MAP MAKER USER MANUAL

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ABOUT THE EDITOR

The Level Editor allows anyone to create fully functional multiplayer maps and publish them on Steam. Creating a map does not require any additional tools or special skills. However, reading this manual is highly recommended.

GETTING STARTED

LAUNCHING THE EDITOR

To launch the Level Editor, select the **Launch Game Editor** option after selecting Orca in your Steam library and press **Play**:
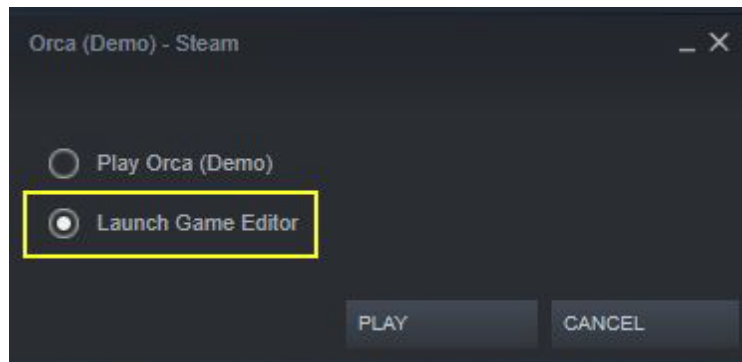
Image 1.1 How to Launch the Level Editor

UI OVERVIEW

Image 1.2 An overview

1. **Menu Bar**

   In the Menu Bar you will find the tools that allow you to make changes to your map, such as modifying terrain or adding objects.

2. **Bottom Bar**

   The Bottom Bar has visibility tools and viewing options to aid your workflows.

3. **Level Outliner**

   The Level Outliner lists all objects on your map and allows you to keep things organized.

4. **Map Navigator**

   The Map Navigator offers a preview of the map under the current Painter Tool and allows you to quickly teleport the camera by clicking.

5. **Helper Info**

   Your current mouse coordinates and extra helper information will show up here (e.g. the tooltip when you hover over the header and bottom bar buttons). Tier information will also show up here when you edit the map.

6. **Close Button**

   Closes the Level Editor. Take care not to press it by accident. Remember to save your changes with the Save button in the Menu Bar.

MENU BAR

Editor Tools are found in the menu bar at the top. They divide up the functionality afforded by the Level Editor.

Image 1.3 The Menu Bar

1. New Map
2. Open Map
3. Save Map
4. Reload Last Save
5. Map Save-As Tool
6. Map Editor Tool
7. Map Decorations Tool
8. Decal Tool
9. Entity Placement Tool
10. Fog & Wind Tool
11. Spline Tool
12. Audio Tool
13. Camera Tool
14. Game Mode Customization Tool
15. Unit Customization Tool
16. Level Properties
17. Level Budgets
18. Publish Tool

BOTTOM BAR

The Bottom Bar offers functionality to ease your workflows in the Level Editor. There are several visibility and camera options:

Image 1.4 The Bottom Bar

1. Classic RTS Camera view (hotkey "C").
2. Free-Hand Camera view (hotkey "C").
3. Allow Camera Panning when the mouse hits the edges of the screen.
4. View Path Painter areas.
5. View Hide Terrain Painter areas.
6. View Unbuildable Terrain areas.
7. Toggle Grid Visible (hotkey "Ctrl+G").
8. View Options Window.
9. Take a Screenshot of the current map and save it in %HOMEPATH%\Carbon\Screenshots\

VIEW OPTIONS

The View Options panel provides you options such as how to configure the Grid display and which camera to use in the Classic RTS Camera mode. The camera specified here when you save your map will be the camera used by players during gameplay!

LEVEL OUTLINE

The Level Outline provides a hierarchy of all objects currently placed on the map. This includes entities, decorations, decals, audio emitters and splines. You can hide this window by clicking the arrow on the top right.
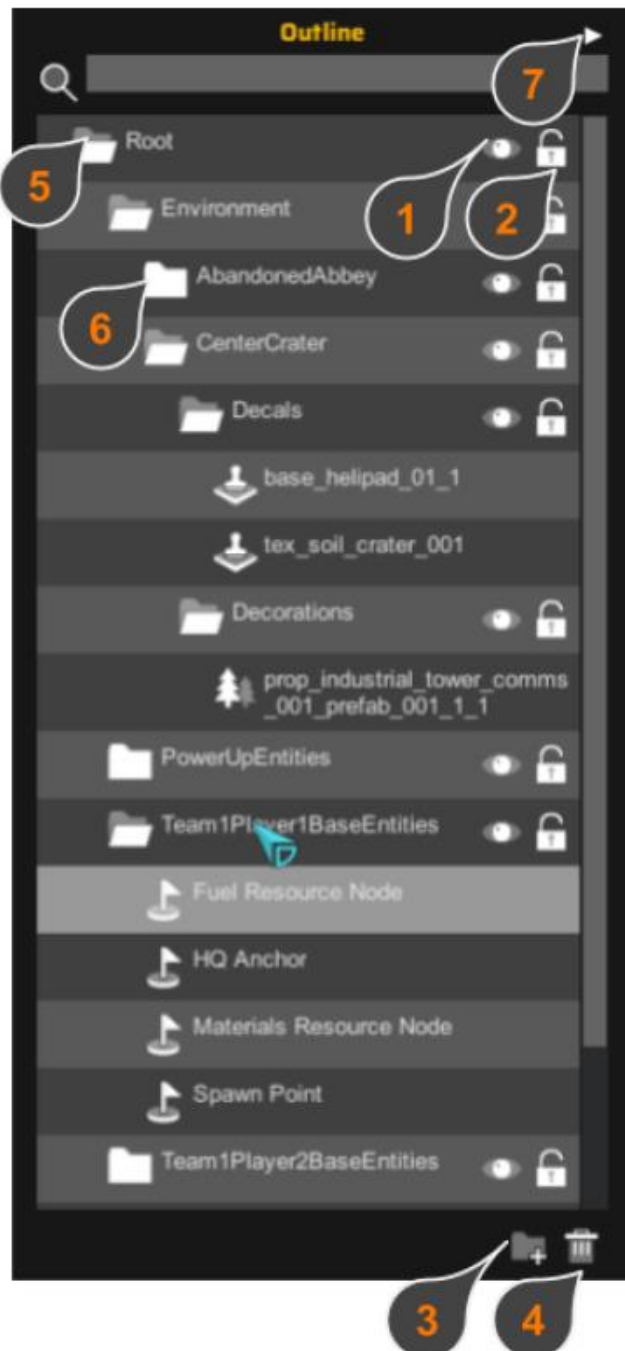
Image 1.5 The Level Outline

In the image to the left, we can see the Level Outliner.

