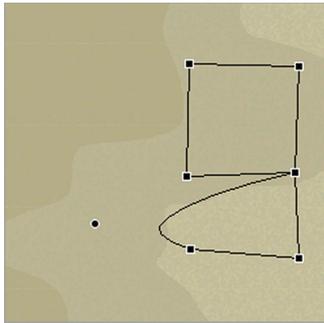


Select the original point and drag a little

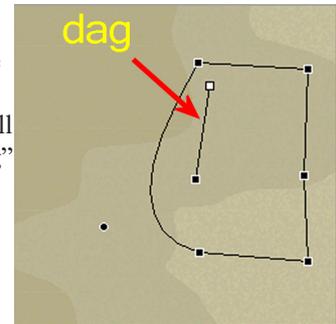


Press the Enter key to update the display





Note also that in some cases you may end up with a polygon of less than three points or a line of only one point. In which case, you will not see anything after you press Enter, as there is no area or line to fill. However, the object still exists, albeit consisting of only one or two points. This is referred to as a “dag” and should be either deleted or expanded to include at least two points for a line and three points for an area.



 Remove or expand all dags.

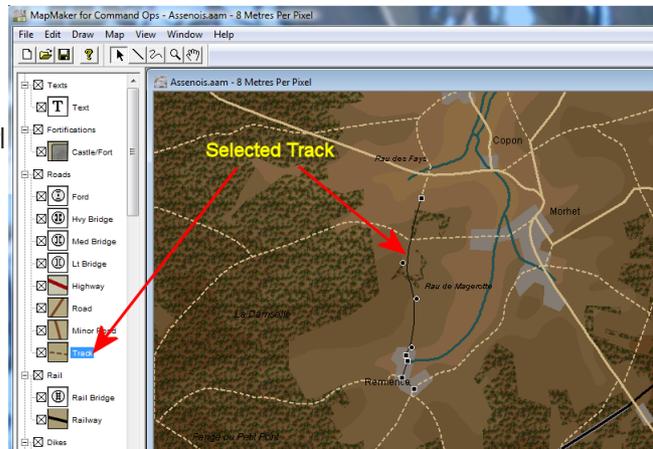
 **WARNING** - Dags may corrupt the map data

Move Object to Different Layer

To move an area or line from one layer to a different layer:

 Select the object

 Select Cut from the Edit menu or hit Ctrl X



COMMAND OPS 2

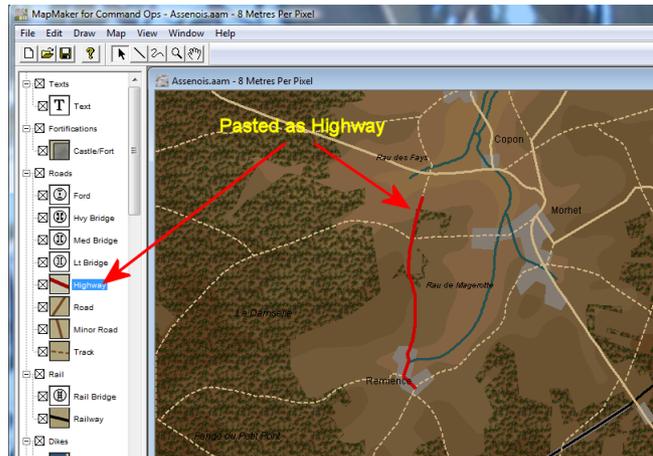


Select the new layer



Select Paste from the Edit menu of hit
Ctrl C

Note that you cannot move area objects to line layers and vice versa - ie can only move an area object to another area layer and you can only move a line object to another line layer.



Known Area Selection Bug Under Vista

If you are running the MapMaker under Windows Vista OS and using the Aero graphics option, then you won't be able to select area objects. However, if you turn off Aero graphics and use Windows Vista Basic graphics instead, it all works fine. To switch graphics under Vista:



Right Click on the desktop and select Personalisation from the context menu



Select "Windows Color and Appearance"



Select "Open classic appearance properties for more options"



Select "Windows Vista Basic" from the color scheme list and hit OK.

This is a problem outside our control. The problem does not exist under Windows System 7 using Aero graphics.

Crossings

Major River and Lake layers are impassable to all foot and motorised units. Minor Rivers are also impassable to motorised units. They can only be traversed at a Crossing. There are five types of crossing, namely a Ferry, Light, Medium and Heavy Road Bridges and a Rail Bridge.

