

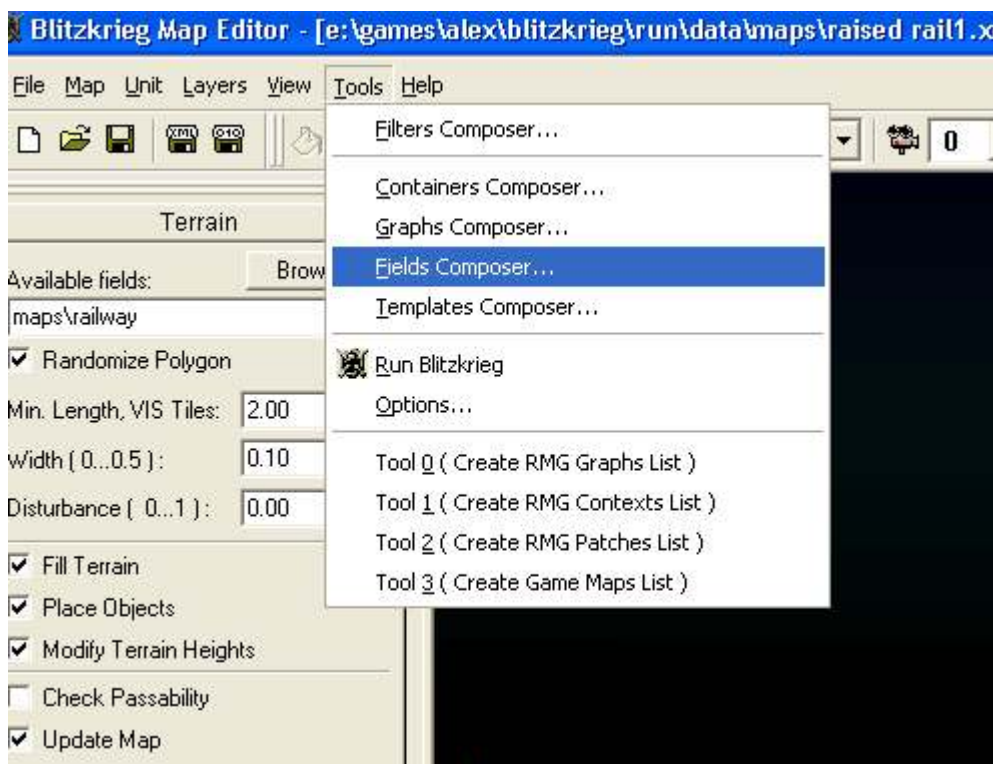
Building level Rail embankments and correcting heights with XML. (V1.0) (Tangram)

- 1 This tutorial has been created to illustrate a few techniques in providing raised level embankments for railway lines but is equally suitable for creating level roads and other built up areas. The technique is cumbersome but worth the visual result as the Blitzkrieg map editor is awful at preserving level ground areas and all too often the only recourse is to zero the ground level undoing much hard work. The operation is in two parts initially using the “Fields composer”, then by saving the map as an XML file and editing it accordingly. Remember to rename and save your map frequently ie. Blitkreigmap1a, Blitkreigmap1b etc both in BZM and XML where and when appropriate and every other time in between, mistakes are made and programs crash so be warned.

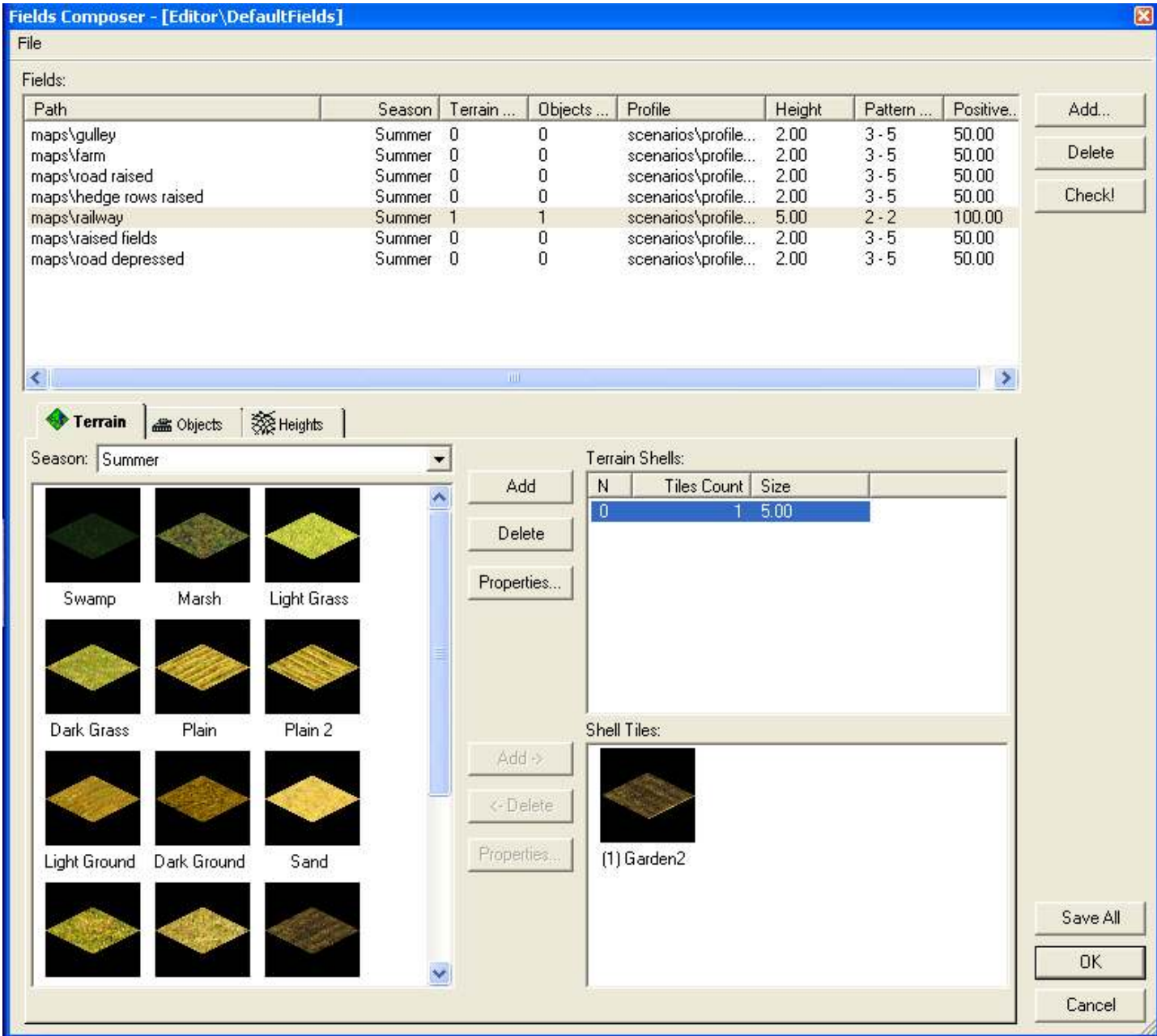
Firstly the map created here is the smallest size possible 1x1 patches or 16x16 VIS tiles it was created purely to illustrate the point, so anything larger than this will have to be scaled accordingly, see the XML section later on.

