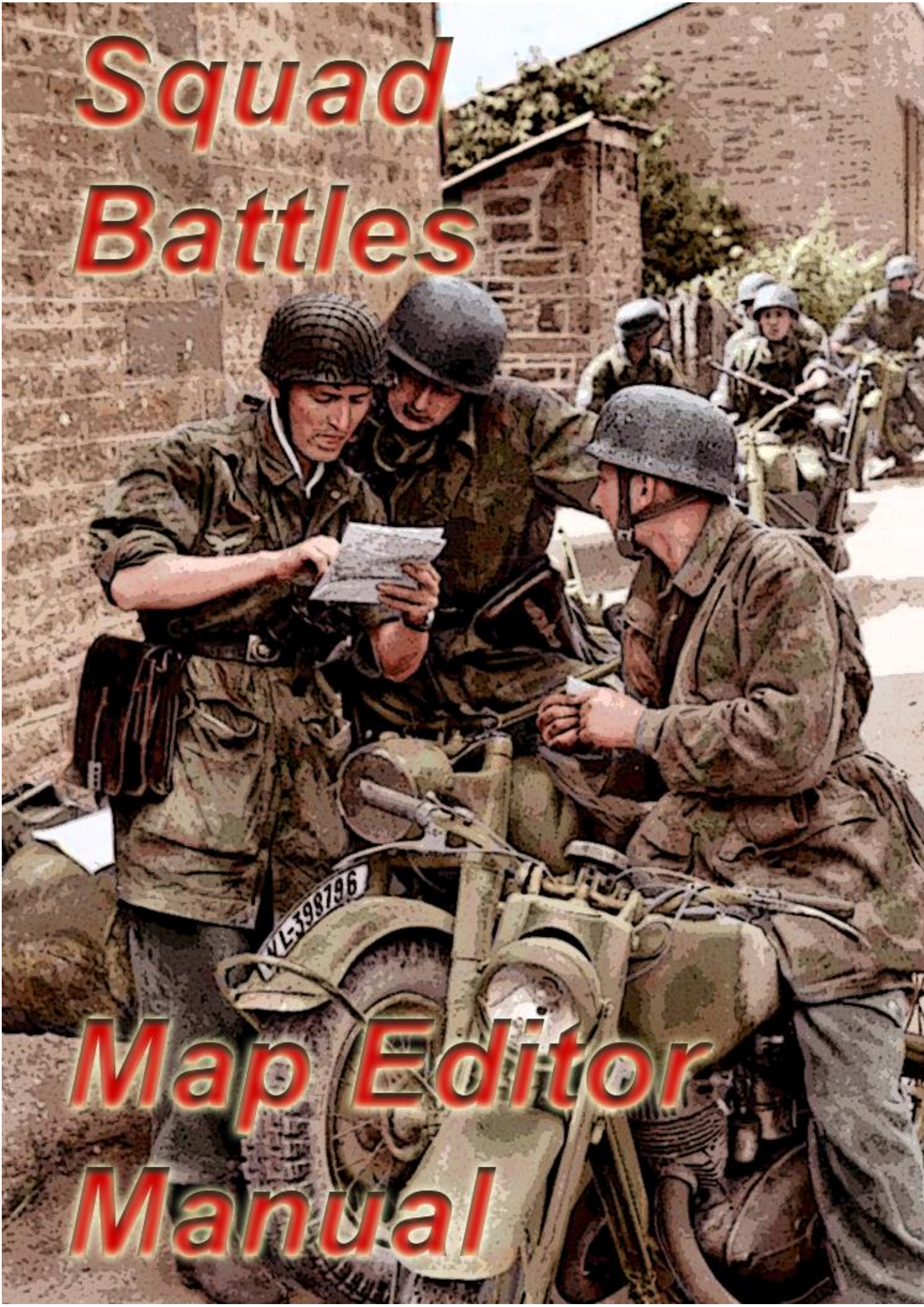
Squad Battles



Map Editor Manual

Squad Battles
Map Editor Manual

Table of contents

Appendix

The Map Editor

Introduction.

The map editor enables you to create your own maps from scratch or edit existing ones.

Creating your own maps does not have to be complicated and is a lot of fun. If you are wanting to design your own scenarios, then there's a good chance you will want to design your own maps. The scale of Squad Battles means that your maps don't need to be faithful recreations of a particular battlefield, they can be customised to suit the needs of your scenario. If you want to do an amphibious assault, then you can create a beach head. If you want to do some urban fighting you can build a city, if you want to seize an Airfield you can build that.