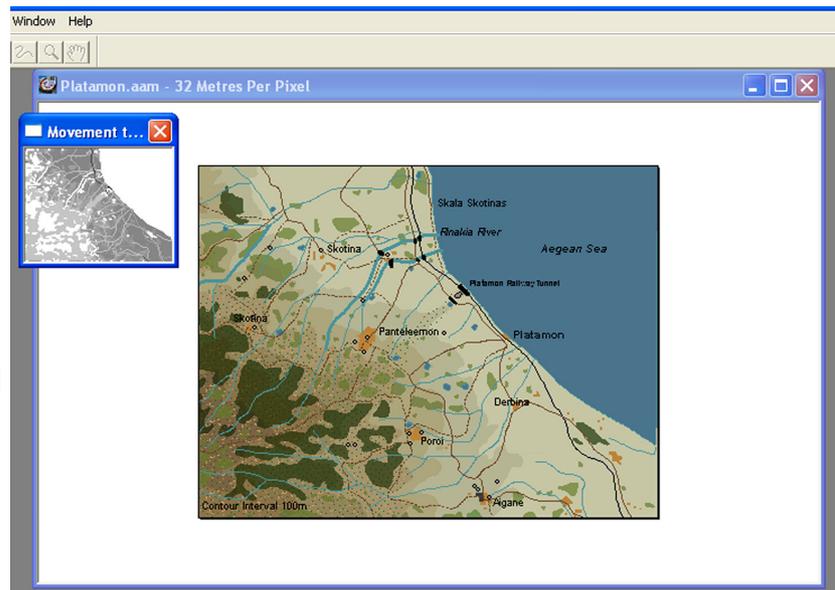
Technically, you can place Crossings anywhere. Each one will produce a crossing point icon when it appears in the Game and ScenMaker. Too many produce a cluttered looking map, so restrict their use to where they are really needed.

⊕ **IMPORTANT** – Once you have drawn your map you must ensure that the crossings actually work. To do so:

-  Calculate the terrain tables – see [Calculate Terrain Tables](#)
-  Select **Show Foot Movement Table** from the **Map** menu
-  Select **Show Motorised Movement Table** from the **Map** menu

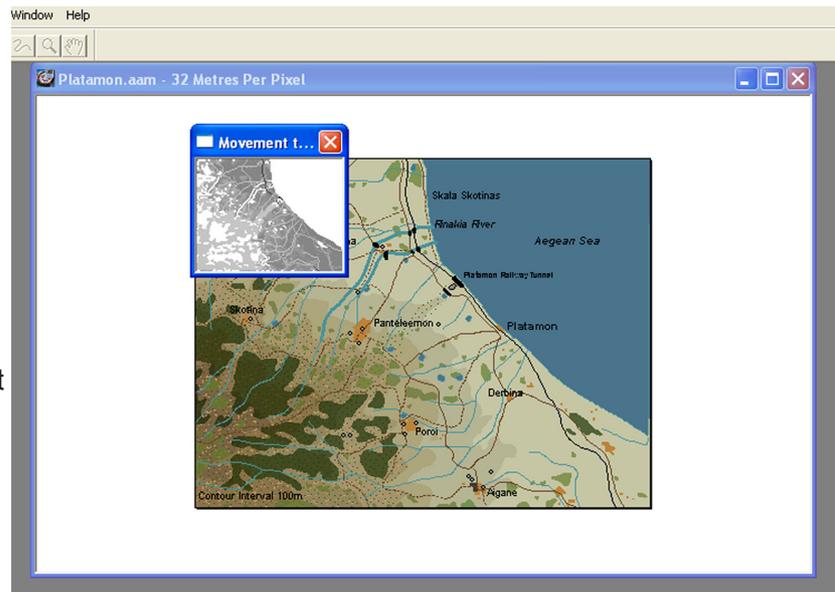
The Movement Table opens in small window, which can be expanded by dragging it. The white areas represent impassable terrain. The darker the colour the better the movement rate. Thus a Heavy Road bridge is a black line while a light road bridge is a light grey coloured line.

⊕ You can reposition and resize the Movement Table window like any normal application window.