The Level Outline lists all objects in your map and provides some tools to help your workflows when selecting, organizing and deleting objects.

In this case, we can see the level is organized into Folders with objects inside them.

Different types of objects have different iconographies:

Image 1.6 Object Icon Legend

You can also Set Invisible and Lock your folders and its content objects to help with Selection while making edits to your map:
1. Set Folder Invisible/Visible (including its content objects)
2. Lock Folder
3. New Folder
4. Delete Selected Folder/Object
You can also open/collapse your folders by click on the folder icons themselves.
5. An open folder (click to collapse)
6. A collapsed folder (click to open)

Image 1.7 Level Outline (Hidden)

You can also hide Level Outline using **7. Hide Window** button (See Image 1.6). The hidden Level Outline will be accessible through the sidebar on the right top corner of the screen (see image on the right).

SELECTING, DELETING

You can select and delete objects using the outliner. To select, click the item displayed. To delete, you can either hit the **Delete** key, or click on the **Trash Can** at the bottom of the outline window.

NB: This will delete all your selected items and is not reversible, except by reloading the last save.

RENAMING, SEARCHING

You can rename anything in the outliner by **double clicking** it and typing out a new name. This is useful, as you can later search for your placed items by their given names using the search bar at the top.

FOLDERS: LOCK/UNLOCK & SET VISIBILITY

In the Level Outline you can create folders to better organize your maps. This is recommended, as it will help you produce content faster and lock and hide groups of items.

To create a new folder, click on the folder icon button at the bottom of at the bottom of the outline window. The Trash Can button will allow you to delete whatever items you have selected.
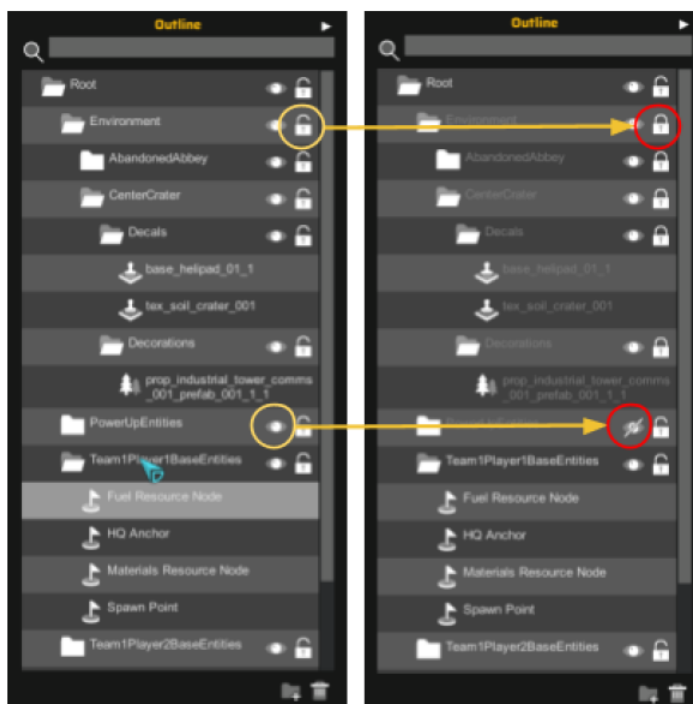
The visibility and lock icons are indispensable for a safer workflow. As you work on your map, you should group things together by area and type of object.

Once you are happy with your work in the current area, you can lock these objects into place. This means they won't be selectable, editable or deletable. This allows us to continue to work on your map safely, knowing the area will always be safe from further edits.

Image 1.8 Lock/Unlock folder and set folder visibility

We can also use the folder groupings to hide certain objects (e.g. if we're painting the terrain, we can hide the we can hide the forest standing above it to get a better view).

MAP NAVIGATOR

The Map Navigator is found at the top right of your screen. It shows a preview of the current painter mode's canvas. Clicking anywhere in the preview will teleport the camera to the clicked location. You can hide the Map Navigator by clicking the arrow on the top right.

Image 1.9 Map Navigator

The Map Navigator shows a preview of the map under the selected TerrainEditor. This means that the preview changes depending on which Map Editor Painter you have enabled.

Apart from what the preview shows, you can always click anywhere on the Map Navigator to teleport the camera to the clicked location.

On the image to the left we can see a preview of the Tier Painter of a certain level, which shows roughly the height differences across the map.

You can also hide Map Navigator using the **Hide Window** arrow button at the top right corner of the window. The hidden Map Navigator will be accessible through the sidebar on the right top corner of the screen (see image on the right).

Image 1.10 Map Navigator (Hidden)

SELECTION

You can select anything on the map by clicking on it when the corresponding menu is open. Selection is exclusive to objects that belong to the current enabled tool (i.e. if you try to select a Decoration without having the **Set Decoration Tool** open, it will not select it). This is so you can use Multi-Selection more effectively, while only selecting the type of objects you're currently editing.

You can also select via the Level Outline, which will automatically change the tool you have selected to the appropriate one.

MULTI-SELECTION

Most tools allow for multi-selection. If you **Ctrl+Click** on an object, you will add it to the selection along with any objects already selected. You can also multi-select by dragging your cursor on the map, which will create a rectangle that will select anything inside it. Likewise, if you drag a multi-selection while holding down the **Ctrl** key, it will *add* the objects to your current selection.

TRANSFORM TOOLS

Most things you place in the Level Editor can be moved, rotated, and scaled. Menus that allow transform actions such as the Map Decorations Tool and the Entity Placement Tool will display a toolbar with transform tools available.

Image 1.11 Selection, Transform Actions and Inspectors

1. Translate Tool   **6.** Snap To Terrain*
2. Rotate Tool   **7.** Object Position Values
3. Scale Tool   **8.** Object Rotation Values
4. Duplicate Selected Objects   **9.** Object Scale Values
5. Delete Selected Objects

*Note that in this case, Snap To Terrain is available. This is not the case for all tools, and in fact many of them have their own special commands added after the duplicate and delete buttons.