If you do want to faithfully recreate a historical situation and you have a graphic file of a map and a paint program, then you can load that and covert it for Squad Battles. So, there's lots of options for you to explore and pretty much anywhere you can think of you can recreate.

The map editor only supplies the geography that is the towns, fields, hedges, hills, and valleys of the battlefield. The infrastructure of a combat zone; The bunkers, minefields, trenches barbed wire etc., are added using the scenario editor.

You must exercise caution if you are editing the stock maps that come with the game, if you make changes to these then you may find that this causes scenarios that rely on those maps to fail. If that happens it isn't a disaster, but you will probably need to completely uninstall and then reinstall the game. The best thing to do is to make copies of the original maps and then work on those. As with the editing of anything, the golden rules are always back up your original, and save your work often.

The Interface.

Figure 1 gives you an overview of the main components of the map editor, each of these will be taken in turn and described in detail.

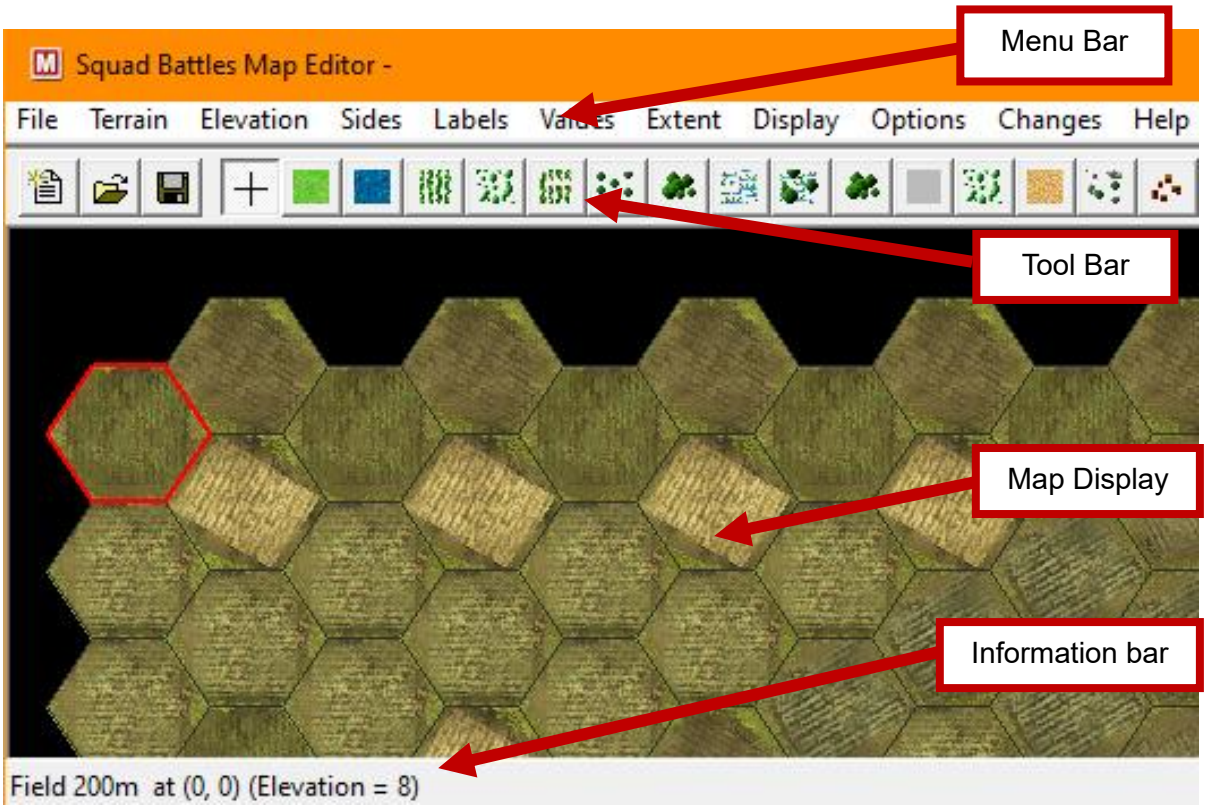


Figure 1 The Interface

The menu bar.

The menu bar offers a series of drop-down menus at the top of the screen. Many of the options that are used frequently are repeated graphically in the tool bar below this.

Figure 2 Menu Bar

The tool bar.

Below the menu bar is the tool bar. This displays buttons for many of the commonly used map making actions. Each of these has a self-explanatory tool tip.