To resize and align the movement table window to the map window:

-  Zoom out the main map window so that it fits within the screen.
-  Then align the top left of the movement table window with the top left of the map window

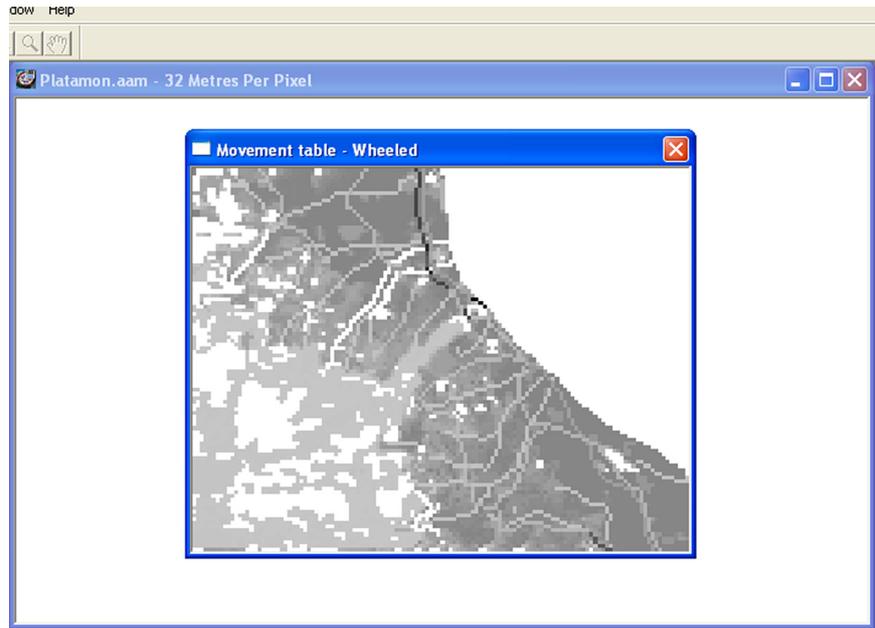


COMMAND OPS 2



Drag the movement table window so that its bottom right is aligned to the map window's bottom right.

This will ensure they are all at the same scale and assist in identifying locations.



A valid crossing should show a grey or black contiguous line from one side of the river to the other. The pixels that make up the line can be diagonally adjoining, but there must be no gaps, otherwise the crossing is invalid.



Save the map



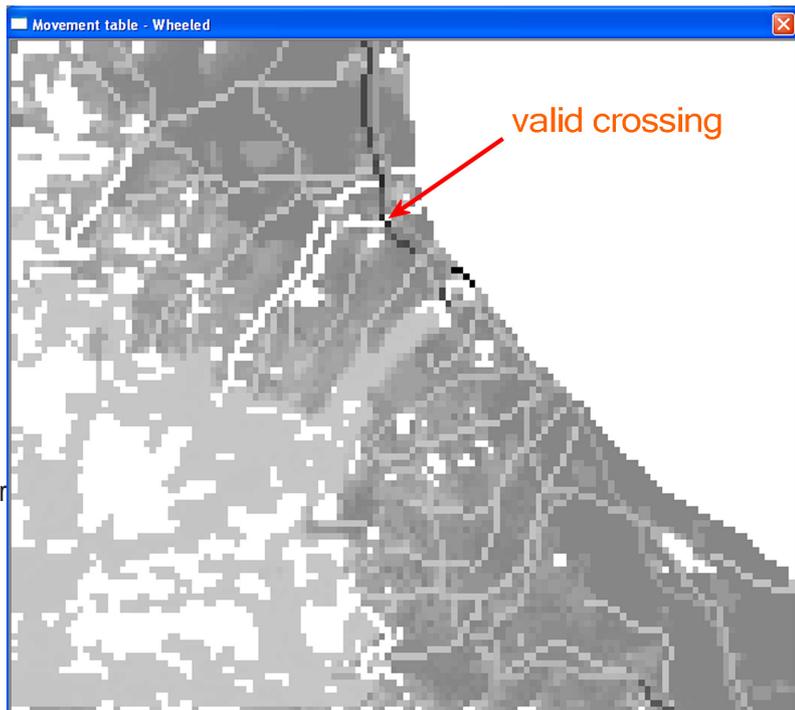
Launch the ScenMaker



Open a scenario using the map – see ScenMaker Manual for details.



Use the **Route Tool** to confirm that the Crossing is valid – see the **Confirm Crossing** section in the ScenMaker Manual.



