

# 1. Introduction

Creative Golf Editor software is developed by the Datacrea Company. The application is delivered with the Creative Golf game software and allows create or edit very realistic golf courses. Created or modified golf courses are possible to integrate into the Creative Golf game which provides a real-to-life playing experience.

## Conditions for playing of modelled golf course in Creative Golf game

The modelled golf course is playable only on the Creative Golf game installation where the model was created. The licensee can create model only for his private use, he cannot further distribute it or publicly present it.

Datacrea company is not responsible for the quality of such a model, used name or misuse of a third-party trademark, for example, but not exclusively, name of an existing golf club or golf course.

Datacrea company is not responsible for the third-party models like houses, benches, billboards and so on inserted to modelled golf course.

This responsibility is solely on owner or subscriber of license of the Creative golf program and its editor.

By using the Creative Golf editor, the owner or subscriber of Creative Golf editor license agrees to these conditions.

## Conditions for distribution of modelled golf course to other users

If the owner or subscriber of Creative Golf editor license would like to provide the created model also for playing by other users of Creative golf game, it is necessary to send the model to Datacrea company and ask for adding it to the Courses Library product.

In case of real existing golf course, Datacrea company requires to provide also a written approval from the owner of golf course to use its branding name, logo and given model of golf course for playing in Creative Golf game.

In case of including of some additional third-party 3D models (like houses, benches, bridges and so on) to the golf course model, Datacrea company requires written consent or invoice to prove the rights for next distribution of these models.

Datacrea company reserves the right to review and if necessary also improve the quality of the created model, contact owner of golf course to confirm the rights for branding name distribution, and based on this to make decision about its inclusion or non-inclusion to the Courses Library product.

The owner or subscriber of Creative Golf editor license agrees that the model will be distributed without any fees to the author of model and it will be distributed exclusively through distribution channels of Datacrea company.

Datacrea company reserves the right to remove a golf course from library in the case of justified third-party complaints about the violation of their business rights or branding name.

By using the Creative Golf editor, the owner or subscriber of Creative Golf editor license agrees to these conditions.

## Hardware requirements

The Creative Golf Editor software is designed for Windows 10, 11 operating systems. We recommend install it on a computer with Intel Core i3 processor or higher, 2GB RAM minimum and dedicated graphics card with at least 1GB video RAM with pixel shader 3.0 or higher.

## Installation and activation

Installation process consists of installation of Creative Golf game then Creative Golf Editor software

1. Install basic setup of Creative Golf
2. Install Creative Golf Editor
3. Activate installed software after installation. If internet connection is available, this step is performed automatically.

Activation is required for licensing of the Creative Golf game.








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### 3. Recommended sequence for golf course modelling

- In small starting dialog [Select Action](#), choose New Map button and fill size of map and units in [New Map](#) dialog.
- [Save](#) the map. The map can be saved to any directory, but the game loads maps only from Media/Maps subfolder of installation path.
- Use [Import Surface](#) command from File menu to import terrain to map.
- Familiarize yourself with the commands for [changing the view](#) of the camera, using mouse buttons for zoom, pan, rotate scene view.
- Assign Satellite image on terrain via [Satellite Image](#) command from Map menu. Use **Tab** key to switch between satellite image and textured terrain.
- Define Golf Course basic information like [Holes](#), [Course Properties](#), [Outer](#) / [Inner Boundary](#), [Tees](#) via commands from Course menu.  
Run [Update Map](#) command from Map menu to see updated positions of sticks along outer, inner boundaries.
- Draw [Material curves](#)  and assign textures from Library in [Texture Manager](#)  dialog from Textures menu.  
Be sure the move enablers [Move Curve](#) , [Move Grip](#)  are switched on to be able to perform desired editing of grip points or moving whole curve. We recommend to use right click menu command Offset Curve to draw fringe curve derived from green curve.  
Run [Update Map](#) command from Map menu to see updated appearance of scene after editing of material curves.
- Add [grass](#) to material curves of certain type. For editing of grass run right click menu command Edit Grass on any curve with grass. Grass is always regenerated on all curves. It is possible to generate grass also on Terrain curves, what is good to use, because grass on terrain curves can be populated through larger areas with various material curves (various textures) without influence of material curves priorities.
- Use [Modeling](#) commands to adjust the terrain shape. Even good terrain with good resolution requires minimal [relaxing](#) of bunker edges.
- Drag objects and trees from [Library Manager](#). Use [Generate Group](#) to insert group of trees. Be sure the move enabler [Move Object](#)  is on to be able to move objects in map. To select more objects, switch on [Multi select](#) enabler . It is good to embed some brush kinds of trees little bit under terrain using right click menu command Object Height. We recommend to use different seeds, rotation and scale for trees of the same kind which are next to each other in scene.  
Run [Update Map](#) command from Map menu to see updated shadows from terrain and objects after terrain modeling, or manipulating with objects.
- Use [Visibility Filter](#)  to switch off visibility of scene items which hinder to see modeled items. For example, it is possible switch off the visibility of trees to model terrain.

- Use [Selection Filter](#)  to switch off selection of scene items which hinder the currently edited items. It is good to switch off selection of large items, or items which are not edited for a long time - for example water surfaces.
- Use context menu on selected object to [Manipulate](#) with objects
- Change [light properties](#) to update lightmap. Run Update Map to see the changes.
- Insert random sounds of birds to scene using [Ambient Sounds](#) command from Objects menu.
- Edit birds flying in scene using [Map Flocks](#) command from Objects menu.
- Drag correct background to scene from Background directory of [Library Manager](#). Change its height and rotation using [Background Rotation](#) and [Background Height](#) commands from Objects menu. See also how to create your own new background and add to the library.
- Draw [Hole Flyby curves](#) from Course menu to provide fly by before each hole in golf game
- Draw general [Presentation curves](#) from Presentation menu to provide presentation fly-by of course. This can be visible in Hole Flyby menu of Course Viewer or can be used for creating of video in editor.
- Be aware of possible [Performance](#) problems of scene.

## 4. File Menu

### Run Creative Golf Editor software

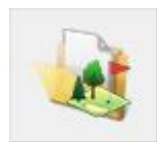
After Creative Golf Editor software is launched, the Select Action dialog appears.



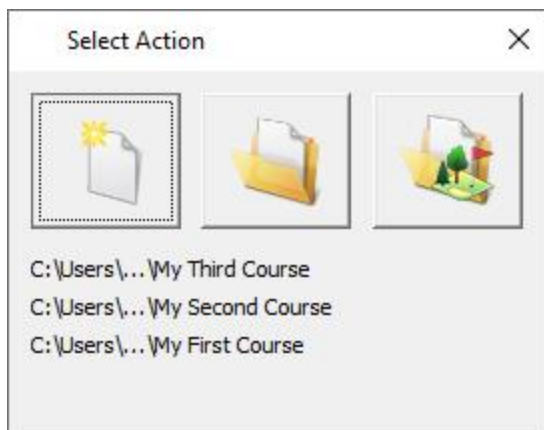
Click the New Map button to create a new map



Click the Open Map button to open an existing map



Click the Open Sample Map button to open the existing map prepared as the sample for you




Or click on any of the buttons listed last edited map to open it

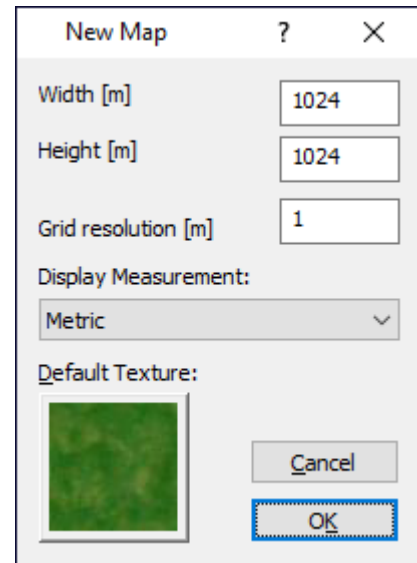
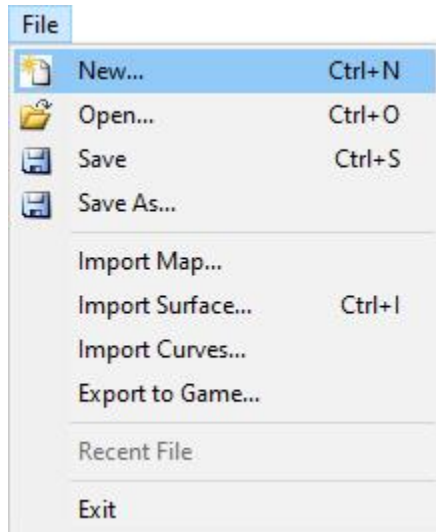


## Create New Map

To create a new map, use New command.

You have the following possibilities to create a new map:

- From File drop-down menu select New
- Using icon from the toolbar 
- Using keyboard shortcut: **Ctrl+N**



In New Map dialog you can set the size of the new map and select Display Measurement in metric or imperial units. Map size can be in the range 64 m – 16384 m. The max area depends on free computer resources (RAM, GRAM)


You can also click on the Default Texture button to select the texture of rough material but you can do it later too using Texture Manager dialog.

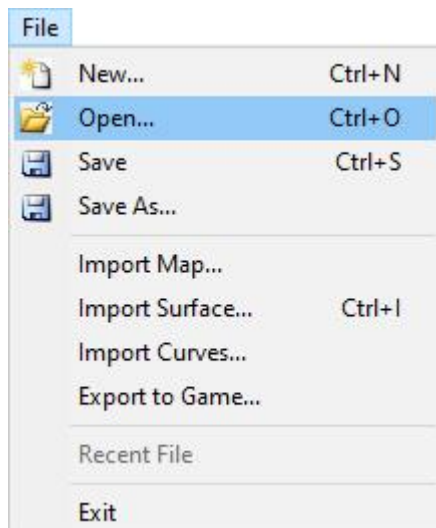
By clicking the OK button, you can confirm changes and create a new map.

## Open Existing Map

To open an existing map, use Open command.

You have the following possibilities to open an existing map:

- From File drop-down menu select Open
- Using icon from the toolbar 
- Using keyboard shortcut: **Ctrl+O**



### Note:

You cannot open multiple maps simultaneously.

### Files of type:


The following file name extensions are supported:

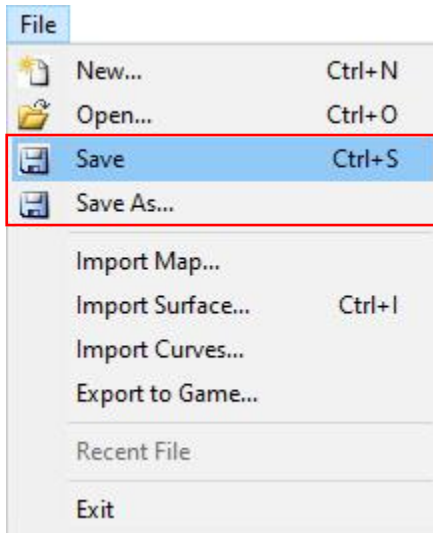
- Course Creator Map Files \*.cgc
- Course Creator Map Package Files \*.cgl

## Save, Save As

To save the active map, use Save or Save As commands.

You have the following possibilities to launch Save or Save As commands:

- From File drop-down menu select Save or Save As
- Using icon from the toolbar 
- Using the keyboard shortcut: **Ctrl+S**



By using Save command you can save the active map to its current name and directory. When you save the map for the first time the Save As dialog pops up and you can set the name of the map and the destination where to save it. If you want to change the name or directory of an existing map please choose the Save As command.

### Files of type:

The following file name extensions are supported:

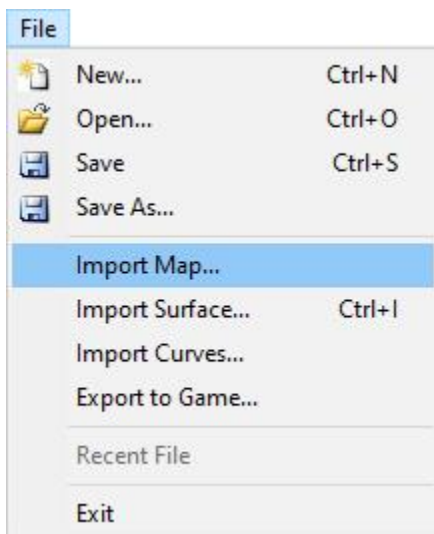
- Course Creator Map Files \*.cgc
- Course Creator Map Package Files \*.cgl

## Import Map

To import data from another map file, use Import Map command.

You have the following possibility to launch Import Map command:

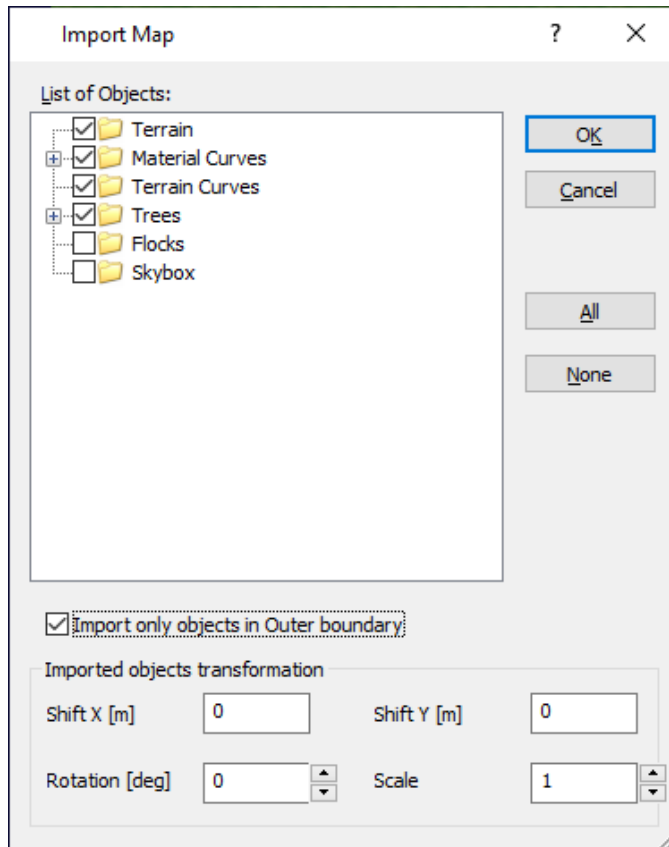
- From File drop-down menu select Import Map



When the Import Map command is launched the Open dialog pops up where you can navigate the file to import data from. Select it and click the Open command.

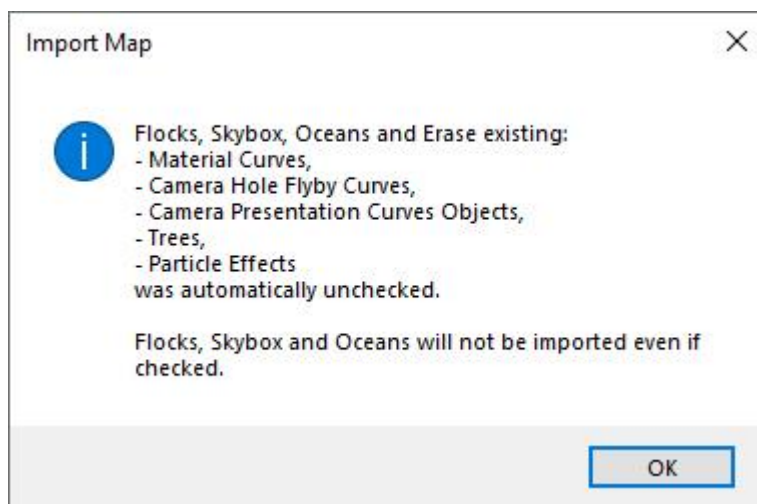
In the Import Map dialog use the checkbox to select desired data to import. You can also use All button to activate all checkboxes or None button to clear all of them.

You can also change the position of imported objects under Imported objects transformation



If you check the Import only objects in Outer boundary checkbox a dialog pops up to inform you which objects will not be imported.

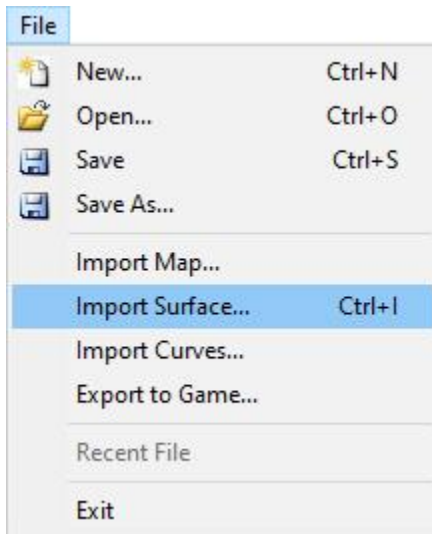
**Note:** Be sure the current map size is the same as the size of the imported map. You can check it by using Map Properties command from Map drop-down menu



## Import Surface

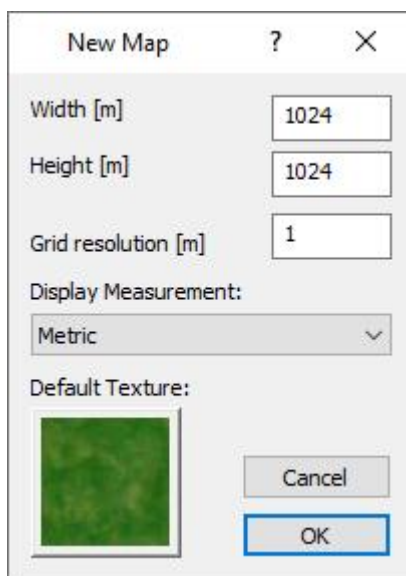
To import terrain or update part of the terrain in the map, use Import Surface command. You have the following possibilities to launch Import Surface command:

- From File drop-down menu select Import Surface
- Using the keyboard shortcut: **Ctrl+I**



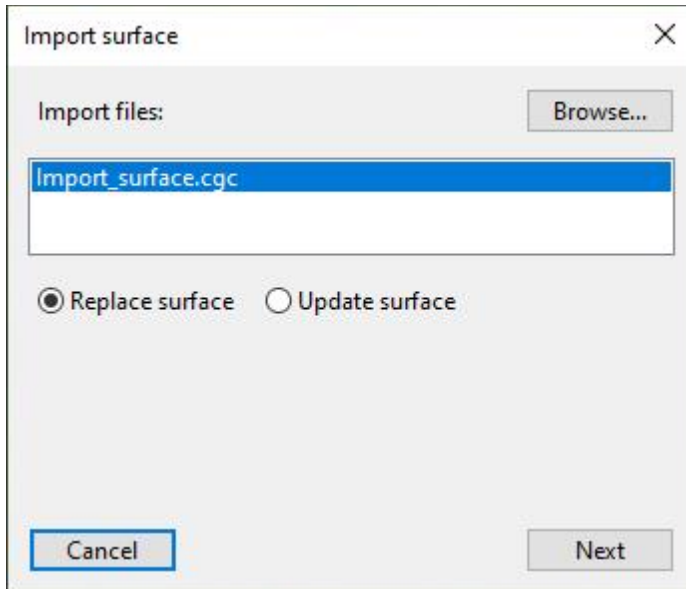
### How to do it:

- 1) In the up menu File / New I'll create a new map with approximately the same size as the terrain which I want to import. Map is made from blocks in size 64x64m, so created terrain must be multiple of number 64. Otherwise will be the size of the terrain rounded to this number.  
The most use size of terrain is 1024x1024m, 2048x2048m, 4096x4096m (the maximal size of the map).



- 2) I'll save the satellite image for this terrain (with the same position and size as the terrain) into the folder where I have .xyz terrain data. The name of this image will be preview.jpg

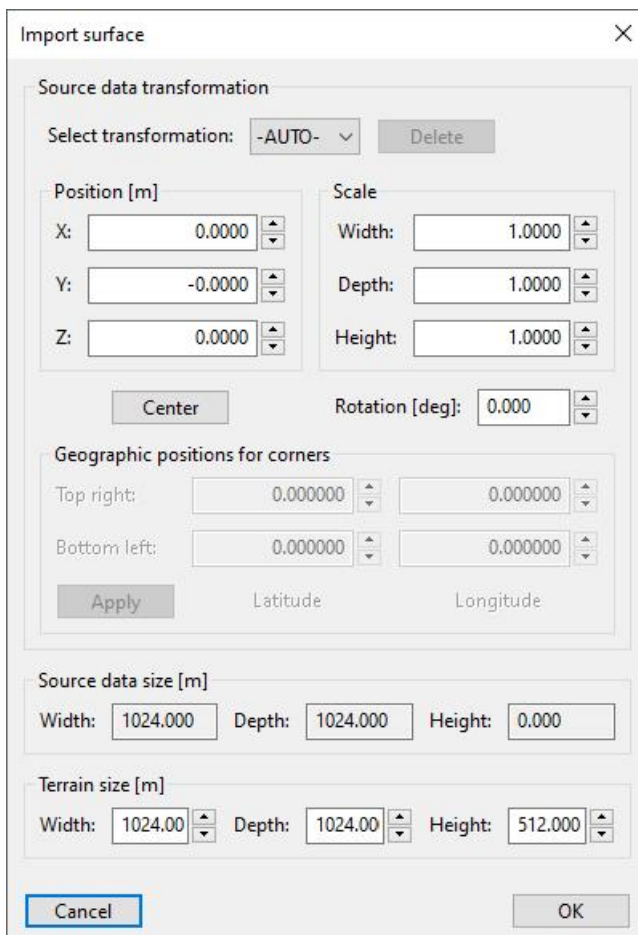
- 3) In the up menu File / Import Surface I'll choose .xyz terrain file. In Import Surface dialog I'll choose the file and option Replace surface.



Press the Next button to continue.

Import terrain can take a while depends on density of imported net of terrain.

- 4) After loading of terrain we have another Import Surface dialog with information about the terrain.



I don't see terrain so I'll click on Center button. Terrain will be centered on the created map.

Import surface

Source data transformation

Select transformation:

Position [m]

X:

Y:

Z:

Scale

Width:

Depth:

Height:

Rotation [deg]:

Geographic positions for corners

Top right:

Bottom left:

Latitude Longitude

Source data size [m]

Width:  Depth:  Height:

Terrain size [m]

Width:  Depth:  Height:

Now I can see a red frame which means the border of imported terrain. Because the name of satellite image is preview.jpg, now I can see it with 50% opacity in the same place and area like terrain.

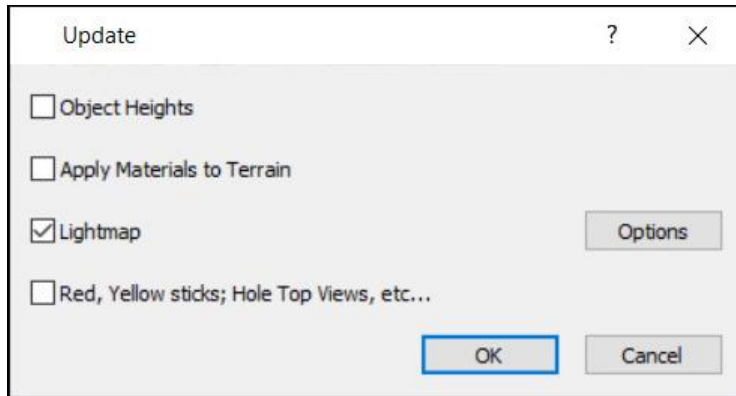
Press the OK button to continue.

Save transformation

Enter transformation name,  
or leave empty to continue without saving

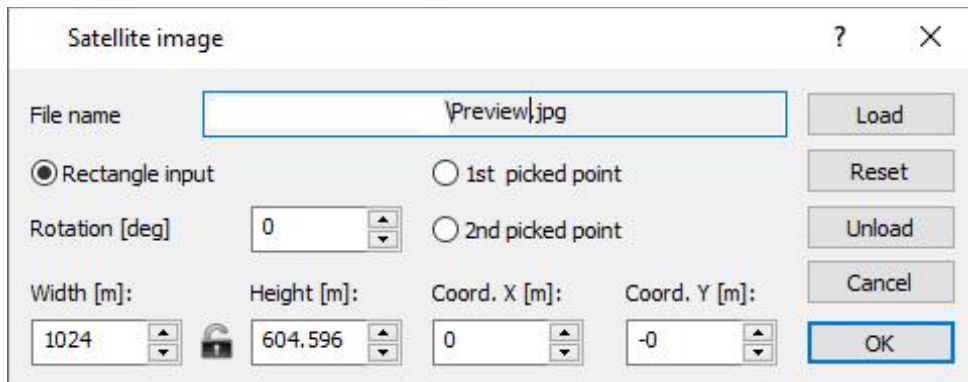
Now I can see the window Save transformation where I can save my settings by writing the name of these settings. If I'll not use any name, I can continue without saving of settings. Press the OK button to continue.

- 5) Terrain was successfully imported into the map. In the up menu I'll choose Map / Update Map and I'll let marked only option Lightmap



Press the OK button to continue.  
Shadows will be applied on imported terrain.

- 6) In the up menu I'll choose Map / Satellite Image. By clicking on Load I'll choose my satellite image preview.jpg (or other with the same area and size).  
I'll set the same size like was on terrain (Width and Height). In case of nonstandard size I can change position of satellite image by set Coord X and Coord Y.



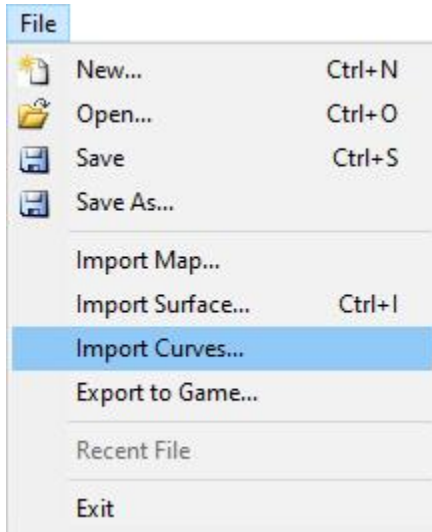
Press the OK button to continue.  
I can compare terrain with shadows and satellite image by use TAB key. The most strong points for orientation are roads, lakes, rivers and sand bunkers. By compare of these positions I can see if satellite image is on right position.

## Import Curves

To import curves from XYZ coordinates file, use Import Curves command.

You have the following possibility to launch Import Curves command:

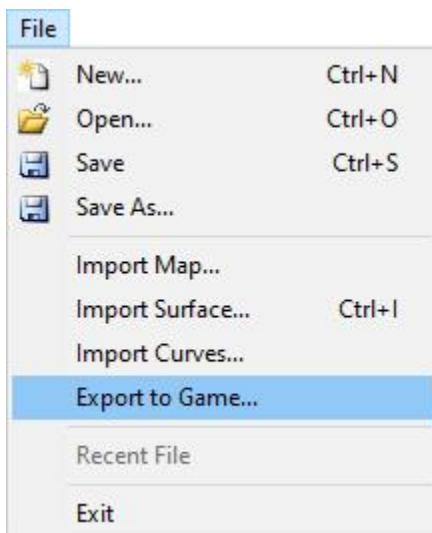
- From File drop-down menu select Import Curves



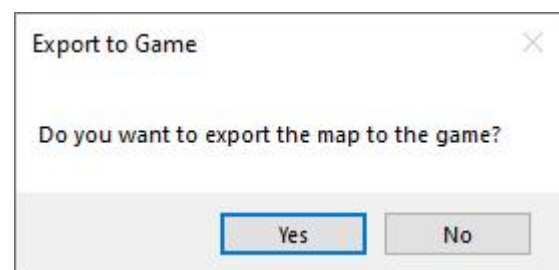
When the Import Curves command is launched the Open dialog appears. Navigate to the \*.xyz file to import curves from.

## Export to Game

To play or check the map in the game, use Export to Game command.



When the Export to Game command is launched the confirmation dialog box appears.






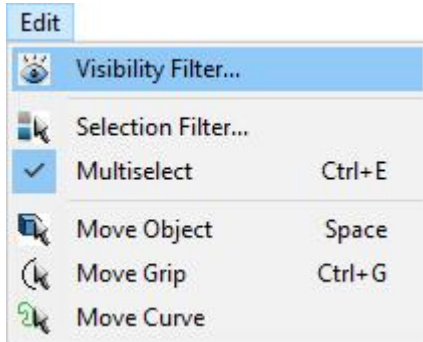
## 5. Edit Menu

### Visibility Filter

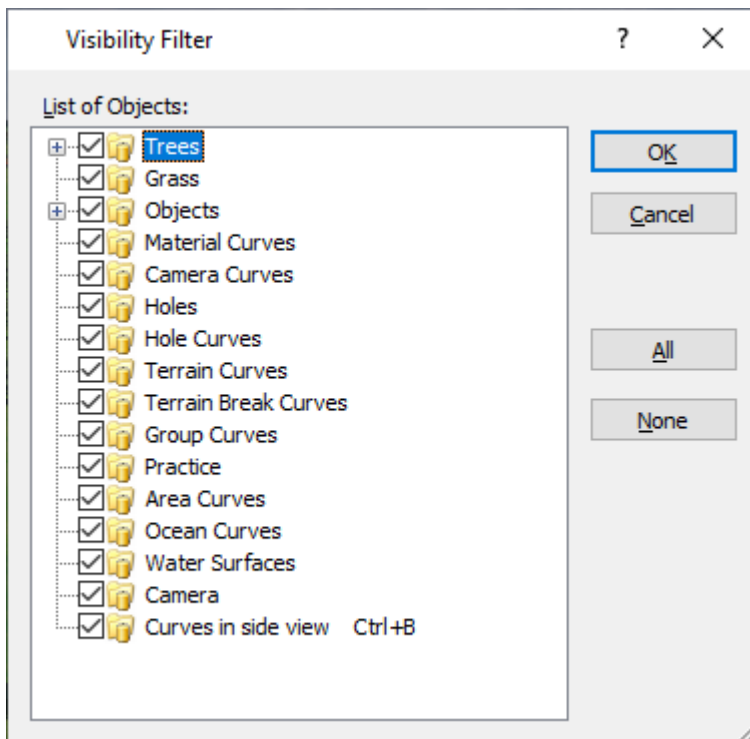
To set visibility of map objects, use Visibility Filter command.

You have following possibilities to launch Visibility Filter command:

- From Edit drop-down menu select Visibility Filter
- Using icon from the toolbar 



Map may contain several types of objects, like trees, grass, material curves, water surfaces etc. These objects can be temporarily invisible to have better access to edited objects. For example, invisible trees to see terrain under the trees and edit it easily.



In the Visibility Filter dialog clear the checkbox next to objects you want to make invisible. Activate the checkbox next to desired objects to make them visible for further modifications.


**Hint:** Click on the **All** button to select all objects. Click on the **None** button to deselect all items.

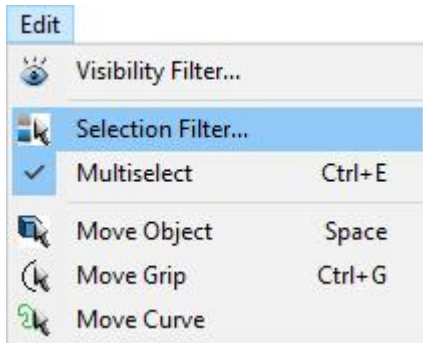
**Note:** You can expand Trees or Objects node by clicking on the + sign on the left to select particular kinds of trees and/or objects available in the map by their name and icon.

## Selection Filter

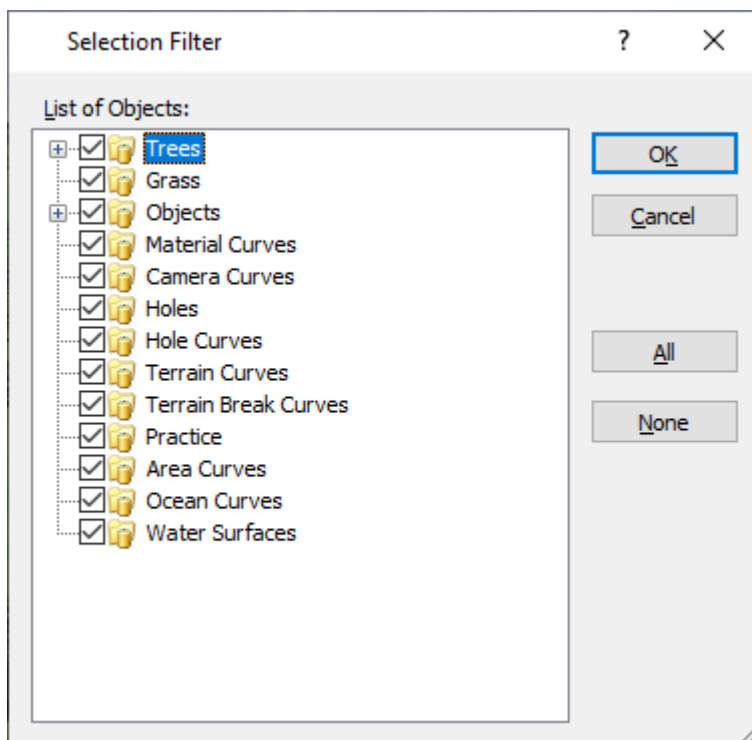
To avoid unwanted modifications of objects, you can set it un-selectable using Selection Filter command.

You have following possibilities to launch Selection Filter command:

- From Edit drop down menu select Selection Filter
- Using icon from the toolbar 



In editor each map object is selectable for further editing by default.



In the Selection Filter dialog clear the checkbox next to objects you want to make un-selectable. Activate the checkbox next to desired objects to make them selectable for further modifications.


**Hint:** Click on the **All** button to select all objects. Click on the **None** button to deselect all items.

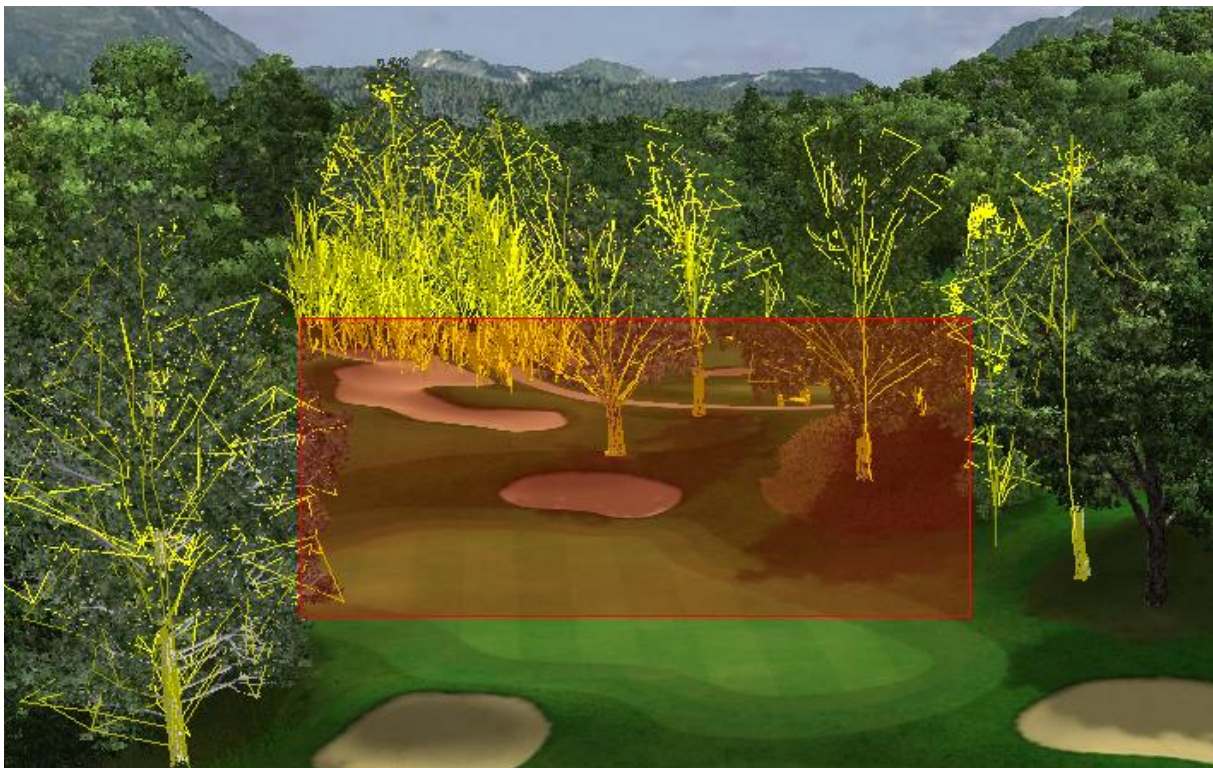
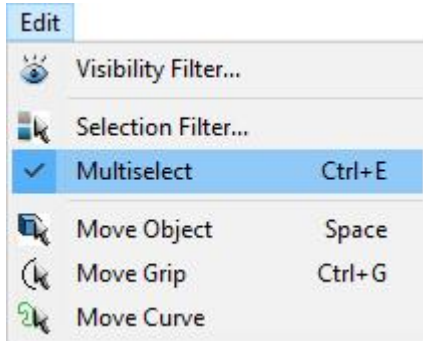
**Note:** You can expand Trees or Objects node by clicking on the + sign on the left to select particular kinds of trees and/or objects available in the map by their name and icon.