Figure 3 Tool Bar

The map display.

Most of the screen is taken up with the map display. Unless you have loaded a saved map this will be filled with clear terrain. This is the canvas that you can edit using the tools and menus described above.

Figure 4 Map Display

Left clicking on a hex selects it and the selected hex is highlighted in red (see figure 5 below)

The information bar.

At the bottom of the screen is the information bar. At the bottom left of the screen the type of terrain, the coordinates and the elevation of the currently selected hex are displayed.

At the bottom right you will see just the Hex coordinates displayed.

Figure 5 Information Bar and Selected Hex

In the example above the terrain in the hex selected is brush, the altitude of the hex is 150m, the coordinates of the hex are 136, 102 and the elevation level is 2. The hex coordinates (136,102) are repeated on the right of the information bar.

Main data maps and submaps.

There are two types of maps in Squad Battles: Main Data maps and Submaps. This map editor enables you to build Main Data maps from scratch or edit the terrain of existing maps. Submaps are smaller selections created from Main Data maps using the separate Sub map Editor. For example: You might create a main data map that covers a 300 x 300 hex area and then only want to use a small section of that in a scenario. The sub map editor enables you to snip a smaller section of the main data map, save it, and then use that in your scenario instead of using the entire main data map.

If you wanted to further edit a sub-map to add or remove terrain features, then you could load that into this editor and make whatever changes you wanted. The submap would then automatically be converted to a full data map, and from this one could make further sub maps if desired.

Exercise caution if you are editing stock maps you MUST rename them before you save any edits otherwise this will spoil the stock scenarios. If you inadvertently do this and you can't undo the change you will need to re-install the game.

Editing a map.

Adding and removing whole hex terrain tiles.

Whole hex terrain includes vegetation, buildings, rough sand, water hexes, any terrain that fills an entire hex. For the effects of these terrain types on movement, combat and line of sight see the main user manual many of the terrain effect values can be edited in the parameter data file.

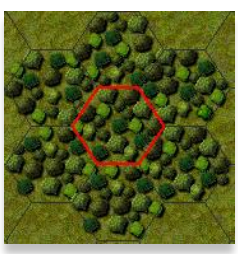
Selecting a terrain tile from either the dropdown menu or the Tool Bar enables you to place that terrain element by left clicking on the map. Right clicking removes the currently selected terrain element.

Filling larger areas with terrain.

If you want to create a larger area filled with a particular terrain, there are three options that will avoid you having to click each individual hex:

1. Placing a seven-hex block,
2. placing a rectangular area,
3. flood filling an area.

Placing a seven-hex block.



Shift+ left click This will place a block of seven hexes centred on the selected hex and with a diameter of three hexes.

Figure 6 Seven Hex Block

Placing a rectangular area

Ctrl+ left click on the upper left corner and then ***Ctrl+ left click on the lower right corner*** This will fill a rectangular area defined by the upper left and the lower right selected hexes as illustrated in Figure 7 below.

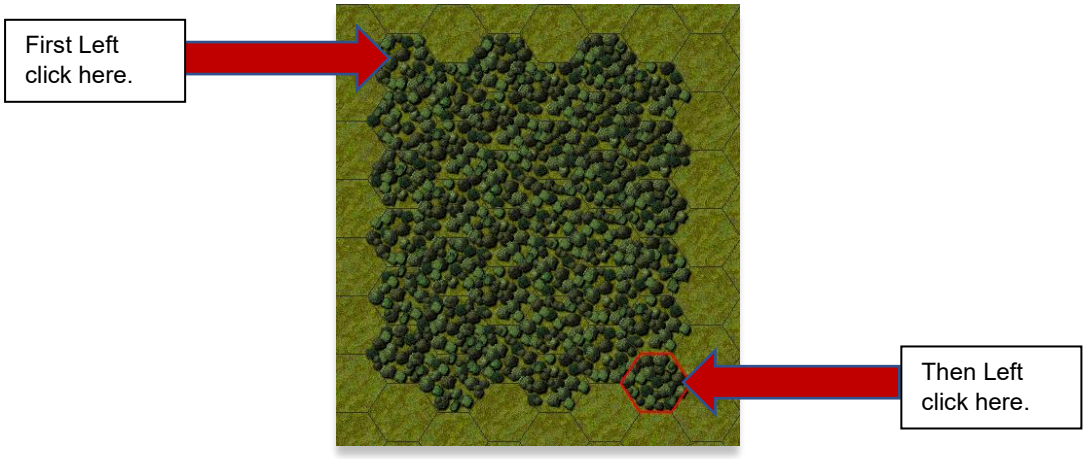


Figure 7 Placing A Contiguous Rectilinear Area Of Terrain.