If a route cannot cross the Crossing then you will need to edit the crossing and / or river in the MapMaker, remember that there is a 100m movement grid superimposed over the map. When the terrain is calculated it ensures that rivers cannot be crossed diagonally. In some cases this may result in an adjoining location being classified as river even though the map object does not extend into it. This can mean that a river may be blocking an adjoining location, even though it doesn't appear so on the map.

To ensure the crossing works, try one or more of the following:

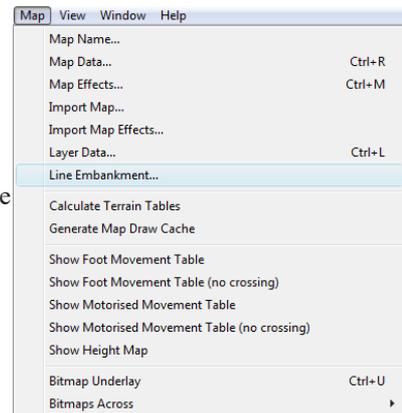
-  Extend the crossing line on one or both sides or
-  Change the angle of the crossing line or
-  Reshape the River object by moving its points

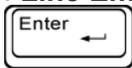
Embankments

Any line object (Road, Rail or River) can have an embankment or cutting added to it. Depending on the value entered, the embankment either raises the line above (e.g. 3m) or lowers it below (e.g. -3m) the current spot height. A negative value in effect creates a cutting. A line object with an embankment is drawn with a grey line down each side.

-  Select a line object

Note that you may have to split the line if you just want to embank a segment of it. See – [Split Lines / Areas](#).

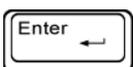


-  Choose **Line Embankment** from the **Map** menu, or press the Enter key  (on the main keypad)

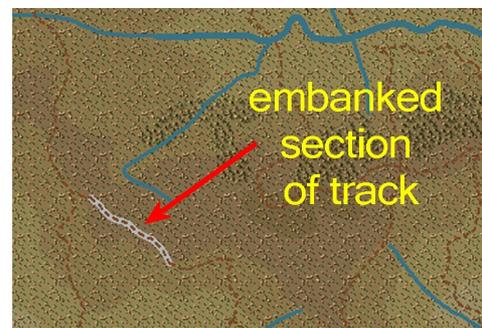


-  Enter the height of the Embankment in metres (you can enter a negative number for a cutting)

-  Select OK to close the window

-  Press the Enter key  (on the numeric keypad) to deselect the line.

The line is now drawn with an Embankment.



COMMAND OPS 2

Please note that while embankments affect line of sight, they currently do not inhibit lateral movement - ie movement across the line.

Text

To add new Text:

-  Select the **Text** layer displayed in the sidebar
-  Select either the Draw or Trace tool.
-  Click on the map where you want the new Text to appear

The Text Edit dialog will be displayed

-  Enter the text in the Text field

This is what appears on the map.

To specify the text style parameters:

-  Either select one of the predefined styles from the **Style** pull-down menu or
-  specify the individual style components

Font – The font the text will be drawn with.

Style – Select any combination of styles.

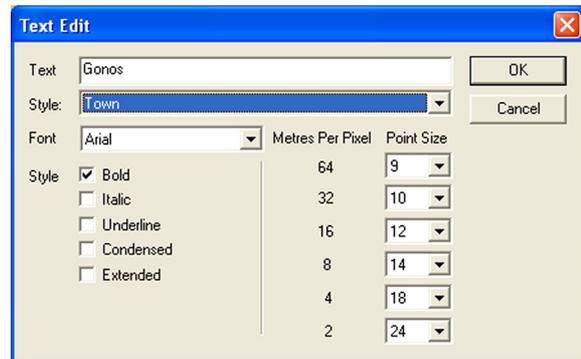
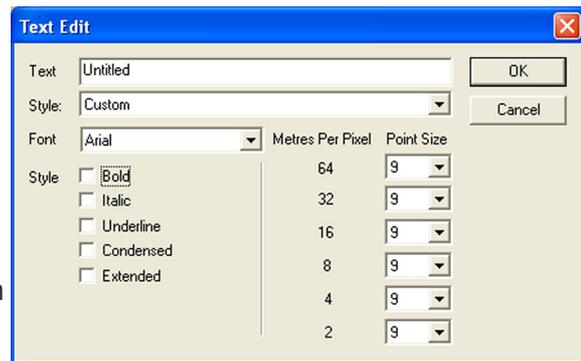
Point Size – These drop down lists let you choose the size of the text at each of the six different map zoom levels. Setting a size of 0 will stop the text being drawn at that scale.