- 2 Open the Blitzkrieg map editor select File, New, Enter a map size 1x1 or 1 and tick the “Square map” box. (You could create a bigger map but lets keep it simple for now). Give your map a name (be unique) and select a season, any one will do. I then selected a sand terrain tile and filled the entire map with the “Fill” button just to highlight the raised areas.

Use the Fields Composer to create the initial raised embankments and level areas on top.

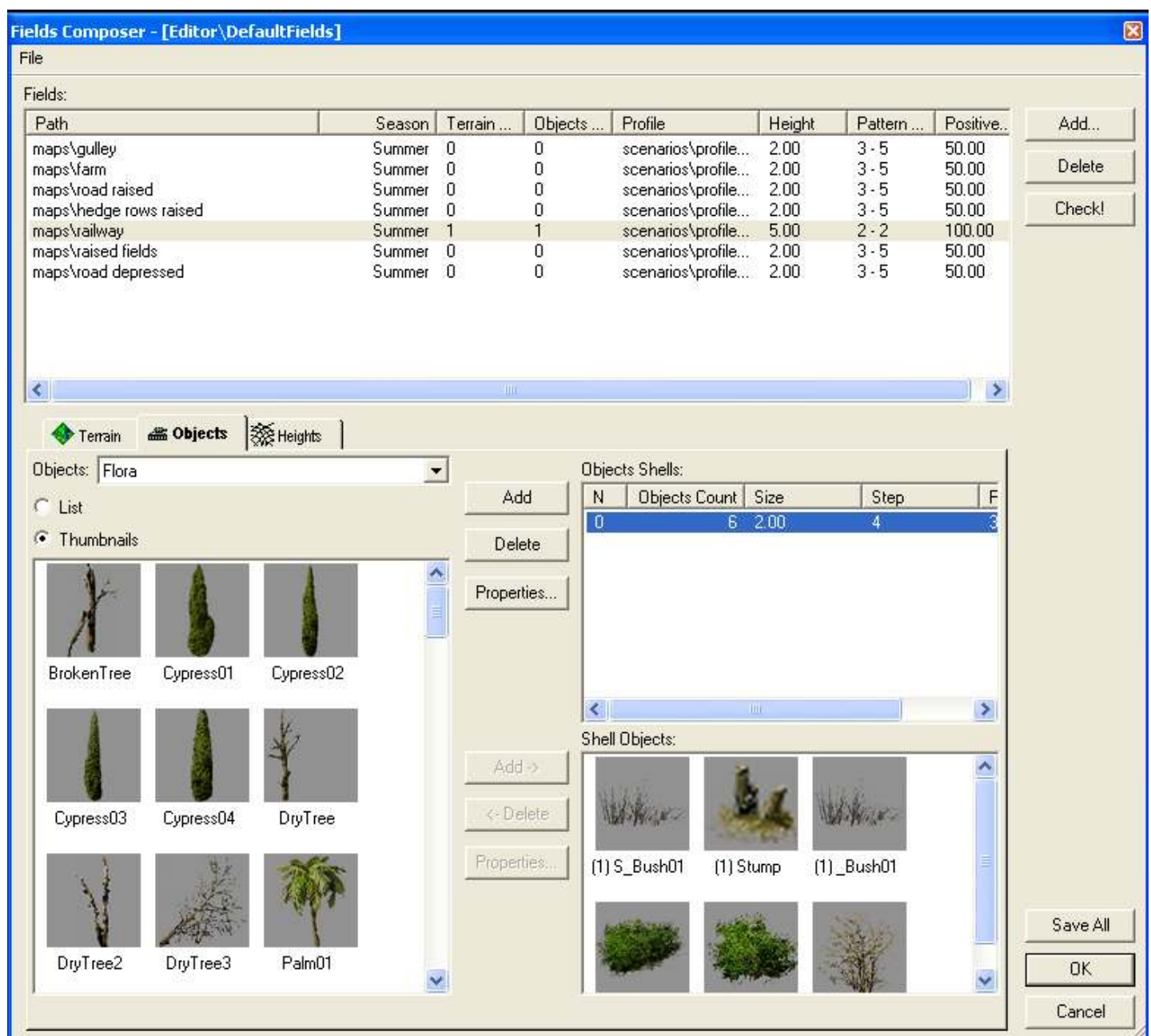


2.01 Using the “Fields Composer” select the add button and give your new field a name and hit OK, now use your cursor to highlight the field name in the “Fields” panel you’ll notice the “Terrain” window has now been populated with field textures. There are 3 tabs for “Terrain”, “Objects” and “Heights” we’ll go through each one.



2.02 Terrain / Field textures can be made relatively complex by including differing textures with varied sizes and varied tile counts a bit of experimentation is required to get things right but being textures the map can always be altered manually or using Fields at a later time. (Note: that “Fill Terrain” and “Update Map” should be ticked, “Modify Terrain Heights” should be switched off and “Place Objects” well that one’s up to you, if you want to add trees etc. then okay, otherwise switch it off). Hopefully I’ll put together a more thorough tutorial on fields. I’ve selected only one tile Garden2 purely to highlight the map with a tiles size of 5.00, for an actual field you’d require a larger size but this is only for a railway embankment. Now onto the “Objects” tab.

2.03 First go to the “Objects shells” window and press the “Add” key to the left of the window, you can add a number of “object Shells” but for now, one will do. Highlight the line No.0 in the Objects Shells Window with your cursor and then click on the properties button on the left, a pop up box will appear allowing you to alter the size of the terrain in VIS tiles, as well as “step” and “probability” both of these control the number of objects placed on the texture. Of more importance here is the “size”, a size of 1 or 2 VIS tiles will place any objects within the first 1 or 2 tiles in from the edge of your field (an easy way of creating hedgerows around a field) leaving the central area bare, “step” is set at 4 and “probability” at 30%. Now go to the drop down “Objects” box that allows you to select any available object, for our purposes, we’ll only use “Flora”. Selecting this gives either a list or thumbnails (choose your preferred method), and simply click on an item and press the “Add” key to the left of the “Shell Objects” window. I’ve added a few tree stumps, shrubs etc. the usual rail side vegetation.



- 2.04 Now for heights, select the “Heights” tab, within “Profile” you’ll probably have the address as “scenarios\profile\profile” or something like this, “Height” i’ve set at 5, “Size” min. and max. are both set at 2 and “Positive” at 100%. “Positive ensures that there is no height variance (feel free to explore different settings). Now press “Save All” and then “OK”.