Flood filling an area.

Shift + right click This flood fills an entire area of clear hexes with a particular terrain type. First ensure that the area to be filled is bounded completely by some terrain so that there are no clear hexes. Then click anywhere inside the area to be filled. Use this feature carefully, it's easy to accidentally fill the whole map with the selected terrain if you haven't bounded the area perfectly. In the example below the area bounded by trees in the first picture has been filled with fields in the second.

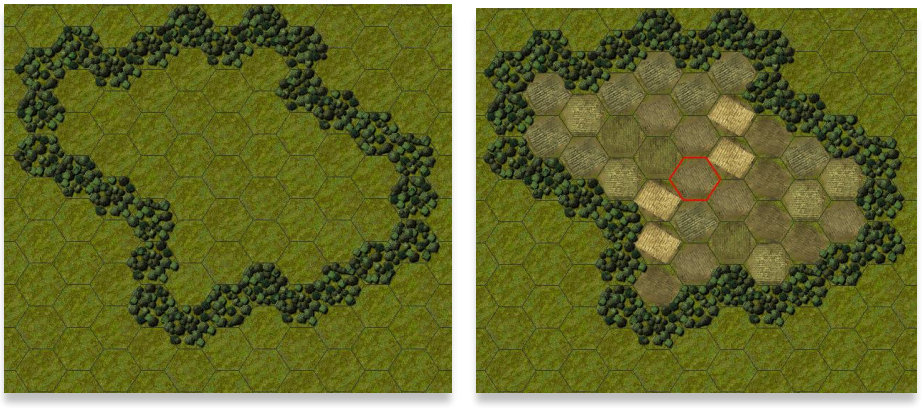


Figure 8 Flood filling

Adding linear features

Linear features are roads, tracks, bridges, railways, and streams that form linear structures which cross and connect multiple hexes.

These are also added by left clicking and removed by right clicking. As with block terrain you need to ensure that if you are wanting to delete a road hex you have first selected road from the menu or the icon bar.

Placing linear hexes takes some care, you need to click close to the edge of the hex side that you want the feature to pass across. If you have clicked too close to another hex side the linear feature will try and pass through that instead so you can find a bridge suddenly deviates up or down stream instead of across, or a road that adds an unwanted fork or turns a corner unexpectedly. If that happens just right click to clear it and then place it again.

Bridges will automatically be placed over deep and shallow water hexes. No bridges are placed over streams.

Adding hex side features.

These can be divided into two categories, single sided and double sided. There are important differences in terms of the protection these hex sides offer for the units occupying their associated hexes and this means care needs to be taken when placing them to avoid unwanted effects.

Single sided hex side features

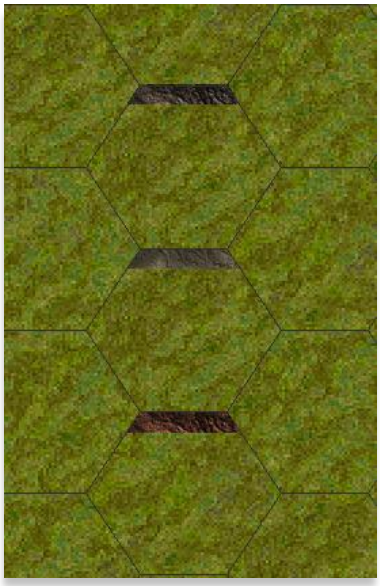


Figure 9 Single Sided Hex Side Features

Single sided hex side features represent:

- Embankments
- Escarpments
- Cliffs

These features need to be placed very carefully. They will confer a benefit in terms of protection only to the side which occupies the hex to which they have been attached to so you must place them on the INSIDE of that hex edge. You must also make sure you don't accidentally place one in an adjoining hex side. If you were to do that then BOTH sides would gain the hex side protection benefit. (See page 54 of the user manual for hex side protection)

Double sided hex side features

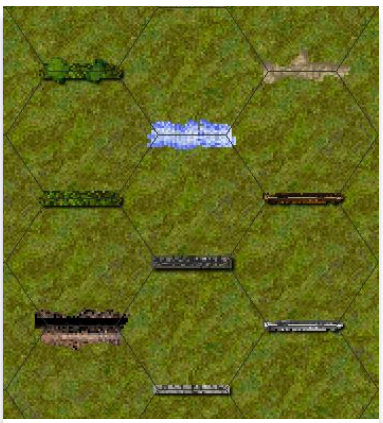


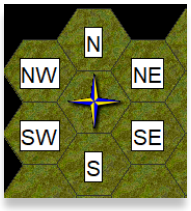
Figure 10 Double Sided Hex Side Features.