You can can access transform tools using the following shortcuts on the keyboard whilst one or multiple objects on the map are selected:

- **W:** Translate
- **E:** Rotate
- **R:** Scale

You can edit these properties two ways:

1. Dragging on the displayed Gizmos on the selected object (e.g. the arrows shown when in the **Translate** mode).

2. Assigning values in a clear and detailed manner through the Inspector window.

DUPLICATE

You can duplicate most placeable items two ways:

1. Clicking on the **Duplicate** button on the tool actions.

2. Hitting **CTRL+D.**

This will duplicate all currently selected items.

DELETE

You can Delete anything 3 ways:

- Hitting the **Delete** key.
- Clicking the **Delete** button on the tool actions.
- Via the Level Outline.

CAMERA CONTROLS

Pressing the **"C"** key will toggle between **Classic RTS** and **Free-Hand** camera views (see also: Shortcuts).

CLASSIC RTS CAMERA

The Classic RTS camera view is the view that players in your map will see. The view is limited to be within certain bounds, just as it will be for players during gameplay. The bounds that confine the camera are defined separately from the bounds of your map, and can be set in the Resize Map Window.

- **Move** up/down and sideways with the **Arrow Keys.**
- **Zoom** in and out with the **Mouse Wheel Scroll.**

You can allow for panning, by placing the cursor on the edges of the screen via the Bottom Bar.

FREE CAMERA IMAGE 1.13 CAMERA EDITOR

The **Free** camera view allows for free flight through the level in a first person perspective:

- **Move** forward and sideways with the **WASD keys.**

- **Look Around** by holding down the **Right Mouse Click.**

- **Pan** the camera by holding down the **Middle Mouse Click** (mouse-wheel click).

- **Zoom** to quickly move forward and backwards with the **Mouse Wheel Scroll.**
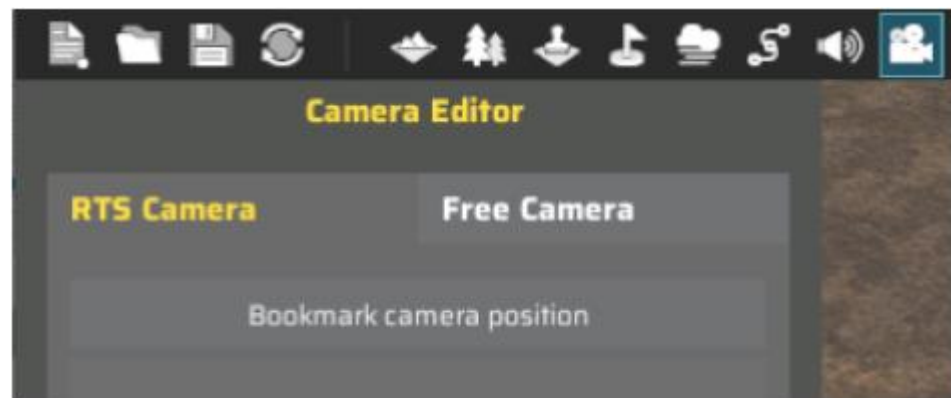

Image 1.13 Camera Editor

Image 1.12 Camera Toggle Group in the bottom bar

You can also switch camera modes using the Camera Mode toggle group in the bottom bar. Camera mode will also auto-switch when you switch tabs of RTS Camera and Free Camera in the Camera Editor.

MAP CREATION PROCESS

Creating a New Map

You can create a new map through the New Map Wizard via the Top Menu. Give your new map a Name, Description and choose a Game Mode. You can edit the Name and Description at a later stage. However, once the Game Mode is selected, it will always remain the same. Therefore, you should consider carefully what kind of map you will want to create.

Image 2.1 New Map Wizart - Map Creation Flow

1. Standard Versus - Regular 2v2 or 3v3 map. Last team standing or first team to successfully deploy 3 payloads (if the map allows payloads) wins.

2. Brawl - 2v2 or 3v3 map. Players spawn with an HQ that creates units automatically. Over time, the tiers of the units created escalates. Last team standing or first team to successfully deploy 3 payloads (if the

map allows payloads) wins.

3. Battlelines - 2v2 or 3v3 map. Players can build any unit in a safe environment. Every so often, these units are spawned into a battle lane and directed to attack an enemy HQ. First team to destroy the

enemy HQ in the battle lane wins.

Creating your map may take up to a minute and the Level Editor will load it up once it is ready.

CHOOSING THEMES & LIGHTING

Before starting, you should decide on your map's Asset Themes . These will dictate which assets are usable in your map: set decoration, decals and terrain textures. Changing themes when you have designed a large portion of the map can prove difficult, so it is advisable that you choose your themes early.

You can change the Lighting on your map easily at any time, but since it makes a vast difference on the look and feel of your level, you should probably settle on one early on.

SETTLING ON A SIZE

To settle on a map size, consider your game mode and the team size you are aiming for with your map. You can use the Map Resize Tool to set a new size for the map. You will be able to set a size for the terrain, a size for the camera bounds, and a size for the playable area.

NB: The edges of the map should never be visible to the players, so make sure to adjust your camera bounds accordingly.

DEVELOPING GAMEPLAY

You're now ready to really start making your map. Your first step should be developing and testing gameplay. Doing this before working on the visuals in your map can make your map load times significantly faster and make it easier to test and continue developing.

PLACING TIERS

A good place to start on a map is in the Tier Painter . This tool allows you to elevate the terrain and make ramps that cross different levels of elevation. You can use the Tier Painter to block out the paths of your map and use elevation as a stand-in for where you will want to place path-blocking obstacles such as buildings.

When placing tiers, consider the following:
- Who has the higher ground in which situation.
- How players can get from point A to point B.
- Where to place elements such as power-ups.
- How the map will affect overall game strategy.

TUNING YOUR MAP – UNITS & GAME MODE OPTIONS

After placing your tiers, you should also take a look at the Unit Customization and Game Mode Customization Tools . These tools will allow you to change certain parameters, which can be vital to how your map plays out.

Game mode parameters can have a major influence on what players will do in your maps (e.g. deciding on a short power-up drop time can mean your map should allow more direct paths towards the power-up drop points).

Drastically changing units can have a huge impact in gameplay (e.g. making units faster, slower or sturdier can mean the points of contention in your map will change).