Whatever settings you specify here will be saved and used as the default next time you enter text.

-  Select **OK** to save and display your new text.

To edit existing text:

-  Select the text to be edited



 Press the Enter key (on the main keypad)

The text edit window will appear.

 Make your changes

 Select **OK**.

Select / Deselect Map Objects

To select a map object:

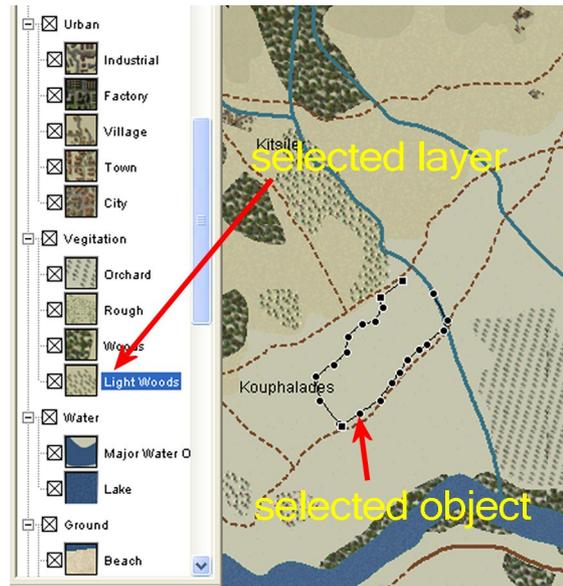
 Select the Arrow tool 

 Select the desired Layer in the Layer List

 Click on the object you wish to select

Note that when you select an area object, it's points are displayed with a line linking them and its fill texture is not drawn.

If you are unsure of the Layer of the Map / Line you wish to select, you can try and locate it like this:



Edit	Draw	Map	View	Windc
Undo				Ctrl+Z
Redo				Ctrl+Y
Delete				Del
Duplicate				
Select All				Ctrl+A
Deselect All				Ctrl+D
Multi-Layer Select				

 Choose **Multi-Layer Select** from the **Edit** menu

 Click on the desired object

 The first object under the location you clicked will be selected on the map and its layer will be selected in the Sidebar as well.

If this is not the object you intended:

 Press the Enter key (on the numeric key pad)

 Move the cursor slightly

 Click again

COMMAND OPS 2

Another way to identify which layer an object belongs to is:

 Hide each layer in turn (See [Show / Hide Layers](#).) until the object you want to select disappears

When this happens you know the layer you just hid contains the object you want to select.

 Unhide and select the layer containing the object you want to select

 Select the object.

To select all the objects of the current layer:

 Choose **Select All** from the **Edit** menu or press Ctrl + A keys  + 

To deselect:

 Select a new object, or

 Select a layer from the Layer List on the Sidebar, or

 Press the Enter (on the numeric key pad) key or

 Select Deselect All from the Edit menu or press Ctrl + D keys  + 

Note that once you deselect an area object its texture fill is redrawn.

Move Map Objects

To move an object:

 Click on the object and drag it to the new location

 Be careful not to select an actual point as this will simply move just that point.

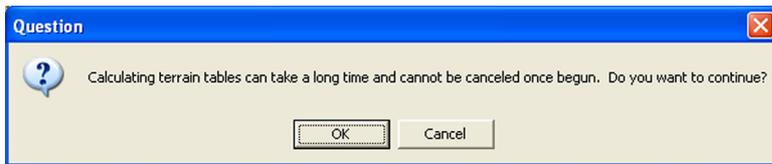
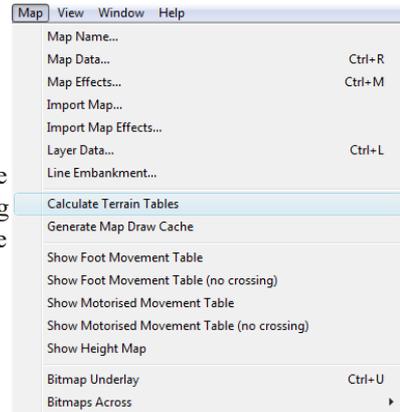
Prepare Map for Use

Calculate Terrain Tables

Before your map can be used in the ScenMaker, or the Game, it must be prepared by having its terrain values calculated. This sets the underlying data so the ScenMaker and Game can determine Line of Sight, calculate routes and determine movement and hit effects at a given location.