These are:

- Hedges
- Hedgerows
- Walls, low and high
- Fences
- Reefs
- Dikes
- Dunes

When you place a double-sided feature, the graphic appears on top of the hex side, right on the boundary of the two hexes. It doesn't matter which of the two hexes you choose hex side protection is offered to both hexes.

Setting the compass



The compass can be made visible by turning labels on using the toolbar icon, otherwise it remains hidden. See page 12

Although North is traditionally shown towards the top of a map you can orientate your map with any of the eight cardinal and intercardinal points at the top by selecting the menu option *Values* \ *Compass*.

With the Compass dialog box open you can make your choice by selecting the appropriate radio button as illustrated below.

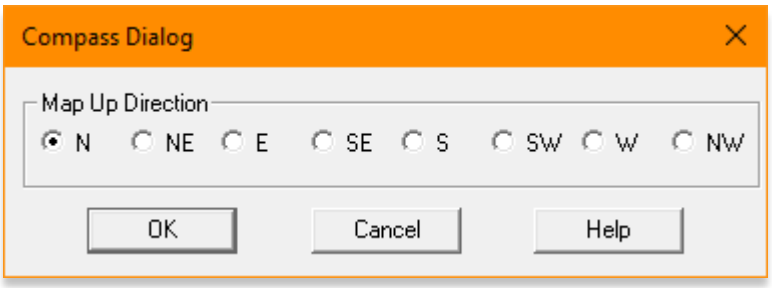


Figure 11 Compass Dialog Box

Elevation.

For elevation changes on a map to be visible one of the following options should be selected from the *Display* menu:

- Display Hex Contours
- Display map Slopes

- Display Elevations

Each option will be useful in different situations and, if desired, any or all can be selected at the same time. Map slopes are not visible on top of a map overlay, the other indicators are.

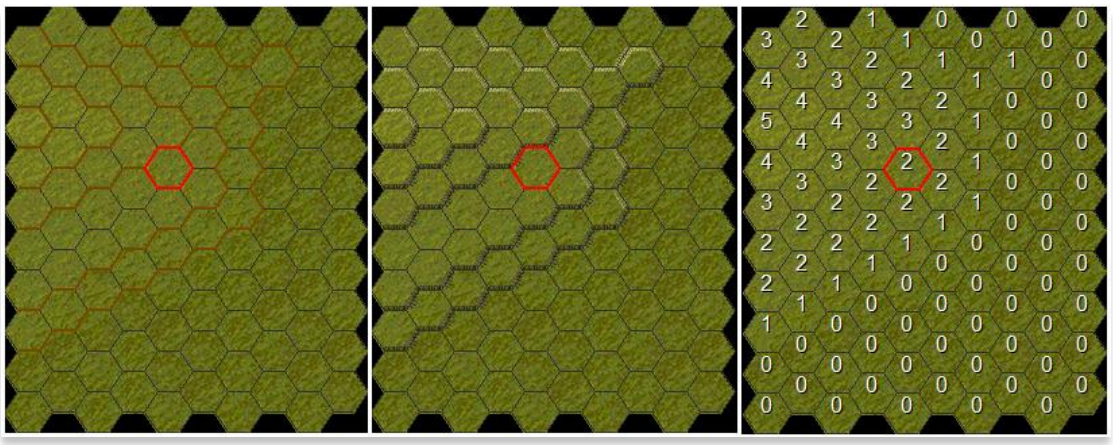


Figure 12 Left to Right: Hex Contours, Map Slopes, Elevation Levels

Distinguishing between elevation levels and altitude

It is important to distinguish between what will be referred to as the altitude of the map and the elevation levels of the map.

- The maps **altitude** is the height of level 0 terrain above mean sea level measured in metres (abbreviated as AMSL). This can be set by invoking the elevation dialog from the *values* menu and entering a value in the elevation text box.
- The **elevation levels** of the map are numbered from 0 to 13 and each represents changes in height from 0, the lowest point on the map, to 13, the highest.

Contours and the maps “delta”

The difference in height changes between elevation levels (commonly referred to as the contour interval) is the maps “delta” which is mathematical shorthand for a change. The default value is 10m. Most maps will have a constant delta that is; the difference in height between each elevation level will be the same, but it is possible to vary these distances if that is needed.