## Multiselect

To enable selection of objects with a selection window, use Multiselect command.

You have following possibilities to launch Multiselect command:

- From Edit drop down menu select Multiselect
- Using icon from the toolbar 
- Using keyboard shortcut: **Ctrl+E**



**Hint:** Click and drag the pointer to the **right** (and up or down) to select the objects **enclosed** by a selection window.

Click and drag the pointer to the **left** (and up or down) to select the objects **enclosed and intersected** by a selection window.

Press the **Shift** button while dragging to add selected objects to the already existing selection set.


Press the **Alt** button while dragging to remove selected objects from the already existing selection set.

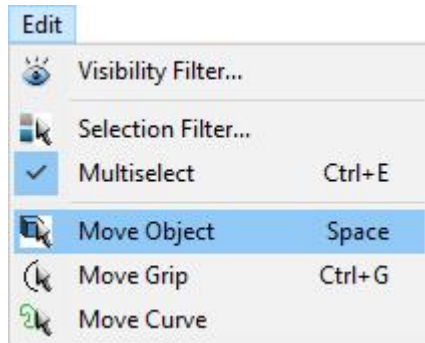
Press the **Ctrl** button and select an object to invert its selection status.

## Move Object

To be able move or copy objects to another position, use Move Object command.

You have the following options for turning on object moving:

- From Edit drop down menu select Move Object
- Using icon from the toolbar 
- Using keyboard shortcut: **Space**



**Move object:** Hover cursor above the object so, that the object gets highlighted, press left mouse button and drag the object to the desired position.


**Copy object:** Hold the **Ctrl** key and move objects to **copy** object in the scene.

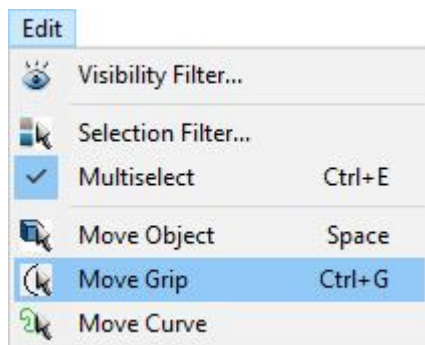
**Note:** You can drag only one object in the time, multi selection is not allowed.

## Move Grip

To switch on/off the possibility to edit grip points of curves, use Move Grip command.

You have following possibilities to launch Move Grip command:

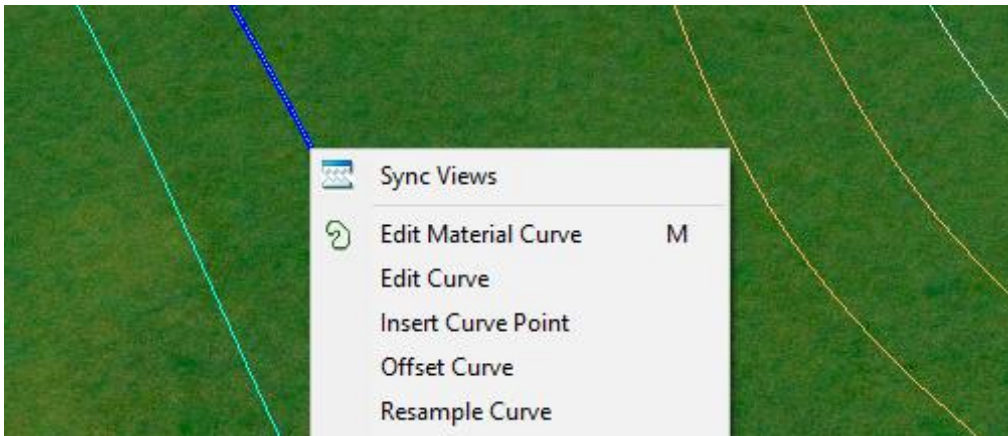
- From Edit drop down menu select Move Grip
- Using icon from the toolbar 
- Using keyboard shortcut: **Ctrl+G**



**Move grip point:** Select the edited curve to be blue. Press left mouse button at the grip and drag and drop the point at the desired position.

**Remove grip point:** Select the edited curve to be blue. Press right mouse button and from the grip context menu choose **Remove Grip** (or use key Delete) to delete the selected point

**Change Smoothness of curve:** Select the edited curve to be blue. Press right mouse button and from the grip context menu toggle **Continuous** to change smoothness of curve from sharp to smooth or vice versa.




**Add new grip point to the curve:** Hover cursor over a curve so, that the curve gets highlighted. Right mouse click at the desired place of the curve and from the context menu choose **Insert curve point**. A single curve grip is added at the picked location on the curve.

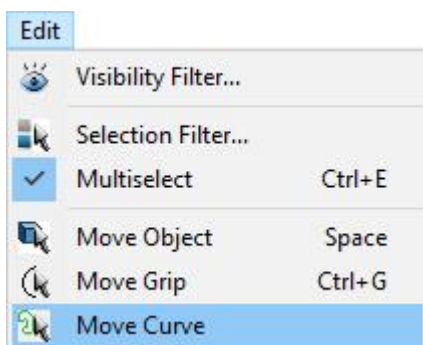
**Note:** You can drag only one grip in the time, multi selection is not allowed.

## Move Curve

To switch on/off the possibility to move curves to another position, use Move Curve command.

You have following possibilities to launch Move Curve command:

- From Edit drop down menu select Move Curve
- Using icon from the toolbar 
- Using keyboard shortcut: **Ctrl+G**



**Hint:** Hover cursor over the curve so, that it gets highlighted. Press left mouse button and drag and drop the curve at the desired position.

**Note:** You can drag only one curve in the time, multi selection is not allowed.



## 6. View Menu


### Views

To switch Top View (2D) and Side View (3D) views, use Views command.

You have the following possibilities to launch Views command:

- From View drop-down menu select Views
- Using icon from the toolbar:

Top View 

Side View 

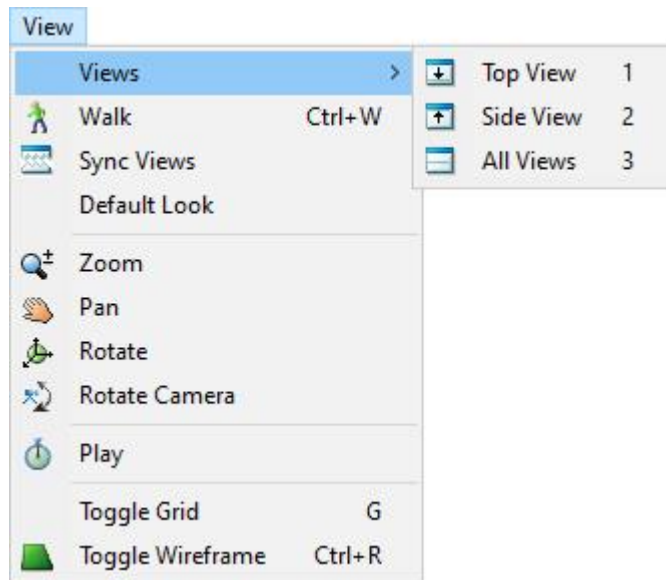
All Views 

- Using keyboard shortcut:

Top View - **1**

Side View - **2**

All Views - **3**



**Top View:** maximize the Top View window

**Side View:** maximize the Side View window

**All Views:** set equal sizes of Top and Side View window


Another way how to change the view is to click on the bar between the views and drag it to the desired position:

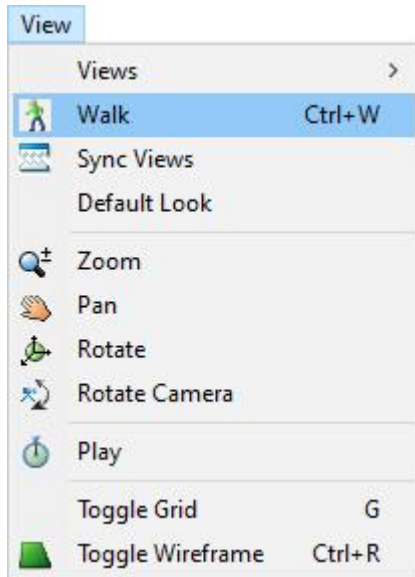


## Walk

To set camera position to golfer view and move around the course using mouse or keyboard, use Walk command. This command is not used very much, since movement via Zoom and Pan commands is much faster and easier.

You have following possibilities to launch Walk command:

- From View drop down menu select Walk
- Using icon from the toolbar 
- Using keyboard shortcut: **Ctrl+W**



**Hint: Turn left** – use left arrow or pick and drag by mouse from left to right

**Turn right** – use right arrow or pick and drag by mouse from right to left

**Move forward** – use up arrow or rotate by mouse wheel

**Move backward** – down arrow or rotate by mouse wheel

**Turn camera view up/down** – pick and drag by mouse up or down


**Note:** This command is active only if focus is in Side View window.

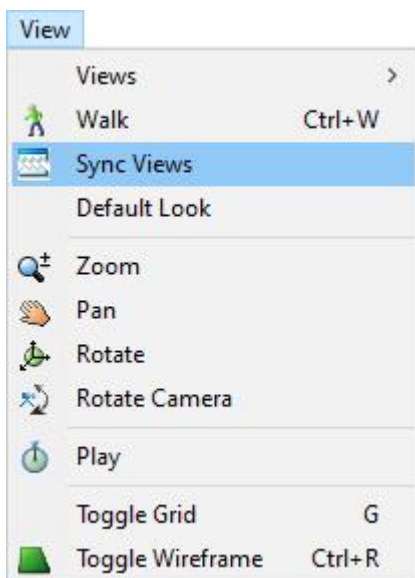
To finish Walk command press Enter or choose Finish from right mouse click context menu or run any other command of editor.

## Sync Views

To synchronize camera of second view (Top or Side) to the same position in both views, use Sync Views command.

You have following possibilities to launch Sync Views command:

- From View drop down menu select Sync Views
- Using icon from the toolbar 



**Hint:** If Top View is active, the command moves camera of Side View to the middle of Top View.

If Side View is active, the command moves camera of Top View to the same position as in Side View.

The Side View camera position is in Top View represented by yellow symbol:

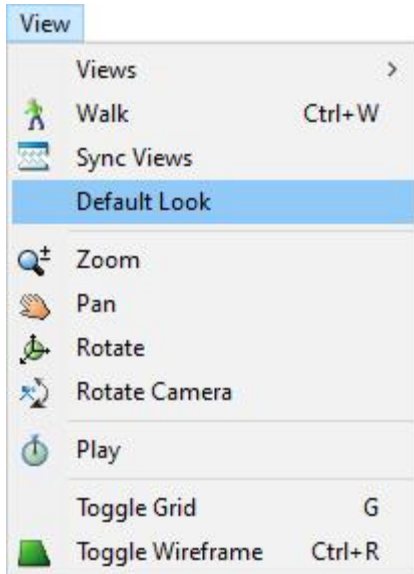


## Default Look

To reset camera view to default look, use Default Look command.

You have following possibility to launch Default Look command:

- From View drop down menu select Default Look



**Hint:** In Top View is the view rotated to default orientation of map, in Side View the camera is in the middle of map.

This command is mostly useful in Top View for some precise modelling.

## Zoom, Pan, Rotate, Rotate Camera

To manipulate with camera, use Zoom, Pan, Rotate or Rotate Camera commands.

Press down on the scroll wheel to switch from the normal mode to pan and rotate modes.



The current mode is graphically represented by mouse icon:



Normal

Pan

Rotate

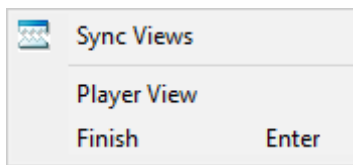
**Zoom** – zoom camera is available in all modes. Roll mouse wheel to zoom. Zoom is slower near to terrain and faster far from the terrain.

**Pan** – move camera. Click to scene using left mouse button, hold and drag to move the view.

**Rotate** – rotate camera around the point. Click to scene to define point on terrain, hold and drag the mouse to rotate around the point. If the point is far from the camera or out of terrain the command acts like Rotate Camera.







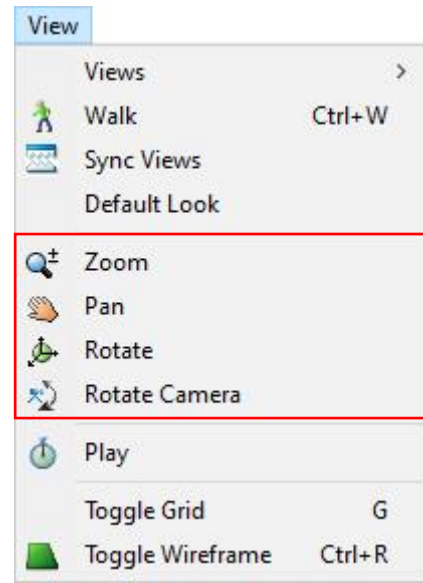
To return to normal mode press Esc or Enter, or use right mouse button and choose Finish:



There are also other possibilities to launch Zoom, Pan, Rotate, Rotate Camera commands:

- From View drop down menu select Zoom, Pan, Rotate or Rotate Camera

- Using icon from the toolbar: Zoom 
- Pan 
- Rotate 
- Rotate Camera 




**Rotate Camera** is another rotate mode, where view is not rotated around the point at the terrain, but around the camera itself. This mode is used rarely, therefore is accessible only from menu.

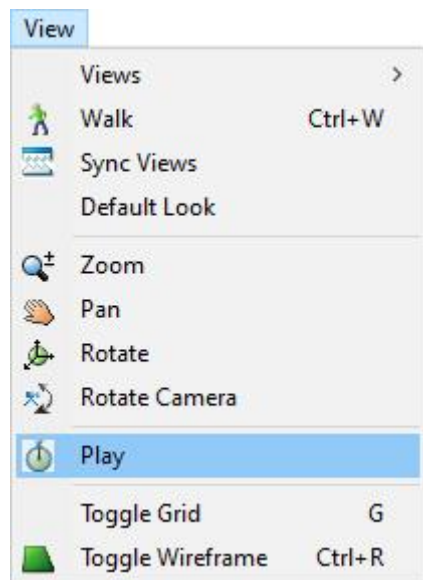
**Note:** These commands are available any time throughout all other commands. To finish camera manipulation and continue in original command press Esc or Enter or right mouse click and from context menu choose Finish.

## Play

To see all additional game effects like flowing of water, waterfalls, staggering of trees, displaying of hole pins, flags..., use Play command - to switch these effects on or off.

You have following possibilities to launch Play command:

- From View drop down menu select Play
- Using icon from the toolbar 



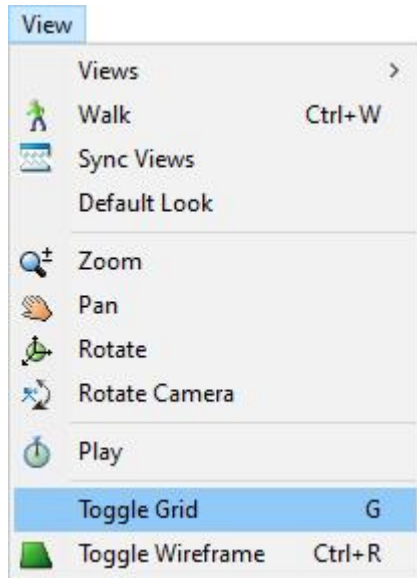
**Note:** Commands like Hole Flyby Curves or Presentation Curves in their play state switch automatically the play mode to on. Other commands switch the play mode automatically off.

## Toggle Grid

To show the grid of the actual map location in Side View, use Toggle Grid command.

You have following possibilities to launch Toggle Grid command:

- From View drop down menu select Toggle Grid
- Using keyboard shortcut: **G**



Using Toggle Grid command you can better see the terrain roughness.

Run Toggle Grid command again to switch grid off.

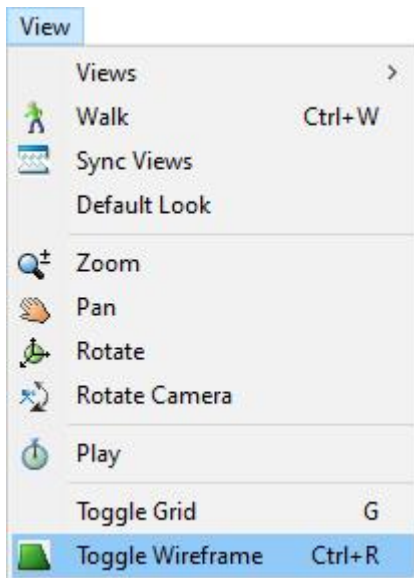


## Toggle Wireframe

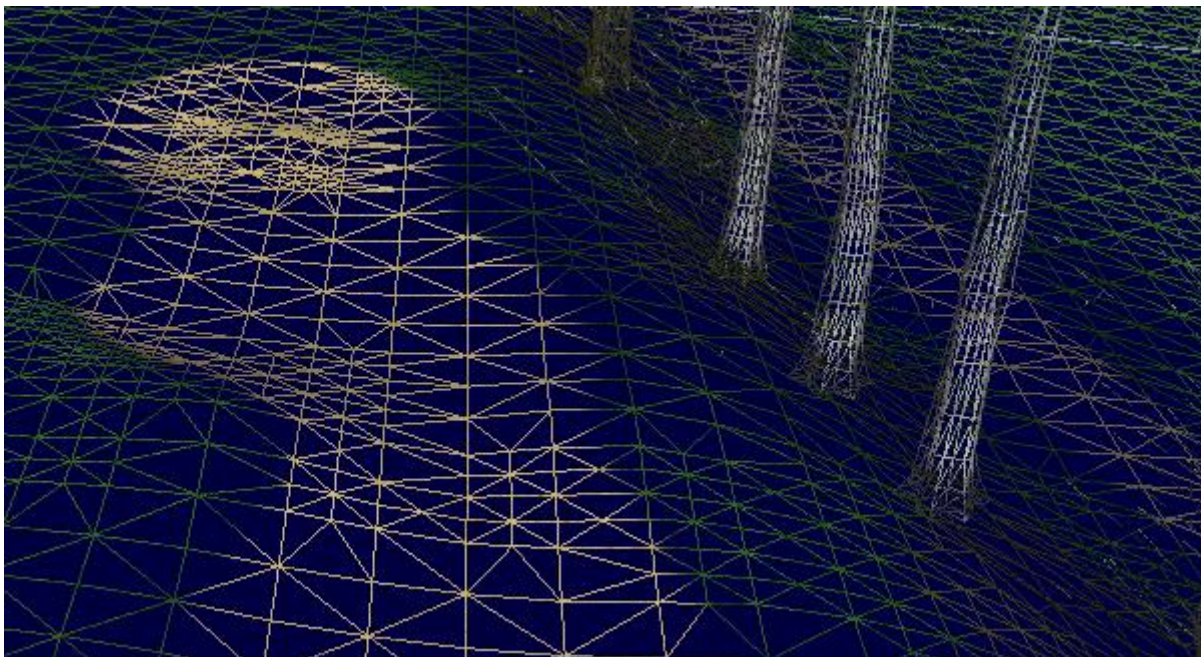
To show the wireframe of the actual map, use Toggle Wireframe command.

You have following possibilities to launch Toggle Wireframe command:

- From View drop down menu select Toggle Wireframe
- Using icon from the toolbar 
- Using keyboard shortcut: **Ctrl+R**



Using Toggle Wireframe command you can turn on the frame of actual map and see through any object and set the desired position of vertex.





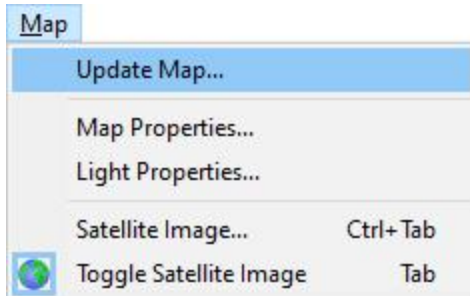
## 7. Map Menu

### Update Map

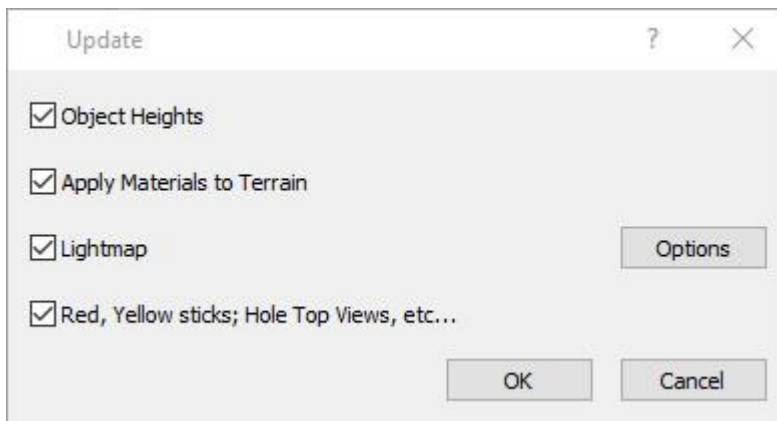
To finalize the edited map, use Update Map command.

You have following possibility to launch Update Map command:

- From Map drop down menu select Update Map...



**Note:** Some operations like update of static shadows, update of textures, generating of sticks ... require more time and therefore are not performed after each particular change (for example after modeling of terrain, moving of object, editing of material curves ...). These operations which require more time are concentrated in the Update Map command and user decides when to run it not to hold fluent using of other commands.



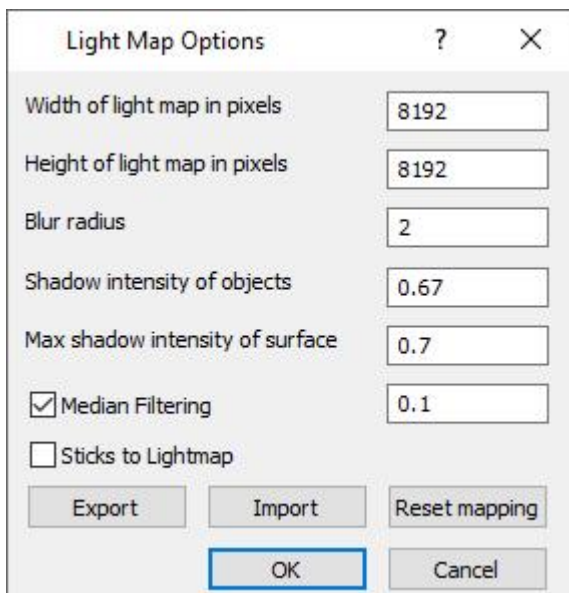
#### Object Heights

Activate this checkbox in case that objects do not follow a new terrain height after Import Surface or other commands.

#### Apply Materials to Terrain

Activate this checkbox after one or more material curve(s) have been created, edited or removed and after modification of textures or materials in library or

via texture manager. You can also update the terrain textures after any change by using the Texture Manager command. This operation can take longer time (e.g. 15 minutes) in case many curves are drawn in the map and this is the first run of Update Map command. The processed and unchanged material curves are copied to the cache file so next run of Update Map is faster.



#### Lightmap

Update of lightmap is needed to update static shadows after terrain modification, or inserting, moving or removal of objects in the map. The Options dialog allows to change the default shadows intensity or resolution of the lightmap picture. Allows also manual editing of lightmap out of editor if necessary.

**Red, Yellow sticks; Hole Top Views, etc...**

Use this option after terrain modification, creation / editing or removal of a material curve (water) or any other change in the map, which may affect hole top views and stick positions.

This option updates

- positions of yellow, red sticks which are generated along the Water / Flowing Water material curves. Generating of sticks can be allowed/suppressed in the Material Curve dialog.
- positions of white sticks, which are automatically generated along the Outer or Inner Boundary curves. Generating of sticks can be allowed/suppressed via context menu on the Outer or Inner Boundary curve.
- top view preview pictures which are generated for the Course Viewer usage
- terrain texture which is used for distance terrain blocks instead of slower methods used for the close blocks. The terrain texture is in 4096 x 4096 resolution by default. For faster work editor supports also

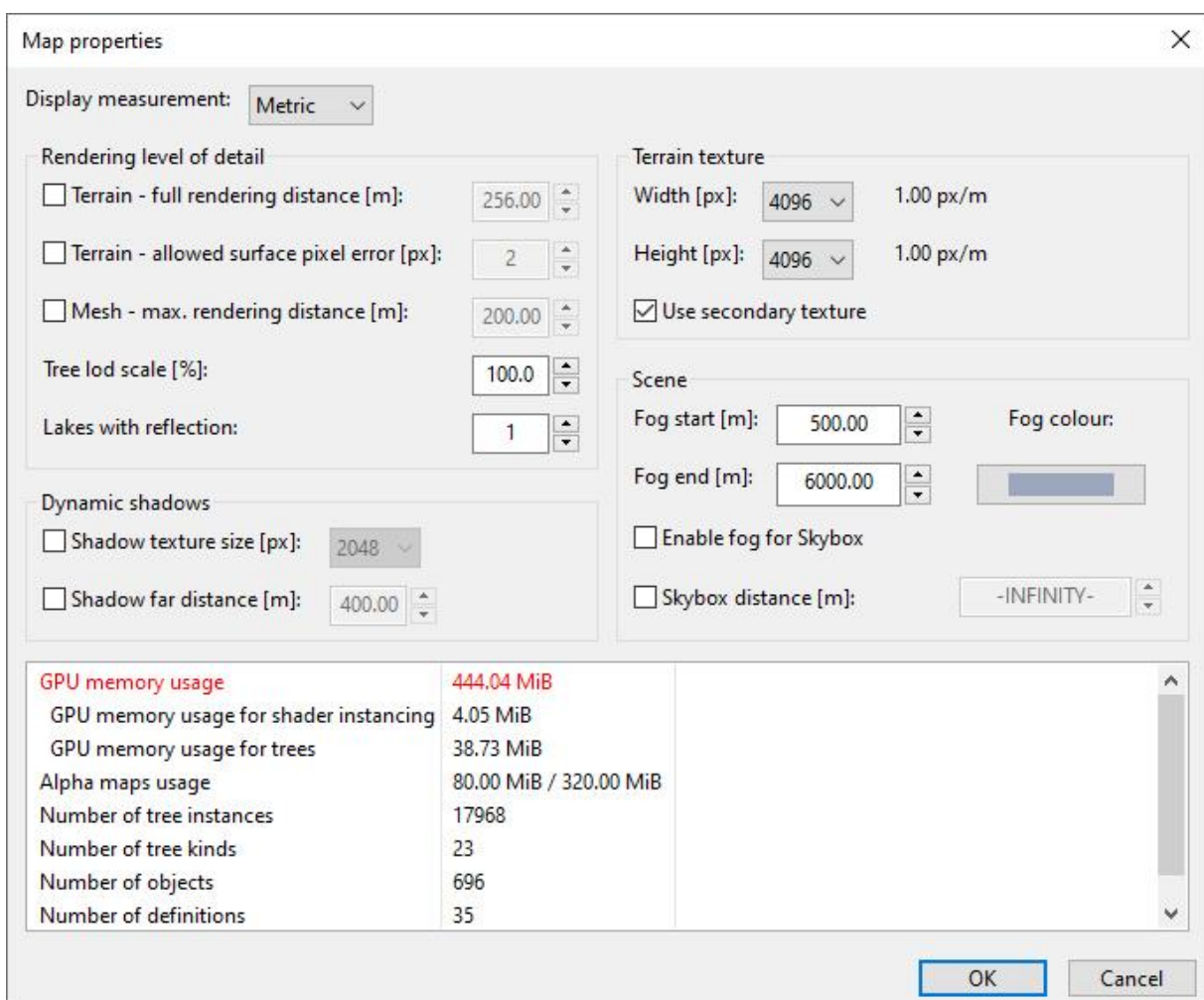
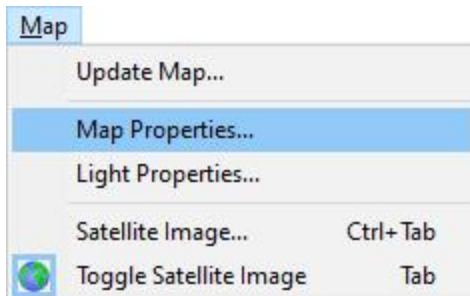
**Note:** Watch status line to see whether the terrain texture is compressed on GPU or CPU. As default it should run on GPU for Nvidia graphics cards. On CPU it runs considerably slower. In case that the compression of terrain texture runs on CPU, update your graphics card driver.

## Map Properties

To set base properties of map, use Map Properties command.

You have following possibility to launch Map Properties command:

- From Map drop down menu select Map Properties...



**Display Measurement** switches display units between **Metric** = meter / **Imperial** = yard

### - Rendering level of detail

**Tree lod scale (10-100%)** allows shorten the distance where trees are changed from 3D to billboard representation. This can be used for the maps which have too many trees and this causes performance problems. Default value is 100% (300m) and is defined in configuration file.

**Lakes with reflection** sets number of lakes near to camera rendered with correct reflection - in correct height. If there are more lakes in the map with water in different absolute heights, reflection for each of them must be calculated extra, what significantly drops performance of map. So, default value is 1 - only one lake near to camera is correctly calculated. All other lakes have reflection calculated from the plane defined by this to camera nearest lake. If camera moves closer to another lake, the calculation is switched according to the water plane of this lake. If you have good hardware you can higher the number of simultaneously calculated lake reflections. Not all lakes must have reflection. If you think a lake is not very important (small or behind of trees...) or should be muddy, you can switch off reflections for this lake also by Lake Properties. Lakes without reflections have very low performance requirements.

**Terrain - full rendering distance [m]** set distance until full rendering with full shaders is used. After it used simple rendering with using terrain texture. Smaller distance provides better performance but less visual quality. This option is provided as override for *SimpleRenderingDist* setting in *globals.conf*. If check box is not check then value from *globals.conf* is showed but previously set value is remembered. On check previously saved value is showed.

**Terrain - allowed surface pixel error [px]** defined how big pixel deference is allowed if changing surface geometry to lower level. Bigger pixel error provides better performance but changing of level of details is more visible. It is override for *PixelError* in *globals.conf*.

**Mesh max rendering distance [m]/unit size** define distance where object of unit size (for example 1 meter) can be hidden. This distance is multiplied by object size so if it is set for example to 200 meters, 0.5 meter big object can be hidden after 100 meters, and 10 meters big after 2000 meters. Smaller distance provides better performance but makes objects hiding more visible. It is override of *MeshMaxRenderingDistance* in *globals.conf*.

#### - Dynamic shadows

**Shadow texture size [px]** Smaller shadow texture provides better performance but shadows are blurred and squared. It is override of *ShadowTextureSize* in *globals.conf*.

**Shadow far distance [m]** define how distanced object from camera should be included in dynamic shadows. Smaller distance provides better performance and sharper shadows, but showing and hiding shadows is more visible. It is override of *ShadowFarDistance* in *globals.conf*.

#### - Fog and Background

**Fog start [m]** set distance where fog start

**For end [m]** set distance where fog end

**Fog color** set which color fog has.

**Note:** Fog is linear interpolated between these boundaries.

**Distance to Background [m]** can be useful for mountainous maps. Default value infinity means that if camera is moving up or down background is always in one size according to camera eye. With lower value of this property the background is going down if camera is elevated up.

**Enable fog for Background** is usable in case that background size is not infinity, ideally with size of terrain. Then fog on terrain can smoothly continue on background.

#### - Terrain

**Terrain texture size.** Terrain texture is texture used for rendering far off terrain. Bigger terrain texture provides better quality for far terrain. Common value is 4096x4096. Bigger 8192x8192 is

usable only for better computers (1GB GPU RAM, 4GB RAM and Windows 64bit). Setting is used in update map command.

**Use secondary terrain texture** is used by default for terrain bigger than 4096 meters, but it is optional here. It uses the same size as terrain texture and use area which is defined for light map. Using secondary terrain texture provide better quality of far terrain.

The bottom part of the Map Properties dialog is used to show the map **Performance** values.

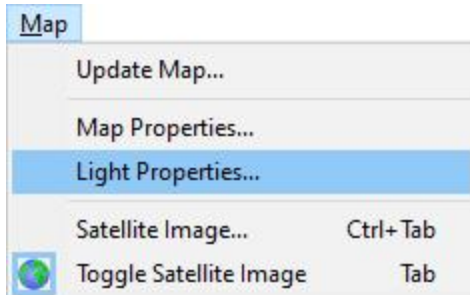


## Light Properties

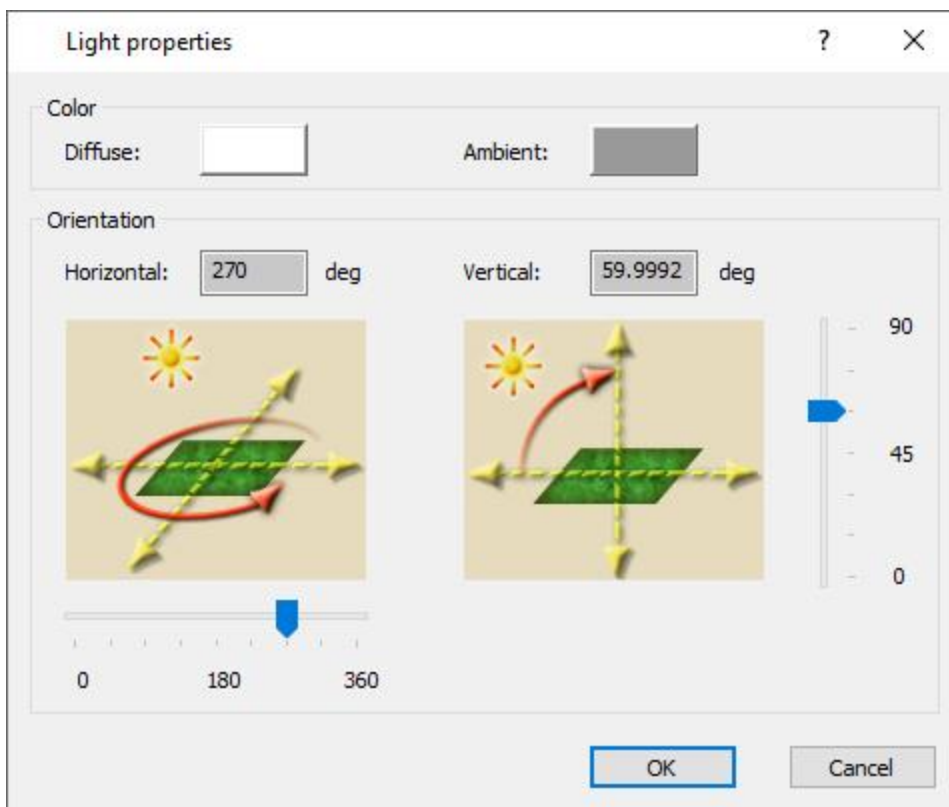
To change position and intensity of scene light, use Light Properties command.

You have following possibility to launch Light Properties command:

- From Map drop down menu select Light Properties...



**Note:** The position of scene light affects the length of shadows.



### Color

Set the desired diffuse or ambient colors by clicking on the colored rectangle

### Orientation

Drag horizontal or vertical slider to set sun position.

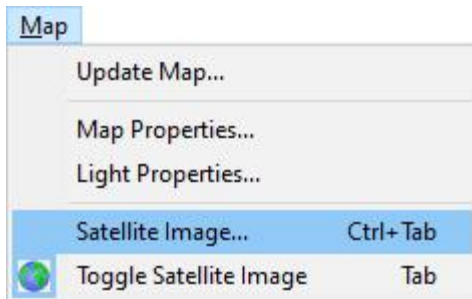
**Hint:** When the slider is activated use right/left arrow to set the angle

## Satellite Image

To assign and locate satellite image to the terrain, use Satellite Image command.