Fields Composer - [Editor\DefaultFields]

File

Fields:

Path	Season	Terrain ...	Objects ...	Profile	Height	Pattern ...	Positive..
maps\gully	Summer	0	0	scenarios\profile...	2.00	3 - 5	50.00
maps\farm	Summer	0	0	scenarios\profile...	2.00	3 - 5	50.00
maps\road raised	Summer	0	0	scenarios\profile...	2.00	3 - 5	50.00
maps\hedge rows raised	Summer	0	0	scenarios\profile...	2.00	3 - 5	50.00
maps\railway	Summer	1	1	scenarios\profile...	5.00	2 - 2	100.00
maps\raised fields	Summer	0	0	scenarios\profile...	2.00	3 - 5	50.00
maps\road depressed	Summer	0	0	scenarios\profile...	2.00	3 - 5	50.00

☒ Terrain
 ☐ Objects
 ☒ Heights

Profile:

Height: VIS Points (0 ... 5)

Size Min: VIS Tiles (1 ... 16)

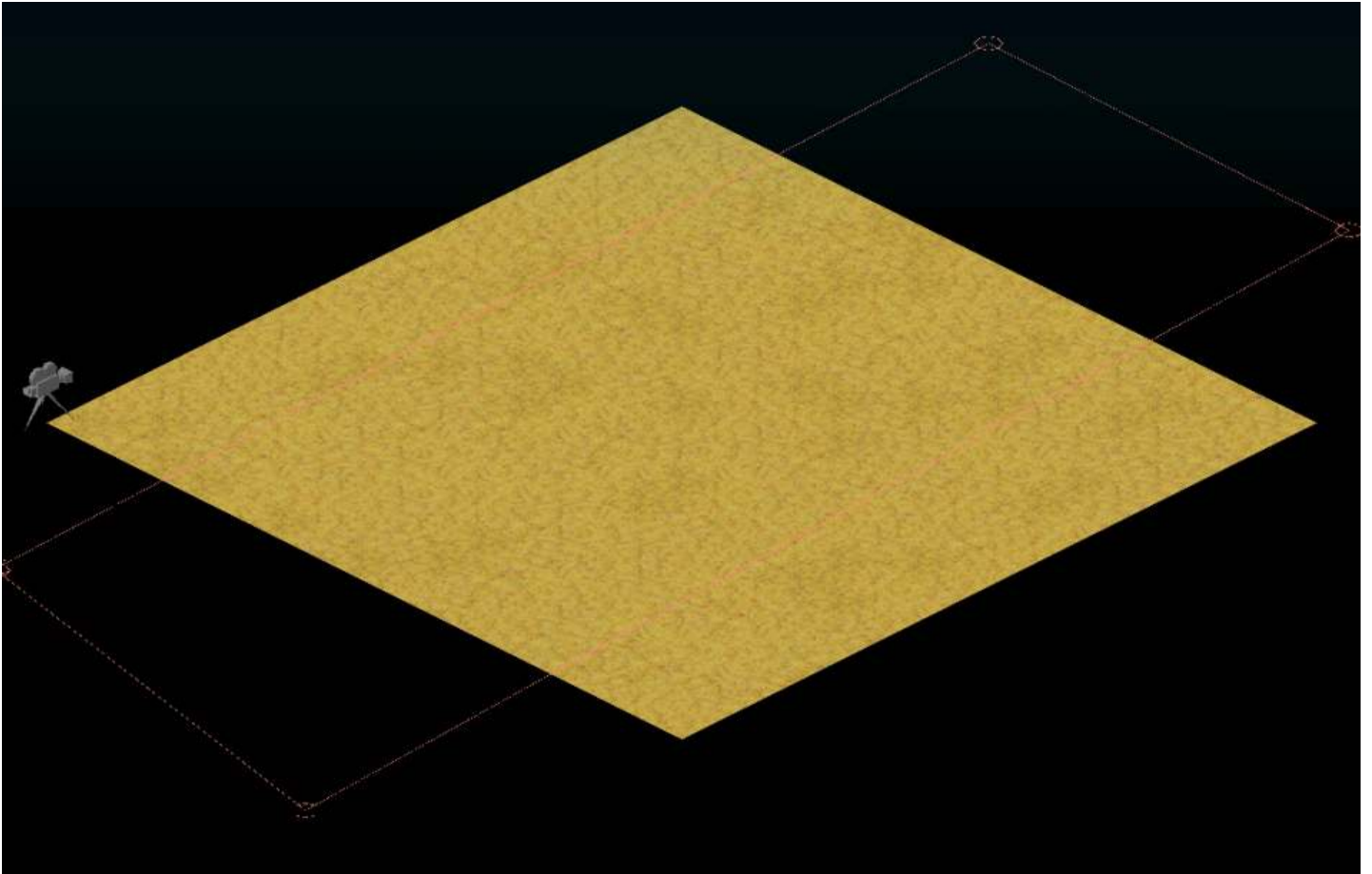
Size Max: VIS Tiles (1 ... 16)

Positive %:

0% 100%

- 3 We're now back with the map editor and about to apply our field, select Terrain and then the Fields tab from the left of the screen. My settings here are "Randomize Polygon" ticked on, "Min. length VIS tiles" 2.00, "Width" 0.10, "Disturbance" 0.00 (this last one is important otherwise your level areas will simply not happen), "Fill Terrain" ticked on, "Place Objects" ticked on, "Modify Terrain Heights" ticked on, "Check Passability" off (don't know how or if this works yet) and finally "Update map" ticked on.
- 3.01 Selecting your field, if it fails to appear in the drop down fields list use the browse button to find where you've saved it, they are saved as XML files and I normally store mine in the maps folder but they could be anywhere (root of your C drive anyone?).
- 3.02 Once selected you're almost ready to go, however a few pointers, rail lines in Blitzkrieg should be set at width 6.00 with 100% opacity, a width of 6 is approximately equal to one VIS tile so our embankment has to have a level area of at least 1 VIS tile for a single track railway and 3 VIS tiles for a double track. Now the setting I've already given produces an embankment area of 3 VIS tiles on either side, so for a single track you need a field outline at least 7 VIS tiles wide and 9 VIS tiles for double track.
- 3.03 While figuring out where to put your railway lines bear in mind the width required, ensure you toggle on the "Displaying Terrain Tile Grid" on the map editor toolbar, it makes life much easier you can use this for precise locating of node points, the counting in of VIS tiles and just getting a straight line, it could also be worth while to lay out a track on the map and place some marker object a tree or post at either side of the track at the edge of the 7 or 9 VIS tile range and then deleting the track. Want to copy a previous layout other than counting and writing it down you could use a piece of clear acetate (the sort used for laminators or overhead slides) place it on your screen surface (it will normally be held by static) and mark the required grid points with a drywipe marker pen (works a treat). Remember that scrolling in the map editor is available only from the keyboard arrow keys.
- 3.04 Now pick the points with your cursor (you'll see a small pink circle at each node). The embankment here is rectangular so i've picked only 4 points for my field, the start point is outside the edge of the map as the rail line is going off the map edge, the next 3 points once again are all past the edge of the map to produce my rectangle, on a bigger map you'll need an awful lot more node points for your field. If you place a wrong node at this stage you can right click on your mouse and the last node will be deleted this can be repeated until you're back at your origin point. Once you've placed your 4th node you can press the SPACEBAR, ENTER or RETURN key but only press one and only once, this will close the polygon, you now have the possibility of moving your node points to correct any errors, left click on the node and drag it to its correct location, you cannot insert new node points and there is no undo command (so make sure you saved the map), finally press the SPACEBAR, ENTER or RETURN key and hey presto your field.