PLACING ENTITIES

Entities will define much of the map's behavior. The Entity Placement Tool will allow you to place units, buildings, resource nodes, power-up drop locations, player spawn-point locations and other gameplay-vital elements.

The placement of these entities will define your map's points of contention. Players will converge and fight around power-up drops and will regroup around their spawn points. An interesting placement of entities is important, but needs to be fair for both teams while still creating options where choices can be made.

BRINGING IT ALL TOGETHER

The steps above are dependent on each other. This means that changing your entity placement will likely mean you need to tweak your tier layout. An interesting layout that is fair for both teams may not necessarily be symmetrical, but trades off pros and cons such as elevation for proximity to power-ups.

Being satisfied with your map means that the way the map flows and your vision of how players will behave in it is pretty much finalized. You are now ready to begin decorating your map.

DECORATING THE MAP

Creating the visual style of the map should come after you have done all the gameplay changes you want for your map. As mentioned earlier, this is because it becomes more difficult to make gameplay changes to your map once you also have to accommodate changes to decorations, decals, and paint.

SPLAT PAINTING

You can use the Map Editor's Splat Painter to paint the terrain with materials. Doing so should give you a good idea of what kinds of decoration areas your map will have e.g. forested areas, urban areas, rocky areas, etc.

Make sure to notice the Soft Brush mode, which will give you more organic results.

TERRAIN HEIGHT

You can use the Map Editor's Terrain Height Painter to introduce some variation to your terrain. The Terrain Height Painter allows you to make small undulations to the terrain which do not affect gameplay and are merely visual. This should not be confused with the Tier Painter, which has a direct impact on gameplay.

This tool is useful to further sell the visuals of the landscape (e.g. you can make a sandy surface which has varying gradients, etc.)

MAP DECORATIONS

You can use the Map Decoration Tool to place objects into your map, such as trees, buildings, and many, many more things! This is the time to let your inner artist shine!

Make sure to use the Paint functionality on the tool to its full extent, to keep an eye on your Budget and to use the Transform tools on your decorations to introduce some variation to your assets.

DECALS

The Decal Editor Tool and the Spline Decal Editor Tool allow you to introduce more variation to your terrain.

Decals are also useful to mark important places on the map and to hide things you don't want visible such as Tier Perimeters.

FOG & WIND

You can use the Fog & Wind Tool to add to a map's ambience with relatively minimal effort. Wind will animate trees and other map decorations according to intensity.

AUDIO

Use the Audio Tool to place audio elements in your game. The Setting you choose will determine what ambience layers will be present in your level. The volume of the layers will be dependent on the camera's proximity to the emitters (auto spawned or manually placed).

TERRAIN PAINTERS

When you're happy with your current map's decoration placements, it is wise to do a pass on the various gameplay-driving terrain painters:

- The Unbuildable Zone Painter allows you to define which areas the player cannot build on. Do not allow the player to build in areas with other geo such as map decorations.

- The Path Painter allows you to define which areas on the map units can traverse. These can be defined separately for air and ground units. You should make sure not to allow units to traverse through geometries on the map, such as map decorations.

SAVING THE MAP CREATION PROCESS AND THE SAVE AS TOOL

You can save your map creation process any time using the Save button in the Menu Bar on the top of the level editor. You can also save the current map as a duplicate with a customized map name using the Save As function by opening the Save As window.

 Save Button (Located in Menu Bar)

 Save As Button (Located in Menu Bar)

When the Save As button is clicked, a Save As window will appear in the center of the level editor screen. You can customize the name of the duplicated map, as shown in the image below. The duplicated map will also appear on the map list in the Open Map window.

PUBLISHING YOUR MAP

You can use the Publish Map Tool to publish your map to the Steam Workshop. Once you publish a map, other players will be able to see, download and play it with other users who also have the map downloaded.

NB: to download a map from the Steam Workshop, select the map you want and press the "Subscribe" button. Once downloaded, the map will be available for selection in the lobby creation screen.

TESTING THE MAP

You can test your unpublished maps in the game at any time.

You will see maps that you have created in their respective Game Modes, under Custom Modes.

All locally created maps will be tagged as Staged. Other players cannot join you when you create a lobby for your map if it has not been published yet. Once published, it will still show up as Staged in the lobby creation screen - that means you are still able to open it in the Level Editor, make changes and publish an updated version to Steam.

NB: for your map to be fully playable, it should pass all Game Mode Constraints.

Custom maps for the Game Modes that don't allow bots (e.g. Battlelines) cannot be tested locally, so in order to test them you'd have to publish the map, have someone download it and help you test it.

EDITOR TOOLS

MAP EDITOR

The Map Editor Allows you to make changes to your map's terrain. Here you will be able to paint the ground, set different height levels, make ravines and control what parts of the map are buildable and traversable by units.

The Map Editor is divided into several painter modes:

1. Terrain Height Painter

2. Splat Painter

3. Abyss Painter

4. Tier Painter

5. Ground Path Painter

6. Air Path Painter

7. Unbuildable Zone Painter

8. Hide Terrain Painter

9. Map Resize Tool

Image 3.1 Map Editor Sidebar

BRUSH

The Map Editor works like painting a canvas (where each mode is its own canvas that gets put together to result in your terrain). As such, you will be painting this canvas with a brush.