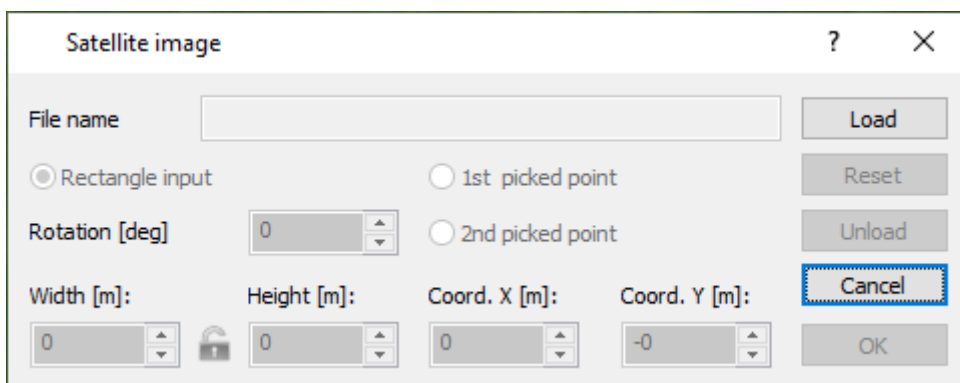
You have following possibilities to launch Satellite Image command:

- From Map drop down menu select Satellite Image
- Using keyboard shortcut: **Ctrl+Tab**



**Note:** Editor supports two ways of terrain texturing:

- Satellite Image: one image drawn on the terrain with the map of terrain (obtained mostly from internet)
- Textured terrain: all materials are textured using materials from editor library




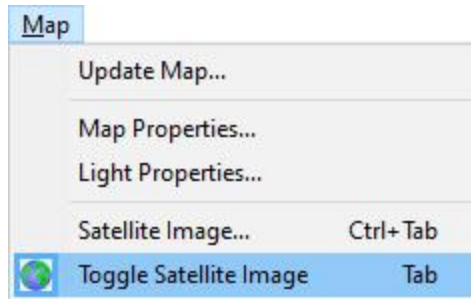
- Use **Load** button to load the image to the map
- Use **Unload** button to remove the image from the map
- Change the **Coord. X [m]**, **Coord. Y [m]** to move image over the terrain.
- Change the **Width [m]** and **Height [m]** values to zoom the image over the terrain.
- Use **Reset** button to reset the **Coord. X [m]**, **Coord. Y [m]**, **Width [m]** and **Height [m]** values to default values.

## Toggle Satellite Image

To hide/unhide the satellite image, use Toggle Satellite Image command.

You have following possibilities to launch Toggle Satellite Image command:

- From Map drop down menu select Toggle Satellite Image
- Using icon from the toolbar 
- Using keyboard shortcut: **Tab**



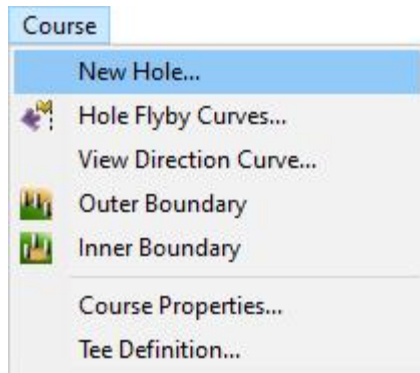
## 8. Course Menu

### New Hole

To create new hole in the opened map, use New Hole command.

You have following possibility to launch New Hole command:

- From Course drop down menu select New Hole



**Hint:** It is recommended to use top view when create a new hole to gain the desired shape of boundary curve and to specify precise tee and flag positions. For defining new hole in side view, in Visibility Filter activate the item Curves in side view

Obvious properties are Boundary Curve, Easy Flag Position, Professional and Lady Tee Positions. OK button is disabled if any of these properties is missing.

**Hole #** – To choose the hole number click the arrow at the right side and select the appropriate number from the drop-down list.

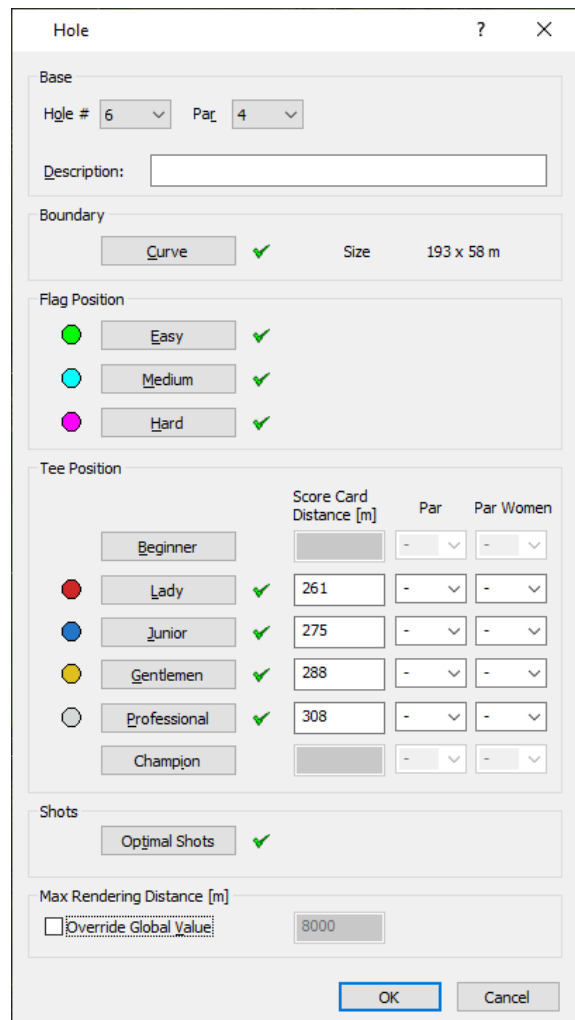
**Note:** A hole in the map must have its specific hole number unique in the map. The playable single courses should be then defined in the Course Properties dialog.

**Par** – Click the arrow at the right side and select the appropriate par value from the drop down list.

**Description** – You can write a short description or a hole name in the editable field. This description is optional and it is displayed during the FlyBy in the Course Viewer.

**Boundary Curve** – Click on the button Curve and pick points of a closed boundary curve in terrain. Right mouse click in the terrain and use Finish from the context menu or press Enter to finish creating of the curve. Boundary curve is used to define Top View area in Game.

**Note:** You can return to editing of the boundary curve any time in the dialog by clicking on the Curve button.

A screenshot of the 'Hole' dialog box. It contains several sections: 'Base' with 'Hole #' (6) and 'Par' (4) dropdowns, and a 'Description' text field; 'Boundary' with a 'Curve' button and a 'Size' of '193 x 58 m'; 'Flag Position' with 'Easy', 'Medium', and 'Hard' options, each with a checked status; 'Tee Position' with a table of options: 'Beginner', 'Lady' (261m), 'Junior' (275m), 'Gentlemen' (288m), 'Professional' (308m), and 'Champion'; 'Shots' with an 'Optimal Shots' button; and 'Max Rendering Distance [m]' with an 'Override Global Value' checkbox and a value of '8000'. 'OK' and 'Cancel' buttons are at the bottom right.

**Flag position** – Click on the Easy, Medium or Hard buttons and pick points in terrain for easy, medium and hard flag positions. Medium and Hard flag positions are optional and mostly for the simulator usage.

**Note:** Buttons Easy, Medium and Hard are disabled while there is no boundary curve specified for the hole. You can edit flag positions any time in the dialog by clicking on the appropriate button.

**Tee position** – Gentlemen tee position is required for each hole in the map. Click on the Gentlemen button and pick the desired position in the terrain. Other tee positions are optional and their buttons are disabled by default while Gentlemen position is not specified.

The Score Card Distance, Par and PAR Women are optional inputs.

If Score Card Distance is entered, this value is displayed in the game when player is starting hole from the tee.

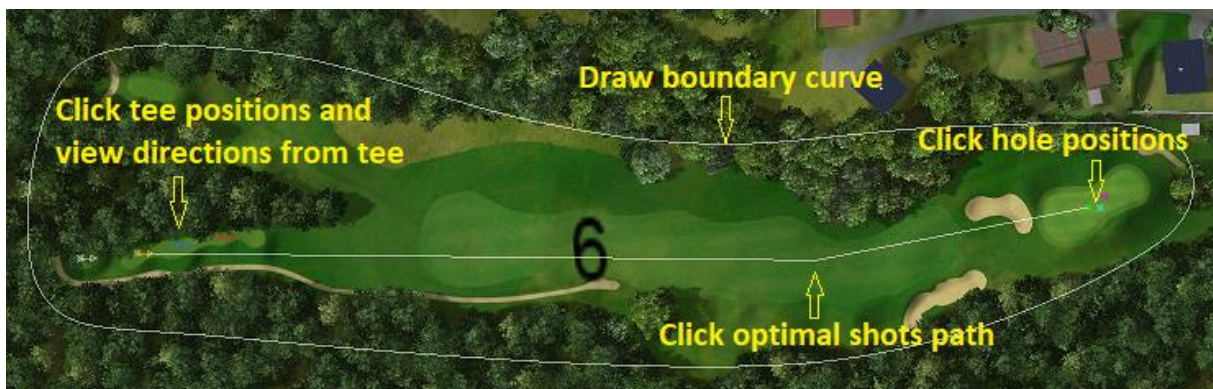
If Par or Par Women is entered, this value overrides general Par defined on the top of dialog for given tee and player's gender.


**Note:** Tee position should be placed inside a tee material curve, although editor allows to position it anywhere in terrain.


**Optimal Shots** – For holes with Par value greater than 3 shots click the button Optimal shots and drag cursor from professional tee to the ideal first shot target position. While dragging, the distance from the tee to the cursor position is populated using measurement units selected in Map properties. Pick the desired target in terrain. For holes with Par = 5 drag the second ideal shot. The last shot from the specified target to green is solved automatically.

Optimal shots definition is optional and is used only for some types of games for right camera orientation during the game.

**Max Rendering Distance** – Settings Override Global Value enable to override global map settings for the hole. Use it to optimize rendering quality. If the distance is defined the game will render only the scenery up to this distance what can increase performance (fps) during playing of the hole. Entering of this value is very rare.



**Note:** Make sure that item Holes in Visibility Filter dialog (accessible via icon from the toolbar ) is on, to see the hole boundary curve in top or side view.

Make sure that item Holes in Selection Filter dialog (accessible via icon from the toolbar ) is on, to be able to select the hole boundary curve in top or side view.

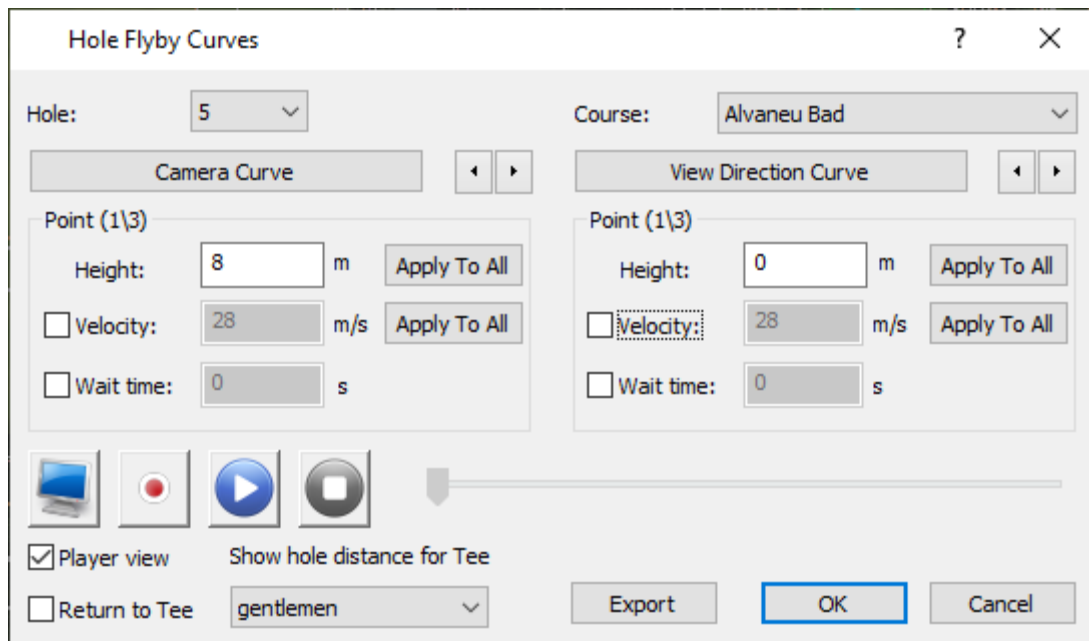
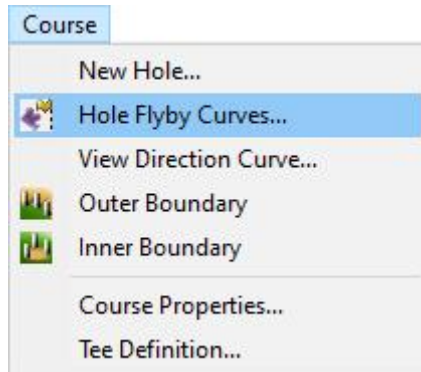


## Hole Flyby Curves

To create a flight above a hole, use Hole Flyby Curves command.

You have following possibility to launch Hole Flyby Curves command:

- From Course drop down menu select Hole Flyby Curves



**Hole** – Click the arrow at the right side and select the appropriate hole number from the drop down list.

**Note:** Each Flyby is connected with its hole properties which must be already defined in the map.

**Camera Curve and View Direction Curve** – Camera curve defines the camera movement itself during the flyby and the View Direction Curve defines the movement of view direction during the flyby. So, while the camera is moving along the camera curve, camera eye is watching the point which is moving along the view direction curve. The default speed is the same for both. If the view direction curve is shorter than the camera curve, camera eye is watching the end of the view direction curve for the rest of movement. To finish creating the curve choose Finish from right mouse click context menu.


**Note:** It is recommended to use top view while creating the curve to easily gain the desired shape of the boundary curve and point positions.

Example of Fly By curves defined in Top View:



in Side View:



**Note:** To see curves in Side View, it is necessary to switch on the “Curves in Side View” check box in Visibility Filter dialog accessible via icon from the toolbar .

**Height, Velocity and Wait time** – Use them to define the properties of the grip points of curve. Use arrow buttons < > to select next or previous grip point to change its properties.

The **Height** is edited as relative height above the terrain. The predefined value for the height of camera curve is 18m/yd. It means the camera flies 18m above the terrain.

The predefined value for the view direction curve is 0. It means camera eye is watching the terrain along the view direction curve.

After the flyby curve it is finished and saved, the height is saved as absolute height. So, the further modeling of terrain (creating of additional hills or holes) doesn't affect the flyby curves.

**Hint:** Hover cursor over the camera or view direction curve so, that it gets highlighted. From the right mouse click context menu choose Edit Flyby Curve to change again their height.

The **Velocity** allows to change the predefined speed of camera or speed of the point which is watched by the camera. If the camera or watched point should stop for some time use the **Wait time** edit box.

Editing of Velocity and Watch time is not usual therefore use the check box in front of the edit box to edit the value.

Use button **Apply to All** to assign current Height, Velocity and Wait time values to all curve points.

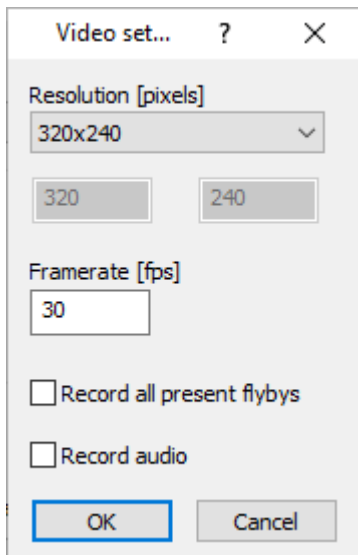
**Play and Stop** – Use these buttons to review the created flyby in editor environment



**Hint:** While playing, you can drag slider to move back or forward in the flyby timeline.

**Record** – Use this button to save the flyby as a video file





**Resolution [pixels]:** From the drop down list select the appropriate video size in pixels

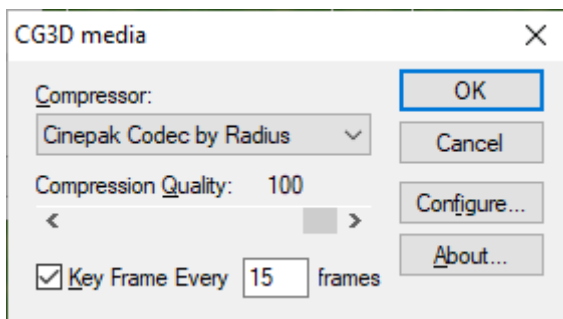
**Framerate [fps]:** Set the video framerate

**Record all present flybys:** Click the checkbox if you want to record all available flybys

**Record audio:** Click the checkbox if you want to record audio

**Note:** Currently is no sound recorded in the avi file. Another opportunity is to use some external recording program for example Fraps which records concurrently and including the sound but it requires a powerful hardware configuration (CPU and GPU).

In the populated Save As dialog specify file name and location where the video file should be stored. Click Save button to close the dialog.



**Compressor:** From drop down list select the appropriate codec.

If available, set also the desired Compression Quality or click Configure button to see and change the codec properties.

**Note:** This dialog is standard Windows dialog which offers all on the computer installed codecs. Not all of them are working correctly. Selecting some of them can cause the crash of program. Try to play with it a bit in advance to choose the working codec and to define the desired quality (flow).

Click OK button to confirm settings and start the recording.

**Note:** While the flyby is recording, you can watch slider movement and a progress value in % at the bottom of Hole Flyby dialog. The recording is sometimes slowly - frame after the frame is generated and saved to the video file. But the advantage of this is that even on the slower machine is possible to generate the fluent video.

After the recording is finished, click Ok or Cancel to close the Hole Flyby dialog.

**Full screen** – Use this button to play the flyby in full screen mode.



**Note:** In a dual displays configuration the full screen mode uses the display which has been set as a primary.

**Hint:** It is also possible to delete a flyby. Activate the Top View window and hover cursor over the camera or view direction curve so, that it gets highlighted. From the right mouse click context menu choose Delete Object(s) and click the OK button.

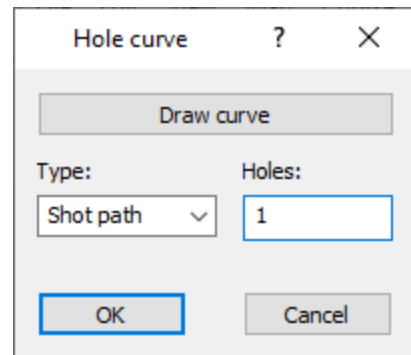
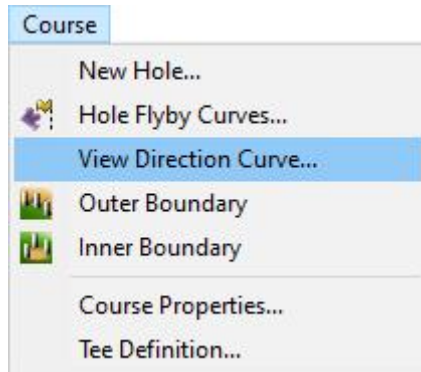


## View Direction Curve

To draw hole curve in active map, use View Direction Curve command.

You have following possibility to launch View Direction Curve command:

- From Course drop down menu select View Direction Curve



The Hole Curve dialog is used to draw curves, which help to improve default player view direction before shot during the playing the hole. There is possibility to draw 2 types of curves:

- If **Shot path** is drawn for a hole, the view of the player before the shot turns to this point on the shot curve that is visible from the player's position and is closest to the pin. Visibility can be limited by obstacle curves.

- if **Obstacle curve** is drawn, the player's view will bypass this curve and look for a point on the Shot path which is closest to the pin.

The **Holes** edit box is for definition of hole number, the curve should be applied for. Usually it is one hole, but can be also more separated by comma, for example "1,3,9".

These curves have sense only for very curved holes, mostly in some Minigolf courses. Example of usage is here:

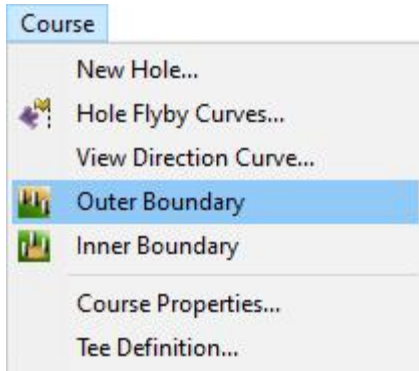


## Outer Boundary

To create an outer boundary of the playground, use Outer Boundary command.

You have following possibility to launch Outer Boundary command:

- From Course drop down menu select Outer Boundary



Outer boundary defines the area where is possible to play. If the ball is outer of this curve player will be penalized by one stroke.

**Note:** There can be only one outer boundary curve in the map. The curves should not overlap and Free Walk camera in the Course Viewer cannot move out of this curve. Currently is not possible to define outer boundary for a hole, only for whole course.

When Outer Boundary command is launched move cursor in terrain and pick points to define a curve in terrain, enclosing a playground area.

**Hint:** It is recommended to use top view while creating the curve to easily gain the desired shape of the boundary curve and point positions. To see the curve in side view be sure that in Visibility Filter the Curves in side view item is activated.

To finish creating of the outer boundary curve select Finish from the right click context menu or press Enter.

To edit created outer boundary curve hover cursor over the outer boundary curve so, that it gets highlighted and from the right mouse click context menu choose Edit Curve command.

**Hint:** It is also possible to delete the outer boundary curve. Activate the Top View window and hover cursor over the outer boundary curve so, that it gets highlighted. From the right mouse click context menu choose Delete Object(s) and click the OK button.

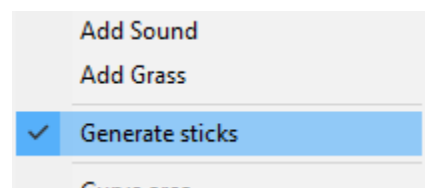




There are white sticks automatically generated along the outer and inner boundaries:



If the sticks are not everywhere, just at some places at the course, it is better to insert the sticks to map manually by dragging stick objects from library. To prevent generating of sticks in this case, select the curve, press right mouse button and switch off the Generate sticks check box:



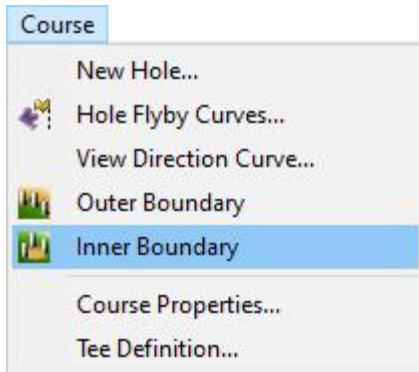
The sticks are generated or removed after running of Update Map command from Map menu.

## Inner Boundary

To create an inner boundary of the playground, use Inner Boundary command.

You have following possibility to launch Inner Boundary command:

- From Course drop down menu select Inner Boundary



Inner boundary defines the area where is not possible to play. If the ball is inner of this curve player will be penalized by one stroke. Free Walk in the game cannot move out of this curve. Scene can contain unlimited number of inner boundary curves.

When Inner Boundary command is launched move cursor in terrain and pick points to define a curve in terrain. Terrain inside of the enclosed area is inaccessible for playing golf cup or free walk in the game.

**Hint:** It is recommended to use top view while creating the curve to easily gain the desired shape of the boundary curve and point positions. To see the curve in side view be sure that in Visibility Filter the Curves in side view item is activated.

To finish creating of the inner boundary curve select Finish from the right click context menu or press Enter.

To edit created inner boundary curve hover cursor over the outer boundary curve so, that it gets highlighted and from the right mouse click context menu choose Edit Curve command.

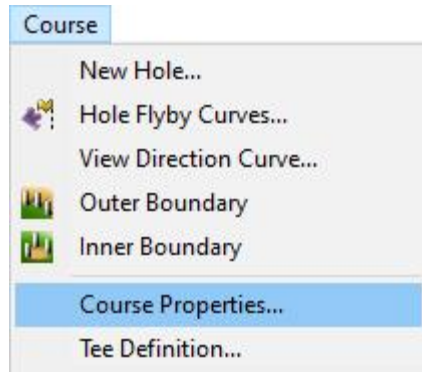
**Hint:** It is also possible to delete the inner boundary curve. Activate the Top View window and hover cursor over the inner boundary curve so, that it gets highlighted. From the right mouse click context menu choose Delete Object(s) and click the OK button.

## Course Properties

To define the properties of courses for the playing, use Course Properties command.

You have following possibility to launch Course Properties command:

- From Course drop down menu select Course Properties

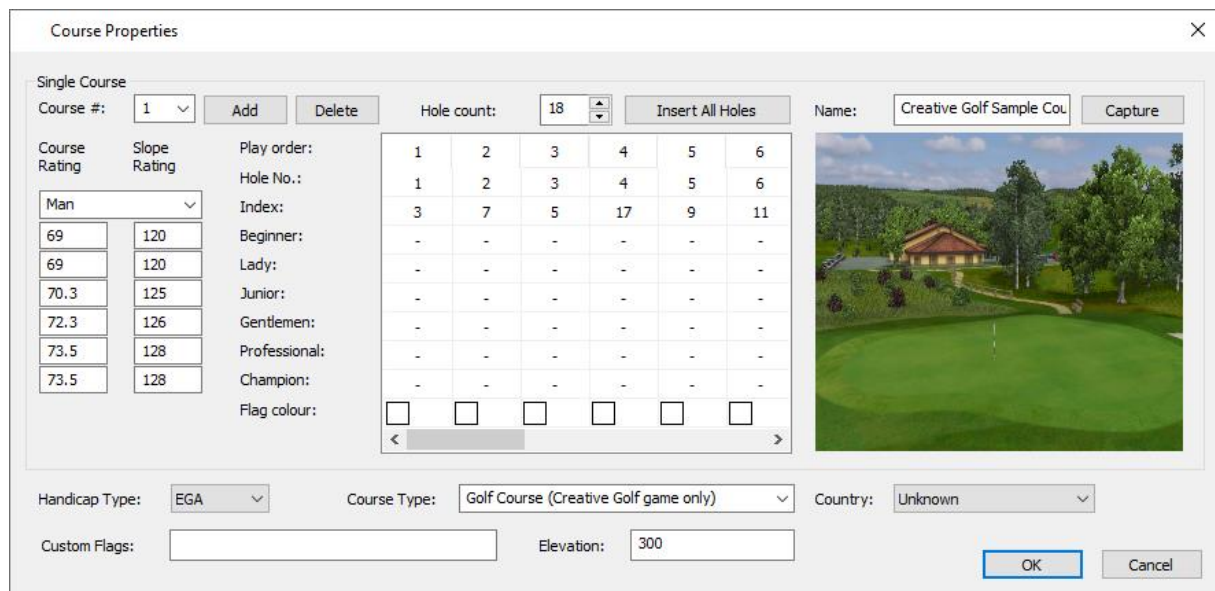


**Note:** One map file can include one or more single courses. For example, a map with 36 holes may contain 2 courses, each by 18 holes. The holes should be already defined in the map. Use the New Hole command at first to define the holes. Holes are numbered by its absolute numbers e.g. 1-36. In the Course Properties dialog the holes are assigned to separate courses which are numbered by relative numbers 1-18 visible in the game.

A hole can be used in one or in more single courses. For example, a map with 27 holes may contain 3 courses, each by

18 holes, where 9 holes are used in the course 1 and also in the course 2 and another 9 holes are included in the course 2 and also in the course 3...

For 9 holes golf course it is possible to use 9 holes twice to create 18 holes golf course.



### Single Course properties:

To create a new course in the map, click Add button.

To remove the last course from the map, click Delete button. The course with the greatest course number will be removed from the map.

Specify following properties for each course number:

- Write the desired single course name in the Name editable field. This name appears in the game.
- Click the Capture button to make a slide shot from the current zoom of the terrain inside the red frame area to create a preview of the single course. This slide appears next to the name in the game.
- Write the number of holes belonging to the current single course in the Hole count editable field (usually 9 or 18)
- In the common case there are only 18 holes in the map - click the Insert All Holes button to assign

all holes existing in the map to the current single course. Corresponding number of hole rows will be placed in the list below.

**Hint:** To remove redundant holes from the current course hole list, set the correct value in the field Hole count and click button Insert All Holes. Hole rows exceeding the number specified in Holes field will be removed from the list.

For each hole row assign the desired Hole absolute number and Handicap value by clicking in the corresponding field and choosing the appropriate value from the available drop-down list. These values (1-18) are valid for the current single course only.

**Note:** Each number can be used only once in the current single course. Holes already used are in the drop-down list marked by red color. Similar rule is valid for Handicap value as well.

**Hint:** Check the hole list carefully and if there exist some red values, choose different Handicap value to get rid of duplicates. The Color is intended for the flag color of the given hole. This is not implemented yet.

Specify Course Rating and Slope Rating for beginner, lady, junior, gentleman, professional and champion tee by writing of the appropriate values in the editable fields at the right side of the Map Info dialog window. This will be used for calculation of player handicap during the netto game.

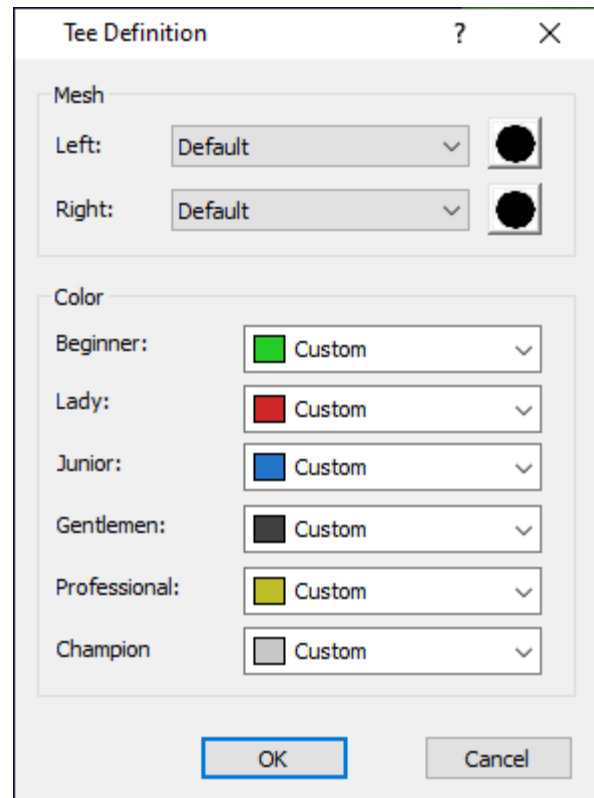
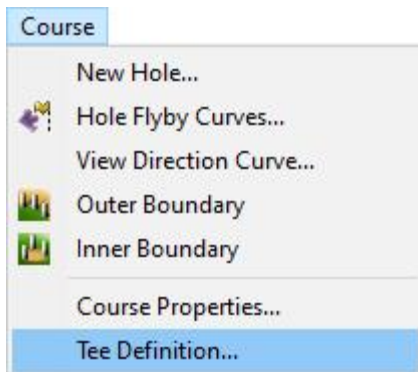


## Tee Definition

To set the tee shape and colour, use Tee Definition command.

You have following possibility to launch Tee Definition command:

- From Course drop down menu select Tee Definition



**Mesh:** Set the desired mesh objects for Left and Right side of tee. Click in the Left or Right field and choose the object from the drop-down list

**Color:** Set appropriate colors of tee objects placed on professional, lady, gentlemen and other tees.

Example of Tee meshes:




The Tee meshes are located in special folder of Objects library named Tee. For definition of a new, by user defined mesh, it is necessary to model it in some software for modeling meshes, export it to fbx format and import to Tee folder of User Objects library. While modeling of mesh, use specially named material for the mesh parts which will be colored by selection of color in Tee definition dialog.

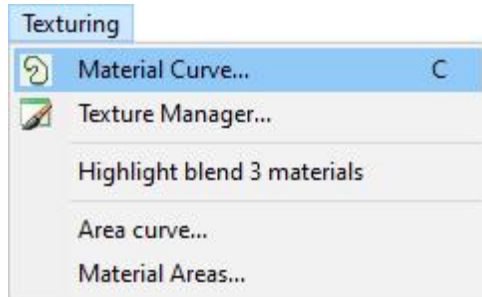
## 9. Texturing Menu

### Material Curve

To create new material curve, use Material Curve command.

You have following possibilities to launch Material Curve command:

- From Texturing drop down menu select Material Curve...
- Using icon from the toolbar 
- Using keyboard shortcut: **C**



**Note:** Material curves are closed curves which define areas with different material. Area without any material curve has the Default material.

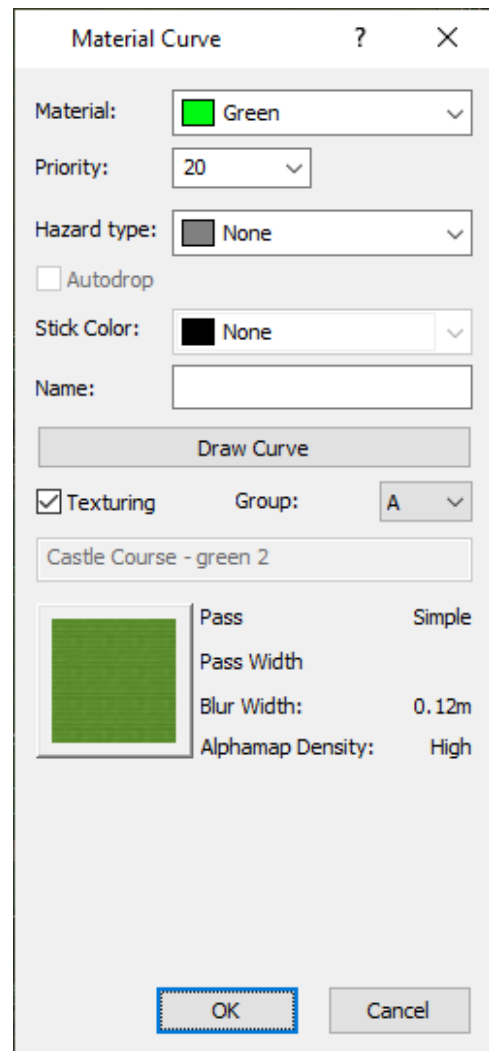
The material curves are defined for more reasons:

- Texturing - area with the same graphical texture (appearance) of the terrain.
- Golf Ball rolling and bouncing parameters. Each predefined material has different physical properties
- Generating of red or yellow sticks around the Water barriers

Any material curve can be used for one, two all or all three these reasons.

- Generating of grass inside of material curve.

When Material Curve command is launched the Material Curve dialog is opened and Draw Curve is already activated. Move cursor in terrain and pick points to define a curve in terrain, enclosing a desired area with specific material properties.



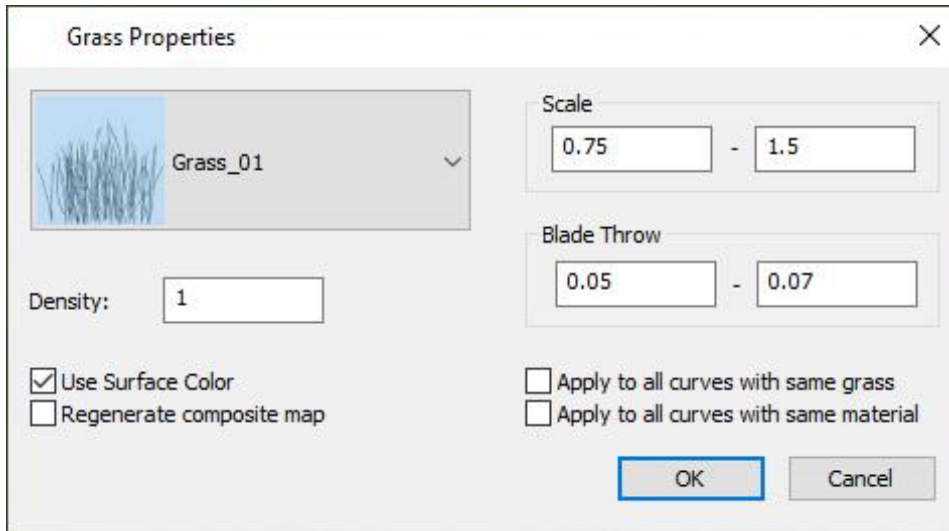
**Hint:** It is recommended to use top view while creating the curve to easily gain the desired shape of the boundary curve and point positions. To see material curves in side view be sure that in Visibility Filter the Curves in side view item is activated.

To finish creating the curve choose Finish from right mouse click context menu or press Enter. Now the material curve properties Material and Priority are available.

**Hint:** While in the dialog, you can anytime return to draw curve mode. Press the Draw Curve button and edit the curve.

Set the desired material type, priority, stick color and texturing values and click OK to confirm settings.

**Grass** - can be added to any material curve. Usually is added to the curve with Deep Grass material. Do not intersect the curves with grass by other material for fluently reduction of grass polygons near the curve. Hover cursor over a curve so, that it gets highlighted. Right mouse click at the curve and from the context menu choose Add Grass. In the Grass properties dialog choose the desired grass type from available list. Set appropriate grass properties. Click Ok to confirm changes. To edit grass properties hover cursor over a curve with some grass assigned so, that the curve gets highlighted. Right mouse click at the curve and from the context menu choose Edit Grass.