When to choose an inconstant delta

It may be that 14 elevation levels for a map are insufficient to cover the full range of the map’s altitudes. This might occur if the map is illustrating very mountainous terrain. If this is the case, then the delta for each terrain level can be set individually.

An inconstant delta needs to be planned with caution to prevent unrealistic situations arising in a scenario. For example: An infantry unit in game could scale an elevation level with a height of 50m in one turn and then scale an elevation level of 5,000m in the next. Recall that units can always move at least one hex unless the terrain itself restricts them from entering it. In this regard the cartographer must use their own judgment, the program won’t enforce realistic limits. It might be possible to work around this restriction by placing a restricting hex side such as a cliff that would prevent units from crossing it unrealistically.

The elevation dialog box

Accessed from the *Values* \ *Elevations* menu item. This allows you to set:

- the altitude of level 0 terrain,
- the maps delta (contour interval) the height between the different elevation levels
- a constant, or variable delta

You can enter the altitude of your level 0 terrain in the elevation text box and then decide how high you want each successive change in elevation level to be. The default is 10m. This means that with each increment in elevation the altitude will change by 10m.

In the example below the map Elevation is set to 3m and the map delta is set to 10

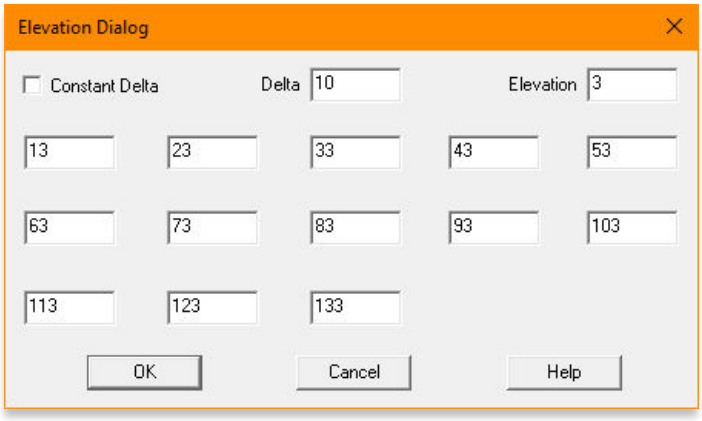


Figure 13 Elevation Dialog box

This means that Level 0 is at an altitude of 3m above mean sea level (AMSL), so level 1 will be at an altitude of 3 + 10 = 13m AMSL, level 2 will be 13+10 = 23m AMSL and so on.

In most situations you will want a constant delta. If you don't want the delta to be constant, then you can enter your own values for each level.

Once these values are set you can start creating hills and valleys on the map.

Placing elevation levels

Elevation levels are placed in the same way as other whole hex terrain. Simply select an elevation level from 0 – 13 and left click on the map to place it. This automatically deselects any terrain choices you had made and all subsequent left and right clicks only changes elevation.

A right click replaces the elevation level of any hex with level 0 terrain.

Laying blocks of contiguous elevation

In much the same way you can lay blocks of contiguous terrain tiles you can do the same with blocks of contiguous elevation

- You can use the ***ctrl+ Left Click*** method to lay rectilinear blocks of terrain of the same height as you can when placing whole hex terrain.
- You can use the **shift+ Left Click** for rectilinear blocks.
- You can **shift+ Right Click** to flood fill an area that is level 0 elevation with a different elevation. This area must be bounded by an elevation level greater than 0 unless you want to flood fill the entire map. *NB: The terrain level to be flood filled MUST be level 0.*

Changing the elevation of the whole map

If you decide that you need to make some changes to all the elevations to make all the terrain higher or lower, then you can use the menu options Extent \ Raise Map or Extent \ Lower Map then that will cause all elevation levels to be incremented or decremented by one elevation level. For example: If you were to choose Extent \Raise map then level 1 terrain would become level 2, and level 2 would become level 3 and so on.

Making a universal change to a selected elevation level

There may be circumstances where you decide you need to make a change to ALL the elevations of a particular height in a map. For example, let's assume you want to make all the level 3 level into level 2 terrain, but you want to leave all the remaining elevations as they are.

1. First select the elevation level that you want to change from in elevation menu in this case 3.
2. From the extent menu select lower elevation

If the map already contains terrain at the new level, you will be asked to confirm the action. This prevents you from accidentally losing levels that you had already placed elsewhere in the map and that you might want to keep.