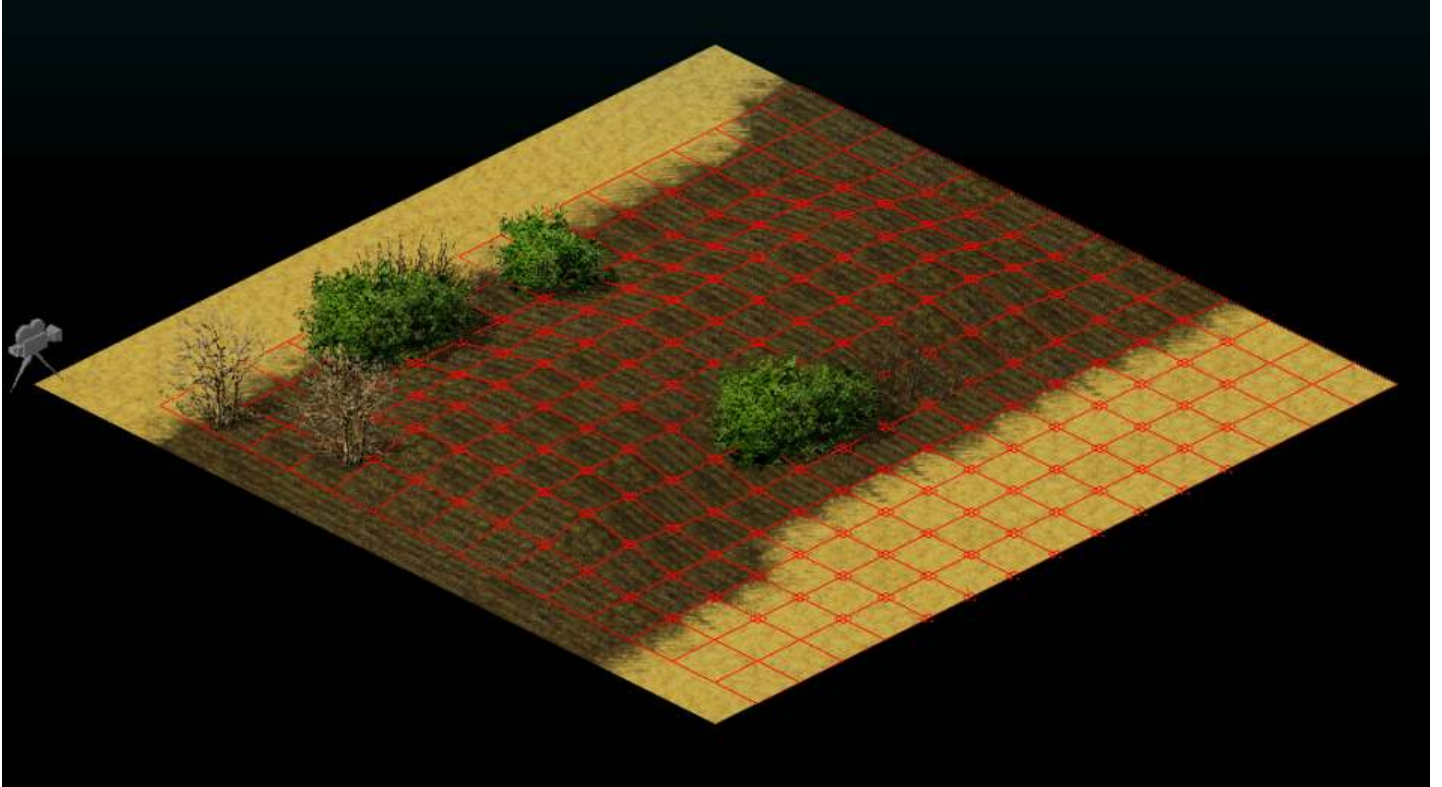
Pick the node points.



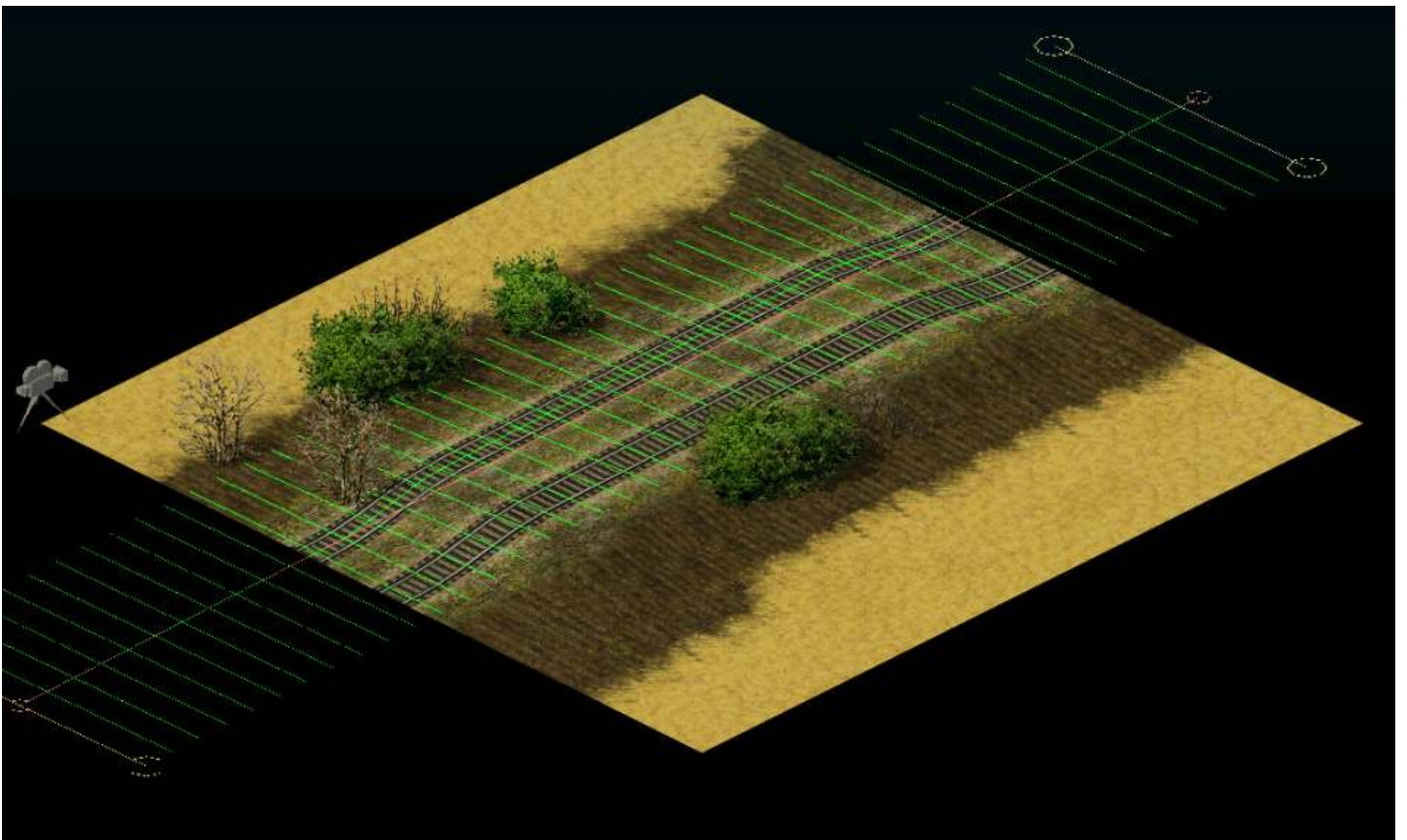
The field has now created the embankment below shrubs and all.



Laying a mesh over the map highlights the contours and shows how our embankment is not consistent at the map edges, this is a flaw in the field generator as it always levels out to the height of the existing terrain at the map edge.