**Material** – The selected material type affects physical properties of the area enclosed by material curve in terrain. For example, a bounce of a ball from asphalt will differ from the bounce of the same speed and direction from a sand bunker.

**Note:** In case it is the first curve with given material in the map use Texture Manager command to assign the texture to the material and type of pass.

**Hint:** To update the terrain texture inside the material curve to reflect changes in material properties, go to Terrain menu, choose Update Map and use Apply materials to Terrain from available options. The update Map command also generates the red / yellow sticks along the curve.

**Priority** – The value specifies which material is displayed in case that an area in terrain belongs into two or more different material curves. The higher number represents the higher priority of the material curve.

For example, a small material curve green with the priority 20 is fully placed inside the material curve fairway with priority 10. After Update Map the green material texture is visible, because of the higher priority assigned to its material curve.

**Hazard Type** – Choose Red, Yellow or Blue hazard type if the material curve surrounds the area of hazard. It is possible to overlap more hazard curves, ball is in the game placed at the outermost curve. The Priority has no influence on the hazard. Once a curve is marked as hazard, the game takes it into account.

**Autodrop** – Switch on the check box to define hazard without penalty.

**Stick Color** – Change Hazard Type to Red, Yellow or Blue to make the option Stick Color available. Choose Red, Yellow or Blue to generate sticks of the selected color in regular distances along the material curve. It is possible to overlap more hazard curves, sticks are generated only at the outermost parts of curves.

Even if the curve surrounds a hazard, it is sometimes better not to generate sticks automatically, but rather to insert them later manually as objects from library - for example, if sticks are in reality only at some side of a water, even if whole water is hazard.

**Hint:** To create hazard and sticks along a curve anywhere in the terrain, even across an area of more different materials, use material curve without texturing.

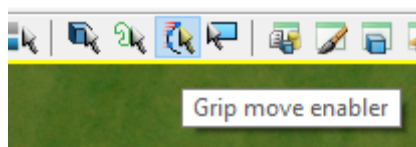
**Autodrop** – switch on this check box if material curve defines area, where is no possibility to play from. It can be Ground under repair or bio zone.

**Texturing** – Activate the checkbox to use the curve also for the different graphical appearance of the enclosed terrain. The material texture and pass properties are defined in Texture Manager command for all curves of given material and group. If the checkbox is active, option Group is available.

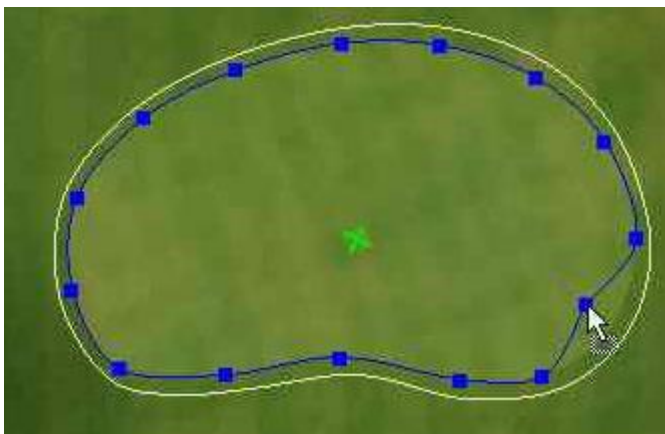
**Group** – enables to assign more than one material texture and/or pass properties to the selected material type. For example, a material type asphalt may have defined e.g. 3 groups: A – red asphalt, B – black asphalt, C – green asphalt. Physical properties of all groups A, B and C are same (asphalt material type), but their graphical appearances differ according to assigned material texture, type and width of pass, blur, alphasmap density etc. See Texture Manager command. Click in the Group box and select a letter from available list. If the group properties already have been specified in Texture Manager, they are populated in the bottom part of the material curve dialog box.

To edit created material curve hover cursor over the material curve so, that it gets highlighted and from the right mouse click context menu choose Edit Material Curve command. Now the Material Curve dialog opens and you can make any changes in material curve properties or click the Draw Curve button to edit curve points.

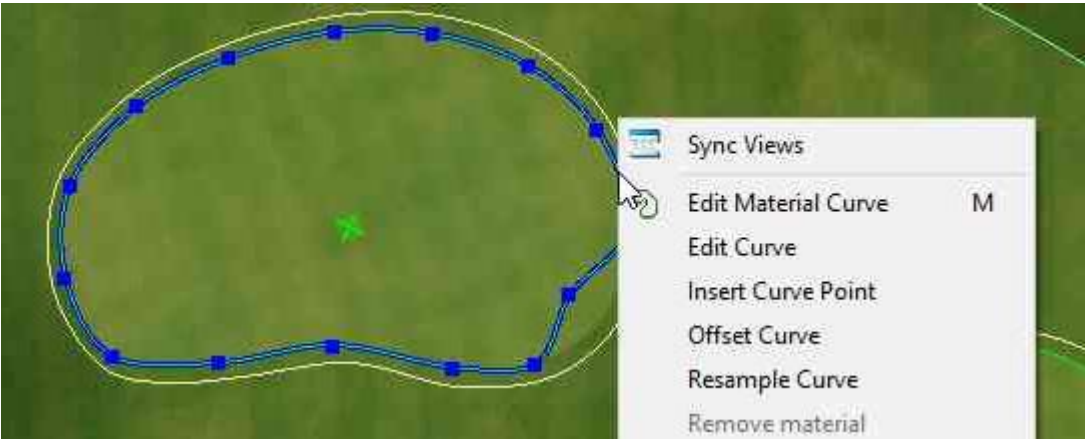
If you want to edit only the curve shape, you can use Edit Curve command from right click menu. The best way how to edit curves is to switch on the grip move enabler:



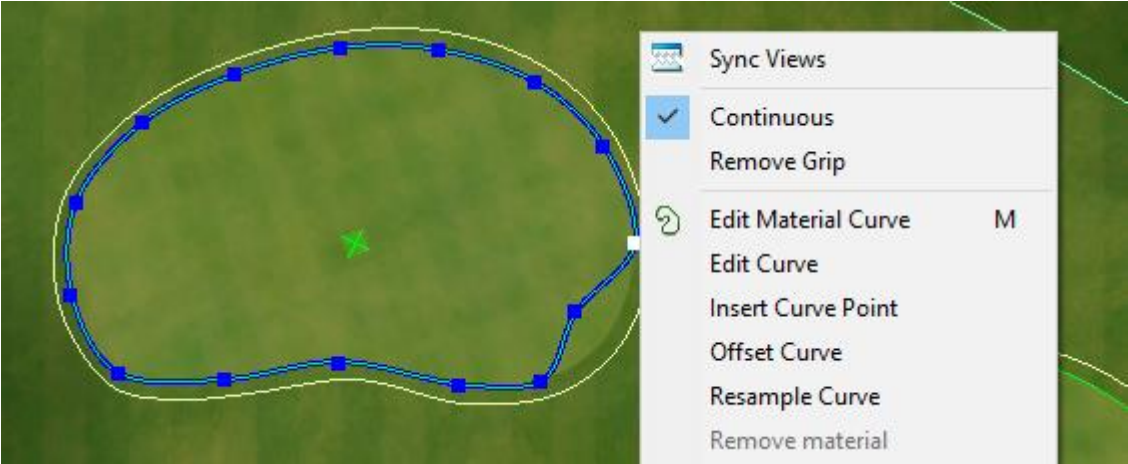
Then select the curve to become blue and move appropriate grip point to a new position.



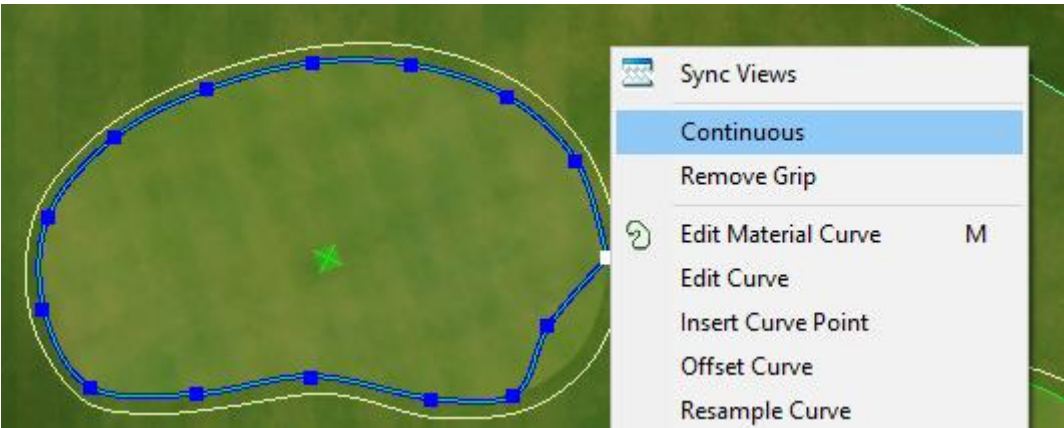
To insert new grip point, hover cursor over the selected (blue) material curve at the position of new desired grip. Press right mouse button and choose Insert Curve Point from right click menu.



To delete grip point, select the grip point and choose Remove Grip from right click menu:



To change smoothness of curve at the grip, select the grip and switch on or off the Continuous check box in right click menu:




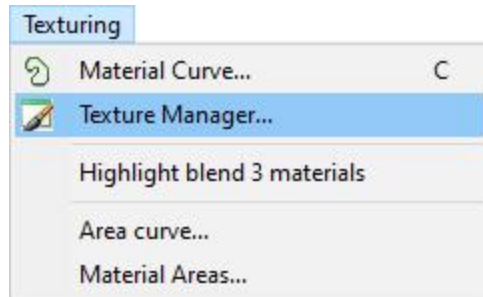


## Texture Manager

To assign separate texture to each Material Curve type, use Texture Manager command.

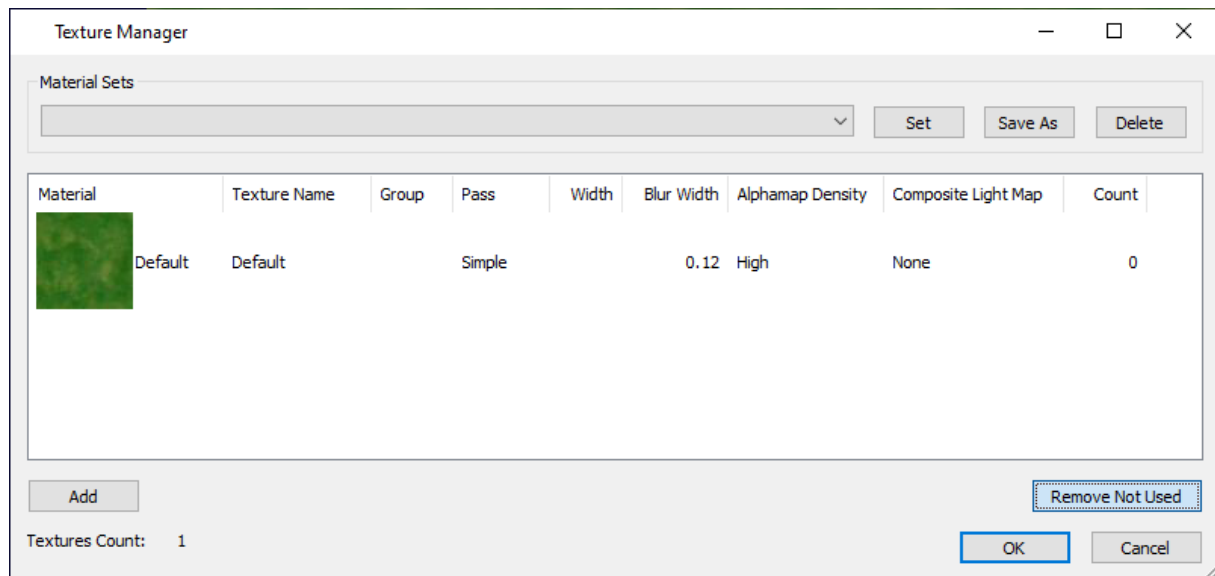
You have following possibility to launch Texture Manager command:

- From Texturing drop down menu select Texture Manager...
- Using icon from the toolbar 



Use Texture Manager command to assign separate terrain textures for each Material Curve type. The material curve type is defined by the Material property (Green, Fringe, Fairway...) and Group (A, B, C...). For example, for the material asphalt define 3 groups: A – red asphalt, B – black asphalt, C – green asphalt. The populated texture manager dialog contains a list of all materials defined in the map.

**Note:** In a new created map there is only one, the default surface material specified in New Map dialog when opening the map.



**Add** – define a new material in the map

**Hint:** You can create new material also by drawing a material curve in scene prior to launching of texture manager command. Any material specified while a new material curve is created will automatically appear in texture manager dialog

**Remove Not Used** – Remove unused materials. Check values in Textures Count field. If the value for certain material is "0", in the map doesn't exist any material curve with the material assigned. Such materials can be removed from the map. (An exception is the Default material, which may be applied to terrain without any material curve.)

**Material** – Double click in the Material field to open the Library dialog and choose the appropriate material from available materials. The name of the assigned material texture appears in the field Texture Name.

**Hint:** One click in the material field highlights all material curves in the map with this material.



**Group** – Change the group letter to assign a different group to all corresponding material curves

**Pass** – From the populated list choose one of the ways of transition from the current material to next, contact material.

**Width** – For most types of pass a parameter width is adjustable. Click in the width field and write the appropriate value of pass width.

**Blur Width** – Change width of the pass blur at the border between two materials.

**Alphamap Density** – Choose alphamap with High resolution or Low resolution to describe the pass. Low resolution lowers the graphics card memory requirements but the border between two materials is not so sharp.

**Composite Light Map** – It can be None, Default or Custom. Default is hardcoded preset. Custom setting is configurable through "Composite lightmap setting" dialog.

Composite lightmap setting

Emboss effect

Width: 0

Offset: 0.15

Dark side brightness: 0.745

Light side brightness: 1.2

Outline effect

Width: 0

Offset: 0

Color: 0.706

Blur: 0.2

Distort

OK Cancel

**Width** – width of emboss effect in pixels. If there is resolution 10px/m, the width is in dm. Enabled values: 0, 1, 2, ... 16. 0 switch off emboss effect.

**Offset** – movement of emboss effect. Positive numbers move outside, negative inside. Offset is in meters and enabled values are in range -1, 1.

**Dark side brightness** – brightness of dark part. Enabled values are in range 0, 2.

**Light side brightness** – brightness of light part. Enabled values are in range 0, 2.

**Width** – width of line in pixels. Also decimal values are enabled. Enabled range is 0, 8.

**Offset** – movement of outline effect. Positive numbers move outside, negative inside. Offset is in meters and enabled values are in range -1, 1.

**Color** – line brightness. Enabled values are in range 0, 2.

**Blur** – width of blue in meters for light map, the same as "Blur Width" for material transition.

**Distort** – set if distort should be used also for lightmap. Distort is defined by "Pass" and "Width" setting.

### Emboss effect



normal bunker



bunker with emboss effect

Emboss effect simulate lighting on bunker walls. It is not right model because it is not computed according real geometry but according material curve. But it is nice 3D effect for make bunker depth more visible.

### Outline effect



normal bunker



bunker with outline effect

Outline effect simulate dark wall of bunker. It is uniformly dark on whole bunker boundary.

Another items in Texture Manager dialog:

**Count:** Shows number of material curves in the map, which have the material assigned.

**Hint:** Click once in the material field to highlight all material curves in the map with corresponding material and group.

Confirm changes in the texture manager dialog by clicking OK button. When any change of material properties is detected, the dialog "Changes need rebuild of texturing" follows:

- Click Later to postpone applying of changed materials. All material changes are stored, but not applied on terrain yet. Use Update Map > Apply materials to Terrain to apply materials later.
- Click Preview to see how changed material textures look like. Preview applies current material

textures only, pass and blur settings are disregarded. The result is achieved faster but not in the final quality. Use later Update Map > Apply materials to Terrain to obtain the final quality.

- Use Apply to apply current materials settings to terrain.

**Save As** – Create a material set to reuse it in another map. In populated Save Set dialog fill the name for the new material set and click OK.

After saving of the map file the set of selected materials with the specified name will be created. It becomes available in Texture Manager in Material Sets list in other maps.

**Set** – Apply materials from a material set created in another map. From Material Set drop down list select material set you would like to use and click the Set button. Map materials of same type and group like materials in set will be replaced, other map materials stay unchanged.

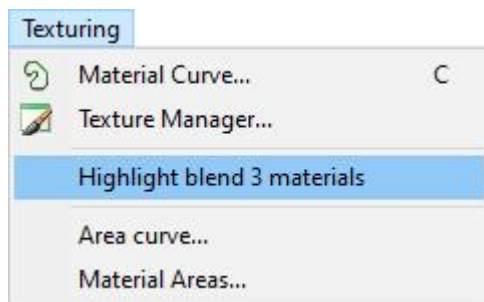
**Delete** – Remove a material set. From Material Set drop down list select material set you would like to remove and click the Delete button. The selected material set will be removed.

## Highlight blend 3 materials

To highlights all places in the map where more than 2 materials are blended, use Highlight blend 3 materials command.

You have following possibility to launch Highlight blend 3 materials command:

- From Texturing drop down menu select Highlight blend 3 materials



Reducing of places in the map to minimum where more than 2 materials are blended improves the rendering performance.

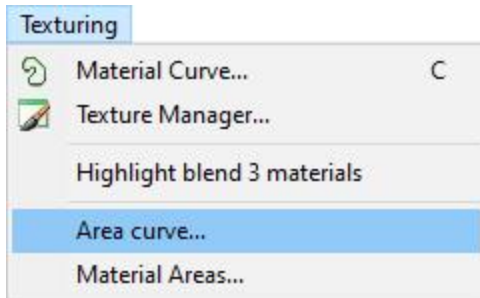
At some places in a terrain, where are in contact 3 or 4 materials, there may occur also a texturing error (rectangles with sharp edges). Editor supports contact maximum of 3 materials. Sometimes also contact of 3 materials can produce error - for example mix two equal materials using different Alphamap density. These places are highlighted too.

## Area curve

To calculate and export areas of more regions to text file, draw Area Curves.

You have following possibility to launch Area curve command:

- From Texturing drop down menu select Area curve



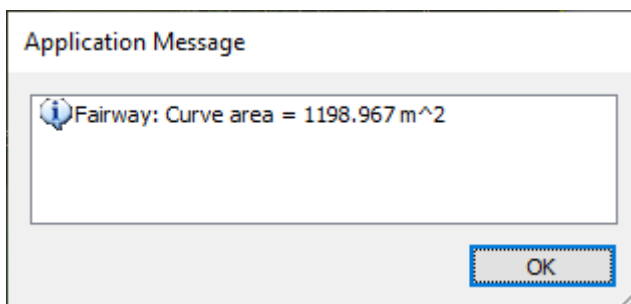
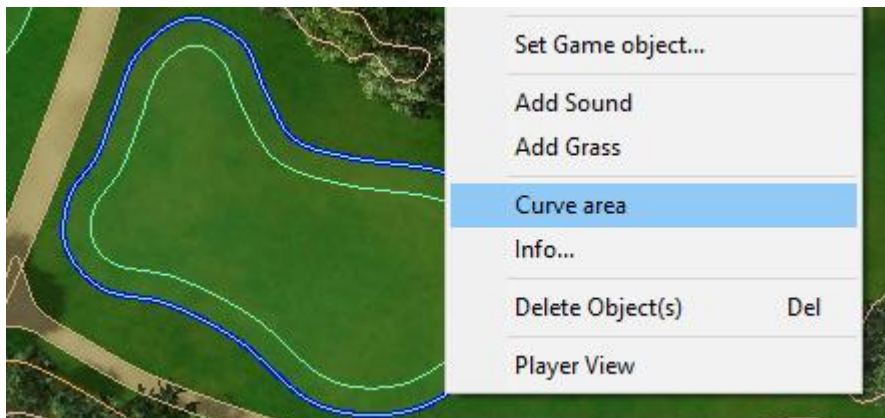
When Area curve command is launched the Area curve dialog is opened and Draw Curve is already activated. Move cursor in terrain and pick points to define a curve in terrain, enclosing a desired area.

**Hint:** It is recommended to use top view while creating the curve to easily gain the desired shape of the boundary curve and point positions. To see area curves in side view be sure that in Visibility Filter the Curves in side view item is activated.

To finish creating the curve choose Finish from right mouse click context menu or press Enter. Now you can set a name for newly created area.

**Hint:** To edit created area curve hover cursor over the area curve so, that it gets highlighted and from the right mouse click context menu choose Edit Area Curve command.

It is possible to calculate area of any other curve in map. Select the curve, press right mouse button and choose Curve area command:

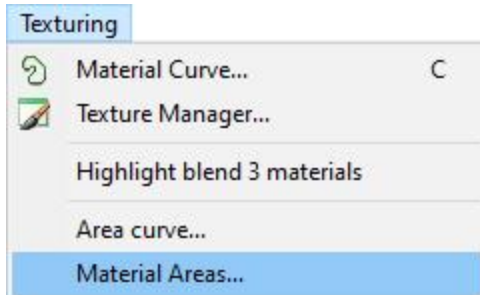


## Material Areas

To calculate and export areas of all Area Curves in map, use Material Areas command.

You have following possibility to launch Material Areas command:

- From Texturing drop down menu select Material Areas...



Specify file name of text file to export areas to.

Export looks like this:


Area [m <sup>2</sup> ]	Fairway	Rough
Area 1	157.71	0.00
Area 2	207.72	0.00
Sum	365.43	0.00

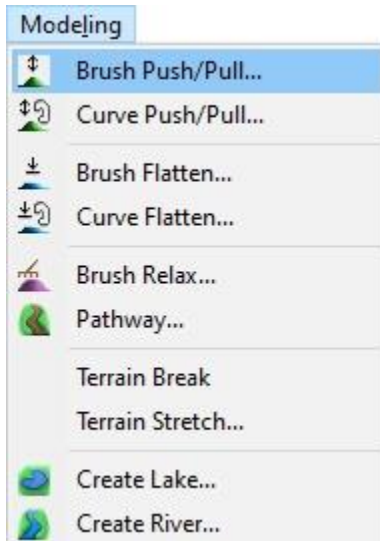
## 10. Modeling Menu

### Brush Push/Pull

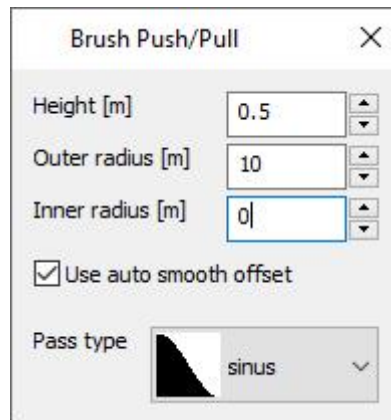
To modify terrain height by brush tool, use Brush Push/Pull command

You have following possibilities to launch Brush Push/Pull command:

- From Modeling drop down menu select Brush Push/Pull
- Using icon from the toolbar 



When Brush Push/Pull command is launched the Brush Push/Pull dialog is opened where you can set brush properties



**Height** – set the relative height value by which will be the terrain pulled (in case of positive height value) or pushed (negative height value)

**Inner radius** – set inner radius of brush. The terrain inside the inner radius will be pushed /pulled by the full height value

**Outer radius** – this value should be greater than inner radius.

Terrain between inner and

outer radius represents a pass area. Inside the pass area the terrain is still affected by the brush tool, but its height changes by 100% (at inner radius) to 0% (at outer radius) of height value.

**Use auto smooth offset** – check the checkbox if inner and outer radius values create an appropriate (large enough) pass area

**Pass type** – from the drop-down list select sinus or linear pass between unchanged and modified terrain.

**Note:** In case of an inconvenient value written in one of radius or height fields, the value turns to red and should be changed.

Move cursor in terrain and click the left mouse button to create a single hill (in case of pull), or hole (push) or hold left mouse button depressed and drag cursor across the terrain to create a contiguous mound / valley.

To finish the Brush Push/Pull command press Enter or Esc key.

The Undo command only works after finish of Brush dialog.

**Hint:** Hold down the **Ctrl** key while clicking to temporary switch pull to push and vice versa.




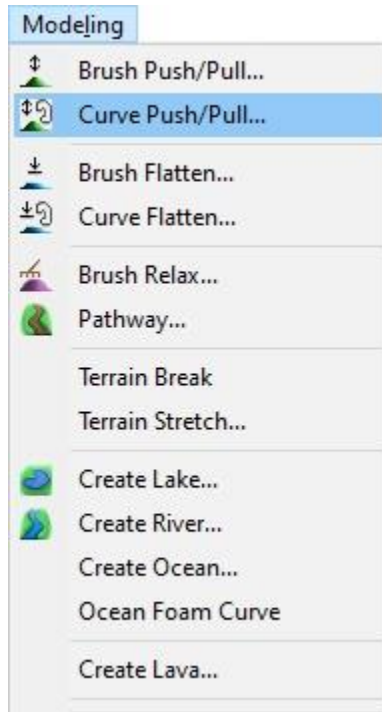


## Curve Push/Pull

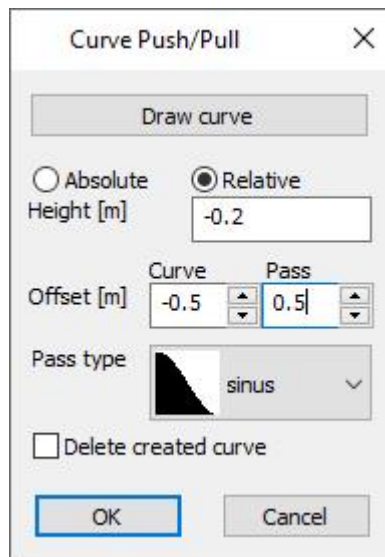
To modify terrain height by a curve, use Curve Push/Pull command

You have following possibilities to launch Curve Push/Pull command:

- From Modeling drop down menu select Curve Push/Pull
- Using icon from the toolbar 



When Curve Push/Pull command is launched the Curve Push/Pull dialog is opened and Draw curve is already activated. Move cursor in terrain and pick several points to create a curve.



**Hint:** Use right mouse click context menu to edit the curve during creation

To finish creating the curve choose Finish from right mouse click context menu or press Enter.

**Height** – set absolute or relative height value by which will be the terrain pulled (in case of positive height value) or pushed (negative height value).

**Hint:** You can also drag the height value by moving cursor vertically up or down in terrain. This is visible only in Side View.

**Offset Curve** – set offset distance from the curve to specify area, in which the terrain will be fully affected (the terrain inside the offset area will be pushed /pulled by the full height value).

**Offset Pass** – this value specified a wide of pass area. Inside the pass area the terrain is still affected by the push/pull tool, but its height changes by 100% (at inner border) to 0% (at outer border) of height value.

**Pass type** – from the drop-down list select sinus or linear pass between unchanged and modified terrain.

**Delete created curve** – If the curve was created during the command activate this checkbox if you want to remove the created curve from the map after the change

**Hint:** To create an enclosed curve during creation choose Close option from right mouse click context menu

**Note:** You can also run the command by using of existing curve. Hover cursor over an existing terrain / material / camera or forest boundary curve, right mouse click and from the context menu choose Apply push/pull. In this case the Draw Curve button is disabled in the dialog box.

To confirm and finish the Brush Push/Pull command click the OK button or press Enter

Example of making bunker deeper: Select the material curve Sand, enter Offset Curve -0.5, Offset Pass 0.5 and Height e.g., -0.2m. This way the bunker is 0.2m deeper than before at the 0.5m pass.




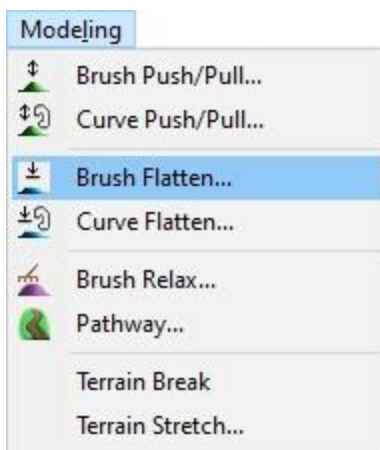
The same procedure can be used in case of deepening the terrain under the lakes.

## Brush Flatten

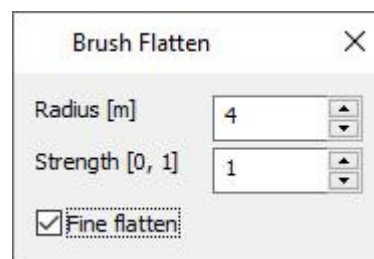
To flatten terrain by brush tool, use Brush Flatten command

You have following possibilities to launch Brush Flatten command:

- From Modeling drop down menu select Brush Flatten
- Using icon from the toolbar 



Unlike relax the flatten command flattens the surface out. When Brush Flatten command is launched the Brush Flatten dialog is opened where you can set brush properties.



**Radius** – set the appropriate brush radius  
**Strength** – set intensity of relax tool. The value close to 0 means a weak intensity, value 1 represents maximum of strength.  
**Fine flatten** – Activate this checkbox to calculate each point

only from the neighbouring points so the flattening is not so noticeable. If the check box is switched off, flattening is calculated from all points of brush size.

Pick discrete places in terrain or drag the cursor across areas which need flattening of surface.

To finish the Brush Flatten command press Enter or Esc key.

**Note:** Too large flatten circles can cause performance problems and delayed response of the program.


Example of using brush flatten command to flatten river area:

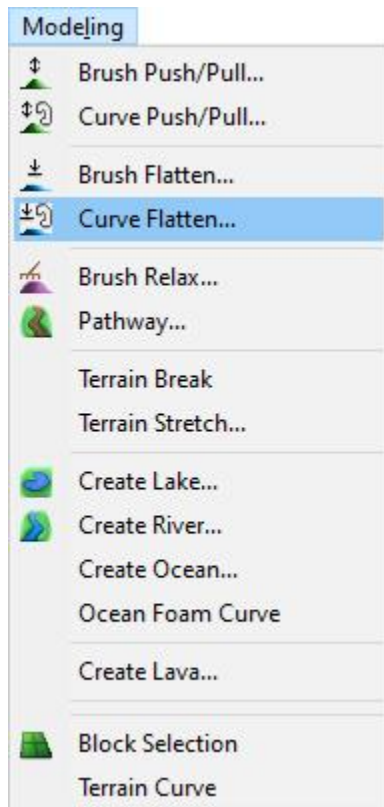


## Curve Flatten

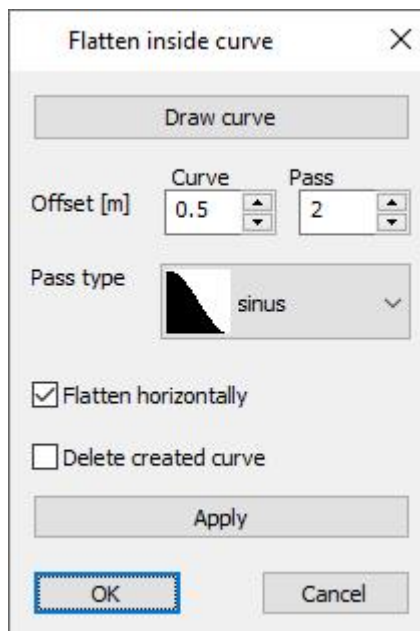
To flatten terrain inside of curve to one average height, use Curve Flatten command.

You have following possibilities to launch Curve Flatten command:

- From Modeling drop down menu select Curve Flatten
- Using icon from the toolbar 



When Curve Flatten command is launched the Flatten inside curve dialog is opened and Draw curve is already activated. Move cursor in terrain and pick several points to create a closed curve.



**Hint:** Use right mouse click context menu to edit the curve during creation  
To finish creating the curve choose Finish from right mouse click context menu or press Enter.

**Offset Curve** – set offset distance from the curve to specify boundary of the area, in which the terrain is fully affected (the terrain inside the offset curve is pushed /pulled by the full height value).

**Offset Pass** – this value specified an outer boundary of pass area. Inside the pass area the terrain is still affected by the flatten, but the influence changes by 100% (at inner border) to 0% (at outer border).

**Pass type** – from the drop-down list select sinus or linear pass between modified and unchanged terrain

**Flatten horizontally** – activate this checkbox if you want to apply the flatten horizontally  
**Delete created curve** – If the curve was created during the command activate this checkbox if you want to remove the created curve from the map after the change  
**Apply** – use this button to apply the changes

**Note:** You can also run the command by using of existing curve. Hover cursor over an existing terrain / material / camera or forest boundary curve, right mouse click and from the context menu choose Apply flatten. In this case the Draw curve button is disabled in the dialog box.

To confirm and finish the Curve Flatten command click the OK button or press Enter


Example of using curve flatten command to flatten Tee area:

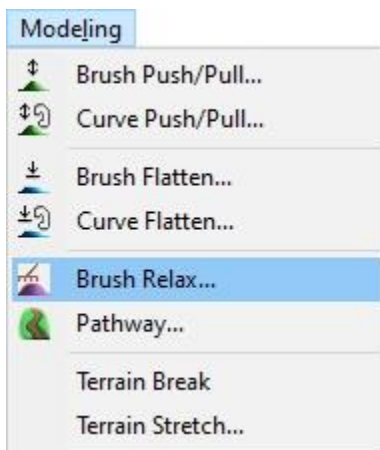


## Brush Relax

To relax terrain roughness by brush tool, use Brush Relax command.

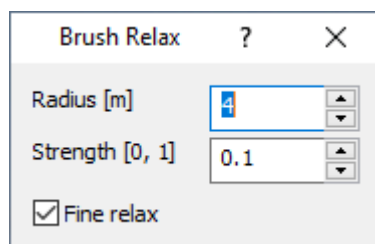
You have following possibilities to launch Brush Relax command:

- From Modeling drop down menu select Brush Relax
- Using icon from the toolbar 



Unlike flatten relax preserves more the original terrain shape. It only smooths out the rough surface.

When Brush Relax command is launched the Brush Relax dialog is opened where you can set brush properties



**Radius** – set the appropriate brush radius

**Strength** – set intensity of relax tool. The value close to 0 means a weak intensity, value 1 represents maximum of strength.

**Fine relax** – Activate this checkbox

to calculate each point only from the neighbouring points so the relaxing is not so noticeable.

Pick discrete places in terrain or drag the cursor across areas which need flattening of surface. To finish the Brush Relax command press Enter or Esc key.




Example of relaxing edges of bunker if terrain is not smooth:

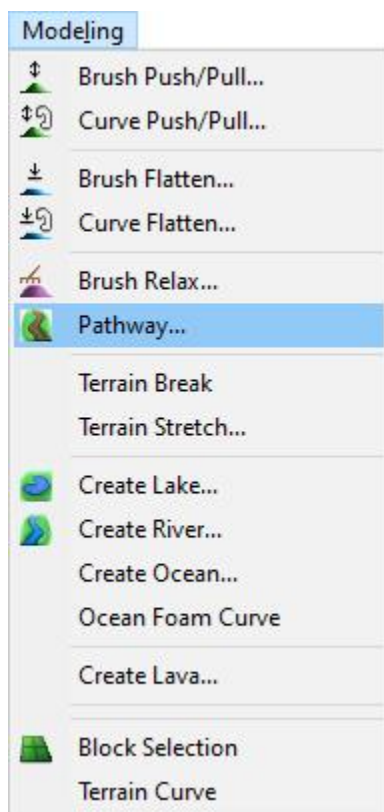


## Pathway

To create a horizontally flattened pathway or drive way of specified width at hillside, use Pathway command.

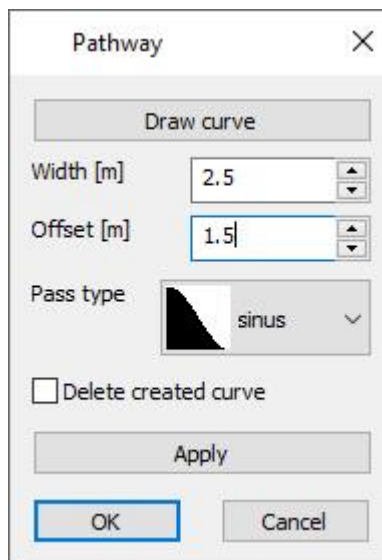
You have following possibilities to launch Pathway command:

- From Modeling drop down menu select Pathway
- Using icon from the toolbar 



When Pathway command is launched the Pathway dialog is opened and Draw curve is already activated. Move cursor in terrain and pick several points to create a path curve.