Map labels

Figure 14 Label Dialog Box

No map is complete without place names. Labels can be toggled on and off with the display label button on the tool bar and added with the add label button. Toggling labels on or off also toggles the compass graphic in the top left corner of the map.

There are three options for the label type, the differences being in the colour of the labels text, plain will be black, water is blue, and trees green. There also are three size options and three options for the justification of the label in relation to the selected hex.

There is no requirement to stick to these colour conventions, any type of label can be applied to any hex.

Right clicking on a labelled hex will delete that label.

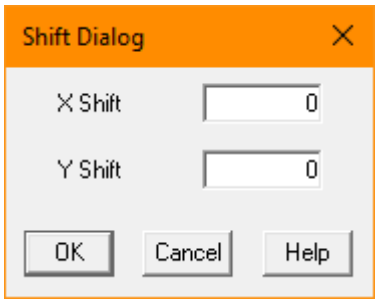
Resizing a map

A map can be extended or reduced in size by choosing the menu option **Extent / Resize**. This will open the Resize dialog where a new Width and height can be defined for the current map. With each of these options the reference point that will remain unchanged is the 0, 0 hex in the top left corner of the map. Extending the map by increasing the width will add the appropriate number of hexes to the right-hand edge of the map. These will appear as clear terrain with an elevation level of 0 (see page 12 Elevation for an explanation of elevation levels)

Increasing the height will add the appropriate number of hexes to the bottom of the map.

In this way the map maker can edit a map where a scenario is already under construction if that is necessary. Although if this results in hexes where units have already been placed being deleted it will produce an error when attempting to open that scenario either in the editor or in game. Editing maps that already have scenarios associated with them should only be done as a last resort. Much safer to make a copy of the map and then edit that.

Shifting a map



A map can be shifted either horizontally or vertically, or both horizontally and vertically, by selecting the menu option **Extent /Shift.** This will move the map the required number of hexes vertically. (X Shift) or horizontally, (Y Shift.)

The hex 0, 0 is again the reference hex, both positive and negative integers can be entered. The map does not change size during this process so hexes will be forced off the map and be permanently lost. New hexes that are introduced will be clear terrain at elevation level 0.

If it was necessary to shift a map without losing terrain, then the original map should be increased in size first so that there is an appropriate margin and then the shift applied.

Rotate a map

The map can be rotated through 180° by invoking the **Extent \ Rotate** option from the menu bar.

Clip a map

The menu item Extent \ Clip has the effect of moving the entire map one hex vertically and one hex horizontally to the left. The map remains the same size. Hexes in the first row and first column are shifted off the map and lost. Clear hexes are added to the last column and last row of the map.

Jump map

This gives an overview of where the current map view is located on the open map and enables the user to jump easily to locations without needing to scroll through the whole map.

Using overlays

Scaling the overlay

Overlays are very useful if you have a copy of a map you want to recreate accurately for Squad Battles. To create an overlay, you will need to use a paint program to scale a .bmp file of your map to fit the scale of Squad battles.

- Each hex in Squad Battles represents 40m and so an area of 1km x 1km will represent a squad battles map of 25 x 25 hexes.
- Each squad battles hex is about 30 pixels wide so an overlay image should be at a scale of about 750 pixels per Km.

Maps at the scale of 1:50,000 can be used as overlays but the larger the map scale, then the easier it is to work with.

Once you have scaled the map using a paint program and saved it as a .bmp you will need to create a blank map of the right number of hexes in the map editor.

You can now load your .bmp file as an overlay.

1. Go to the File menu and select overlay... to load your overlay.
2. Press the spacebar to toggle between the overlay image and the Squad Battles map. If your map is large, you might notice that there is a mismatch between the horizontal and vertical scales of the overlay and the game map. The vertical axis of the Squad battles map will be slightly longer than the vertical axis of your overlay file. This will become increasingly apparent on larger maps. This is because of the geometry of a regular hexagon, whose height is slightly greater than its width. So, a 25 x 25 square of hexagons forms a rectangle not a square.
3. To resolve the mismatch in vertical and horizontal scales. You will need to rescale your BMP file again, but this time only in the *Horizontal axis*. A scale of 87% will be just about right. You will have to explore your individual paint programs instructions on how to do this, but most will offer the option to rescale on just one axis. Load the overlay again once it has been rescaled and it should match the hex grid.

Creating a map using an overlay

Once you have scaled your overlay you can start creating your map.