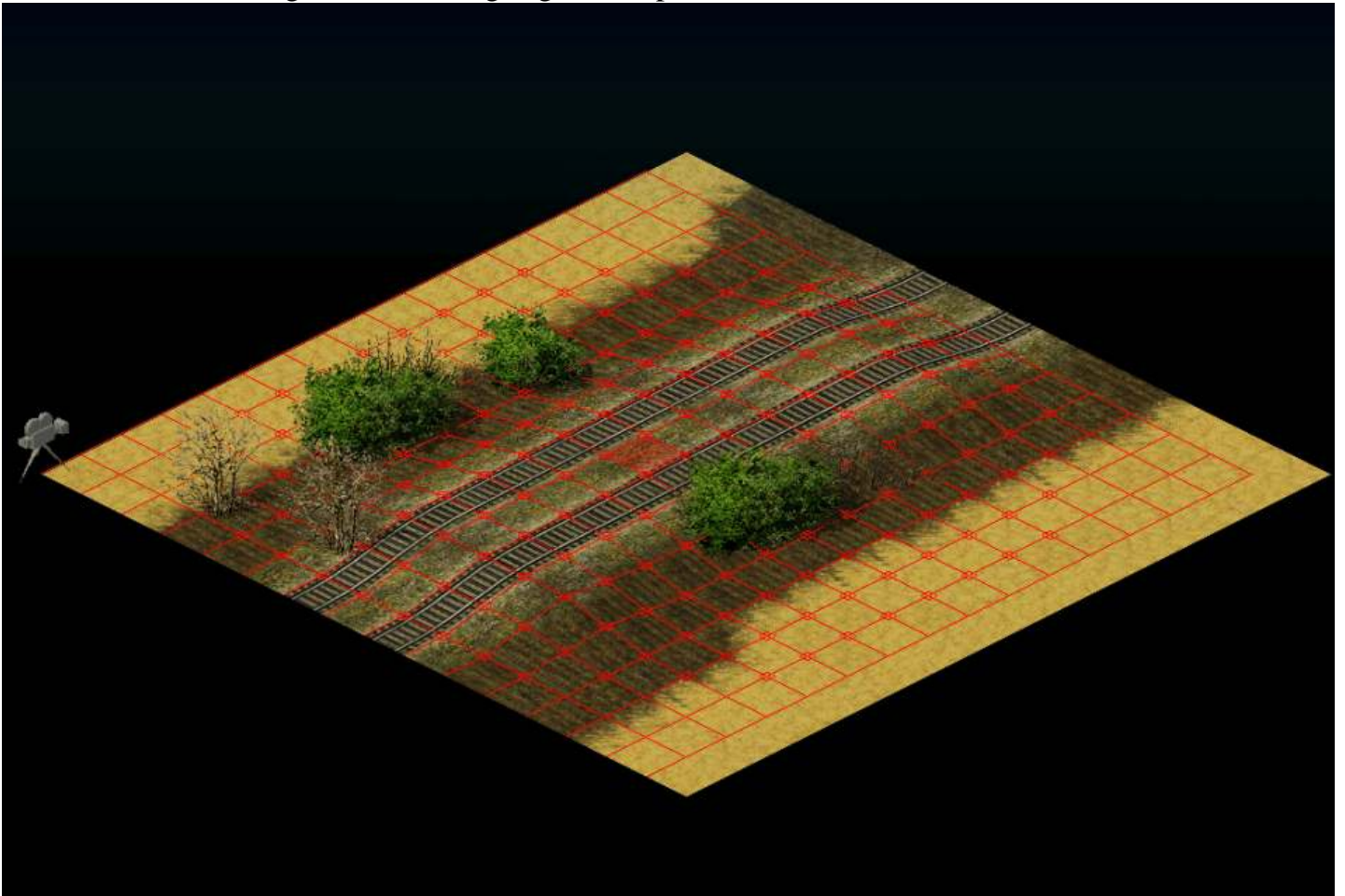
I'm now placing the rail track using "Entrenchments", "Roads" tabs on the left of the screen, railroad width 6 opacity 100. A space at least equal to the track width gives a reasonable double track.



The double track below (the shrubs can be manually edited at any time). Make sure you go to the Terrain, Heights tab and press Update, your track should appear as below.



The mesh just highlights the contours again (note: this is not the grid display but the Height brush, it is bright red so it highlights the point a bit better).



4 Hope you've been saving the map frequently, things now get a bit awkward so if you're happy at each stage, save it otherwise reload your map or start again. Now go to File and save as XML. Just when you thought you'd figured out the map origin points (VIS and Script origins are taken from the Western corner of the map), life gets rather screwy, in XML the first node point on the map is in the Northern corner and progresses East to the far end of the map, it then steps one node West from the Northern origin point and progresses East again it does this at all node points until reaching the Southern corner of the map, (see figure below).

4.01 This map is only 1x1 patch or 16x16 VIS tiles or 1024x1024 Script points or 17x17 node points. We're concerned with the XML node points which produces 289 points or items, however the map coding in XML gives item 1 in the Terrain\Altitudes\Items table as a measurement of the node points 17x17 for the overall map and so our 289 items become items 2... to ...290 these are the height points we're concerned with. So you must always add 1 to your maps total node points to figure out exactly where you are in the XML table.

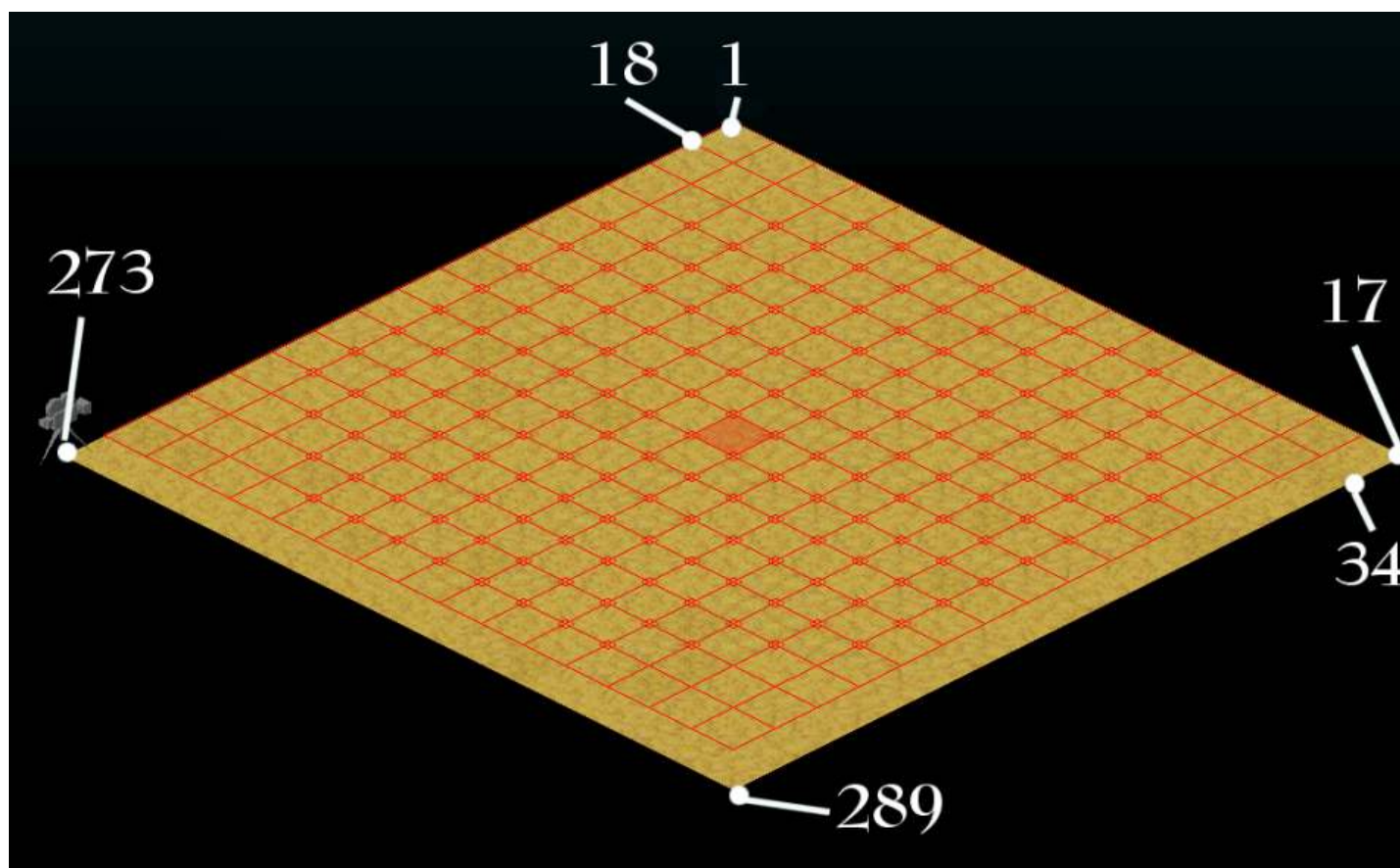
Note:

A map of 2x2 (32x32 VIS tiles) = $(32+1) \times (32+1)$ node points = 1089 node points + 1 for XML

A map of 3x3 (48x48 VIS tiles) = $(48+1) \times (48+1)$ node points = 2401 node points + 1 for XML

A map of 4x4 (64x64 VIS tiles) = $(64+1) \times (64+1)$ node points = 4225 node points + 1 for XML

And so on (hope that doesn't sound like gobbledygook).



5 I've used XMLspy (home edition, there is a demo copy available, fully functioning for 30 days) from Altova, you can use other programs even Notepad but you don't get the nicely laid out tables just a long text string (pile of spaghetti more like) shop around, XMLspy works for me if anyone knows of something better or cheaper then let the whole community know.

Season	0
MissionIndex	-1
GameType	0
AttackingSide	0
Terrain	
tileset	terrain\sets\1\tileset
crosset	terrain\sets\1\crosset
noise	terrain\sets\1\noise
patches	
tiles	
Rivers	
Roads	
Altitudes	
item (290)	
size_x	size_y
Height	Shad
1	17
2	17
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	

5.01 You can see item 1 in the table above gives the map size in node points 17x17, items 2 and onwards have both a height and shade value, we're really concerned with the height value but I suppose the shade value should be corrected as well to match similar height points.

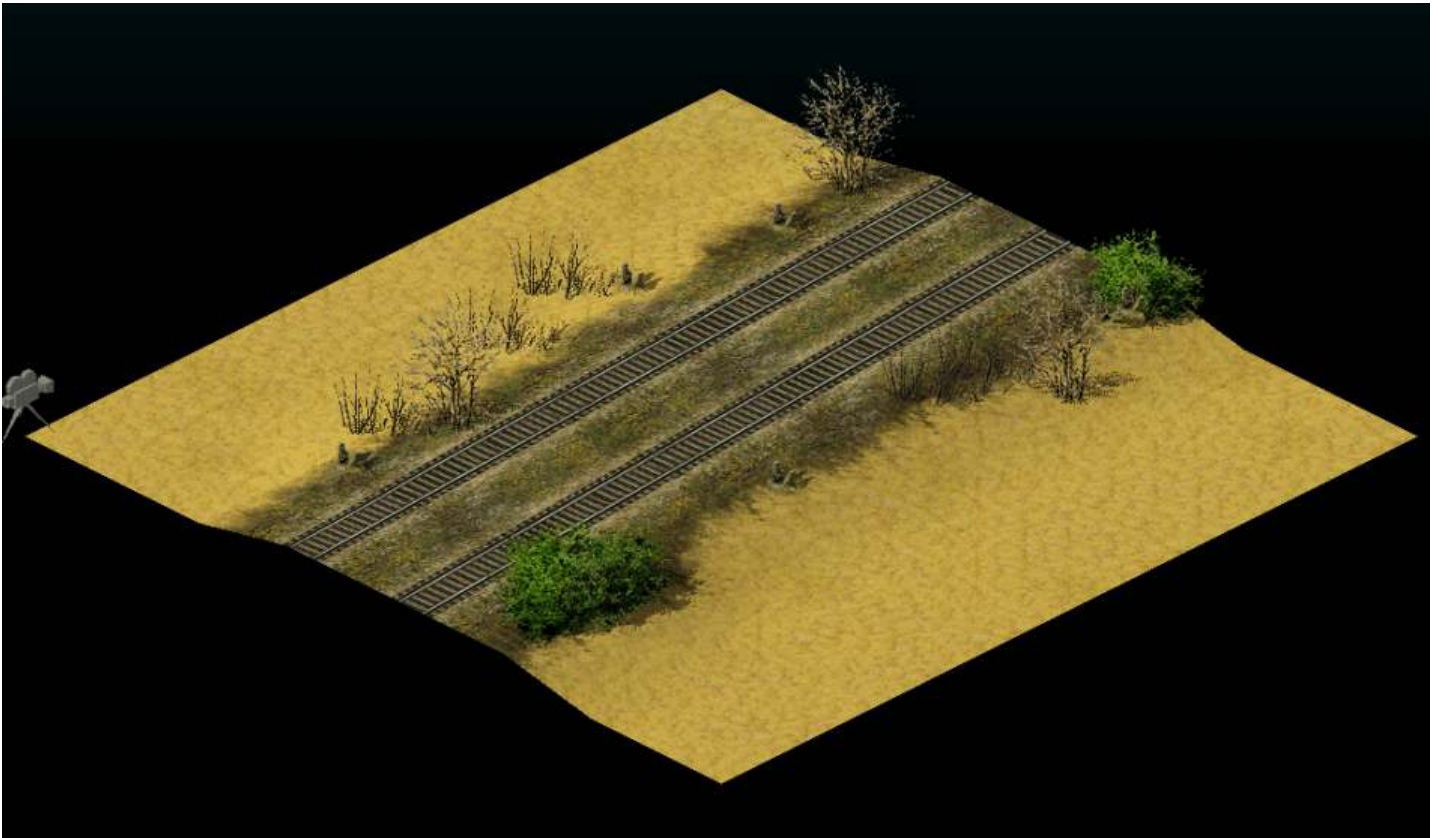
18		0	208
19		0	208
20		0	208
21		0	208
22		0	208
23		0	208
24		0	202
25		0	197
26		0	197
27		0	197
28		0	197
29		0	202
30		0	208
31		0	208
32		0	208
33		0	208
34		0	208
35		0	208
36		0	208
37		0	208
38		0	208
39		0	208
40		0	212
41		4.44445	206
42		8.88889	189
43		8.88889	184
44		8.88889	184
45		8.88889	179
46		4.44445	185
47		0	202
48		0	208
49		0	208
50		0	208
51		0	208
52		0	208
53		0	208
54		0	208
55		0	208
56		0	208
57		0	217
58		8.88889	219
59		17.7778	206
60		17.7778	197
61		17.7778	197
62		17.7778	185
63		8.88889	179
64		0	197

5.02 The table above shows item 41 to 46 with lower height points than 58 to 63 we can also see that there are 11 zero height points between our raised elevations, it's also the case that at the edge of the map the points are all zeroed so if we count back up the table 11 items 30 to 40 are zeroed correctly but items 24 to 29 should be given a raised elevation. So we copy the values from items 58 to 63 and paste them to line 41 and 24 respectively. We then have to do the same at the opposite end of the table, save the XML file and then reload the map in the Blitkreig map editor (Note: you must reload otherwise the newly edited XML will be overwritten by the map editor).