**Hint:** Use right mouse click context menu to edit the curve during creation



To finish creating the curve choose Finish from right mouse click context menu or press Enter.

**Width** – set the desired width of pathway.

**Offset** – this value affects an outer boundary of pass area. Inside the pass area the terrain is still affected by the pathway tool, to minimum change at the outer border.

**Pass type** – from the drop-down list select sinus or linear pass between modified and unchanged terrain.

**Delete created curve** – If the curve was created during the command activate this checkbox if you want to remove the created curve from the map after the change.

**Apply** – click this button to accept current changes and check the result.

To confirm and finish the Pathway command click the OK button or press Enter.

**Note:** You can also run the command by using of existing curve. Hover cursor over an existing terrain / material / camera or forest boundary curve, right mouse click and from the context menu choose Apply pathway. In this case the Draw curve button is disabled in the dialog box.

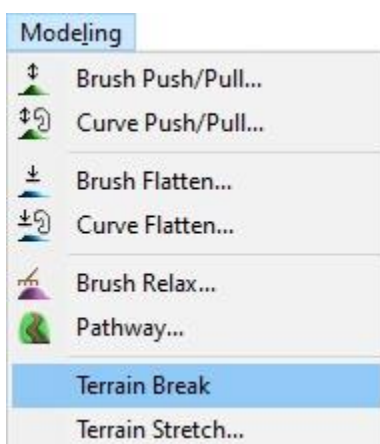


## Terrain Break

To cut terrain surface triangles in desired direction, use Terrain Break command. This is usually used for modelling of steep edges of bunkers or other terrain discontinuities.

You have following possibility to launch Terrain Break command:

- From Modeling drop down menu select Terrain Break



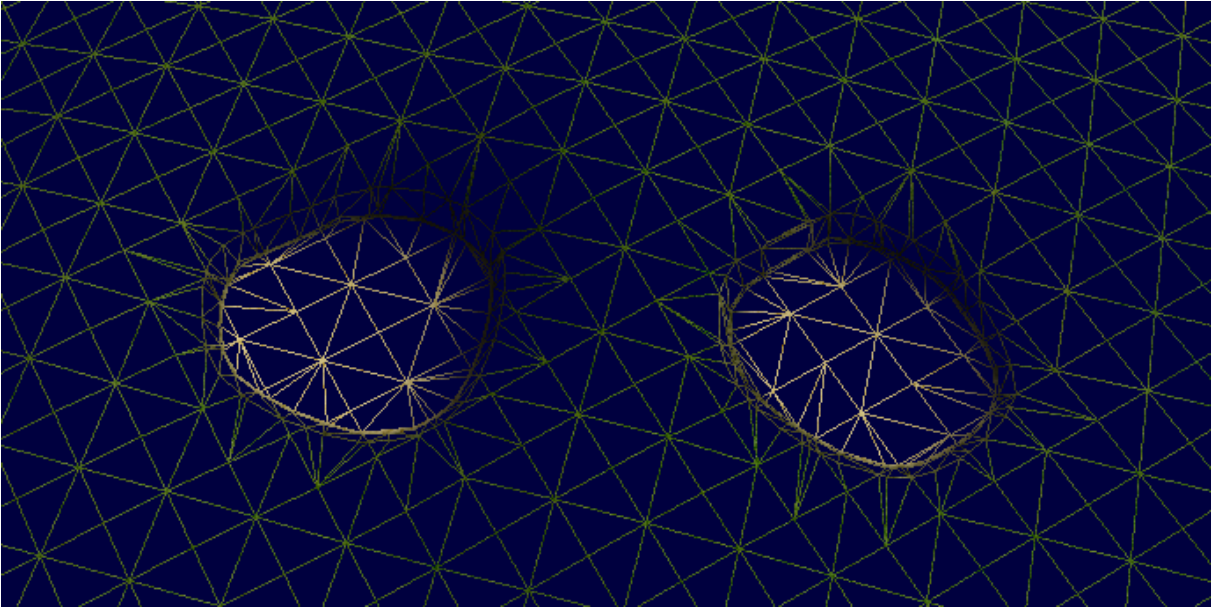
Move cursor in terrain and pick several points to create a path curve. The curve can be open or closed.

To finish creating the curve choose Finish from right mouse click context menu or press Enter.

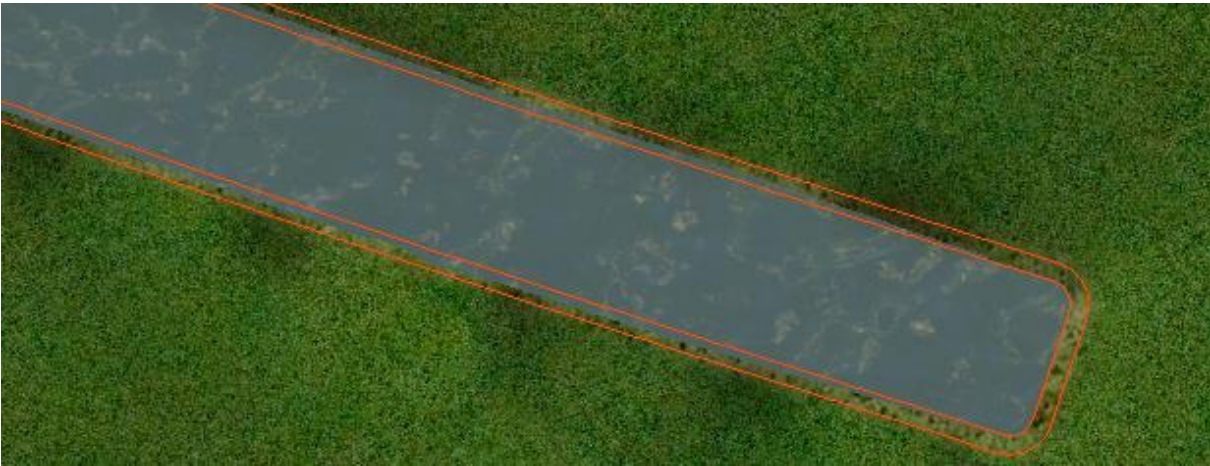
Terrain is represented by surface triangles, which are regular. The only exception in regularity of terrain mesh is at borders of terrain blocks with different size of base triangle (see description of Block Selection command), or if the triangles are additionally cut by terrain break curve.



Regular mesh modified by terrain break curves to be able to model appropriate bunker walls:



Breaking of terrain polygons along water canal (red curves) and then using of curve push pull to model a regular riverbed.



**Note:** It is not possible to model fully vertical mesh of terrain, only to get closer to it.



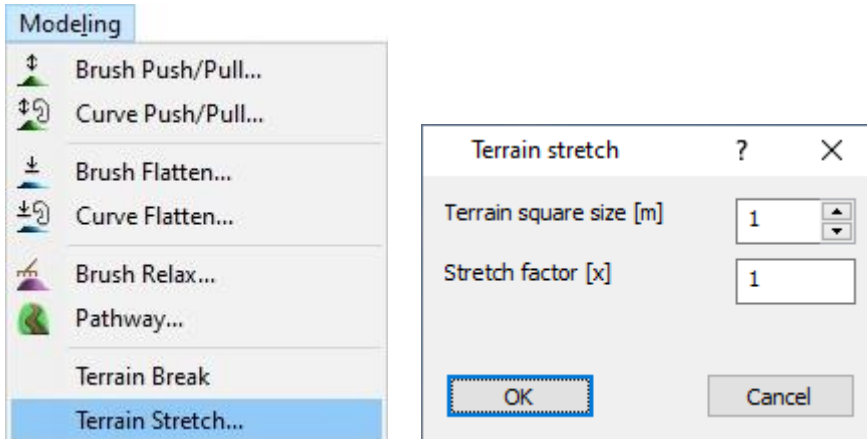
## Terrain Stretch

To change size of whole map, use Terrain Stretch command.

You have following possibility to launch Terrain Stretch command:

- From Modeling drop down menu select Terrain Stretch

It is very rarely used command to enlarge size of whole map.



**Terrain square size** is the size of basic triangles of terrain.

**Stretch factor** is coefficient to enlarge whole terrain.


These two values are bind together.

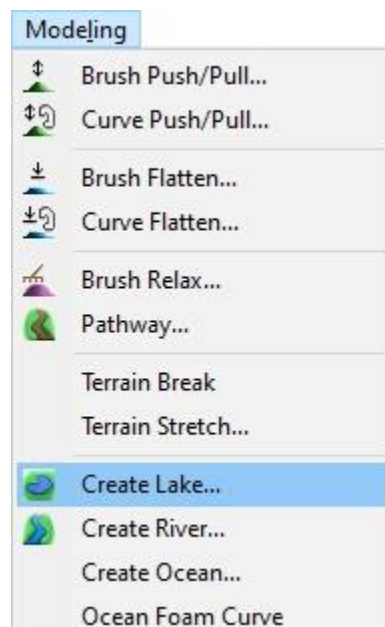
**Note:** The terrain heights are not changed by this command.

## Create Lake

To create a lake, use Create Lake command.

You have following possibilities to launch Create Lake command:

- From Modeling drop down menu select Create Lake
- Using icon from the toolbar 



When Create Lake command is launched move cursor in terrain and pick some points to create a border curve of water table

**Hint:** It is recommended to use top view while creating the curve to easily gain the desired shape of the boundary curve and point positions. The curve should be created deep enough inside the shores of the lake so that the edges of the water are not visible.

**Hint:** Use right mouse click context menu to edit the curve during creation

**Note:** Make sure that item Water Surfaces in Visibility Filter is on to see water tables in top or side view.

To finish creating the curve choose Finish from right mouse click context menu or press Enter.

To move the lake to desired height select it and from right mouse click context menu select Object Height command.

To edit created lake, make sure that item Water Surfaces in Selection Filter is on to be able to select water tables in top or side view.

Hover cursor over it so, that it gets highlighted and from the right mouse click context menu choose:

**Lake Shape** – to modify border curve of the lake

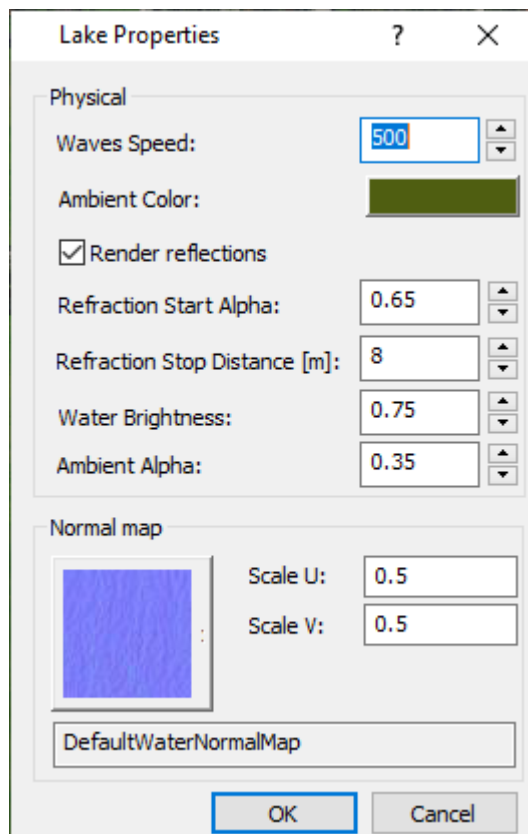
**Lake Properties** – to edit lake water properties

**Object Height** – to modify height of the lake object above the terrain

**Add Sound** – to add a sound to the lake object.

**Note:** The sound of the water waves is usually (and as default) not added to the lake object itself but to the water material curve. This ensures better uniform volume of sound around the whole water object.

**Delete Object(s)** – to remove the lake object from the map



When Lake Properties command is launched the Lake Properties dialog is opened where you can set the lake water properties

**Waves Speed** – to define an appropriate waves speed

**Ambient Color** – click the button to open color palette

and choose the desired ambient color of water table

**Render reflections** – activate this checkbox to allow to

switch off the reflection of surrounding objects like

hills, trees, clouds etc. in the lake surface. This

increases performance of the scene rendering.

**Refraction Start Alpha** – to set the refraction of water surface where 0 means reflective and value 1

transparent water surface

**Refraction Stop distance** – to set the distance of water surface for reflection

**Water Brightness** – to change the brightness of water surface

**Ambient Alpha** – to set the intensity of ambient color where 0 means low and value 1 high effect

**Scale U** and **Scale V** – to change size of waves in both directions. The values 0-1 are meaningful.

**Hint:** To see how the current setting of lake properties (e.g. waves speed and waves shape) looks like, go to View menu and turn the toggle Play on.


Editing of Lake shape:

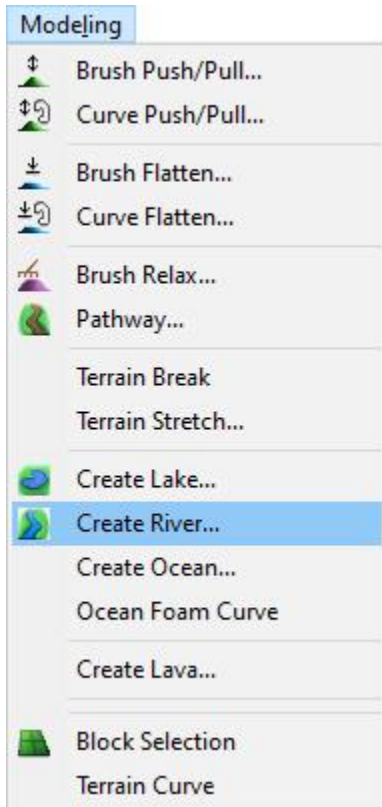


## Create River

To create a river in terrain, use Create River command.

You have following possibilities to launch Create River command:

- From Modeling drop down menu select Create River
- Using icon from the toolbar 



When Create River command is launched move cursor in terrain and pick some points to create a stream line curve

**Hint:** It is recommended to use top view while creating the curve to easily gain the desired shape of the curve and point positions.

**Hint:** Use right mouse click context menu to edit the curve during creation

**Note:** Make sure that item Water Surfaces in Visibility Filter is on to see water tables in top or side view.

To finish creating the curve choose Finish from right mouse click context menu or press Enter.

When you finished the creation of curve the River dialog is opened where you can set the river water properties

**Waves Speed** – from drop down list select the appropriate option. Custom, Fast, Normal, Slow, Very fast, Very slow

**Hint:** Use the option Custom to set a custom speed value. Write the value in editable box, enabled for the option at the right side.

**Ambient Color** – click the button to open color palette and choose the desired color of river water table

**Waves Normal Map** – click the button and from the populated Library tree select the desired waves texture. Set appropriate values of waves Scale in U and V directions.

**Transparency Map** – click the button to change current alpha map. Alpha map defines by its black color transparency of the water surface. At the border is the flowing water stream more transparent to see bottom near to the bank.

**Edit Width and Depth** – click the button to modify shape of river stream curve. Use left and right arrows at right side to select previous / next curve point. It is also possible to use arrows at keyboard.

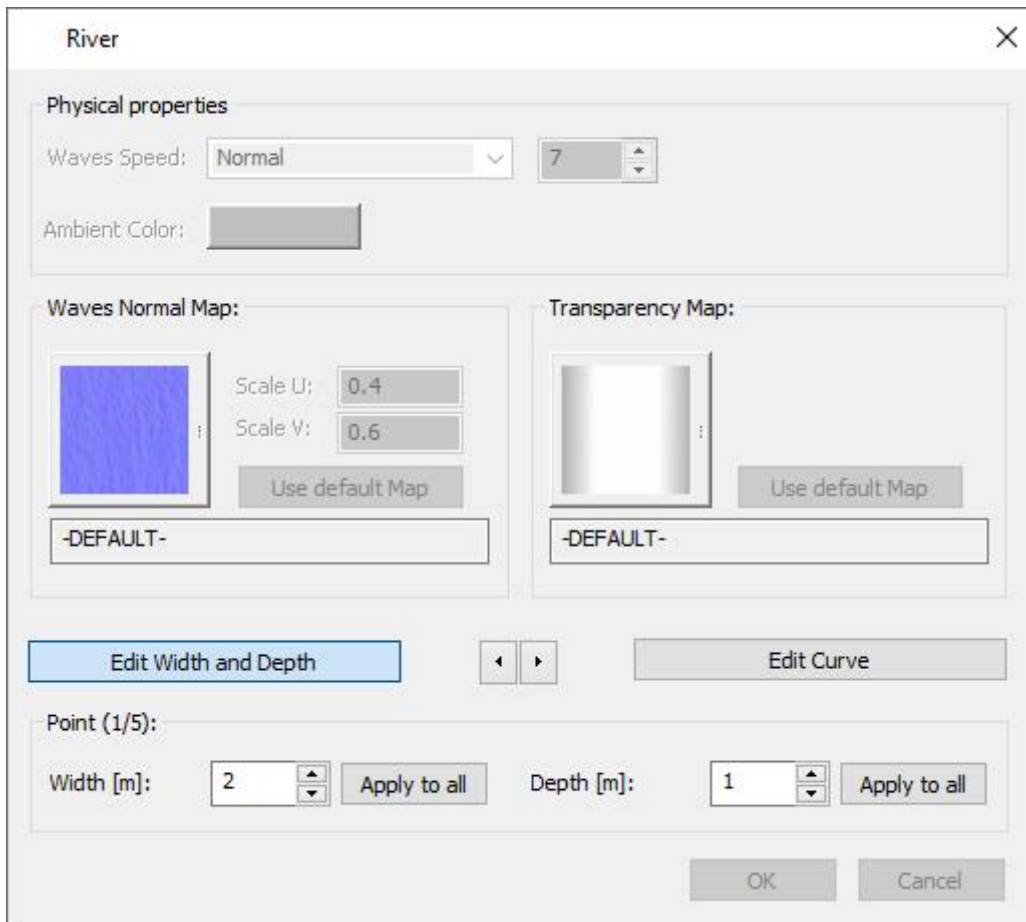
**Width and Depth** – change width and depth of the river at the selected curve point. Alternately use keys ' / ' or ' \* ' to change width. Use keys ' + ' or ' - ' to change depth.

**Apply to all** – click the button to apply changes for all available curve point

Finish editing by repeated clicking on the Edit Width and Depth toggle (to switch off) or press Enter or select Finish from the context menu.

**Edit Curve** – to modify location of points of stream line curve. Finish editing by repeated clicking on the Edit Curve toggle (to switch off) or press Enter or select Finish from the context menu.

To confirm and finish the Create River command click the OK button or press Enter



To edit created river hover cursor over it so, that it gets highlighted and from the right mouse click context menu choose:

**Edit River** – to call River dialog and change river properties.

**Object Height** – to modify overall height of the entire river object.

**Add Sound** – to add a sound to the river object.

**Note:** The sound of the water waves is usually (and as default) not added to the river object itself but to the water material curve. This ensures better uniform volume of sound around the whole water object.

**Delete Object(s)** – to remove the lake object from the map.

**Note:** Make sure that item Water Surfaces in Selection Filter is on to allow selecting any river object.





It is good sometimes to rotate the side view so, that camera is under terrain to see height of individual points and fall of water while editing the depths of points:

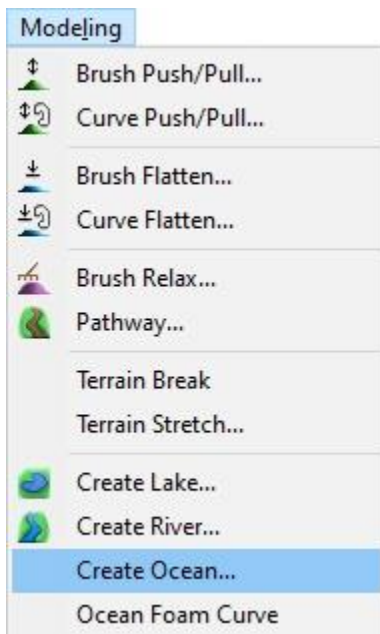


## Create Ocean

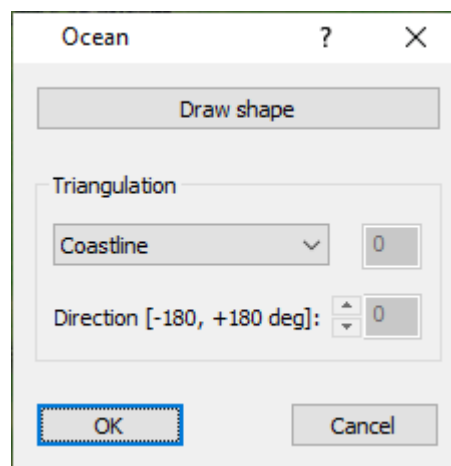
To create ocean in terrain, use Create Ocean command.

You have following possibility to launch Create Ocean command:

- From Modeling drop down menu select Create Ocean



When Create Ocean command is launched the Ocean dialog is opened and Draw shape is already activated. Move cursor in terrain and pick points to create a border curve of water table.



**Triangulation** – set the shape of waves. From drop down list select the appropriate option, Coastline, LOD, Triangle size, Square size.  
**Direction** – set the direction of waves.

To confirm and finish the Create Ocean command click the OK button or press Enter.

Select ocean object and use right click menu command Object Height to place the water area to desired height for good continuation to coast.

To finish creating the curve choose Finish from right mouse click context menu or press Enter.

**Hint:** It is recommended to use top view while creating the curve to easily gain the desired shape of the boundary curve and point positions and be able to click points also out of terrain area.

**Hint:** Use right mouse click context menu to edit the curve during creation

**Note:** Make sure that item Ocean Curves in Visibility Filter is on to see water tables in top or side view.

When Ocean Properties command from right mouse click context menu is launched the Ocean Properties dialog is opened where you can set the water properties.

Section	Property	Value
Waves	Speed [m/s]	2.5
	Length [m]	15
	Maximum Height [m]	0.4
	Minor Waves Speed [m/s]	0.3
Foam	Speed [m/s]	0.3
	Amount at crest	5
	Amount near to coast	3
	Distance from coast [m]	80
	Size [m]	100
Material	Reflection Amount	0.3
	Ambient Color	Dark Green
	Diffuse Color	Black
	Base Color Amount	1
	Specular Power	50
	Specular Color	Empty

**Waves** – set the waves properties as Speed, Length, Maximum Height and Minor Waves Speed.

**Foam** – set the foam properties as Speed, Amount at crest, Amount near to coast, Distance from coast and Size.

**Material** – set the properties for the material of water.

**Reflection Amount** – set the reflection of water surface where 0 means low and value 2 high effect.

**Ambient Color** – click the button to open color palette and choose the desired ambient color of water table.

**Diffuse Color** – click the button to open color palette and choose the desired diffuse color of water table.

**Base Color Amount** – set the amount of the base color of water surface where 0 means low and value 2 high effect.

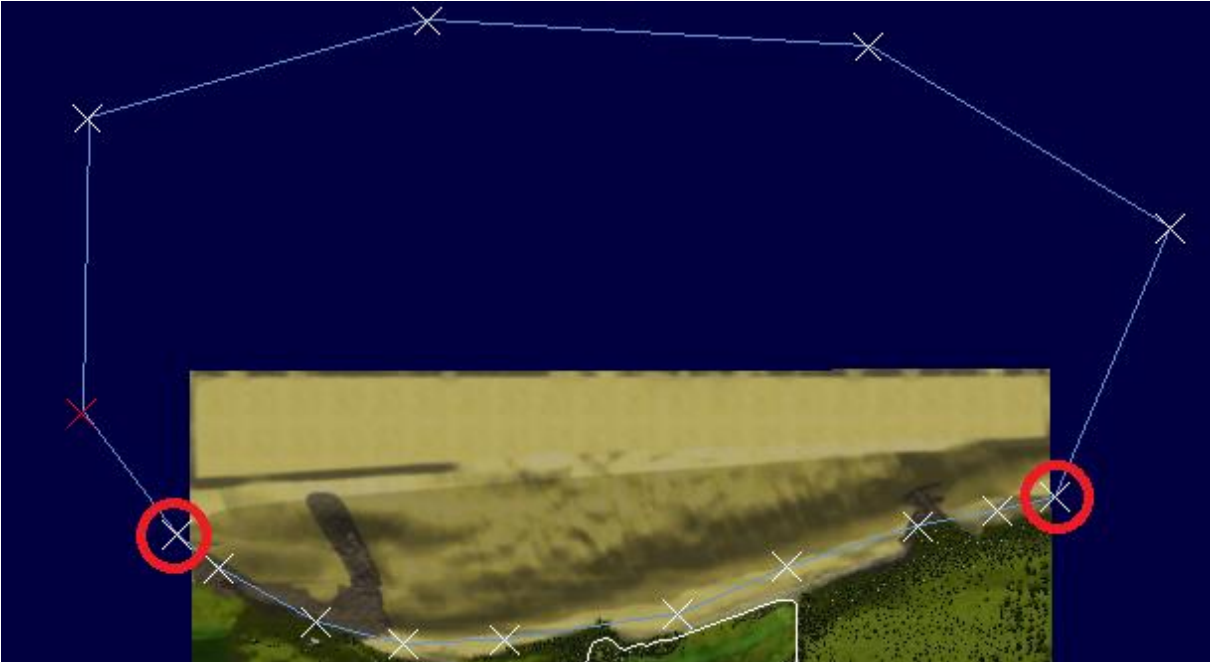
**Specular Power** – set the specular power of water surface.

**Specular Color** – click the button to open color palette and choose the desired specular color of water table.

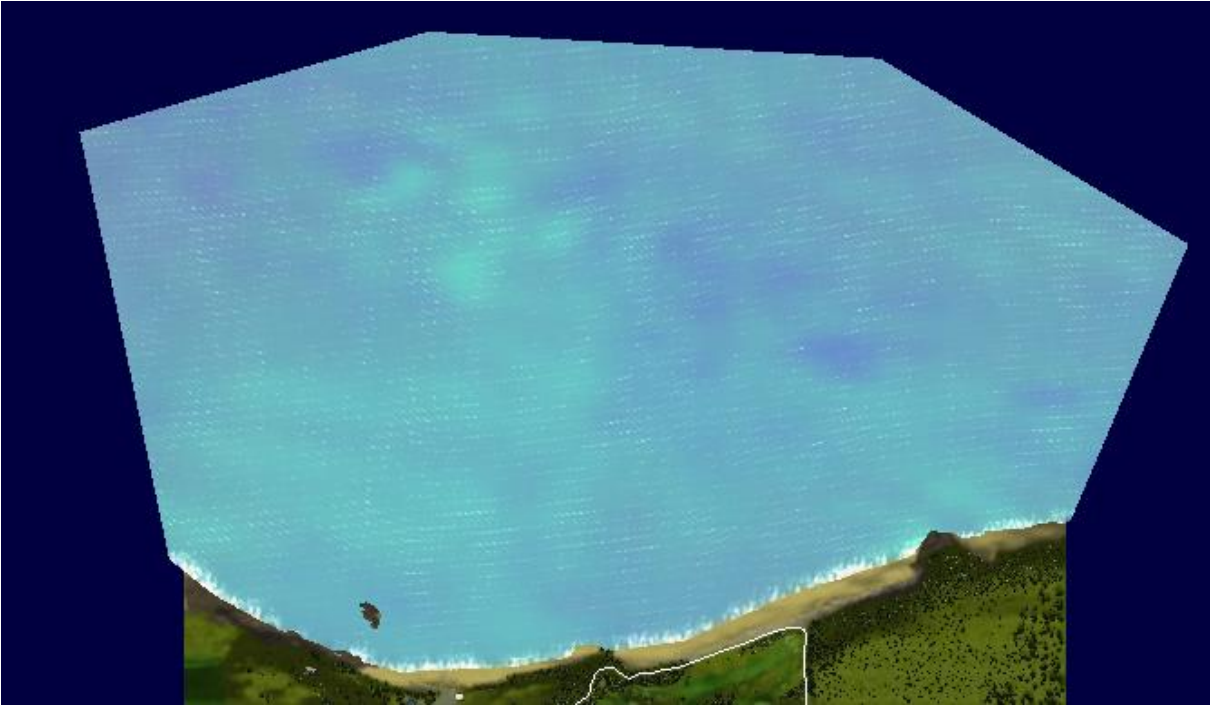
To confirm changes, click the OK button or press Enter.

**Hint:** To see how the current setting of Ocean properties (e.g. waves speed and waves shape) looks like, go to View menu and turn the toggle Play on.

Example of ocean curve for coastline case. It is good to enter some points near of coast (marked by red) to keep foam only near of coast:



After applying right click menu Object Height command:



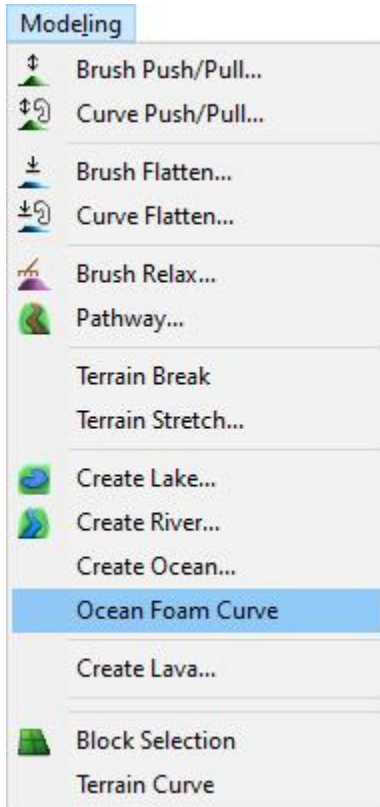
It is good to switch off selection of Water surfaces in Selection Filter dialog not to highlight the water surfaces any time when cursor is moved above a water.

## Ocean Foam Curve

To generate areas with additional foam on ocean object, use Ocean Foam Curve command.

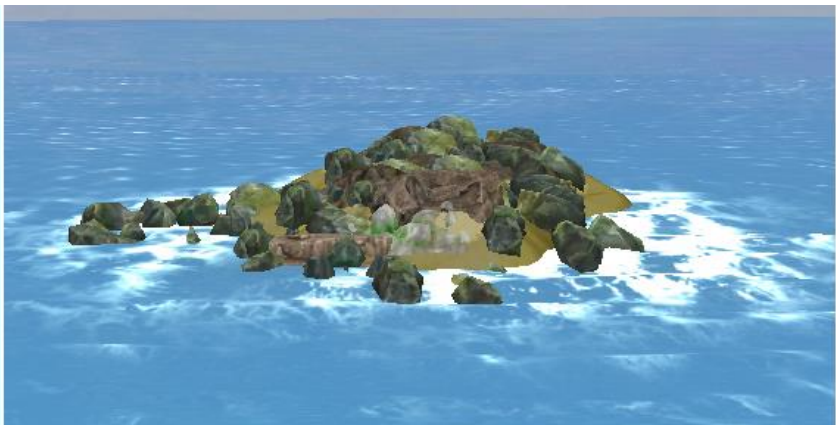
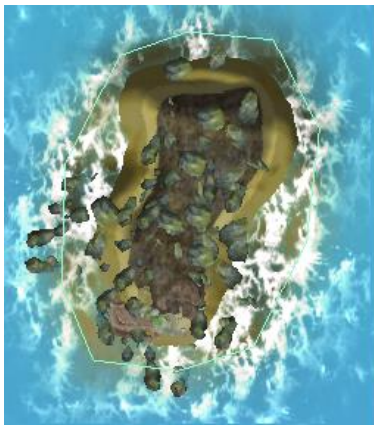
You have following possibility to launch Ocean Foam Curve command:

- From Modeling drop down menu select Ocean Foam Curve



Create ocean foam curves before generating of ocean, or edit ocean shape after drawing of ocean foam curves to recreate the ocean object with acceptation of ocean foam curves.

The ocean foam curves can be used for example for generating of extra foam around of islands (see example below).



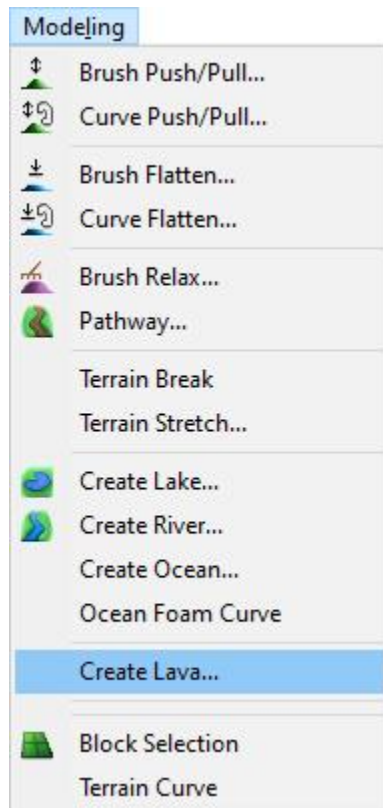


## Create Lava

To create lava in terrain, use Create Lava command. Lava is very similar object to the ocean, but with red and yellow textures instead of blue.

You have following possibility to launch Create Lava command:

- From Modeling drop down menu select Create Lava



When Create Lava command is launched move cursor in terrain and pick some points to create a closed curve.

**Hint:** It is recommended to use top view while creating the curve to easily gain the desired shape of the boundary curve and point positions.

**Hint:** Use right mouse click context menu to edit the curve during creation

**Note:** Make sure that item Water Surfaces in Visibility Filter is on to see lava tables in top or side view.

To finish creating the curve choose Finish from right mouse click context menu or press Enter.

When you finished the creation of curve the lava table is displayed.

To edit created lava hover cursor over it so, that it gets highlighted and from the right mouse click context menu choose:

**Lava Shape** – to modify border curve of the lava

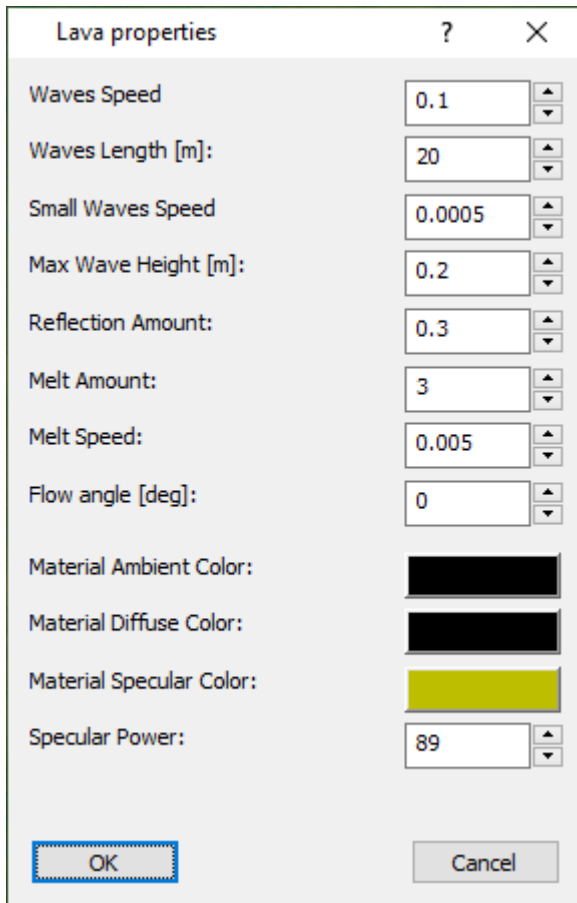
**Lava properties** – to edit lava properties

**Object Height** – to modify height of the lava object above the terrain

**Delete Object(s)** – to remove the lava object from the map

**Note:** Make sure that item Water Surfaces in Selection Filter is on to allow selecting any lava object.

When Lava properties command is launched the Lava properties dialog is opened where you can set the lava properties.