Whether you're painting grass into your terrain or setting height, you will be working through a brush. This will affect part of your terrain in some way.
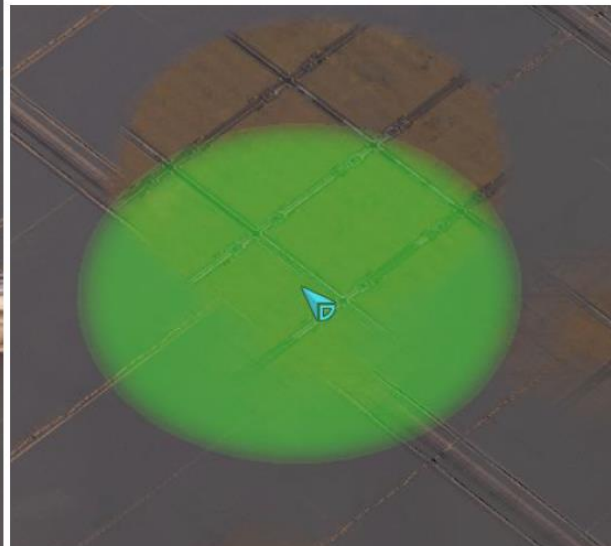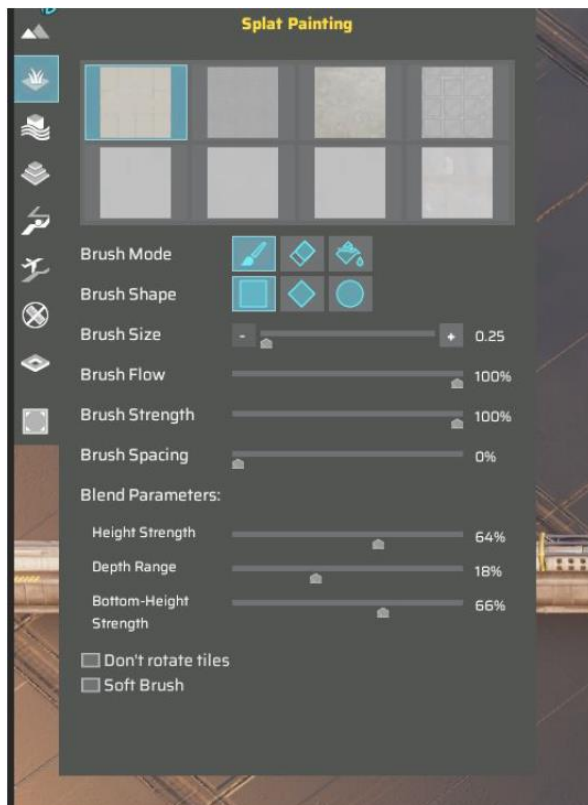

Image 3.2 (left) Brush Settings in Splat Painting.

Image 3.3 (right) A brush stroke indicator at your cursor position on the map.

What that brush looks like depends on your Brush Options. Your available Brush Options will depend on the Map Editor Mode.

BRUSH MODE

Think of this as "Paint" vs "Erase". It defines what operation you want to do on the canvas. The standard operations are Paint, Erase, Fill and Smoothen .

BRUSH SHAPE & SIZE

If you select different shapes, you will see that the green overlay under your cursor also changes shape to match.

Adjusting the size will scale that shape up and down. You can change the brush size by pressing the "+" and "-" keys.

TERRAIN HEIGHT PAINTER

The Height Painter allows you to create undulations in the terrain. You'll be able to raise and lower the terrain up to a certain point. These changes are merely visual and do not impact the gameplay of your map.
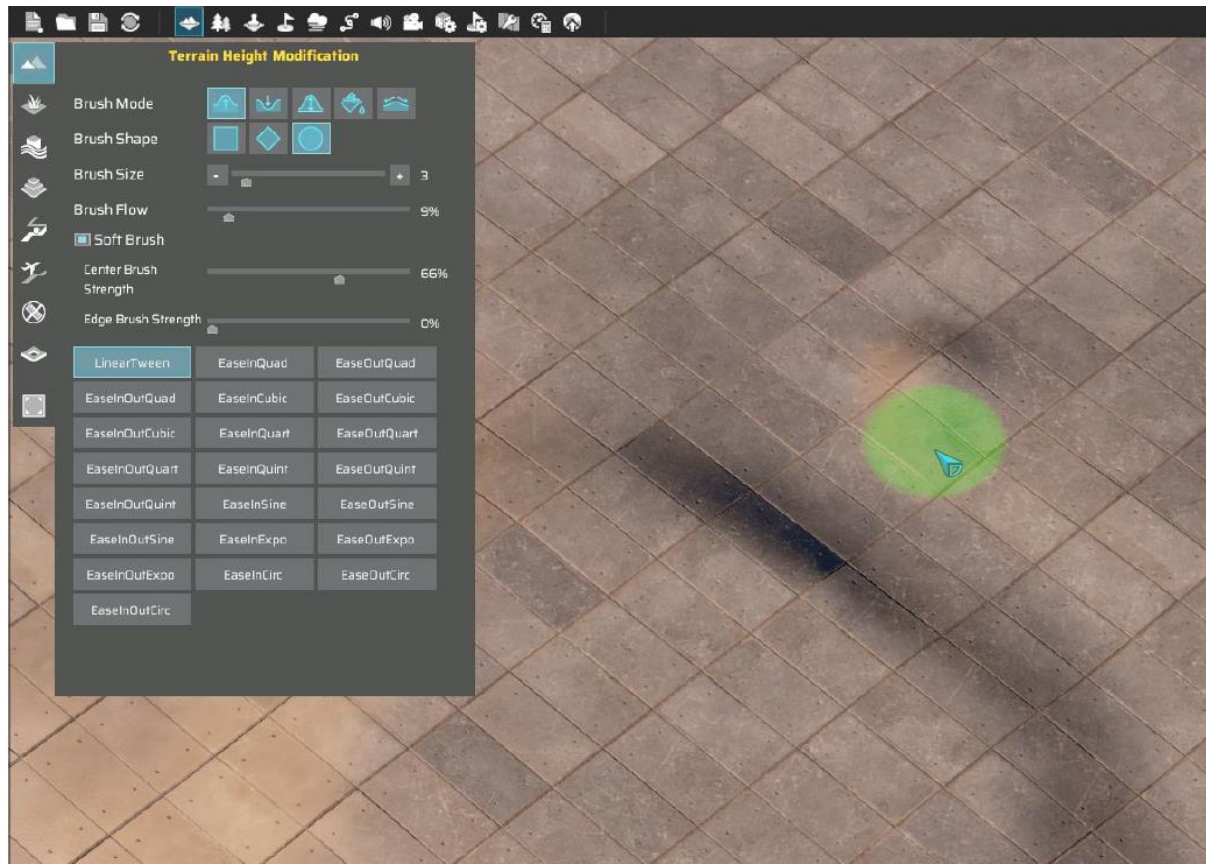

Image 3.4 Terrain Height Painter Menu

You can use the Terrain Height Painter by tuning the standard Brush Options , which will define how the terrain will change as you paint. In this case, using a Soft Brush will yield smoother hills as you paint, instead of creating steep differences of height.

You can also use a Smoothen Brush Mode to average out the terrain under the cursor.

NB: The Soft Brush options are not compatible with the Set Brush Mode.

In order to create a height which hides higher-ground units behind the Fog-of-War, you will need to use the Tier Map Editor.