5.03 And voilà, well not yet only one end of this map has been altered to highlight the difference (yep and those with good observation will have noticed it's not the same map, did I not go and overwrite some of my screen captures, sods law, save rename save rename blah blah get the point, it's a must).



Yeah that's it. (What happens if I place a hill next to the track....?##~~, (see below)).



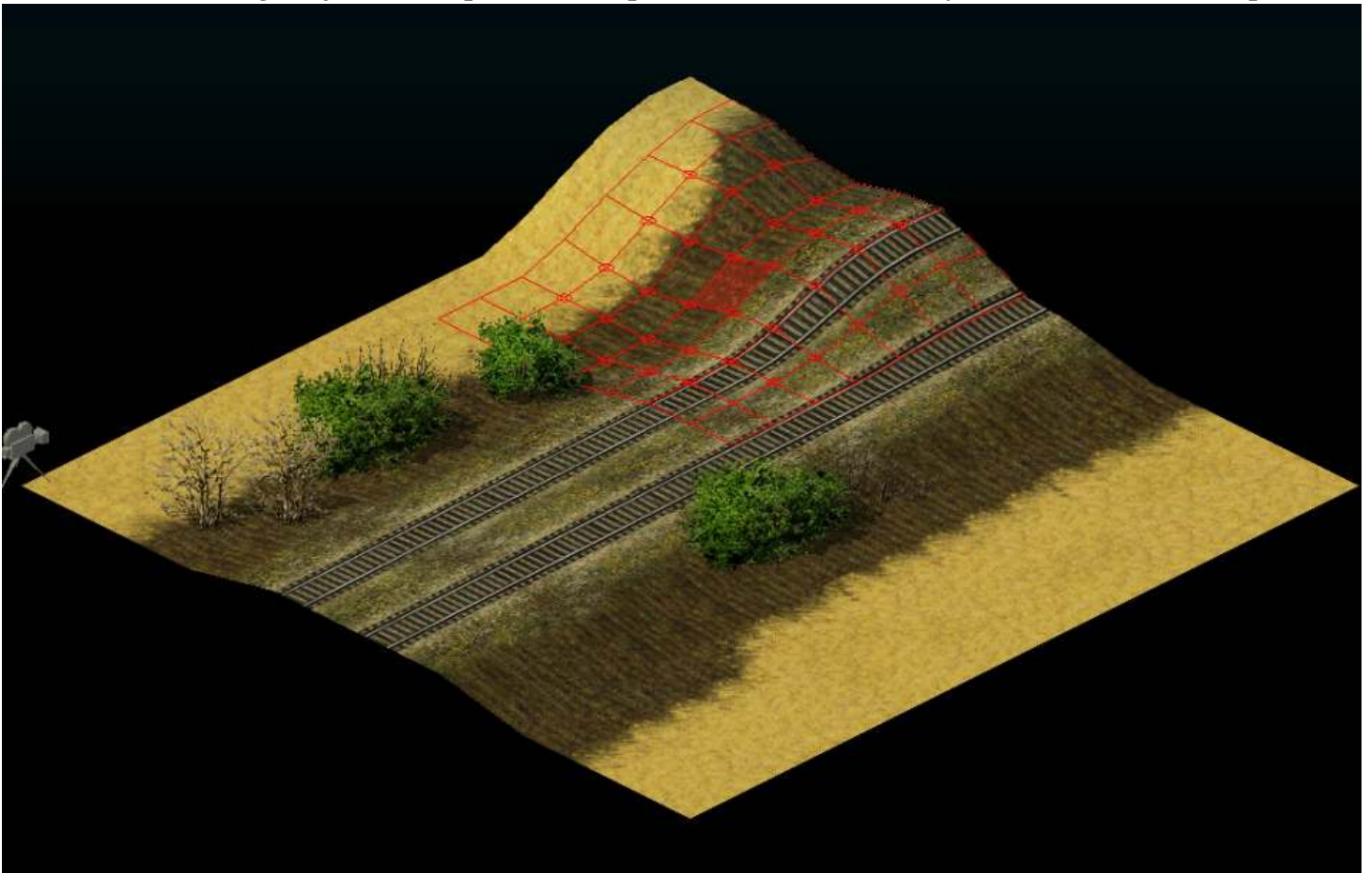
- 6 Well to illustrate the point with hills and other deformations, I created a small hill in the Northern corner of the map using Terrain, Height tools (at least we know that this corner will be item 2 in the XML table).



Press the update button and there's the hills with a deformed rail track, not so good.



Here's the mesh again just to emphasise the point, how often have you seen this on a map.



6.01 Rename and Save the map again in XML, (at least you'll have something to fall back on if things go a bit pear shaped). We can see below the differing heights at item 2 etc. etc.