**Waves Speed** – to define an appropriate waves speed.

**Waves Length** – to define an appropriate waves length.

**Small Waves Speed** – to define an appropriate small waves speed.

**Max Wave Height** – to define an appropriate maximal wave height.

**Reflection Amount** – set the reflection of lava surface where 0 means low and value 2 high effect.

**Melt Amount** – set the melt amount of lava surface where 0 means low and value 100 high effect.

**Melt Speed** – to define an appropriate melt speed

**Flow angle** – to define an appropriate flow angle.

**Material Ambient Color** – click the button to open color palette and choose the desired ambient color of lava table.

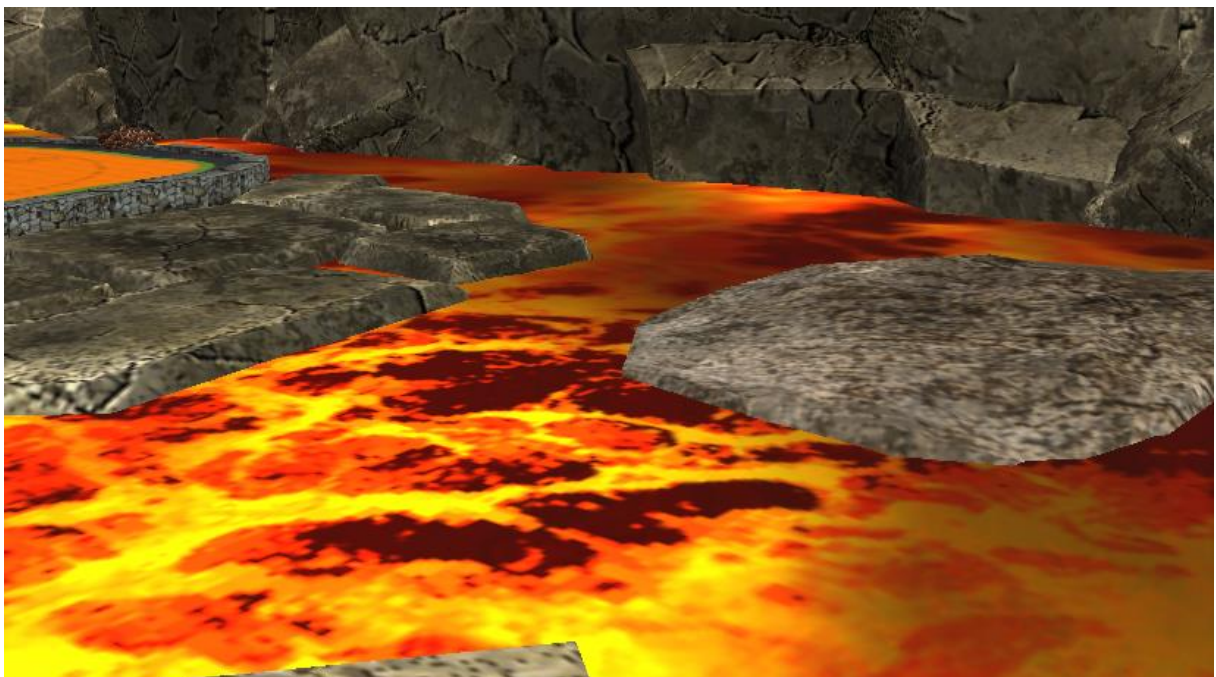
**Material Diffuse Color** – click the button to open color palette and choose the desired diffuse color of lava table.

**Material Specular Color** – click the button to open color palette and choose the desired specular color of lava table.

**Specular Power** – set the specular power of lava

surface.

**Hint:** To see how the current setting of lava properties (e.g. waves speed and waves length) looks like, go to View menu and turn the toggle Play on.




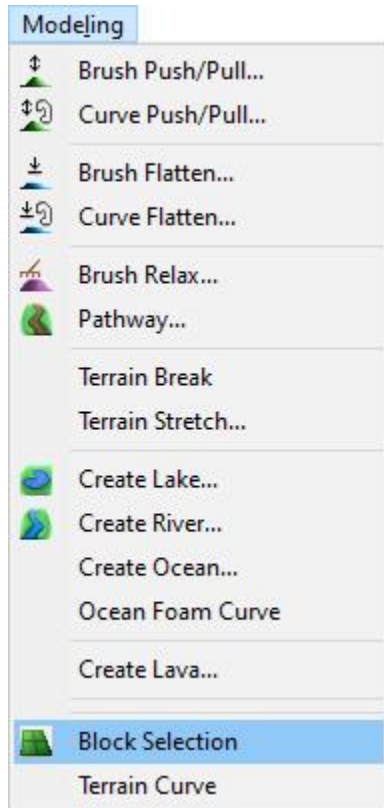


## Block Selection

To select terrain blocks, use Block Selection command.

You have following possibilities to launch Block Selection command:

- From modeling drop down menu select Block Selection
- Using icon from the toolbar 



Whole terrain mesh is divided to blocks of size 64m. Block consists of regular polygons of default size 1m. For some places in terrain, where occur small and smooth terrain shapes (e.g. sand bunkers), it may be useful to use smaller size of polygons.

When Block Selection command is launched move cursor in terrain and select one or more terrain blocks, which the size of polygons should be changed.

**Hint:** Select terrain blocks with a selection window or use Ctrl+ mouse click or Shift + mouse click to select more than one terrain blocks.

Right mouse click at the selected block and from the context menu choose the appropriate size.

Available values are:

**Density 1 m** (default),

**Density 0.5 m**

**Density 0.25 m**

Depending on the selected value the size of polygons belonging to the selected block(s) will be changed. The color of terrain block

with the increased density gets a yellow tint.

**Export blocks** – to export selected blocks (not available in public version of course creator).

**Hide blocks** – to hide selected blocks. Color of selected blocks gets a white tint.

**Show blocks** – to unhide hidden blocks. Select the white hidden block.

Deactivate the Terrain Block Selection Enabler by clicking the icon on the toolbar or Block Selection item in Modeling menu.

**Note:** After deactivation of Terrain Block Selection Enabler hidden blocks visually disappear from the map.

**Hint:** Due to performance it is recommended to keep the density of terrain mesh as low as possible.

Example of blocks with normal and higher density:

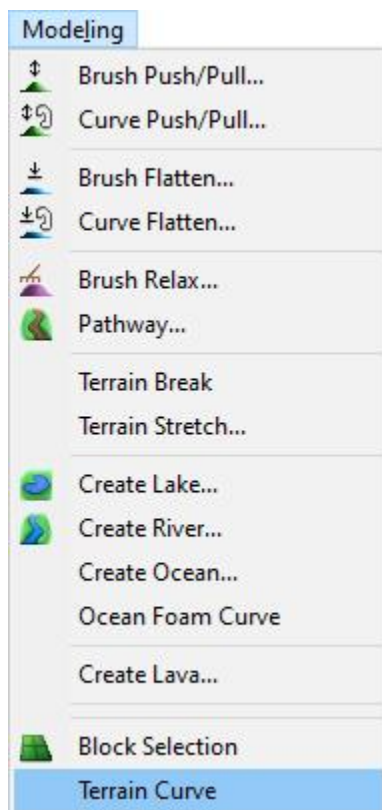


## Terrain Curve

To create a terrain curve, use Terrain Curve command.

You have following possibility to launch Terrain Curve command:

- From Modeling drop down menu select Terrain Curve



Terrain curve is intended for the terrain modeling commands which require a curve (e.g. Flatten terrain inside of curve, Push/Pull terrain inside or along of the curve....). The terrain modeling commands allow drawing of terrain curves during the commands itself or using any existing preselected terrain or material curve. The drawing of a terrain curve in advance has good sense for the Curve Push/Pull command in case a different height is required in each point of curve. In this case draw the terrain curve in advance, set the additional heights into the grip points, preselect the curve and then run the Curve Push/Pull command.

When Create Lake command is launched move cursor in terrain and pick some points to create a curve.

**Hint:** It is recommended to use top view while creating the curve to easily gain the desired shape of the curve and point positions.

**Hint:** Use right mouse click context menu to edit the curve during creation.

**Hint:** To set a height of a curve point above terrain use Edit additional heights command from right mouse click context menu.

**Note:** Make sure that items Terrain Curves and Curves in side view in Visibility Filter are on to see curve in side or top view.

To finish creating the curve choose Finish from right mouse click context menu or press Enter.

To edit created terrain curve hover cursor over it so, that it gets highlighted and from the right mouse click context menu choose Edit Terrain curve.

**Note:** Make sure that item Terrain Curves in Selection Filter is on to allow selecting any terrain curve.

To delete the terrain curve. Activate the Top View window and hover cursor over the terrain curve so, that it gets highlighted. From the right mouse click context menu choose Delete Object(s) and click the OK button or press the Delete key.

**Hint:** Hold down Ctrl or Shift keys or use selection window to select multiple curves.

Since terrain curves allow also generating of grass, they can be used for populating of grass over variously textured area without necessity to consider priorities of material curves and transitions between them. Example:




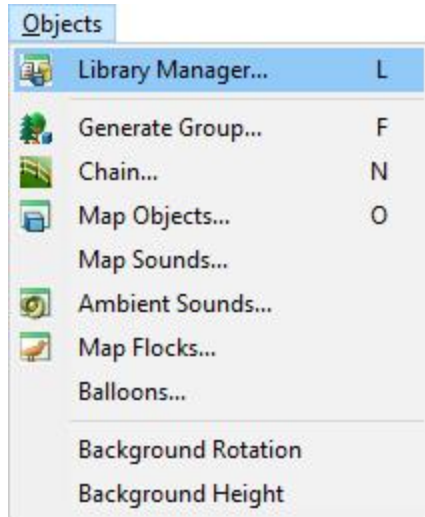
# 11. Objects Menu

## Library Manager

To open the library with objects, trees, textures and sounds for multiple insertion to maps, use Library Manager command.


You have following possibilities to launch Library Manager command:

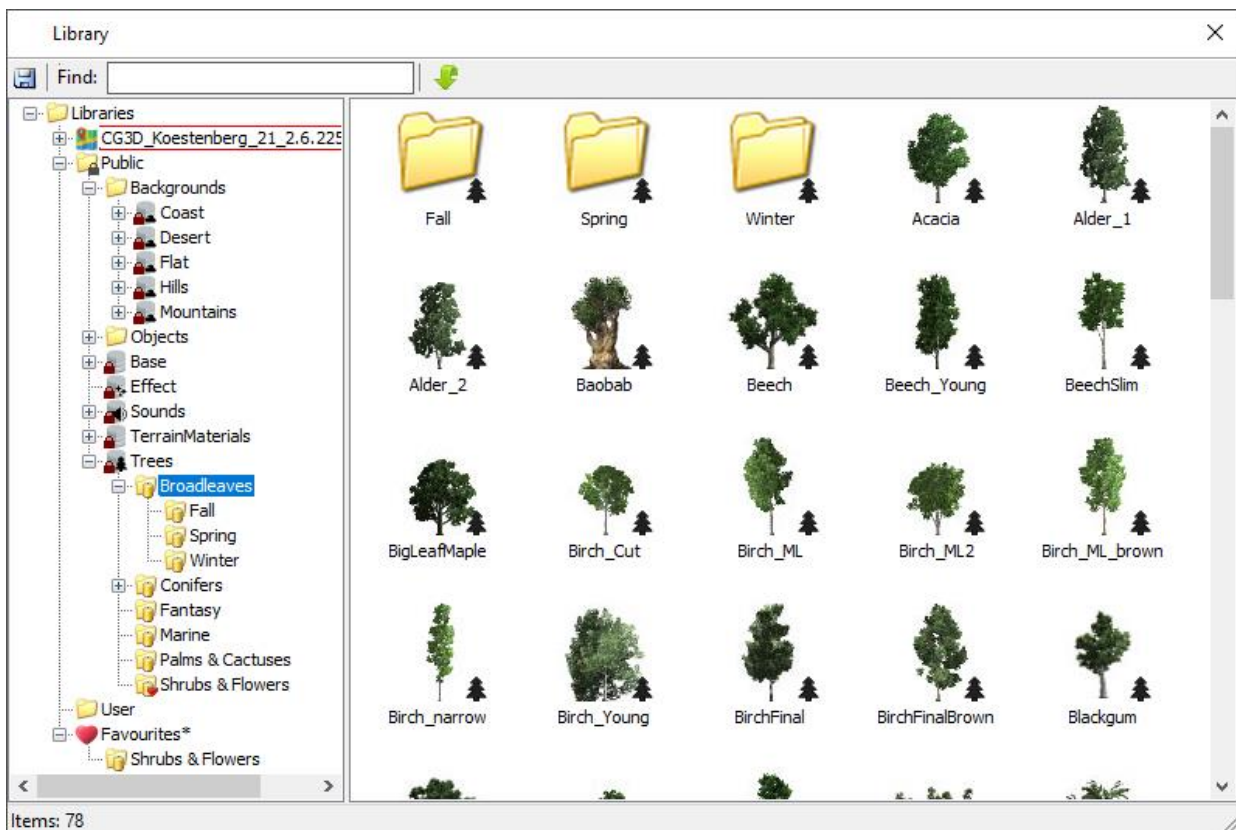
- From Objects drop down menu select Library Manager
- Using icon from the toolbar 
- Using keyboard shortcut: L



When the Library Manager command is launched the library with objects, trees, textures and sounds is opened. Expand library tree and locate the desired object in right side of Library manager window and by pressing the left mouse button drag the object from Library manager window into the map and drop it on the desired position in terrain.

**Hint:** Use **Ctrl+drag** to copy any object in the map. Remember that the Object move enabler should be turned on.

**Note:** After the first run is install only base library. For more libraries push green button **Download / Update Libraries** in the top of Library dialog. 





In the top of Library dialog is possible to search objects according name. Fill name of object to the edit field and press Enter.

After changing object in the library save the libraries on the right click mouse button and select **Save Libraries**

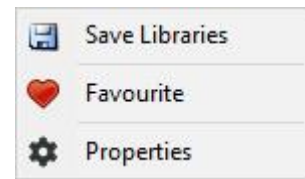
Click the right mouse button on the object / folder and set **Favourite**.

Object / folder is set in Favourites as frequently used object / folder.

To remove object / folder from Favourites library select object /folder in Favorites library and press the right click mouse button choose **Remove Favourite**.

In the **Properties** are shown object information's the name, ID number, size and location of library.

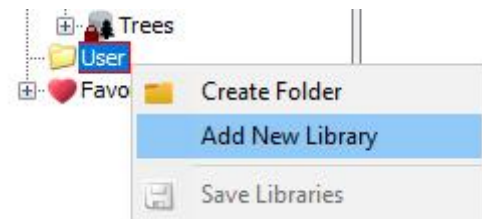
In public version of editor is possible to edit only User libraries. Rest of them are read only.



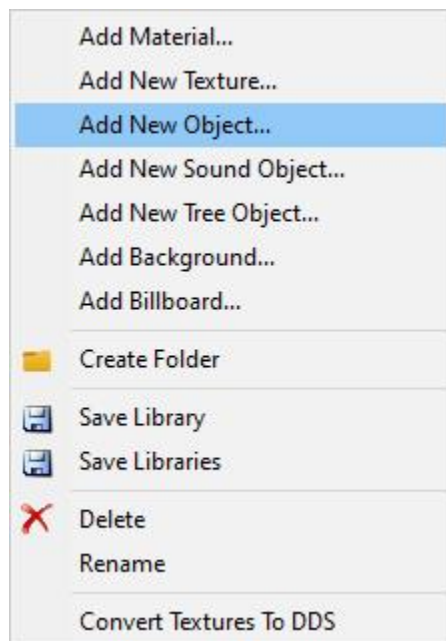
### Import a mesh file into User Library:

To import a mesh file into User Library launch Library manager.

In tree or list view, right click on chosen folder to show context menu with several options.



Select *Add New Object...*, and use the file browser to locate the file you want to import.

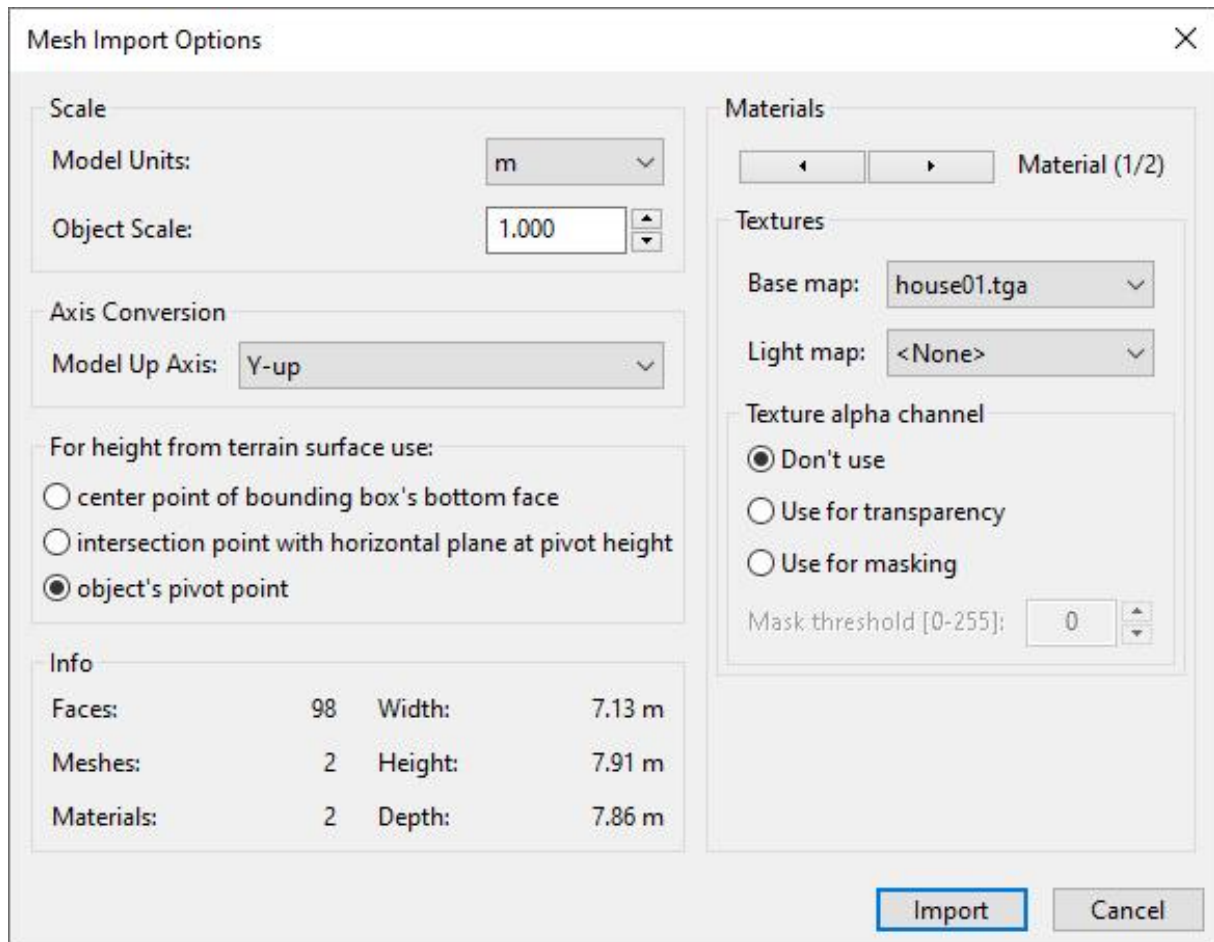


**Note:** Supported file formats for mesh objects are 'Autodesk FBX' and 'Wavefront OBJ'.

The *Mesh Import Options* window opens. Set the options you want and click *Import*.

If some errors occur during the import, the pop-up window reports them at the end of the process.

**Note:** The importer combines the contents of the file into a single mesh object, and gives the object the same name as the file (without the file name extension).



**Scale** - determines the scaling for the contents of the file on import. All vertices of the incoming model are scaled relative to world origin: (0,0,0).

**Model Units** - here you can specify the scale factor by choosing predefined unit used in the original file.

**Note:** Our application works internally in metres. So if left default, scale factor will be 1.0, and no scale conversion will be applied.

**Object Scale** - actual scale factor applied to incoming data.

**Axis Conversion** – here you can specify the axis of the incoming model it uses for up direction. The object will be rotated to match its vertical axis with up axis in host application.

**For height from terrain surface use** - to easily place and manipulate an object on terrain surface we use object's terrain height parameter. It is a vertical distance between terrain surface and some object's point (generated, if necessary).

*The options for object's reference point are:*

- \* center point of bounding box's bottom face
- \* intersection point with horizontal plane at pivot height
- \* object's pivot point

**Note:** if no intersection exists, pivot point is used.



**Info** - displays total number of faces, meshes and materials the resulted object will have, as well size of the object after set scale and axis conversions applied.

**Materials** - here you can set texture data for each material found in imported model.

**Textures** - every material can use none, one (selected in Base map combobox) or two textures (second one selected in Light map combobox).

The combo boxes are populated with all texture file names referenced in selected material.

The texture files need to be present in imported object's folder or its parent's "textures" subfolder. Otherwise the import is canceled.

**Texture alpha channel** - specifies how to interpret the alpha channel values of the textures during rendering. Available only when some texture selected.

\* *Don't use* - The values are ignored. It's the default.

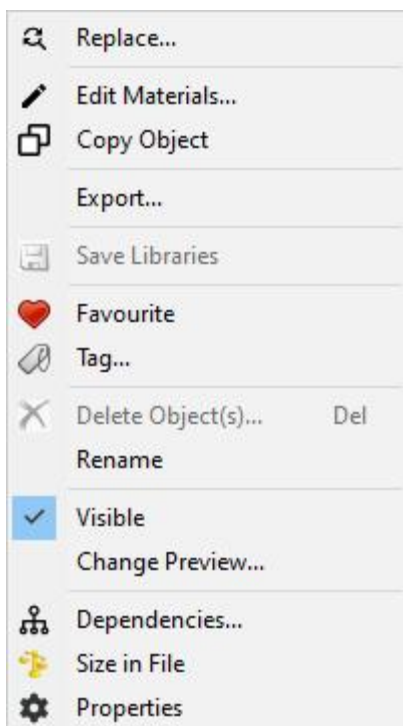
\* *Use for transparency* - The values are used in blending operation, which combines object's rendering output with already rendered scene.

\* *Use for masking* - Pixels with alpha value lower then some threshold are rejected, not rendered. The threshold can be set in Mask threshold edit box.

**Mask threshold** - 1 byte value against which alpha values will be tested [0-255]

**Note:** to import a mesh file with lightmap should be main texture in Diffuse Color layer and lightmap texture should be in Ambient Color layer with Map Channel setted on 2. Lightmap should be in Uvw mapping mapped in 2-nd channel.

To edit the imported mesh object hover cursor above the object, so that the object gets highlighted, press the right mouse button and select your choice. (Replace, Edit Materials, Copy Object, .....)

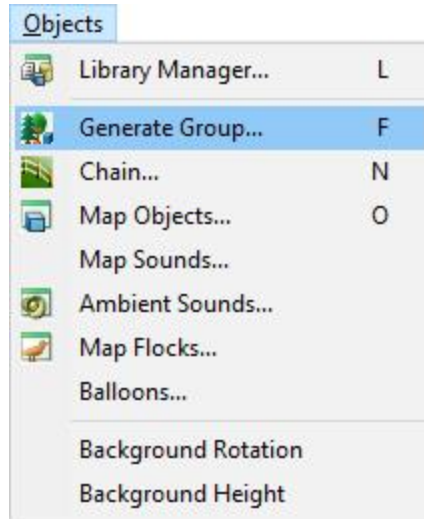


## Generate Group

To create a group of trees of specified species, scale and density, in area inside of a boundary curve, use Generate Group command. This command can be used also for generating groups of other objects from Objects libraries.

You have following possibilities to launch Generate Group command:

- From Objects drop down menu select Generate Group
- Using icon from the toolbar 



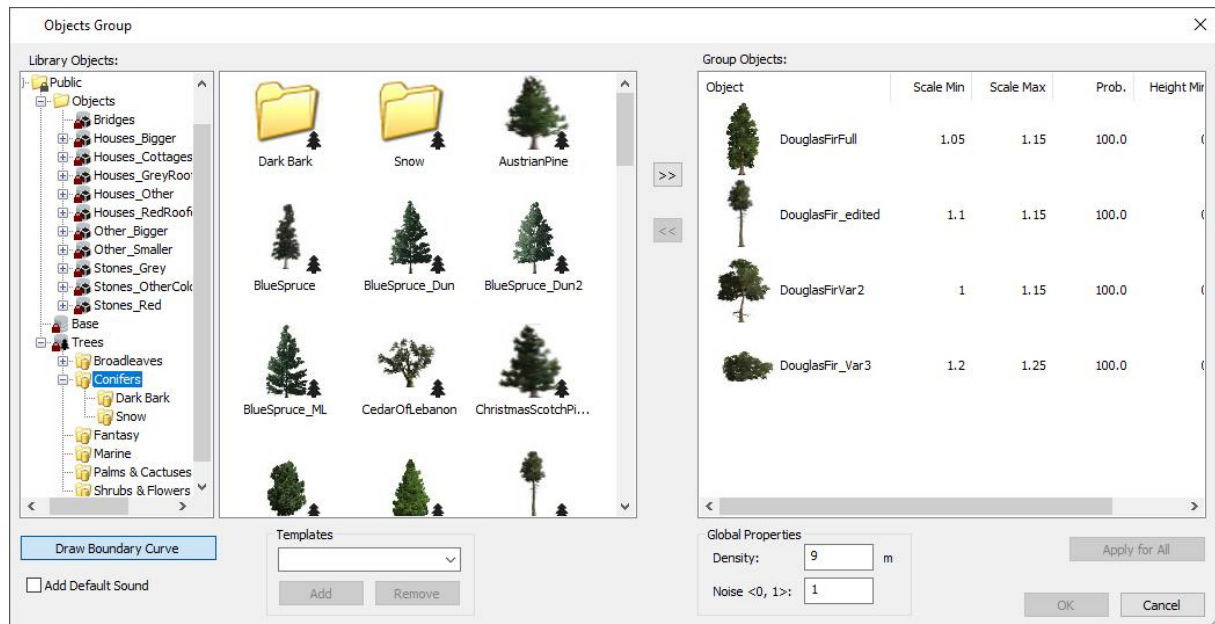
- Using keyboard shortcut: **F**

When Generate Group command is launched the Objects Group dialog is opened and Draw Boundary Curve is already activated. Move cursor in terrain and pick several points to create a curve. To finish creating the curve choose Finish from right mouse click context menu.

**Hint:** It is recommended to use top view while creating the curve to easily gain the desired shape of the boundary curve and point positions. To see the curve in side view be sure that in Visibility Filter the Curves in side view item is activated.

**Hint:** It is recommended to use more groups with the same combinations of trees around of golf course, but with always

lower density.



**Library Objects browser** is in the left part of dialog. Choose a needed tree species and double click on it to assign it to the forest vegetation in the right side. Or use >> button in the middle of dialog to add the tree to the forest. To remove tree from the forest double click on the tree's icon in the list at the right side of dialog, or use << button.

For each tree in **Group Objects** set minimal and maximal size scale and its probability value, the minimal and maximal height. The higher Prob. value the higher amounts of trees of the species in forest. In Density field set an overall forest density value. The density number represents distance between two adjacent trees. The higher is the value, the fewer trees will be placed in the forest. Noise parameter affects layout of trees in the forest. Use zero value to place trees in regular pitch (to create an "orchard"), use value 1 to create totally disordered layout of trees (to create forest).

**Hint:** To use same scale and Prob. values to all trees in forest, select the tree (which values should be used) and click Apply for All button.

**Hint:** Hover cursor above the group object so, that the object gets highlighted, press right mouse button and from the context menu choose Generate Group From command to create a new group using properties of the selected one

**Hint:** It is recommended to generate some forests around the holes at first with trees chosen for the golf course and then use **Ctrl+Drag** to copy freestanding trees of different variants, rotations and scales to exact positions at holes.

**Hint:** If you need some kind of trees e.g., behind of green, for example pines, oaks and some shrubs - generate at first group from them somewhere to the middle of fairway, drag or **Ctrl+Drag** them to their positions where you need it and then delete the group. Each tree copied or moved out of the group boundary doesn't belong to group any more.


**Hint:** To use same settings of Group Objects in the future, write templates name to the Templates edit field and press Add to create template of Group Objects.

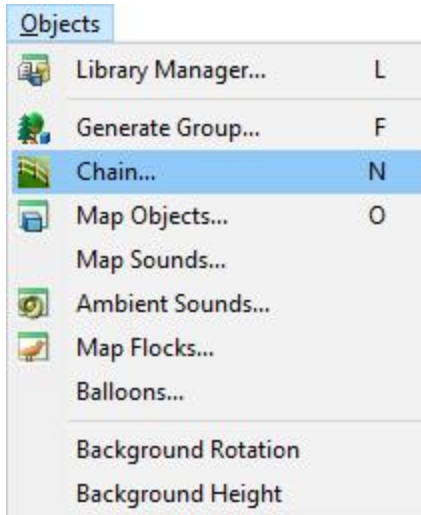
**Note:** High density of small trees, shrubs or flowers can cause performance problems.

## Chain

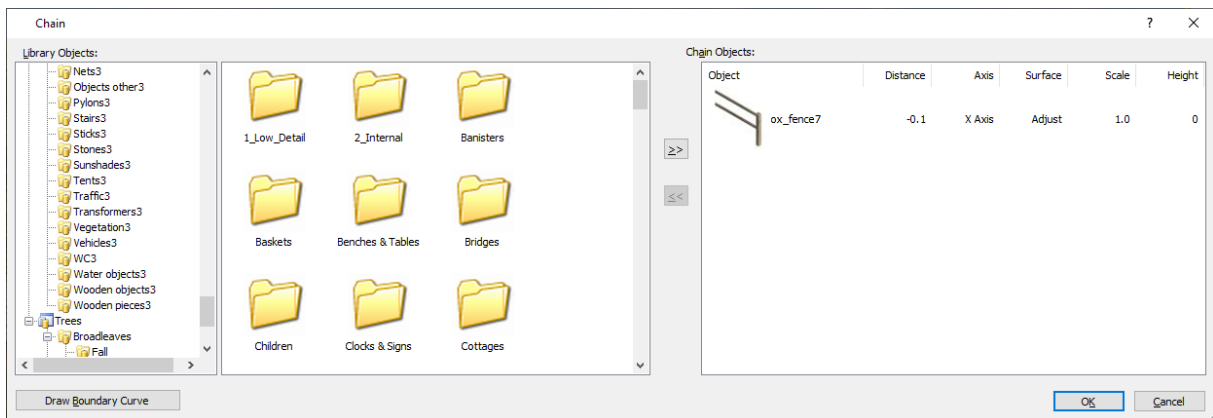
To generate a group of objects or trees along a curve, use Chain command.

You have following possibilities to launch Chain command:

- From Objects drop down menu select Chain
- Using icon from the toolbar 
- Using keyboard shortcut: **N**



When the Chain command is launched the library with objects and trees is opened.




Fence generated from pieces in chain:

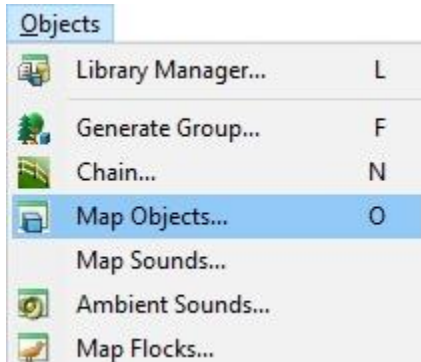


## Map Objects

To list all object and tree types populated in map, use Map Objects command.

You have following possibilities to launch Map Objects command:

- From Objects drop down menu select Map Objects
- Using icon from the toolbar 
- Using keyboard shortcut: **O**



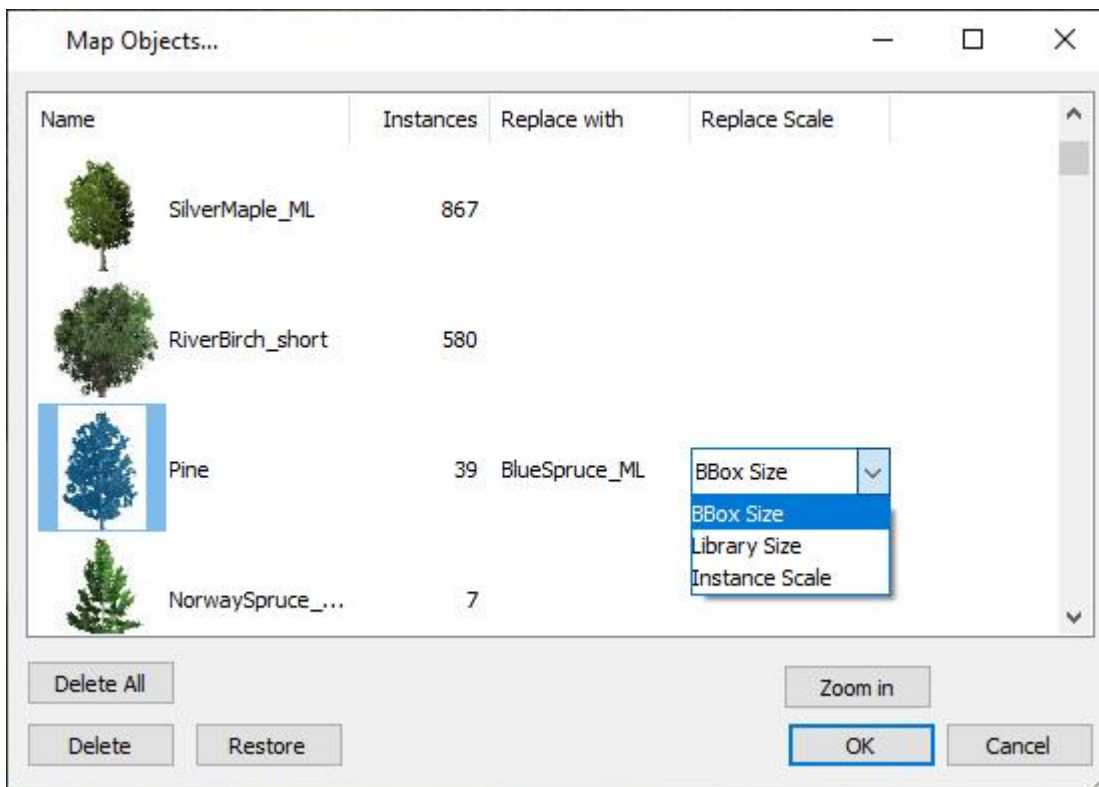
When the Map Object command is launched a dialog with all map objects and trees is opened.

**Name** – name of the object

**Instances** – number of object instances in map

**Delete All** – delete all objects and trees from map listed in Map Objects dialog

**Delete** – delete all instances of selected object or tree from map. Click on the object icon to enable Delete button.



**Replace** – replace all instances of selected object or tree from map. Click on the object icon to enable Replace button. Click on Replace button and select the new object from the Library dialog.

Then set **Replace Scale** type from the drop-down list:

**BBox Size** - Each replaced object instance will have approximately the same bounding box size as the original object instance

**Library Size** - Each replaced object instance will have the same size 1 defined in library

**Instance Scale** - Each replaced object instance will have the scale of the original object instance

Use **Zoom in** button to select all instances in the map.

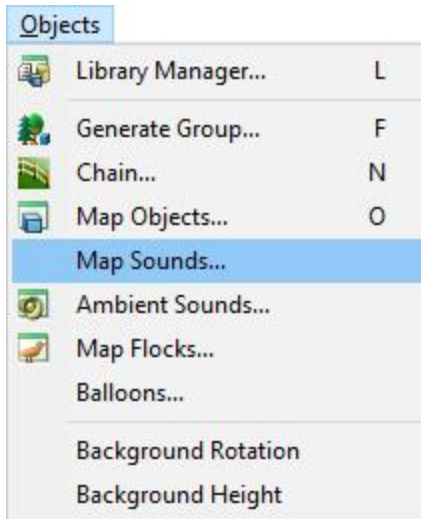


## Map Sounds

To list all sounds populated in the map, use Map Sounds command.

You have the following possibilities to launch Map Sounds command:

- From Objects drop down menu select Map Objects



When the Map Sounds command is launched a dialog with all populated sounds is opened.