SPLAT PAINTER

The Splat Painter allows you to paint materials onto your terrain. Materials define how the terrain looks visually.

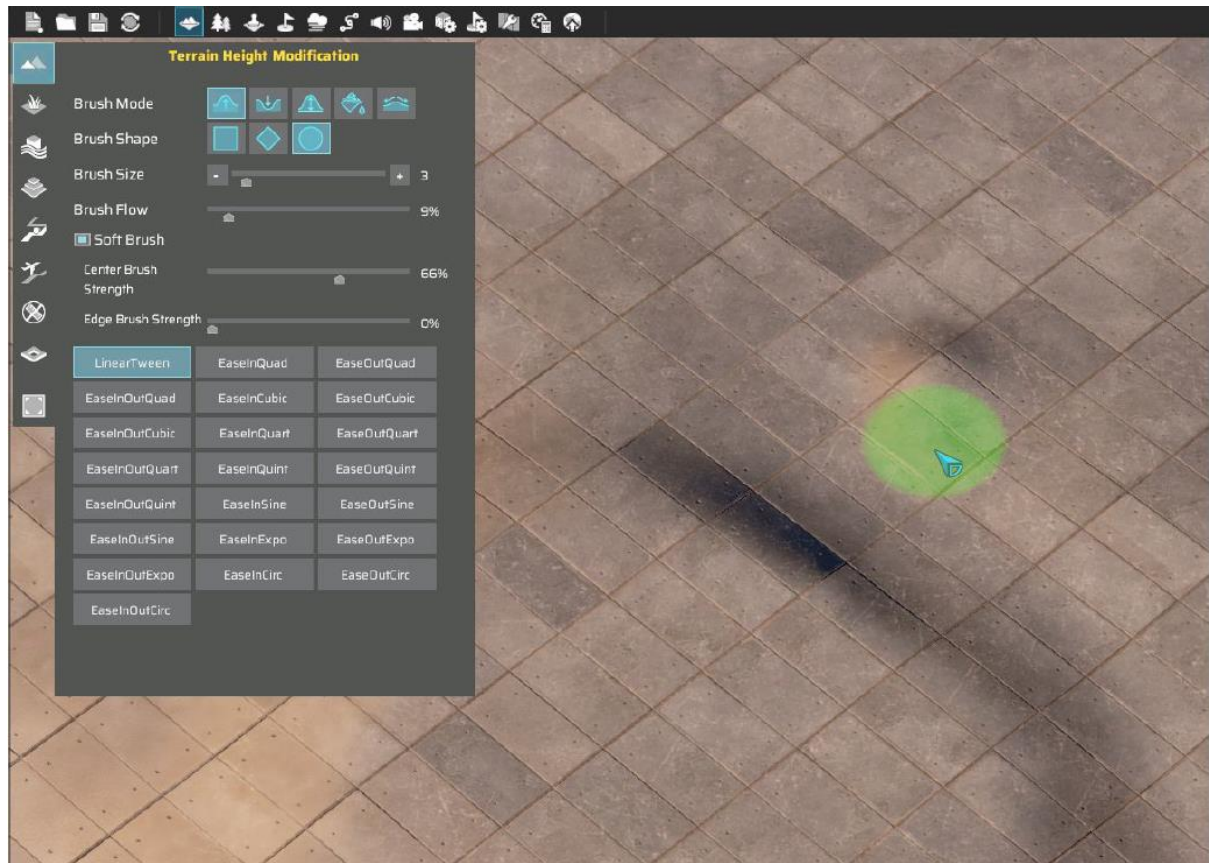You'll use this tool to paint grass, rock or dirt surfaces.

Image 3.5 Splat Painting Menu

At the top you'll see your available materials. The available materials depend on your level Asset Themes.

After selecting one of the materials, you can then begin painting as per your brush options.

NB: Up to 3 materials can be blended at a time.

The Splat Painter offers quite a few more Brush Options than other painters:
- **Brush Strength** - determines the brush opacity of the painted material.
- **Brush Flow** - determines how much paint is applied per stroke, up to the specified opacity.

- **Brush Spacing** - determines how often the brush paint is applied when dragging on the terrain canvas.

BRUSH STRENGTH VS BRUSH FLOW:
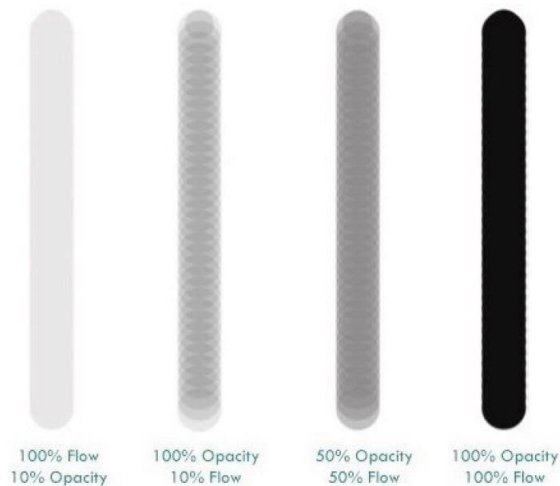
A lower Brush Flow value allows you to paint over the same area multiple

times in order to apply the opacity given by Brush Strength.

A Brush Flow value of 100 means that at each stroke, the painted area will

assume a value of Brush Strength opacity, meaning that a single pass on

the area will get the final value, and that repainting it again won't

strengthen the produced effect

100% Flow 10% Opacity   100% Opacity 10% Flow   50% Opacity 50% Flow   100% Opacity 100% Flow

(source: Retouching Academy's breakdown of the difference between opacity and flow)

BLEND PARAMETERS

These parameters determine how the materials are blended when they have competing height maps. We don't blend materials simply by overlaying their color.

Example - If we're blending a Dirt material into a Cobblestone material, it is visually off-putting if they blend uniformly (left image). The expected behavior is that the dirt seeps into the cobblestone by filling the lower heights, keeping the cobblestone's peaks intact (right image).

(source: Andrey Mishkinis's Advanced Terrain Texture Splatting)

- **Height Range** - Determines the influence of heightmaps in the output pixel.
- **Depth Range** - Determines the value range that composes the bottom of the heightmap into which the flat material can get fully blended into.

- **Bottom-Height Strength** - Determines the strength of the output value for pixels within Depth Range.
  This value is generally best left at 0% or 100%.