Terrain

tileset

terrain\sets\1\tileset

crosset

terrain\sets\1\crosset

noise

terrain\sets\1\noise

patches

tiles

Rivers

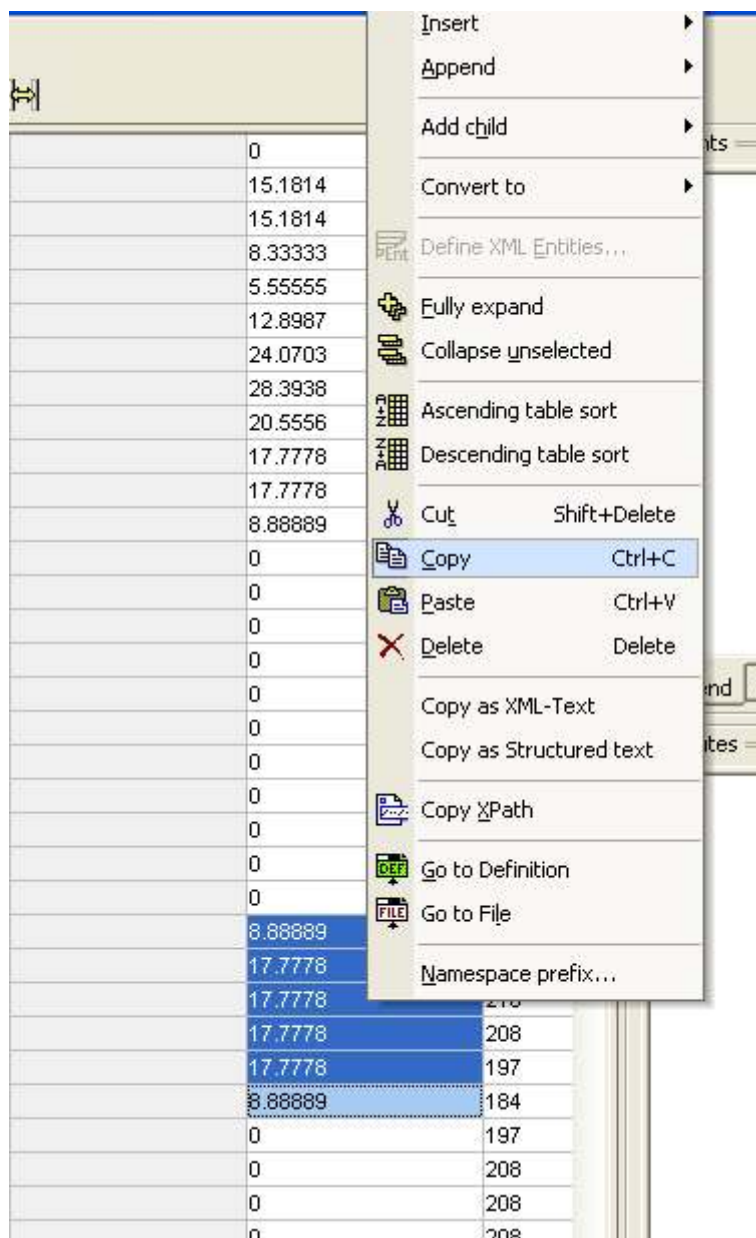
Roads

Altitudes

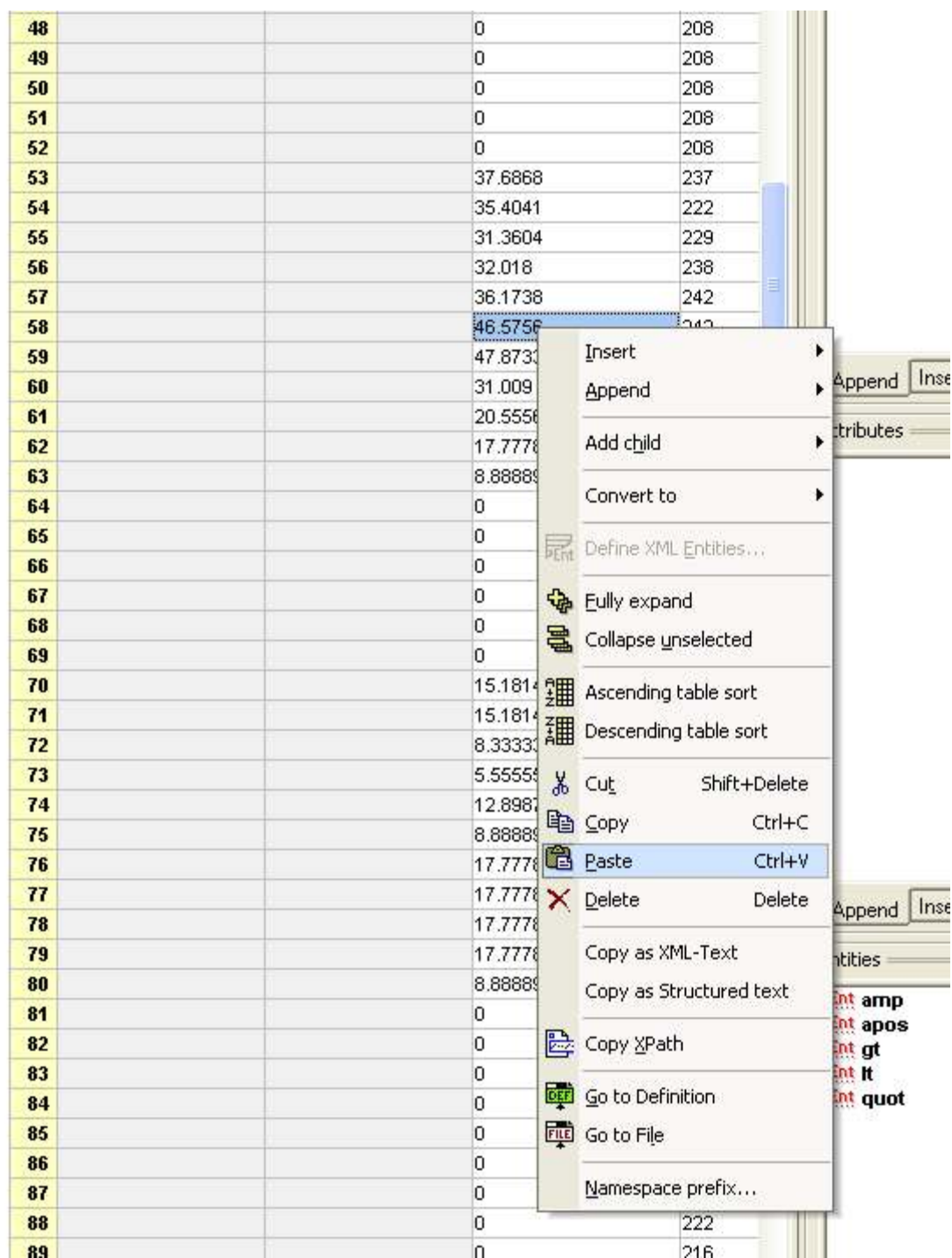
item (290)

	= size_x	= size_y	= Height	= Shad
1	17	17		
2			67.5658	204
3			65.1317	203
4			63.0735	183
5			49.9002	170
6			46.0529	211
7			56.4547	220
8			60.695	183
9			41.13	153
10			20.5556	174
11			17.7778	193
12			8.88889	185
13			0	197
14			0	208
15			0	208
16			0	208
17			0	208
18			0	208
19			68.3772	212
20			64.54	219
21			67.6123	215
22			62.0567	174
23			49.1886	202
24			58.8889	221
25			64.5322	191
26			47.2082	153
27			22.8383	163
28			17.7778	190
29			8.88889	184

Fortunately we can use our copy and paste trick in XMLspy, counting the points on the map as before. So here I've copied the same values as before, ones we already know to be consistent with our embankment heights.



Now it's all just a click and paste away from rectifying our map



The correct heights are now entered, so once again it's time to save our XML file in XMLspy and then reload the map in the Blitzkreig map editor.

	= size_x	= size_y	= Height	= Shad
1	17	17		
2			67.5658	204
3			65.1317	203
4			63.0735	183
5			49.9002	170
6			46.0529	211
7			8.88889	220
8			17.7778	183
9			17.7778	153
10			17.7778	174
11			17.7778	193
12			8.88889	185
13			0	197
14			0	208
15			0	208
16			0	208
17			0	208
18			0	208
19			68.3772	212
20			64.54	219
21			67.6123	215
22			62.0567	174
23			49.1886	202
24			8.88889	221
25			17.7778	191
26			17.7778	153
27			17.7778	163
28			17.7778	190
29			8.88889	184
30			0	197
31			0	208

6.02 And voilà a nice level track with a hill alongside, without deformation. Now we should save the map again both as an XML and then a BZM file so we can edit as normal and add it to a PAK file.



(Note of warning: CDV/Nival do not recommend using an XML editor and encourage you to use the map editor, you'll notice that while in XML many if not all functions can be changed so be careful, all we've altered here were height values but much more can be done including ruining considerable map making time if you get it wrong, be careful rename at each stage and constantly save your map and or XML version).

Cheers for now, I'm off to rest my burned out eyes.

Tangram