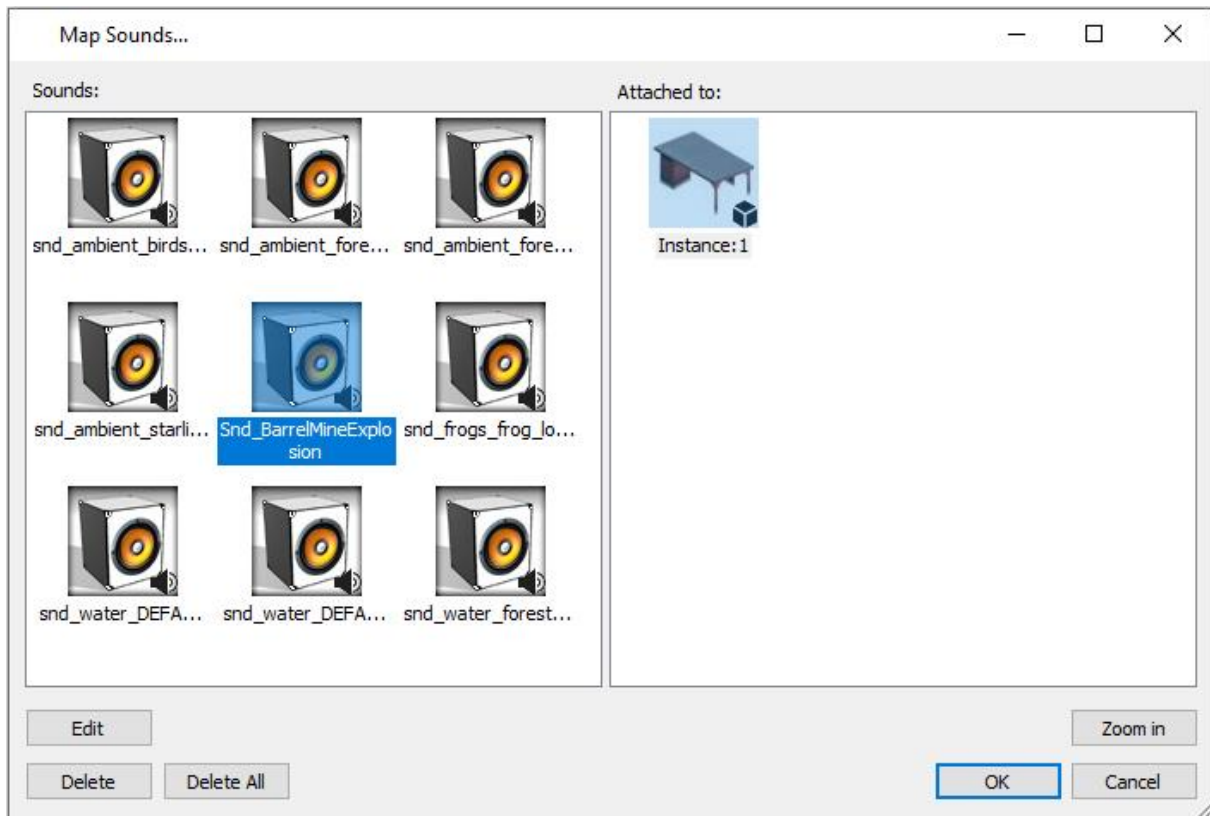
**Sounds** – all sounds populated in the map.

**Attached to** – is shown all instances for the sound object selected in the left window.

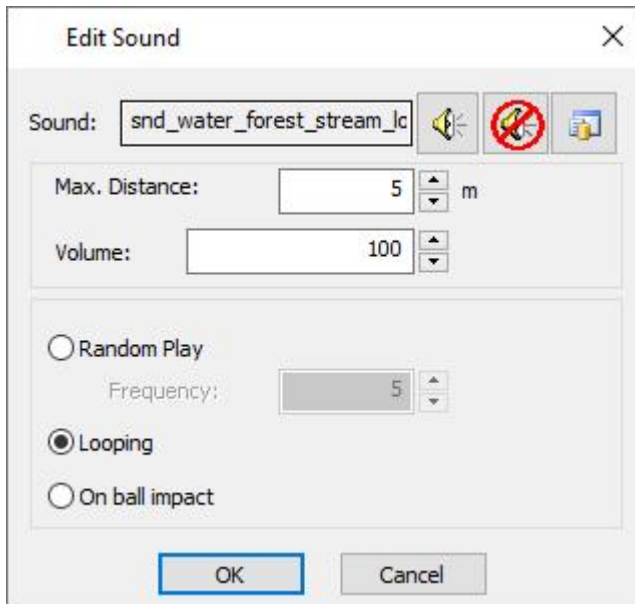
**Delete All** – delete all sound objects from the map listed in Map Sounds dialog

**Delete** – delete all selected sound objects from the map. Click on the object icon to enable Delete button.

**Zoom in** – to show the object with an associated sound select instance in the right window Attached to and select Zoom in button.



**Edit** – to be able to edit sound select a populated sound in the Sound window and chose the instance (object, curve,..) where the sound was used. When the Edit command is launched the Edit sound dialog is opened.




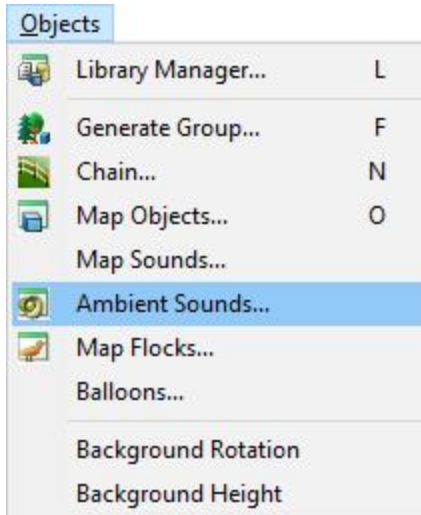
Add Sound and Edit Sound dialog are the same. See the description of [Add Sound](#) command.

## Ambient Sounds

To assign sounds to the map, use Ambient Sounds command.

You have following possibilities to launch Ambient Sounds command:

- From Objects drop down menu select Ambient Sounds
- Using icon from the toolbar 



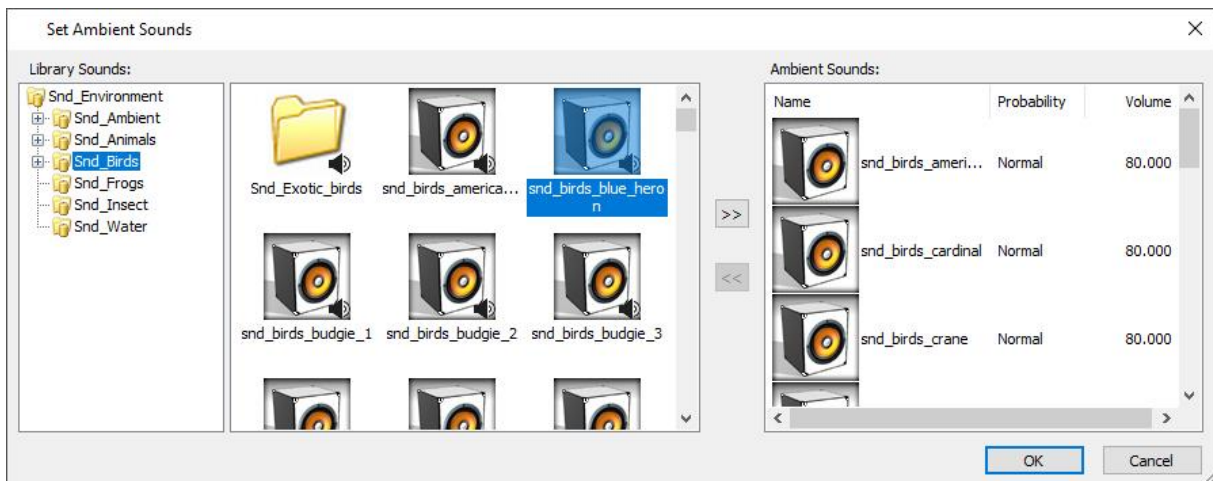
Mapped sounds are randomly generated and played in the map.

*Hint:* Use Play command from View menu to listen the sounds mapped.

From the Library Sounds browser, which is on the left part of dialog, choose a needed sound and double click on it to assign it to the Ambient Sounds on the right side of dialog, or use >> button in the middle of dialog to add sound to scene.

*Hint:* Click on the sound icon and from the right click drop down menu run Play Sound Object... command to listen the sound.

*Note:* You can remove sound from the map by double click on the sound's icon in the list at the right side of dialog, or by using the << button in the middle of dialog



You can set properties for each sound:

**Probability** – how often is sound played, choose between Low, Normal or High options


**Volume** – how loudly is the sound played, choose value from 0-100

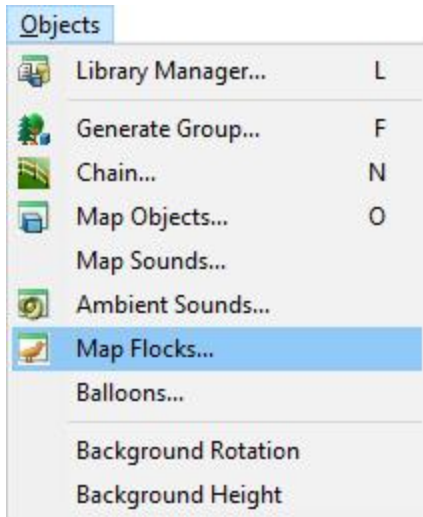
*Hint:* Use low Probability and Volume about 70-80 for pleasurable sounds in map.

## Map Flocks

To assign birds and flocks of birds to the map, use Map Flocks command.

You have following possibilities to launch Map Flocks command:

- From Objects drop down menu select Map Flocks
- Using icon from the toolbar 

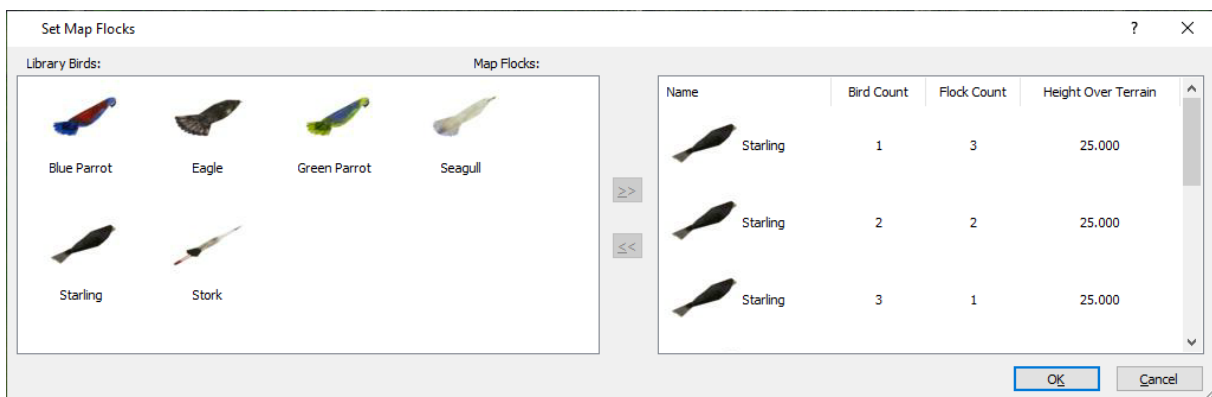


Mapped flocks are randomly flying in the map.

**Hint:** Use Play command from View menu to see the flocks mapped.

From the Library Birds browser, which is on the left part of dialog, choose a needed bird and double click on it to assign it to the Map Flocks on the right side of dialog, or use >> button in the middle of dialog to add bird to scene.

**Note:** You can remove flock from the map by double click on the flock's icon in the list at the right side of dialog, or by using the << button in the middle of dialog.



You can set properties for each flock:

**Bird Count** – number of birds in the flock.

**Flock Count** – number of flocks in the map of given type.

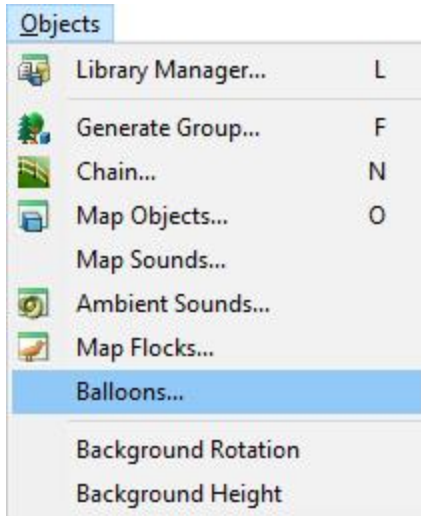
**Height Over Terrain** – rough height of flock flying.

## Balloons

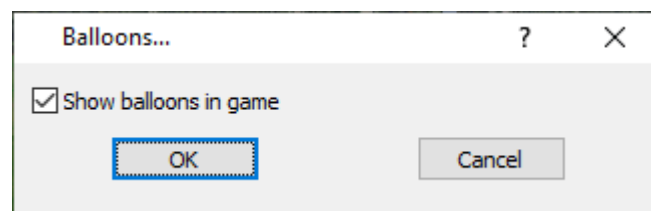
To show/hide balloons in the game, use Balloons command.

You have following possibility to launch Balloons command:

- From Objects drop down menu select Balloons



When Balloons command is launched the Balloons dialog is opened. Activate the checkbox if you want to allow balloons in the game:

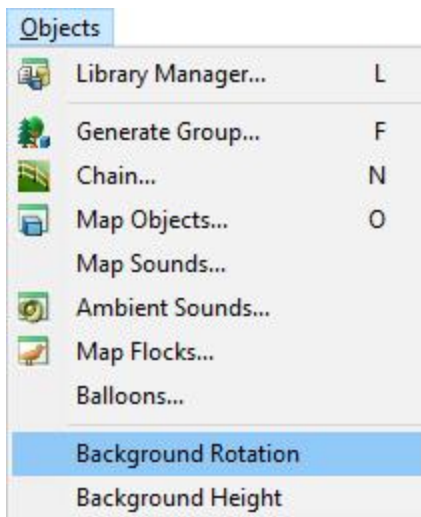


## Background Rotation

To rotate background around center of map use Background Rotation command

You have following possibility to launch Background Rotation command:

- From Objects drop down menu select Background Rotation



When Background Rotation command is launched click to scene, hold and drag to rotate the background which is a 2D panoramic picture used as a background of scene.

To finish Background Rotation command, choose Finish from right mouse click context menu

**Hint:** Use Library Manager to drag & drop background from the Background folder to the scene

**Note:** Make sure to use side view to see the rotation of background

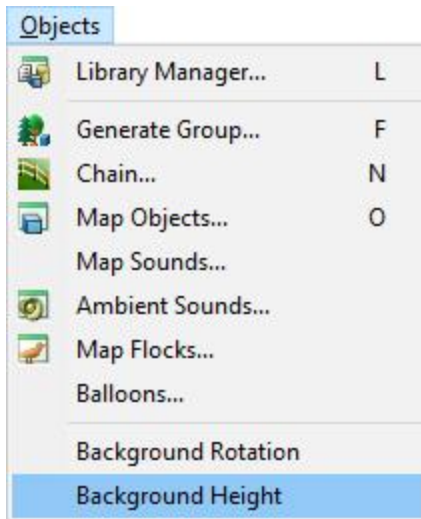


## Background Height

To move background up or down, use Background Height command.

You have following possibility to launch Background Height command:

- From Objects drop down menu select Background Height



When Background Height command is launched click to scene, hold and drag to move the background up or down.

To finish Background Height command, choose Finish from right mouse click context menu


**Note:** Make sure to use side view to see the elevation of background

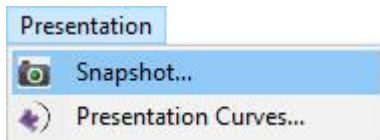
## 12. Presentation Menu

### Snapshot

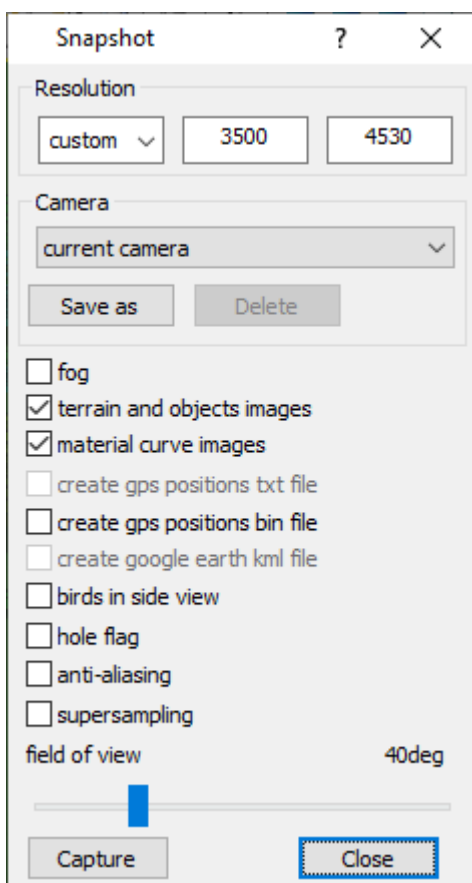
To capture a view to picture, use Snapshot command.

You have following possibilities to launch Snapshot command:

- From Presentation drop down menu select Snapshot
- Using icon from the toolbar 



When Snapshot command is launched the Snapshot dialog is opened where you can set snapshot properties.



**Resolution** – set picture size

**Camera** – select saved camera or use current camera

**Save as** – save current camera view. Cameras are saved into FILENAME\_cams.xml.

**Delete** – remove selected camera view

**fog** – switch fog on or off for the picture

**terrain and objects images** – enable to save extra terrain and object images. Terrain image contains terrain without objects. Objects images contains only objects without terrain and has also alpha mask. Using terrain and objects images is easy to combine clipped terrain with objects.

**material curve images** – switch on, to generate black and white images with material curves contours. These can be used for later postprocessing of images.

**create gps position txt file** – switch on to create .txt with gps positions of image corners. It is available only for top view images and if gps mapping is set.

**create gps position bin file** – switch on to create .bin file with gps positions for each pixel in image. It is available only for side view images and if gps mapping is set.

**create google earth kml file** – switch on to create google earth .kml file. Google earth can show image according gps position and orientation on earth. It is available only for top view images and if gps mapping is set.

**birds in side view** – switch on enable birds in side view

**hole flag** – switch on enable hole flag is side view

**anti-aliasing** – switch on to get images with better quality. Using anti-aliasing consumes more graphics card memory so it is not possible generate images as big as images without anti-aliasing

**field of view** – info field of view on oblique camera angle shot

**Capture** – save captured picture

**Close** – close the dialog without capturing a picture

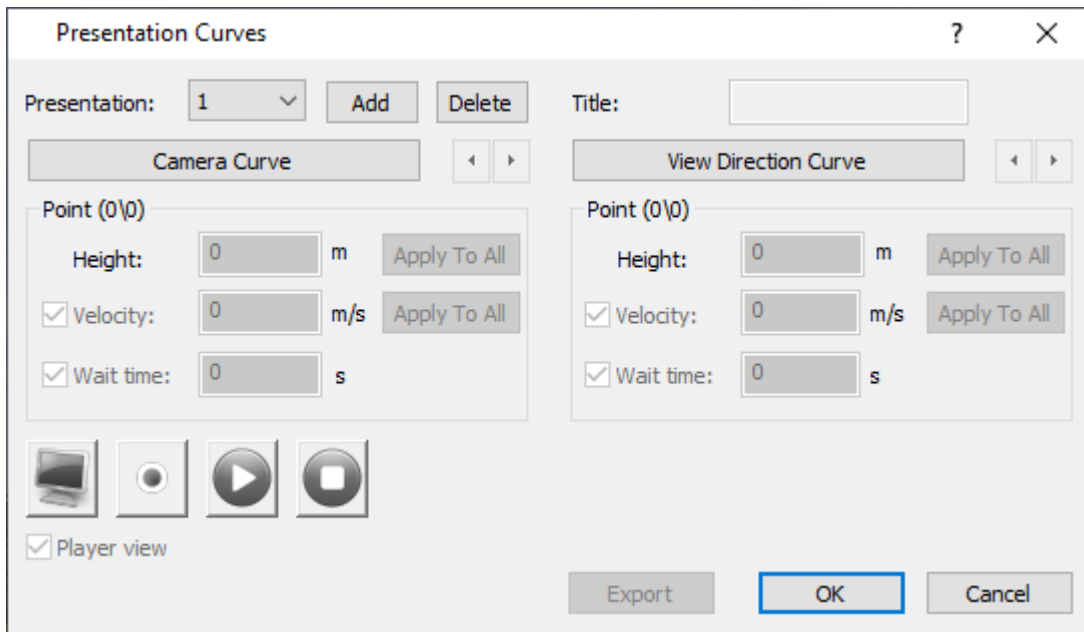
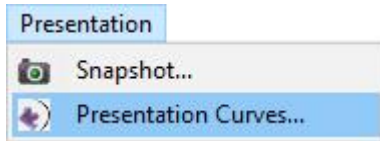
**Hint:** It is possible to save different camera positions used for snapshot by Save as button which can be restored from drop down list. Saved camera positions can be deleted by Delete button.

## Presentation Curves

To create a presentation flight above terrain, use Presentation Curves command.

You have following possibility to launch Presentation Curves command:

- From Presentation drop down menu select Presentation Curves



**Presentation** – Click the arrow at the right side and select the appropriate presentation number from the drop-down list.

**Add** – create a new presentation

**Delete** – remove the current presentation From the Presentation drop down list click on the presentation number you would like to remove. Click the Delete button and presentation curves belonging to presentation with selected number will be deleted from the map.

**Title** – save a text which will be displayed during the presentation.

**Camera Curve and View Direction Curve** – For each presentation create the camera curve and the view direction curve. Camera curve defines the camera movement itself during the presentation and the View Direction Curve defines the movement of view direction during the presentation.

So, while the camera is moving along the camera curve, camera eye is watching the point which is moving along the view direction curve. The default speed is the same for both. If the view direction curve is shorter than the camera curve, camera eye is watching the end of the view direction curve for the rest of movement. To finish creating the curve choose Finish from right mouse click context menu.

**Note:** It is recommended to use top view while creating the curve to easily gain the desired shape of the boundary curve and point positions.

**Height, Velocity and Wait time** – Use them to define the properties of the grip points of curve. Use arrow buttons < > to select next or previous grip point to change its properties.

The **Height** is edited as relative height above the terrain. The predefined value for the height of camera curve is 18m/yd. It means the camera flies 18m above the terrain.

The predefined value for the view direction curve is 0. It means camera eye is watching the terrain along the view direction curve. After the presentation curve it is finished and saved, the height is saved as absolute height. So, the further modeling of terrain (creating of additional hills or holes) doesn't affect the presentation curves.

**Hint:** Hover cursor over the camera or view direction curve so, that it gets highlighted. From the right mouse click context menu choose Edit Presentation Curve to change again their height.

The **Velocity** allows to change the predefined speed of camera or speed of the point which is watched by the camera. If the camera or watched point should stop for some time use the **Wait time** edit box.

Editing of Velocity and Watch time is not usual therefore use the check box in front of the edit box to edit the value.

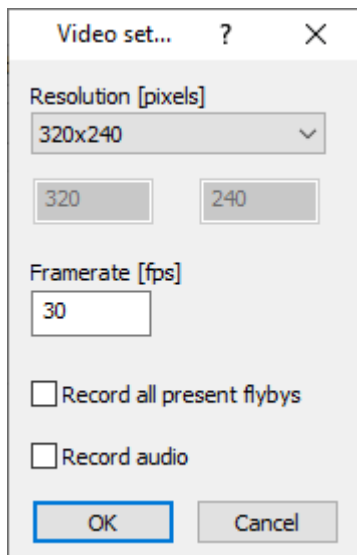
Use button **Apply to All** to assign current Height, Velocity and Wait time values to all curve points.

**Play and Stop** – Use these buttons to review the created presentation in editor environment

**Hint:** While playing, you can drag slider to move back or forward in the presentation timeline.



**Record** – Use this button to save the presentation as a video file



**Resolution [pixels]:** From the drop down list select the appropriate video size in pixels.

**Framerate [fps]:** Set the video framerate

**Record all present flybys:** Click the checkbox if you want to record all available presentations

**Record audio:** Click the checkbox if you want to record audio

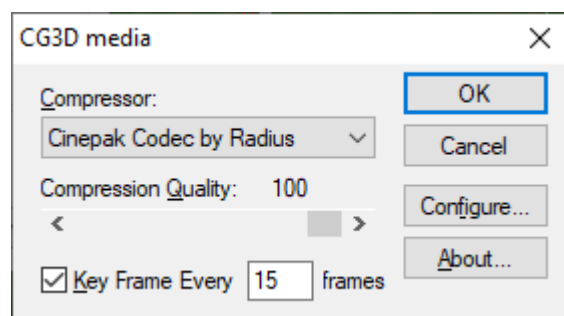
**Note:** Currently is no sound recorded in the .avi file. Another opportunity is to use some external recording program for example Fraps which records concurrently and including the sound but it requires a powerful hardware configuration (CPU and GPU).

In the populated Save As dialog specify file name and location where the video file should be stored. Click Save button to close the dialog.

**Compressor:** From drop down list select the appropriate codec.

If available, set also the desired Compression Quality or click Configure button to see and change the codec properties.

**Note:** This dialog is standard Windows dialog which offers all on the computer installed codecs.



Not all of them are working correctly. Selecting some of them can cause the crash of program. Try to play with it a bit in advance to choose the working codec and to define the desired quality (flow).

Click OK button to confirm settings and start the recording.

**Note:** While the presentation is recording, you can watch slider movement and a progress value in % at the bottom of Presentation dialog. The recording is sometimes slowly - frame after the frame is generated and saved to the video file. But the advantage of this is that even on the slower machine is possible to generate the fluent video.

After the recording is finished, click Ok or Cancel to close the Presentation dialog.



**Full screen** – Use this button to play the flyby in full screen mode.

**Note:** In a dual displays configuration the full screen mode uses the display which has been set as a primary.




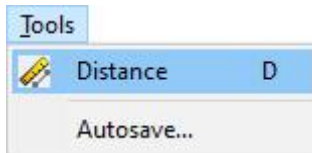
## 13. Tools Menu

### Distance

To measure distance in the scene, use Distance command.

You have following possibilities to launch Distance command:

- From Tools drop down menu select Distance
- Using icon from the toolbar 
- Using keyboard shortcut: **D**



When Distance command is launched click several points in terrain to measure distance between 2 or more points. For broken lines the partial distances are displayed in the middle of each line and total distance is displayed next to the cursor. To finish measuring distances, choose Finish from right mouse click context menu or press Enter.

**Hint:** Distance command can be used in both Top and Side View.

Example of measuring:

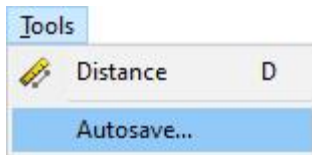


## Autosave

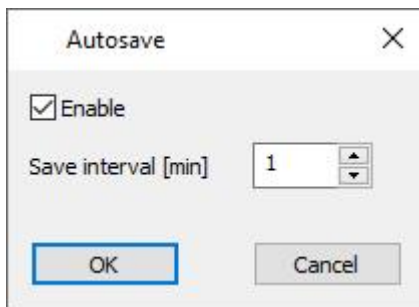
To enable autosave, use Autosave command.

You have following possibility to launch Autosave command:

- From Tools drop down menu select Autosave



You can enable saving your map automatically every few minutes while you work.



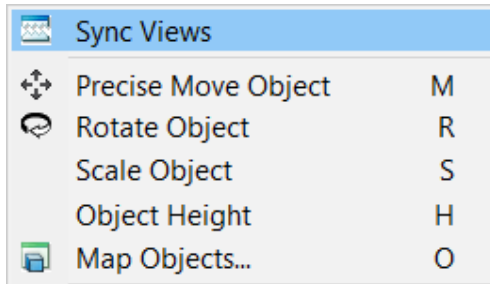
**Enable** – activate this checkbox to turn on Autosave

**Save interval [min]** – set time you would like your work be saved automatically

**Hint:** It is highly recommended to enable autosave to reduce the risk of data loss in case of a crash, freeze or user error.

## 14. Object right-click context menu

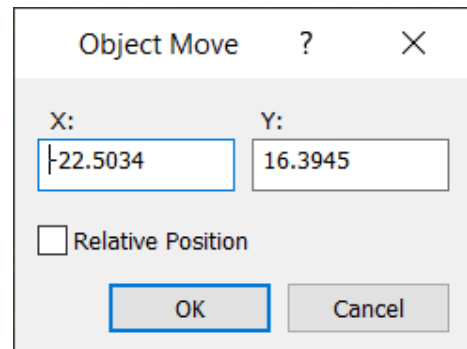
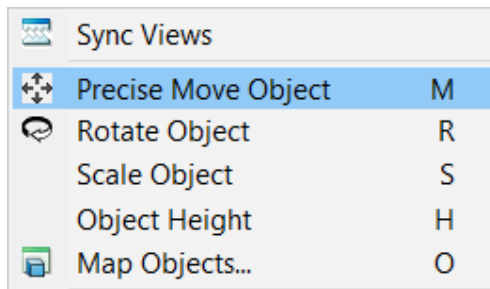
### Sync Views



See the description of [Sync Views](#) command.

### Precise Move Object

To move the object or tree to the precise position of the map hover cursor above the object, so that the object gets highlighted, press the right mouse button and select **Precision Move Object** command from the context menu or press **M** key after selection of object.

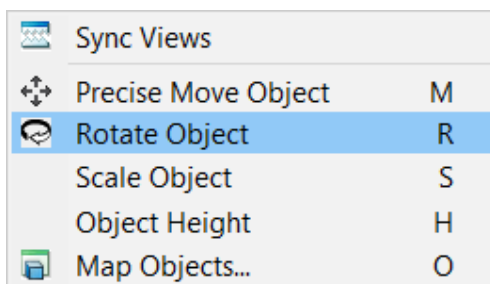


In the Object Move dialog set precise position of object. Fill edit boxes **X:** and **Y:** or click to the scene near of object and drag to **X** or **Y** direction.

**Relative Position:** If the check box is switched off, the absolute position is edited. Relative position is precise position related to the previous object's position. This is automatically used for changing of position of multiple objects.

### Rotate Object

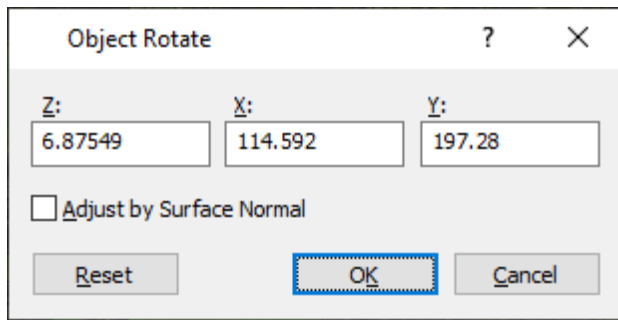
To rotate object or tree hover cursor above the object, so that the object gets highlighted, press right mouse button and select **Rotate Object** command from the context menu or press **R** key after selection of object.



In the Object Rotate dialog set rotate angles around the object's definition axes in degrees. Fill edit boxes or click to the scene near of object and

- drag the Z axis rotation,
- hold the **Shift** key drag the Y axis rotation
- hold the **Ctrl** key drag the X axis rotation

**Reset** button allows to return to original rotation.



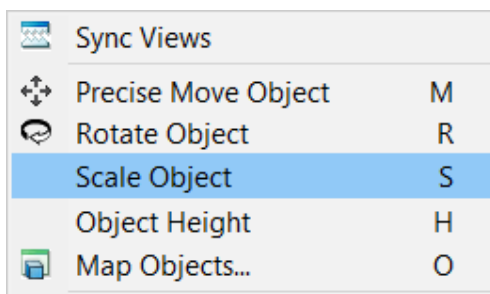
**Adjust by Surface Normal** can be switched on to rotate object perpendicular to terrain at the position where is object located.

*Hint:* Be sure the **Objects** or **Trees** (up to what kind of object is rotated) checkbox is activated in Selection filter dialog.

Click **Ok** or press **Enter** to confirm changes and close Object Rotate dialog.

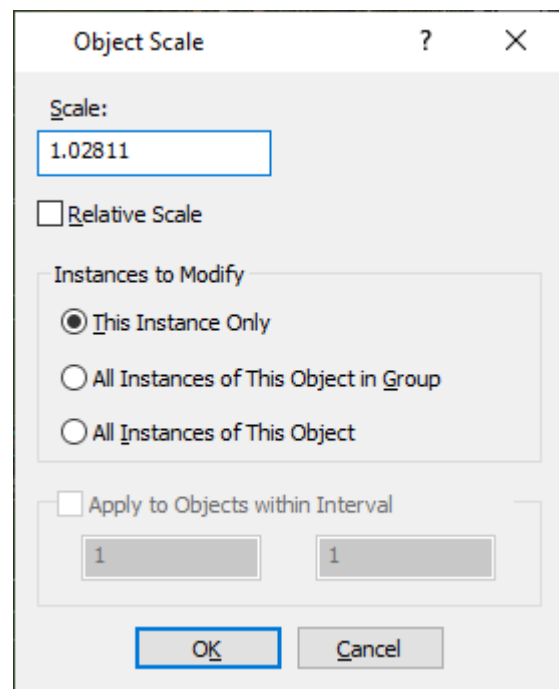
## Scale Object

To scale object or tree hover cursor above the object, so that the object gets highlighted, press right mouse button and select **Scale Object** command from the context menu or press **S** key after selection of the object.



*Hint:* Be sure the **Objects** or **Trees** (up to what kind of object is scaled) checkbox is activated in Selection filter dialog.

**Scale:** Write scale in edit box or click to scene near of object and drag the scale. The selected object is dynamically immediately scaled in scene to preview the change, but the change is applied only after confirming of dialog via OK button.



**Relative Scale:** If the check box is switched off, the absolute scale is edited. Relative scale is scale related to the previous object's scale. This is automatically used for changing of scale of multiple objects.

### Instances to modify:

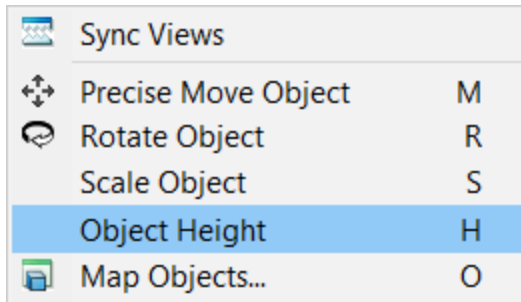
- **This Instance Only** changes scale only of this one object in the map,
- **All Instances of This Object in Group** is available if the selected object belongs to a group and you want to change scale of all objects of selected type in the group,
- **All Instances of This Object** allows to change scale of all objects of this type overall in map.

**Apply to Objects within Interval:** This check box can be switched on if for example only small or big instances should be scaled. This is applicable only for multiple selections.

Click **Ok** or press **Enter** to confirm changes and close Object Scale dialog.

## Object Height

To change height of object, tree, water surface above terrain, hover cursor above the object, so that the object gets highlighted, press right mouse button and select **Object Height** command from the context menu or press **H** key after selection of the object.



**Height:** Write height above the terrain in edit box or click to the scene near of object and drag the height. Use negative value to sink the object under the terrain.

**Height Mode:** Define height value

- **Terrain** according to the terrain,
- **Relative** according to previous value,
- **Absolute** in scene coordinates.

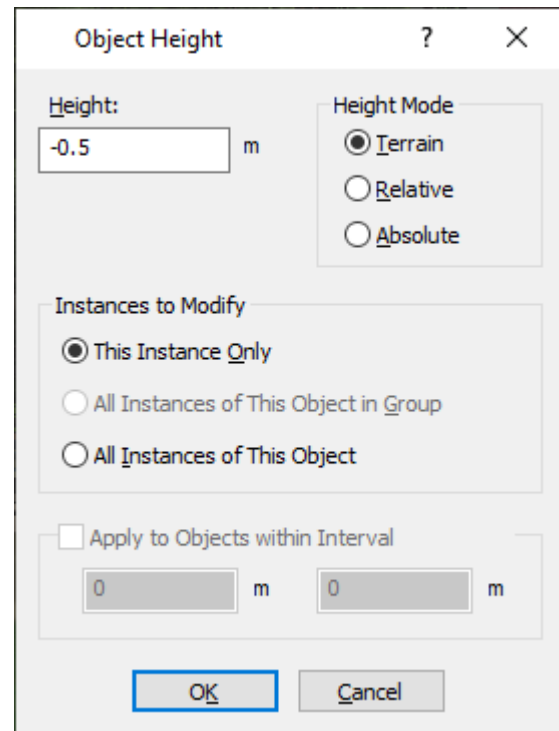
**Instances to modify:**

- **This Instance Only** changes height only of this one object in the map,
- **All Instances of This Object in Group** is available if the selected object belongs to a group and you want to change height of all objects of selected type in the group,
- **All Instances of This Object** allows to change height of all objects of this type overall in map.

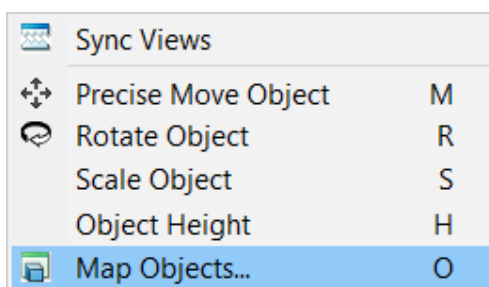
**Apply to Objects within Interval:** This check box can be switched on if only instances with height within this interval should change their height. This is applicable only for multiple selections.

**Hint:** Be sure the **Objects, Trees or Water Surfaces** checkbox is activated in Selection filter dialog (up to what kind of object is edited).

Click **Ok** or press **Enter** to confirm changes and close Object Height dialog.