Choose **Calculate Terrain Tables** from the **Map** menu



This may take a minute, especially on slow machines. A warning window will appear.



Click OK to proceed.

The MapMaker will then calculate the terrain data for your map. This may take a minute, more on a slow machine or if the map is really large.

⊕ **IMPORTANT** – If you have **changed** a map then before using it in the Game or ScenMaker you **MUST Recalculate the Terrain Tables**

Calculating the terrain data determines the terrain presence at each movement grid. From that the movement and hit effects are derived. It also determines the spot height of each location using the distances to the adjoining altitude layers.

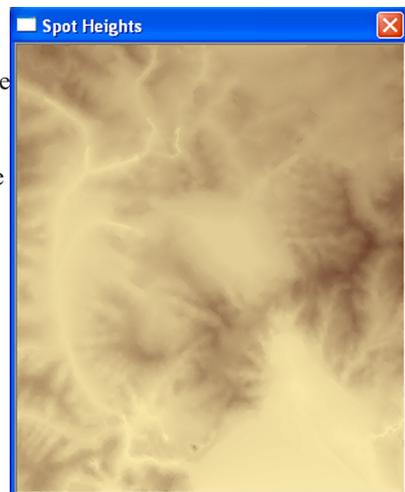
Spot Heights

These are the height in metres at each 100m grid on the map. They are determined when the terrain tables are calculated. Depending on the exact shape of the ground the spot height is calculated using the distance to the adjoining altitude layers. As a rough rule of thumb if the location is midway between two altitude layers then its spot height will be the average of the two (eg if midway between the 40m and 50m alt layers then the spot height will be 45m).

To display the spot heights:



Select **Show Height Map** from the **Map** menu



COMMAND OPS 2

Provided you have already calculated the Terrain Tables, then the Spot Heights window will open. The darker the colour, the higher the elevation.

- ⊕ The Spot Height window can be moved and resized like any normal application window

Check Terrain Data

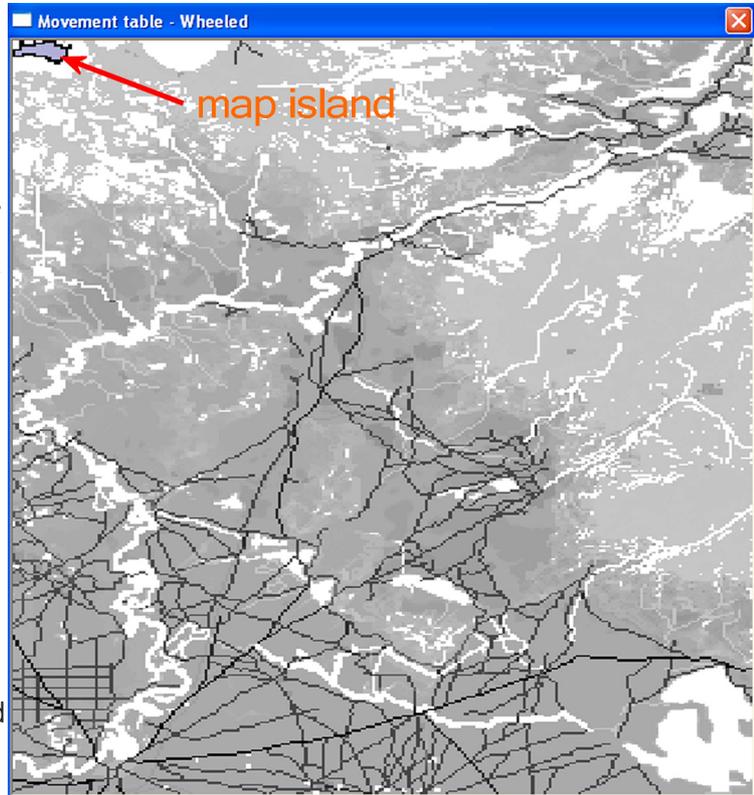
Unintended Map Islands

After calculating the Terrain Tables you should check for unintended map islands – ie areas that are not reachable from other areas on the map. To do so:

-  Choose **Show Foot Movement Table** from the Map menu

-  Choose **Show Motorised Movement Table** from the **Map** menu

-  Click on any grey area and it and all reachable locations will turn blue



This connected area is a map island. Other unreachable areas will remain grey. These belong to one or more other map islands. Now this may be exactly what you want, but if not, then you need to consider one of the following options to link them:

-  Remove some of the impassable terrain (eg Woods, rivers) bordering in between the two islands or

-  Ensure there is a valid crossing connecting the two or

-  Adjust the altitude layers so that the slope is not too steep

- ⊕ A slope of greater than 30 degrees is impassable to motorised except where a road traverses the terrain.