To completely remove impact of height maps in the blending, change all 3 values to 0.

SOFT BRUSH

The soft brush allows you to paint with the brush fading opacity from the center to the edge of the brush to

create a smooth blend. The Center Brush Strength and Edge Brush Strength sliders determine the opacity
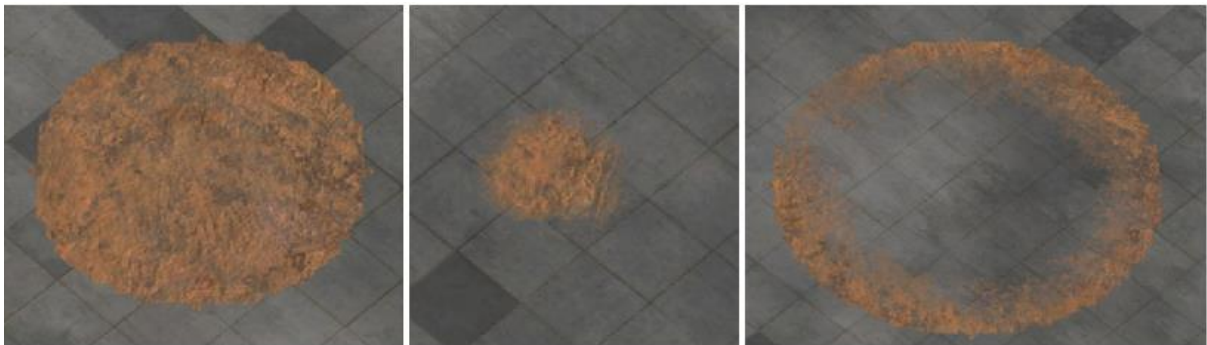
at each point of the brush as it paints.

Image 3.6 Soft Brush Effects with Different Strength Settings

In the images above:
- **Left** - Soft Brush disabled.
- **Middle** - Soft Brush enabled: **Center Brush Strength** = 100%, **Edge Brush Strength** = 0%.
- **Right** - Soft Brush enabled: **Center Brush Strength** = 0%, **Edge Brush Strength** = 100%.

The buttons at the bottom define the easing applied to the Brush, i.e. How the brush goes from Center Brush

Strength to Edge Brush Strength (e.g. should it increase/decrease steadily with distance from the center, or

should it keep the value at the center for longer and then jump suddenly to the edge value)?

You can visualize here the easing that are applied with each button.

ABYSS PAINTER

The Abyss Painter functions much like the Tier Painter , but allows you to create a much larger height difference between tier 0 and tier 1. It is also useful for creating non-traversable pits.
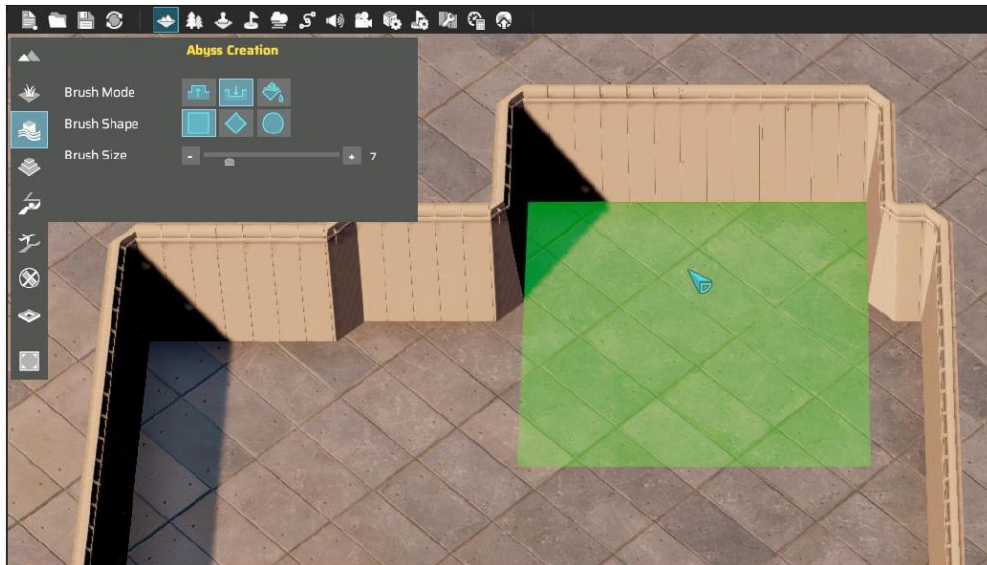

Image 3.7 Lower the Ground using the Abyss Painter

In the Abyss Painter, the Set/Raise brush option will create an elevated tier 1, while the Lower brush option will sink Tier 0 to an abyss. You can couple this tool with the Hide Terrain Painter and a water Map Decoration Object to create canals with bridges.

Image 3.7 Making a Canal using the Abyss Painter

NB: the Abyss Painter has a major influence on the Tier system. This may cause the Tier Painter's stability issues to come up and even be exacerbated. It is recommended to make Abyss changes before painting tiers, so that you don't interrupt existing tier perimeters when applying the abyss brushes.

TIER PAINTER

The Tier Painter allows you to create different step heights across the map. These step heights hide higher-ground units behind the Fog-of-War and they cannot traverse from tier to tier without a ramp.
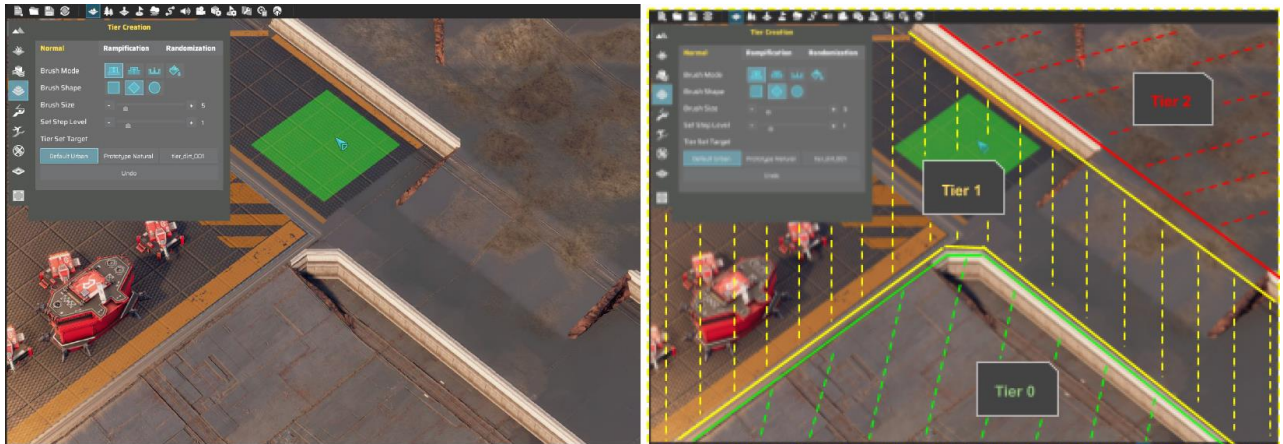