## Map Objects

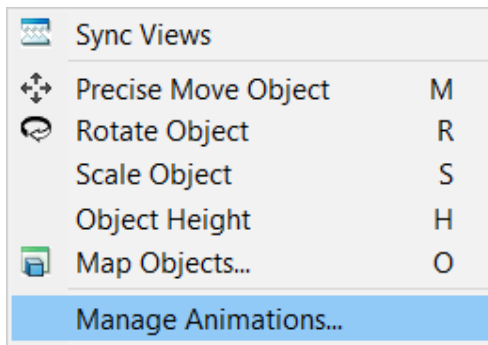


See description of [Map Objects](#) command



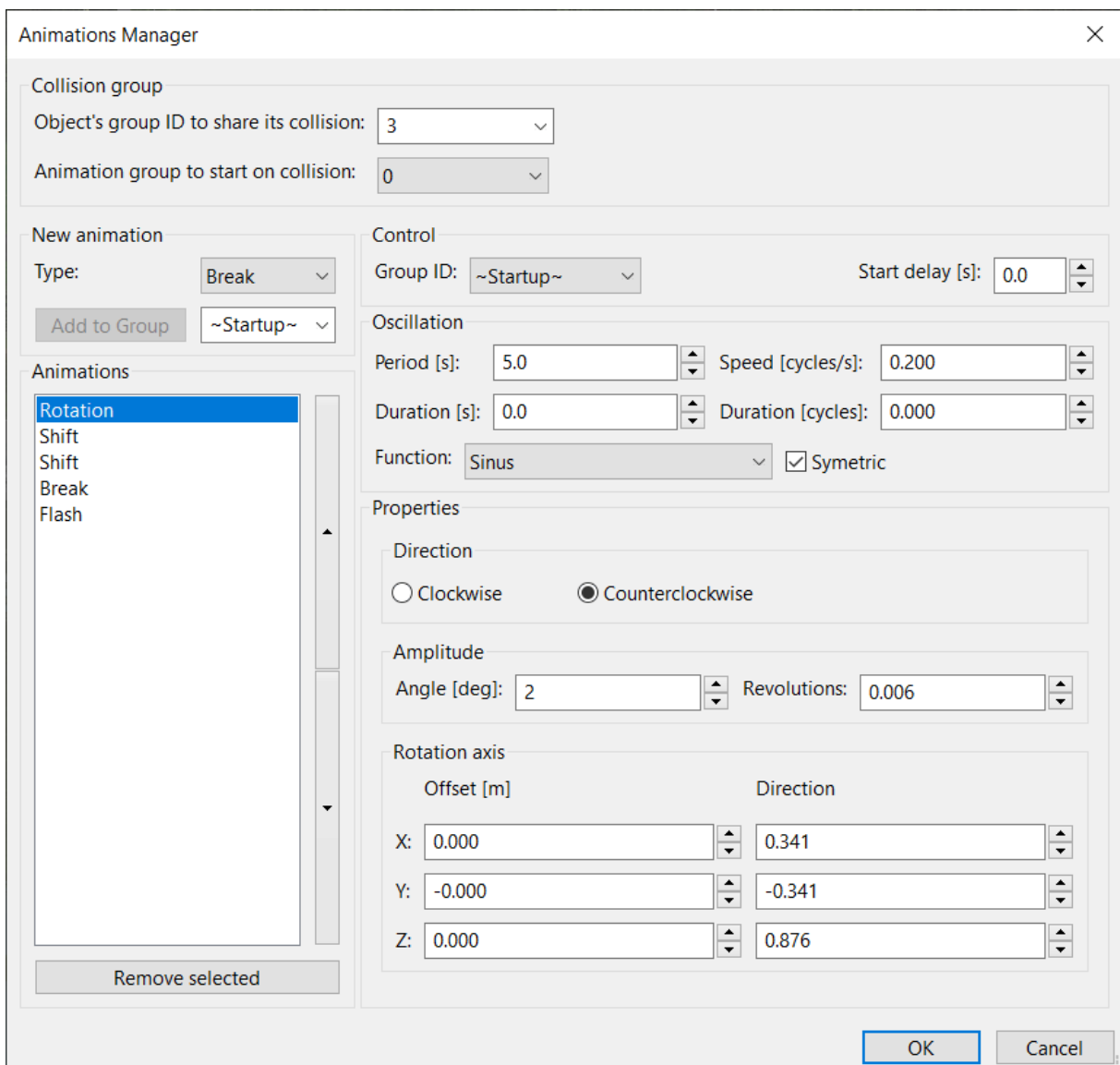
## Manage Animations

To manage animations of objects hover cursor above the object, so that the object gets highlighted, press right mouse button and select **Manage Animations** command from the context menu.



Simple animations allow repeated movement, rotating, flashing, disappearing, breaking of object during the game.

When manage animations command is launched the Animations Manager dialog is opened where you can set animations.



**Collision group:** defines a group of objects with the same/different animation set, where it's possible to share the collision of ball between objects

- **Object's group ID to share its collision** – integer identifier defines a group of objects. Set any integer to the edit field and confirm press Enter button. If set integer identifier to value 0, *Animation group to start on collision* is not available and value of Group ID is only Startup or 0.
- **Animation group to start on collision** – Enables a domino effect. At first set the *New animation* properties. Then select an integer identifier to designate a group of one or more objects. The animation of object starts after collision of ball with objects group with same integer that is set in **Control** –> **Group ID**. It can be used if the animation at selected object should start after collision of ball with another object (second object should be set with different integer), if the animations are independent, please leave value 0.

**New animation:** Choose the **Type** of animation from drop-down menu and set any integer to the edit field under type list and confirm press Enter button. Use **Add to Group** button to assign animation to object. The assigned animations are listed in **Animations** list. Use the arrows to change order of animations or to delete animation press **Remove selected**. Animations are performed in this order. For example, there is not the same result if object at first rotates and during this rotation shifts, or if the object shifts and during this shifting rotates.

The properties in next part of dialog (**Control**, **Oscillation** and **Properties**) belong to the animation selected in **Animations** list.

**Control:** value comes from edit field the *New animation*

- **Group ID:** can be used in case of more joined animations which have the same *Object's group ID*
  - **Startup** - animation starts immediately after map loading in game.
  - **0** – animation starts after collision of ball with object.
  - **any integer** – select one of value from *Animation group to start on collision*, to start the animation. Animation starts after collision of ball with another object.
- **Start delay [s]** – the delay after which the animation starts.

**Oscillation:**

- **Period [s]** – defines how long one animation cycle lasts.
- **Speed [cycles/s]** – defines how many times the animation plays per second (except for Break). The *Period [s]* edit box is recalculated and vice versa.
- **Duration [s]** – defines how long the animation lasts.
- **Duration [cycles]** – defines count of animation cycles. The *Duration [s]* edit box is recalculated and vice versa.

If a non-zero period is set and duration value is 0, the animation repeats over and over.

- **Function:** defines the smoothness of start and finish the animation.
  - **Sinus** – is set, if the animation should start smoothly
  - **Square** – is set, if the animation should start as step change
  - **Sawtooth** – is set, if the animation consists of an endless sequences joined together
- **Symmetric** – switch on if the animation should be done symmetrically. For example, shift in one direction and in opposite direction from base position. *Note:* This causes double speed by the animation.

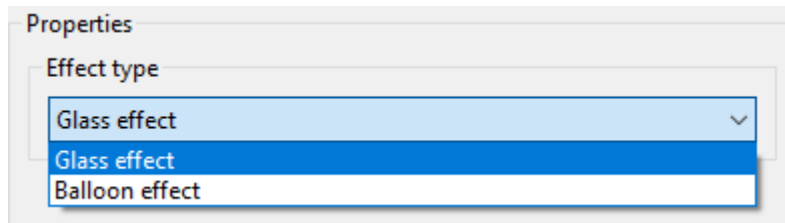
### Properties:

The additional properties can be set separately for each animation in dialog, which looks different for each type of animation:

### Break:

**Effect type:** defines the break effect after breaking of object.

- **Glass effect** if object's pieces fall down as breaking glass.
- **Balloon effect** if object's pieces explode as balloon.

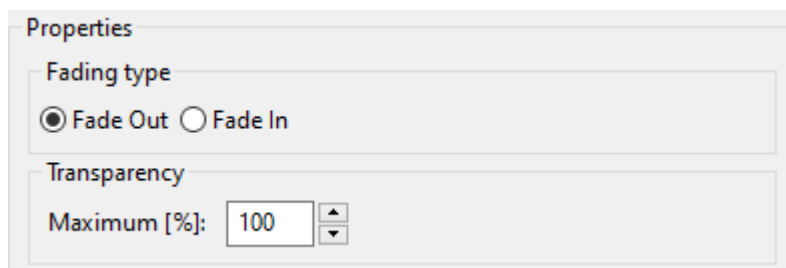


### Fade:

**Fading type:** allows gradual hide or show the object after collision of ball with object

- **Fade out** – gradual fading out of the object from transparency 100% to the set value *Maximum [%]*
- **Fade in** - gradual fading in of the object from transparency 0% to the set value *Maximum [%]*

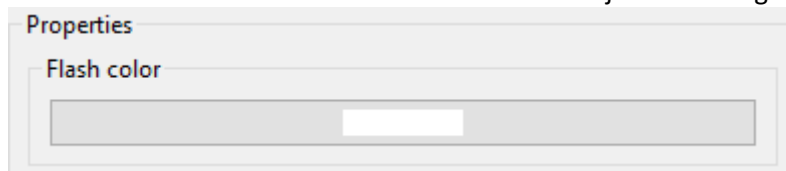
### Transparency:



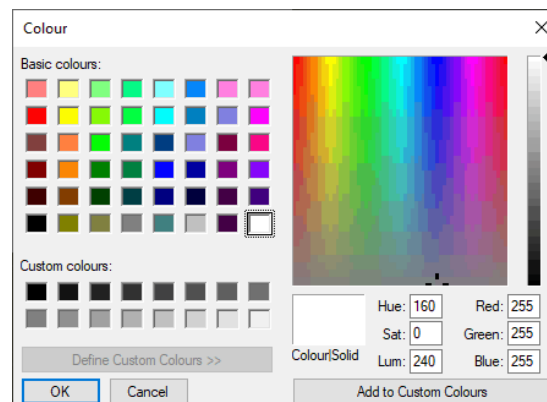
- **Maximum [%]** - the value of the transparency into which the object becomes invisible

### Flash:

- **Flash colour** – allows select color of object's flashing after collision of ball with object.



Click on a colour to select basic or custom colour of object flashing.



### Rotation:

#### Direction:

- **Clockwise** – defines default direction of rotation in clockwise
- **Counterclockwise** - defines default direction of rotation in counterclockwise

#### Amplitude:

- **Angle [deg]** – defines angle of rotation. The value 360 means full rotation always in one direction.
- **Revolutions** – defines count of rotation. The *Angle [deg]* edit box is recalculated and vice versa.

#### Rotation axis:

- **Offset [m]** – defines center point of rotation. The 0,0,0 point is insertion point of object.
- **Direction** – defines axis of rotation. Negative value means opposite direction of rotation. Axes X, Y, Z are axes of object.

**Note:** Remember if a non-zero period is set and duration value is 0, the animation repeats over and over.

**Note:** If Function from drop down menu is set to Sinus, then the rotation will be performed there and back.

The screenshot shows a 'Properties' panel with three sections: 'Direction', 'Amplitude', and 'Rotation axis'.  
- **Direction:** Two radio buttons are present: 'Clockwise' (unselected) and 'Counterclockwise' (selected).  
- **Amplitude:** Two input fields with up/down arrows. 'Angle [deg]' is set to 360, and 'Revolutions' is set to 1.000.  
- **Rotation axis:** A table with two columns: 'Offset [m]' and 'Direction'.  
 - X: Offset [m] is 0.000, Direction is 0.000.  
 - Y: Offset [m] is 0.000, Direction is 0.000.  
 - Z: Offset [m] is 1.000, Direction is 1.000.

### Shift:

- **Amplitude** – X, Y, Z coordinates define the shift in the direction of the map coordinate system.

The screenshot shows a 'Properties' panel with one section: 'Amplitude [m]'. It contains three input fields with up/down arrows: X is 0.000, Y is -0.000, and Z is 0.000.

**Splash:** it is special animation which can be used only on the object placed on water surface. It is possible to simulate the fall of the ball into the water.

**Impact zone [m]:** defines imaginary place where the ball will fall

- **Epicenter** - X, Y, Z coordinates define the center of Impact zone, it is the relative position from the base point of object.
- **Radius** – defines radius of Impact zone from the epicenter

**Impact velocity:**

- **Direction** - defines the axis of impact of the ball. Negative value means opposite direction. Axes X, Y, Z are axes of object.
- **Magnitude [m/s]** – defines velocity of the ball during the impact. Max. value is 100 m/s.

The screenshot shows a 'Properties' panel with two sections: 'Impact zone [m]' and 'Impact velocity'. The 'Impact zone [m]' section contains four input fields: 'Epicenter X:' with value 0.000, 'Epicenter Y:' with value -0.000, 'Epicenter Z:' with value 0.000, and 'Radius:' with value 0.00. The 'Impact velocity' section contains four input fields: 'Direction X:' with value 0.000, 'Direction Y:' with value -0.000, 'Direction Z:' with value -1.000, and 'Magnitude [m/s]:' with value 1.00. Each input field has small up and down arrow icons to its right.


**Sound:** allows add the sound to the object after collision of ball with object.

- **Sample** - Press library icon to select sound from library. The Play Sound and Stop playing Sound buttons can be used to listen the sound.
- **Volume [%]** - volume of sound in scene.
- **Hearing distance [m]** - Maximal radius where is possible to hear the sound in scene.

The screenshot shows a 'Properties' panel for sound settings. It has three sections: 'Sample' with a text input field, a library icon, and a play icon; 'Volume [%]' with a horizontal slider bar and a numeric input field showing '100'; and 'Hearing distance [m]' with a 'Maximum:' label and a numeric input field showing '100.0'.

Click **Ok** or press **Enter** to confirm changes and close Animations Manager dialog.

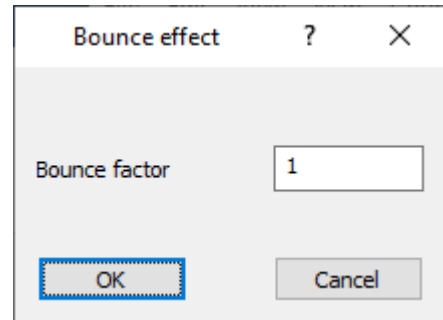
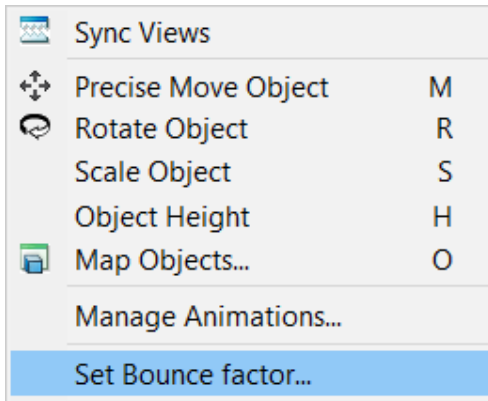
**Note:** It is possible to assign animations only to objects, not to trees.

**Hint:** To test animations in editor, click Play icon  from toolbar. In case of *Group ID* is not set on value *Startup*, you have to click the object to evoke animation during Play mode.



## Set Bounce factor

To change bouncing of ball from the object during the game, hover cursor above the object in map, so that the object gets highlighted, press right mouse button and select **Set Bounce factor...** command from the context menu.

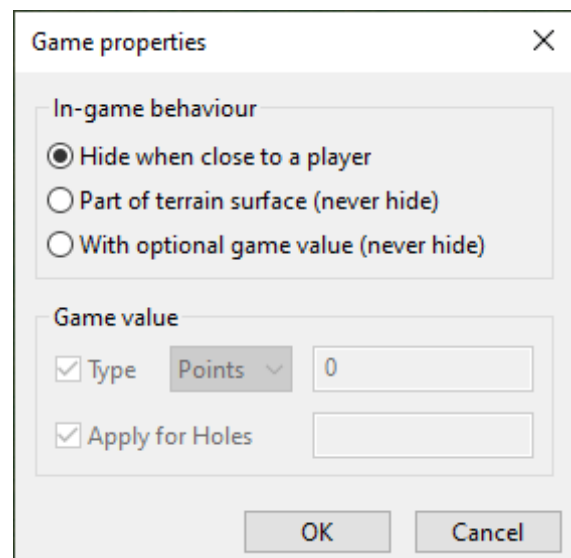
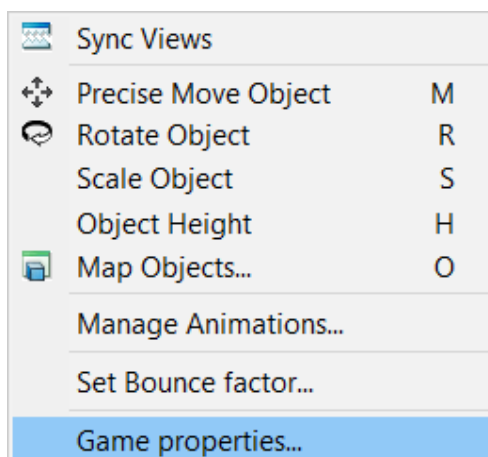


**Bounce factor** – the value above 1 increases normal bouncing of ball. The value below 1 decreases the bouncing.

Click **Ok** or press **Enter** to confirm changes and close Bounce effect dialog.

## Game properties

To set properties of the object in game, hover cursor above the object in map, so that the object gets highlighted, press right mouse button and select **Game properties...** command from the context menu, then Game properties dialog is activated.



**In-game behaviour:** Choose what kind of visibility should be used for the object:

**Hide when close to a player** assures, that the object very close to golf ball disappear during the game to be able to play from any position. If you want to keep the object always visible, choose next possibility.

**Part of terrain surface (never hide)** should be chosen if it is necessary to play from the object. For example, to be able to play from a bridge or roof of some object. Otherwise, if the ball stops at the top of this object, before the next shot it will be placed at terrain, not at the top of object.

**With optional game value (never hide)** should be chosen if you want to set the object that will play an animation after collision with the ball or if you want to set the reward after collision with the ball. Settings of animations via [Manage animations](#).

#### Game value:

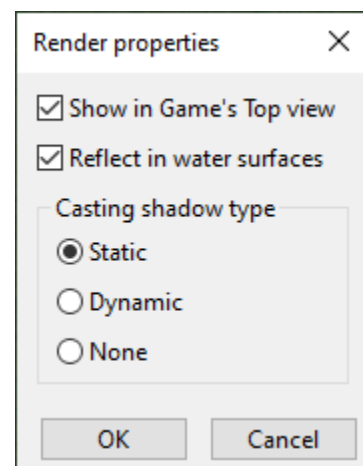
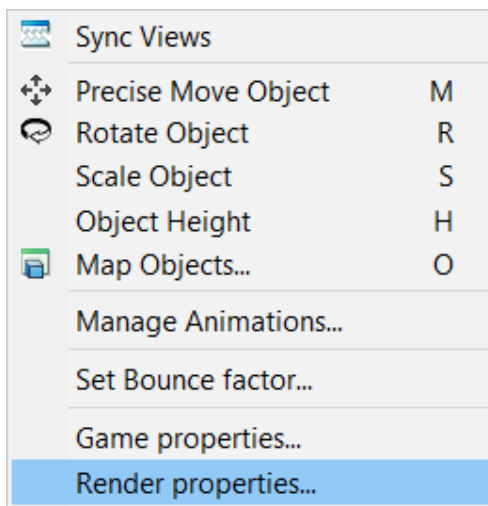
**Type** defines score during the game if it is switched on:

- **Points** - the value of the shot points per shot after collision with the ball
- **Shots** – the count of shots added to the remaining shots after collision with the ball

**Apply for Holes**, defines the hole number from which is the object playable (for example 2,3,6). If the check box is switched off, the object is playable from all holes.

## Render properties

To set render properties of the object in game, hover cursor above the object in map, so that the object gets highlighted, press right mouse button and select **Render properties...** command from the context menu, then Render properties dialog is activated.



**Show in Game's Top view:** If the check box is switched on, the object is shown during game in Top view, otherwise is hidden.

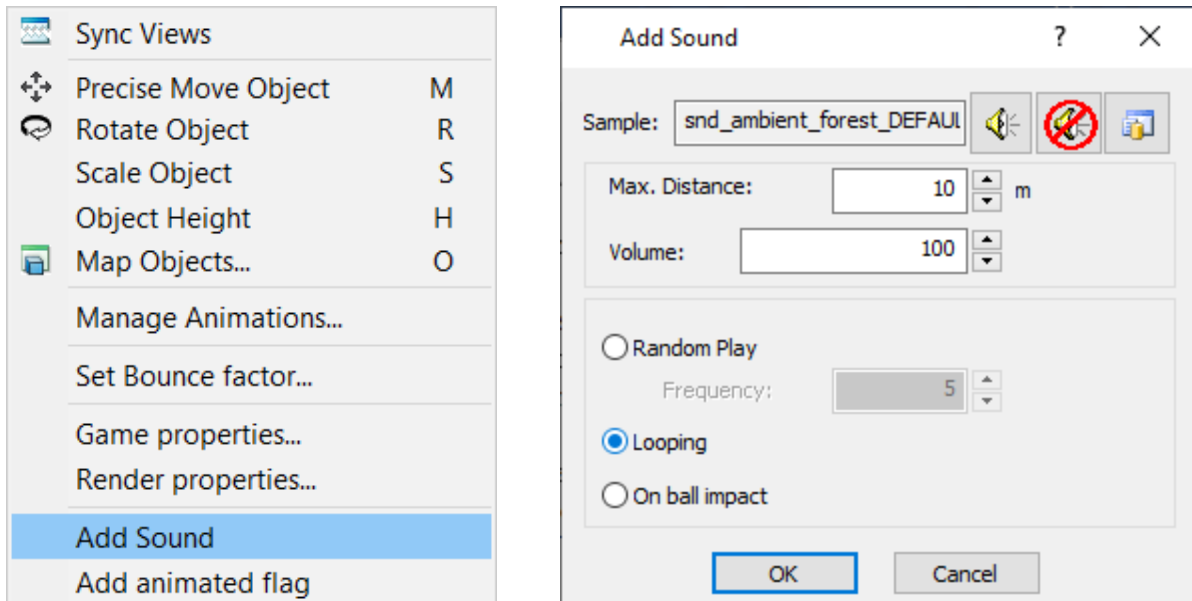
**Reflect in water surfaces:** If the check box is switched on, the object is reflected in water surface. This check box has only performance reason and is not usually used. It is available only on instances of inserted objects in map. It is not possible to predefine at library objects.

**Casting shadow type:** Choose what kind of shadows should be used for the object:

- **Static**, updated via [Update Map](#) command
- **Dynamic**, currently only tee marks, flags and sticks have dynamic shadows by default, but if object contains animations, then should be set dynamic shadow
- **None**, the object is set without shadow

## Add Sound

To add sound to any object, hover cursor above the object so, that the object gets highlighted, press right mouse button and select Add Sound command from context menu.



**Sound:** Press library icon to select sound from library. The Play Sound and Stop playing Sound buttons can be used to listen the sound.

**Max Distance** - Maximal radius where is possible to hear the sound in scene.

**Volume** – volume of sound in scene.

Frequency of sound repetition:

- **Random Play** evokes sound randomly but with some frequency,
- **Looping** evokes sound over and over
- **On ball impact** evokes sound if ball hits the object.

We recommend to add sound of flowing water or ocean not on the water objects but on material curves around them. The same way forest sounds are added to group curves which surround forests.

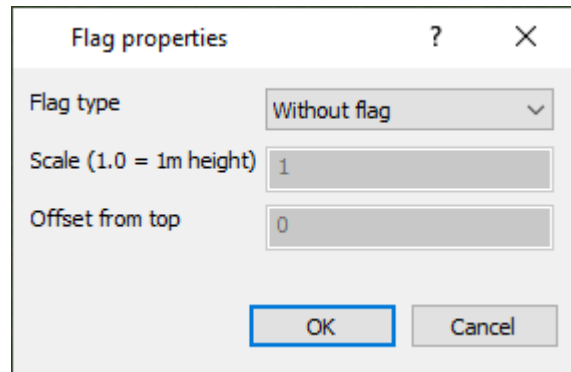
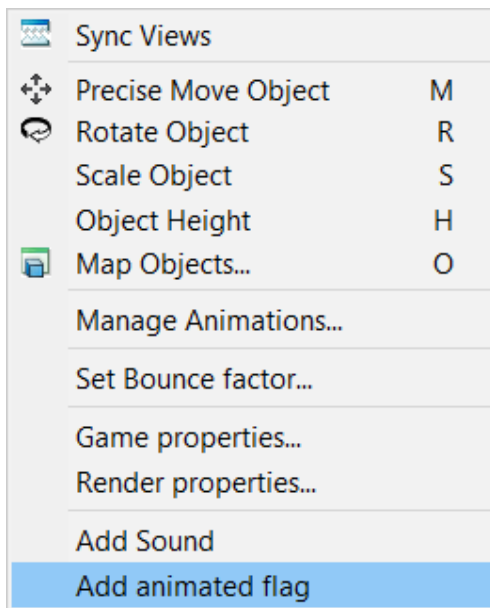
Click **Ok** or press **Enter** to confirm changes and close Add Sound dialog.

If a sound is attached to the object, the context menu command is changed to **Edit Sound / Play Sound**. Press **Play Sound** button you can check sound, then stop sound press **Stop Playing Sound** button.

## Add animated flag

To show/hide animated flag in the game on the object, use **Add animated flag** command.

To add animated flag hover cursor above the object so, that the object gets highlighted, press right mouse button and select **Add animated flag** from context menu, then Flag properties dialog is activated.



**Flag type:** from drop down menu select shape of flag (Without flag; Square; Rectangle 2:1...)

**Scale (1.0 = 1m height):** fill edit box for the flag size (default scale of flag is 1)

**Offset from top:** fill edit box for the flag position (default position of flag is at the top of object)

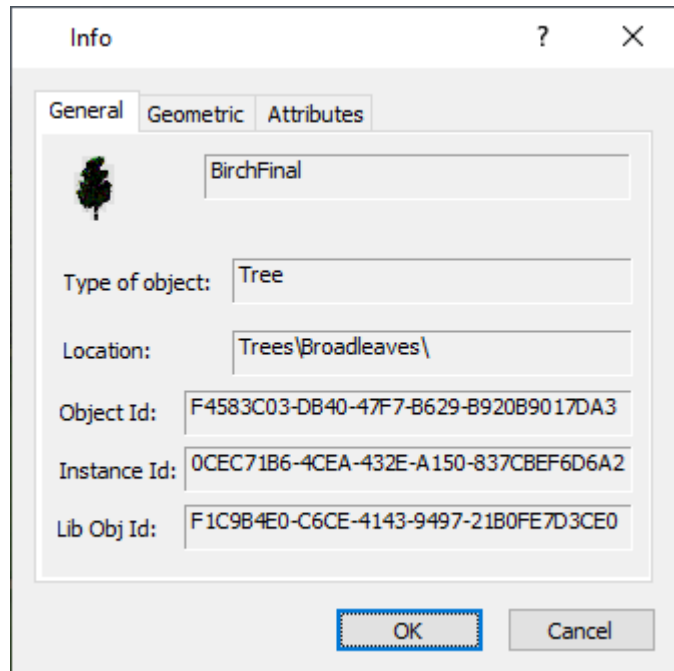
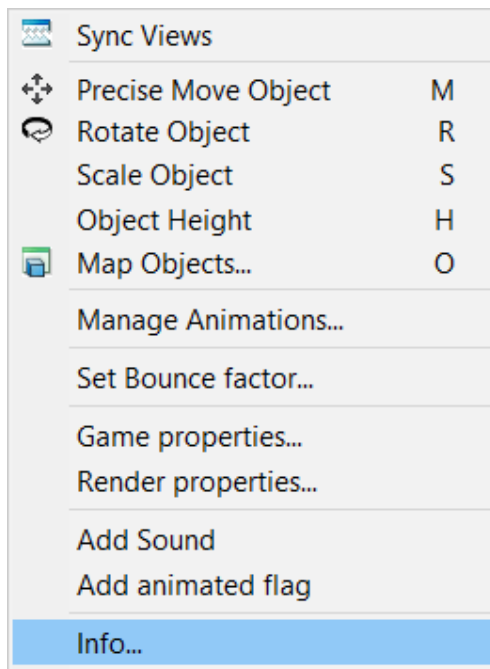
Click Ok or press Enter to confirm changes and close Flag properties dialog.

If a flag is attached to the object, the context menu command is changed to **Flag properties**.

**Note:** To hide animated flag hover cursor above the object so, that the object gets highlighted, press right mouse button and select Flag properties from context menu and set Flag type to Without flag.

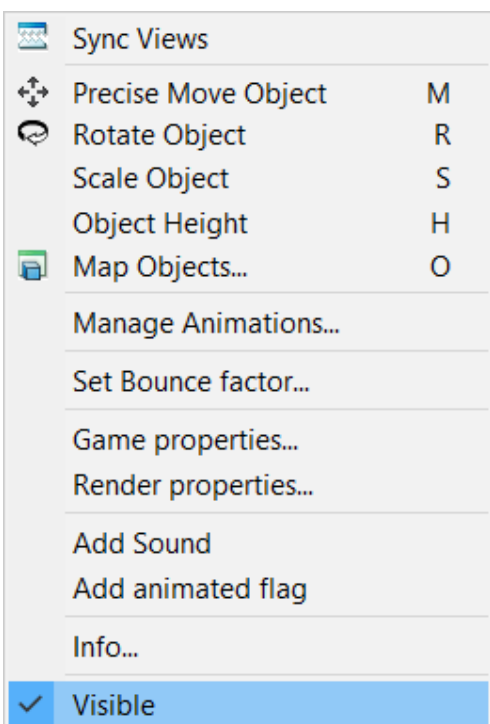
## Info

To invoke the information dialog about object, hover cursor above the object in map so, that the object gets highlighted, press right mouse button and from the context menu choose Info command. The most useful information is the location in Library:



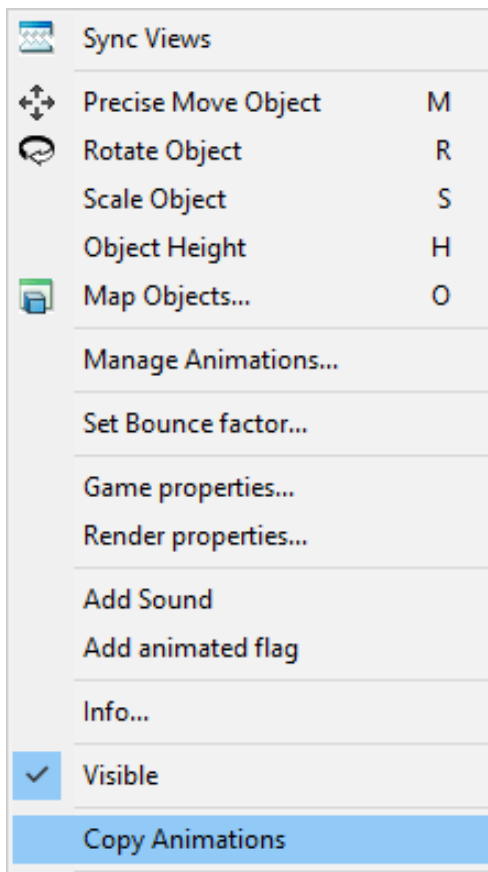
## Visible

The Visible check box in context menu of selected object allows to invisible selected object. Use [Visibility Filter](#) dialog to switch the visibility again on.



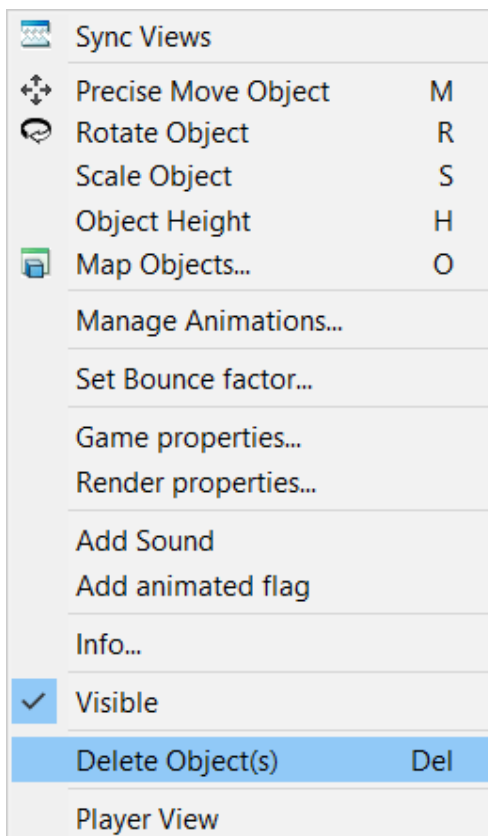


## Copy Animations



To be able copy animations between objects use **Copy Animations** command. Copy animations command is shown only on objects with defined animation. To copy animations hover cursor above the object so, that the object gets highlighted, press right mouse button and select Copy Animations, then hover cursor above second object and use short key **Ctrl+V**. The command copies all values to second object except the Object's group ID.

## Delete Object(s)



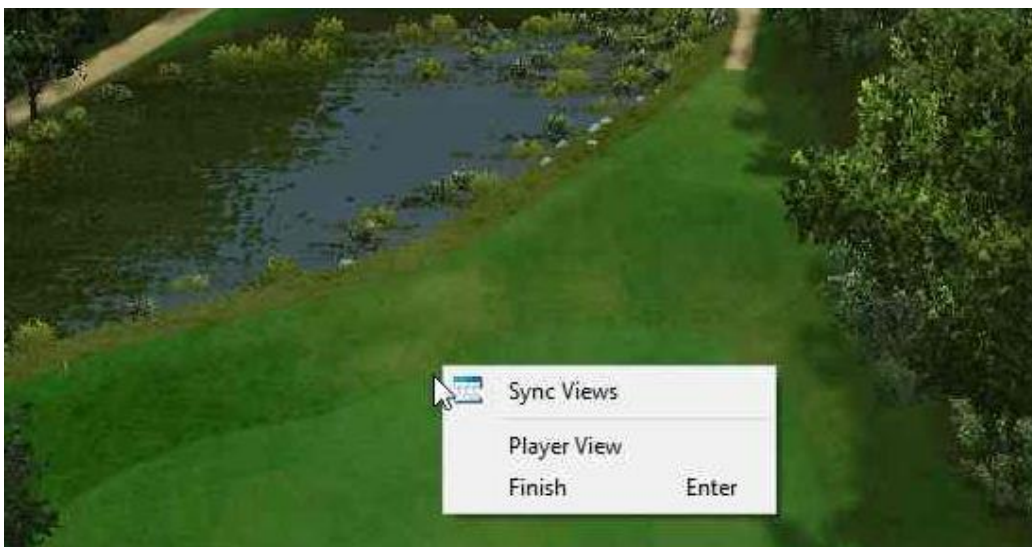
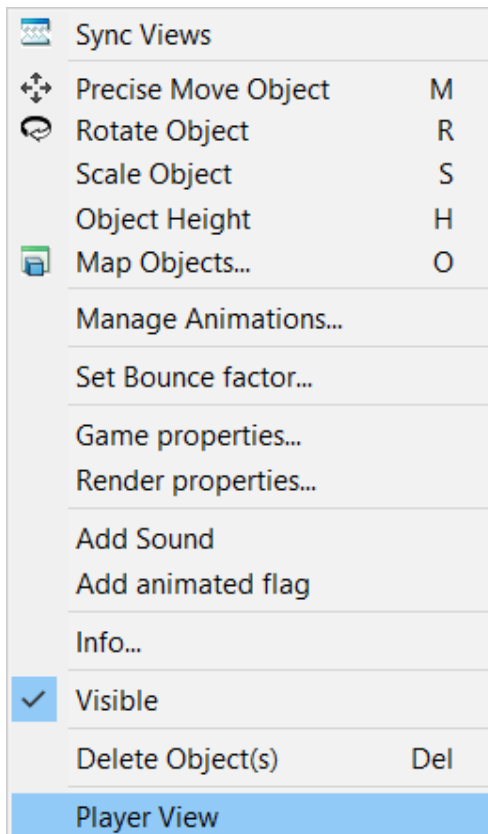
To delete object hover cursor over the object so, that it gets highlighted. From the right mouse click context menu choose Delete Object(s) and click the OK button or press the Delete key.

## Player View

To set camera position to golfer view, use Player View command.

You have following possibilities to launch Player View command:

- Hover cursor above the object (Curve, Group, Tree ...) in map so, that the object gets highlighted, press right mouse button and from the context menu choose Player View command
- Click to any position in map (in Top or Side View), press right mouse button and choose Player View command from the menu



The camera is set horizontally at the level of the player's eyes in the direction of the pin - if the holes are already defined. If the position is on the tee, the direction of view is given by definition the tee.