 Recalculate the Terrain Tables

 Review again

 Save the map

Intended Map Islands

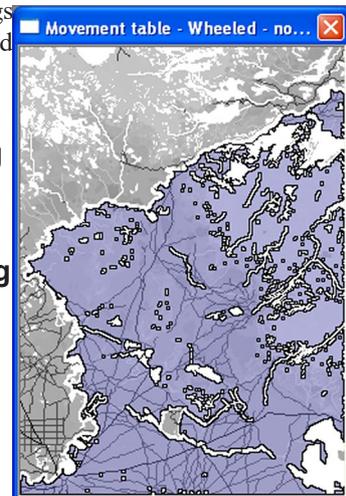
You should also check to see the intended map islands caused when crossings are demolished. You want to ensure that when these crossings are demolished areas that should be unreachable actually are unreachable. To do so:

 Choose **Show Foot Movement Table (no crossing** from the Map menu

 Choose **Show Motorised MovementTable (no crossing)** from the **Map** menu

These show the map islands with all crossings demolished.

 Click on each grey area and all reachable areas (ie parts of the same map island) should be displayed in blue



If this includes areas that you thought should not be part of this island then consider one of the following:

 Widening impassable terrain between the areas (eg rivers, woods)

 Adjusting the altitude layers to increase the slope between these areas.

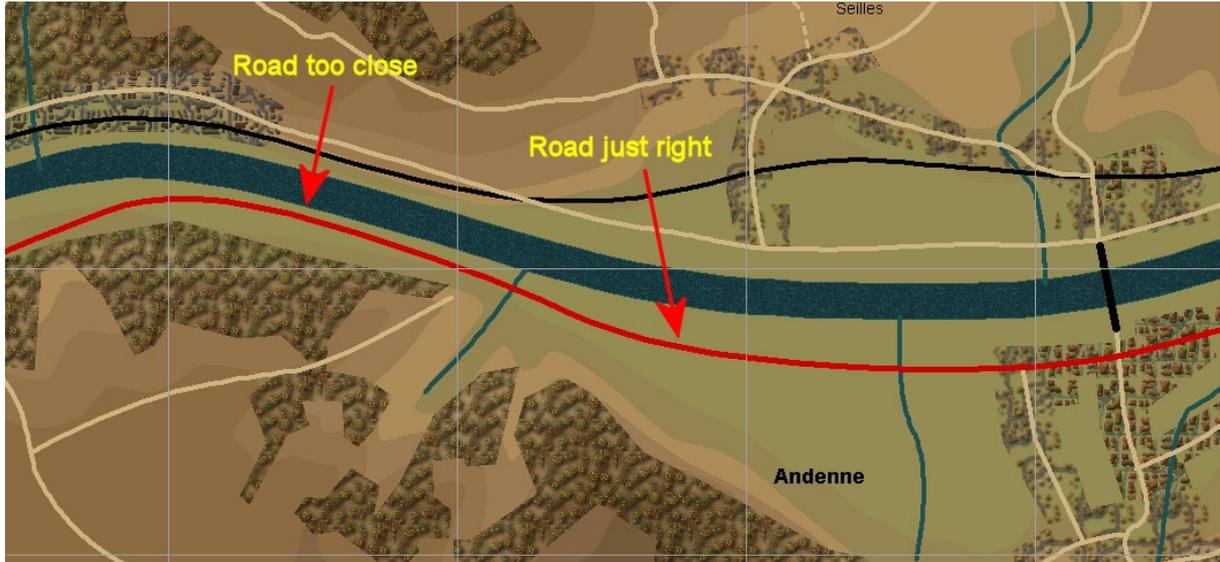
 Recalculate the Terrain Tables

 Review again

 Save the map

Roads and Rivers

If a road line runs too close to a major river, then it may create an unintended crossing. To prevent units from crossing major rivers at the diagonal, a special algorithm is run to make the diagonal grids impassable. However, roads will overrule this and make them passable. This is fine if the road is intending to cross the river eg leading to a crossing. But if the road is running along side the river, then you may need to relocate the road further away from the river.