1. From the file menu choose the Overlay option,
2. Toggle to the overlay map with the space bar.
3. Start laying terrain as you would do normally. Don't worry that you can't see the hex grid, just add terrain features through the overlay. You can start laying either contours or terrain features such as woods or buildings, whichever you prefer.

Toggle from map to overlay as often as you need so that you can monitor your progress, and of course, save your work frequently. The only features which show "through" the overlay are linear and hex side features all other features are hidden.

Pasting one map into another

You may have an area of terrain you have created that you want to copy to another map. For example, you might have produced a map of an airfield that you want to use in another map. Instead of re-drawing the airfield from scratch you can copy and paste that into another map.

If this is just a small area such as an airfield, then you will first need to create a submap that includes only that area of terrain.

For ease of explanation, we will call the map with the terrain you want to copy the originating map and the map where you want to receive the terrain the destination map.

1. Select the hex on your destination map where you want to place the 0,0 (top left most hex) of the originating maps.
2. Select File \ paste... from the File menu and a dialog box will appear inviting you to select a map.
3. Select the originating map.
4. Your selected map will now paste into the destination map with the 0,0 hex of the originating map located at whichever hex you had selected in step 1.

All the terrain that was on the destination map that corresponds to the same area of the originating map will be overwritten with the originating map.

If the originating map was larger than the destination map then any excess will be ignored i.e., the dimensions of the destination map are constant, they will not increase because a larger map was pasted in.

Appendix

Menu Items

The following tables illustrate and briefly describe all the menu options and tool bar icons Where more detailed explanation is warranted there are hyperlinks back to the relevant sections of the manual.

Menu item	Tool bar Icons	Description
File		
New		Opens new map dialogue
Open		Opens the load map dialogue
Save		Saves the current map
Save as		Saves current map with a new name
Overlay		Opens the load overlay file box
Exit		Exits the program
Terrain		whole hex terrain palette
Elevation	0,1,2,3,4,5,6,7,8,9,10,11,12,13	Allows selection of each elevation level (levels 0-9 can always be selected from the keypad)
Sides		hex side **and** linear features palette . *Please note: the medium and heavy bridge options have no effect*
Labels		
Add/delete		Opens the add label dialogue & toggles labels on / off
Values		
Elevations		Opens the elevations dialogue
Compass		Opens the compass dialogue
Extent		
Resize		Resize the map
Shift		Shifts the map in the x and / or the Y axes
Raise Map		Raises the whole map by an elevation level
Lower Map		Lowers the whole map by an elevation level
Raise Elevation		See detailed description
Lower Elevation		See detailed description
Rotate		Rotates the map through 180°
Clip		See detailed description

Menu item	Tool bar Icons	Description
Display		
Map labels		Toggles map labels on or off
Hex Contours		Displays hex contour lines
Map Slopes		Displays 3d slopes
Map Elevations		Displays elevations of each hex
Map Coordinates		Displays all hex coordinates
Jump Map		Displays jump map
Overlay map		If an overlay map has been loaded this toggles it on and off
Zoom Levels (various)		Zoom map in or out for both 2d and 3d
Options		
Prompt for Map		If selected the user will be prompted to open an existing map on startup
Hex Outlines		Displays hex outlines
Blink Hotspot		Causes the currently selected hex, outlined in red, to blink.
Auto Scroll		Toggles the ability to automatically scroll the map or use scroll bars. The arrow keys can always be used to move scroll the map
Enable Undo		Enables up to a maximum of 10 edits to be undone
Changes		
Undo		Undo's last edit
Redo		Redo's last edit
Help		
Contents		Opens the map editor manual
About		Displays version and copyright information

Tool Bar Icon Key.


New map


Open Existing map


Save


None (Place No Terrain)


Clear Terrain


Deep Water


Field


Brush


Vineyard


Orchard


Trees


Marsh


Swamp


Jungle


Hard Surface


Broken


Sand


Rough


Village


Town


City


Industrial


Rice Paddy


Shallow water


Tall Grass


Impassable

Trail

Secondary Road

Primary Road


Rail


Stream


Gully


Hedge Row


Hedges


Tank Ditch


Medium Bridge *


Heavy Bridge *


Dune


Embankment †


Dike


Escarpment †


Low Wall


Reef


High Wall


Cliff †

Fence


Add / Delete Label


Jump map


Show Labels


Contours


map Elevation


map Coordinates


Undo Change


Redo Change


Help File

**Medium and Heavy Bridge icons are unused.*

† Single hex side features (see pages 8 & 9)