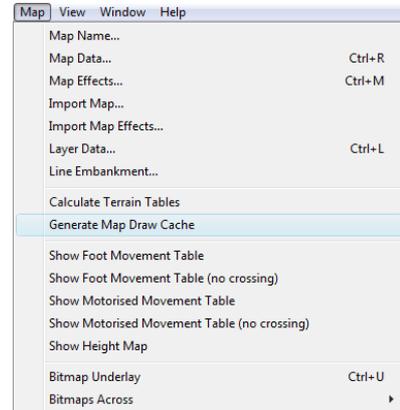
Generate Map Cache

When the Map is displayed in the Game, or the ScenMaker, it can be drawn using two different methods.

- ⊕ On the fly – requires less disk space but is slower
- ⊕ Using a Cache – faster but requires more disk space

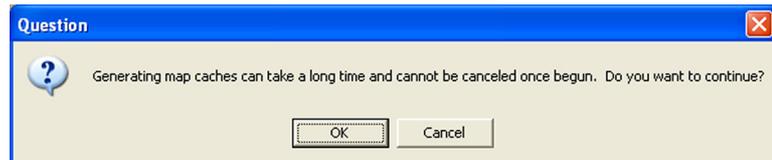
If you wish to increase the drawing performance for your map then you must first generate a Map Cache file, this must be done each time you change the **look** of your map - ie add, delete or change the shape of a line, area or text object - or the Map displayed will not be the map you drew. To do so:

-  Select **Generate Map Draw Cache** from the **Map** menu

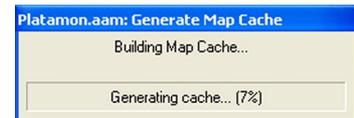


This can take some time. Large maps can take an hour or more, even longer on slow machines. A warning window will appear.

-  Click OK to proceed.



A progress dialog will appear while the cache is being created. The map cache file will be created in the **Maps** folder and will be called **MyMap.cop.cache** (where your map file is called **MyMap.cop**).



The size of the map cache file varies from around 2Mb for a small map up to 33Mb for the Olympian Passes map.

Once the progress dialog disappears, the map cache will be ready for use.

Save Your Map

It is **VERY IMPORTANT** that after you have recalculated the terrain and generated the cache that you save the map. Otherwise you will lose the changes.

-  Save the Map

Annex A - Keyboard Shortcuts

Left Arrow	Select previous point
Right Arrow	Select Next point
Backspace	Delete
Del	Delete
Enter (Num Pad)	Deselects the currently selected Area, Line or Text object.
Enter	Opens Edit Text dialog for currently selected Text object.
Ctrl + Page Up	Zoom Out
Ctrl + Page Down	Zoom In
Print Screen	copy the current screen to the clipboard
Space (while held down)	Activates Grabber tool – left click and drag to scroll map
Alt	Reverses the current Point Type while held down
Ctrl-1 to 6	Zoom Map, 1 = 64 meters per pixel, 6 = 2 meters per pixel.
Ctrl + A	Select All
Ctrl + D	Deselect All
Ctrl + E	Display All Layers
Ctrl + G	Show Map Grid
Ctrl + H	Hide All Layers
Ctrl + L	Open Layer Data for currently Selected Layer.
Ctrl + M	Open Map Effects window
Ctrl + N	New map
Ctrl + O	Open map
Ctrl + R	Open Map Data window
Ctrl + S	Save map
Ctrl + T	Toggle Selected Point Type between Corner and Control Points.
Ctrl + U	Toggle display of Underlay Bitmap
Ctrl + Y	Redo
Ctrl + Z	Undo
1 (Num Pad)	Incrementally move selected point south west
2 (Num Pad)	Incrementally move selected point south
3 (Num Pad)	Incrementally move selected point south east
4 (Num Pad)	Incrementally move selected point west
6 (Num Pad)	Incrementally move selected point east
7 (Num Pad)	Incrementally move selected point north west
8 (Num Pad)	Incrementally move selected point north
9 (Num Pad)	Incrementally move selected point north east
.	Delete

Annex B – Map Making Sequence

-  Create a New Map
-  Update Map and Layer effects
-  Rename layers if needed
-  Prepare Underlay Bitmap if needed
-  Draw Altitude (elevation) layers
-  Draw Area (City, Woods, etc) and Line (Road, Rail, etc) layers
-  Add Text
-  Calculate Movement data
-  Verify and Correct any movement problems
-  Generate Map Cache
-  Save the Map.