Image 3.8 (Left) Tier Painter Menu. Image 3.9 Indication of Different Tiers

NORMAL MODE

Using the normal brush operations, you will be able to set the tier heights in your map.

NB: You can step +1 tier height in a single wall and all walls can only go up by +1 tier at most.

When in **Set** mode, the **Step Level** brush option indicates what tier level we're raising/lowering to. It will increase or decrease tier levels by one until it reaches a plateau at the desired Step Level.

The **Tier Set Target** option allows you to change which tier perimeter visual pieces are used when building tier walls. If you change a tier level and you have under your cursor a tier perimeter that uses a different Tier Set Target, that whole perimeter will switch to use the new Tier Set Target you wish to use.

You can Undo a number of tier operation steps simply by clicking **Undo**.

NB: that there is no Redo operation, so undoing is not reversible.

RAMPIFICATION MODE

The Rampification mode allows you to add ramps that cross your tier walls. To set a ramp, hover the cursor over a tier wall that has enough space to fit a ramp of the specified size.
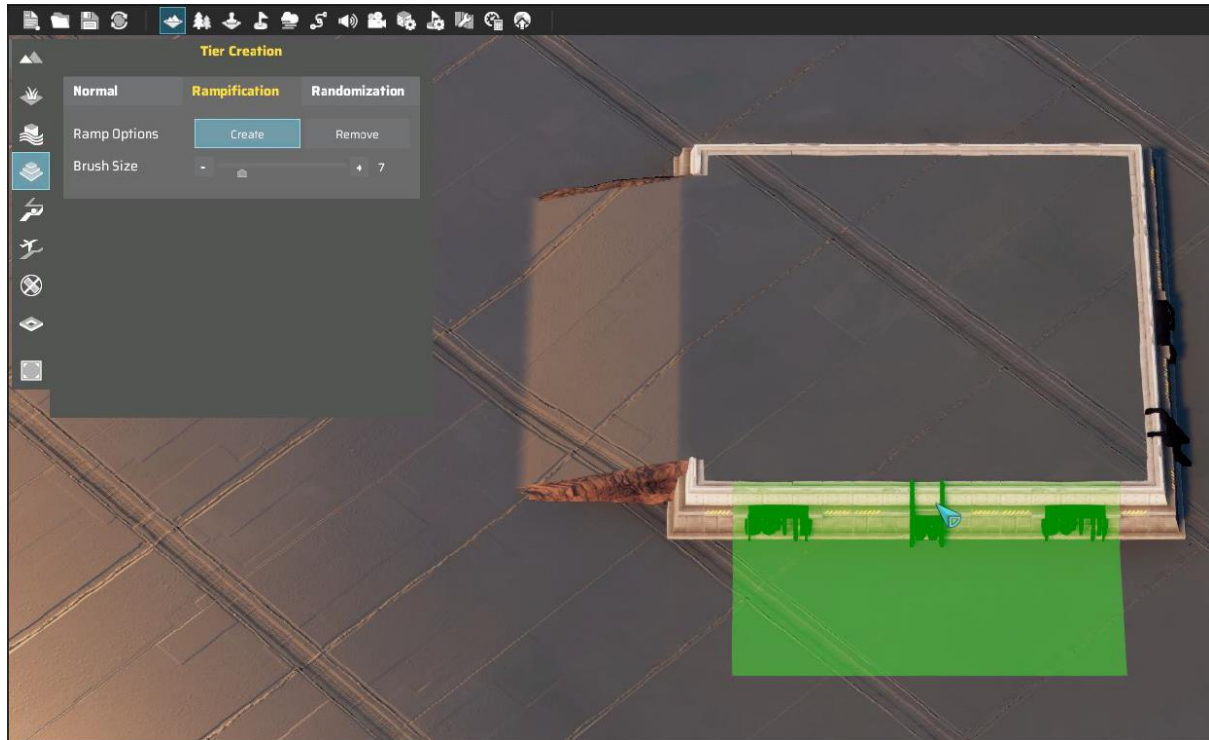

Image 3.10 Create Ramps to Make A Higher Tier Accessible

NB: The fact that the cursor is green doesn't always mean ramp placement is possible. Make sure you have some padding to the left and right of the ramp you're placing!

In the image above, this is the maximum size ramp that is placeable. Notice that it doesn't encompass the entire wall of the perimeter.

RANDOMIZATION

The Randomization mode allows you to change the wall pieces used to dress up the tier perimeters while keeping the current Tier Set Target.

STABILITY ISSUES

The current version of the Tier Painter has some stability issues and you may notice corruption of your terrain. This manifests itself visually as the terrain not filling the inside of a perimeter fully.
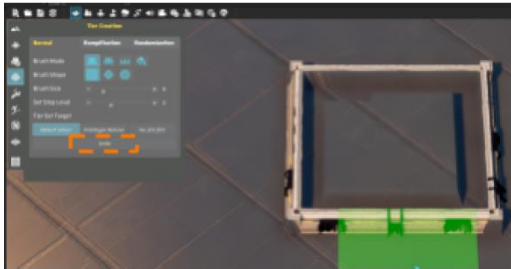

Image 3.11 A Broken Tier

Image: A corrupted tier. Notice how the inside of the tier doesn't reach and fully cover the perimeter walls.

The easiest way to avoid this is to **Undo** immediately after you notice a tier corruption. Keep the following rules in mind when using the tool:

1. Don't lower terrain adjacent to a raised perimeter.
2. When connecting tier "islands", ensure that the bridge can fit at least perimeters on both sides.
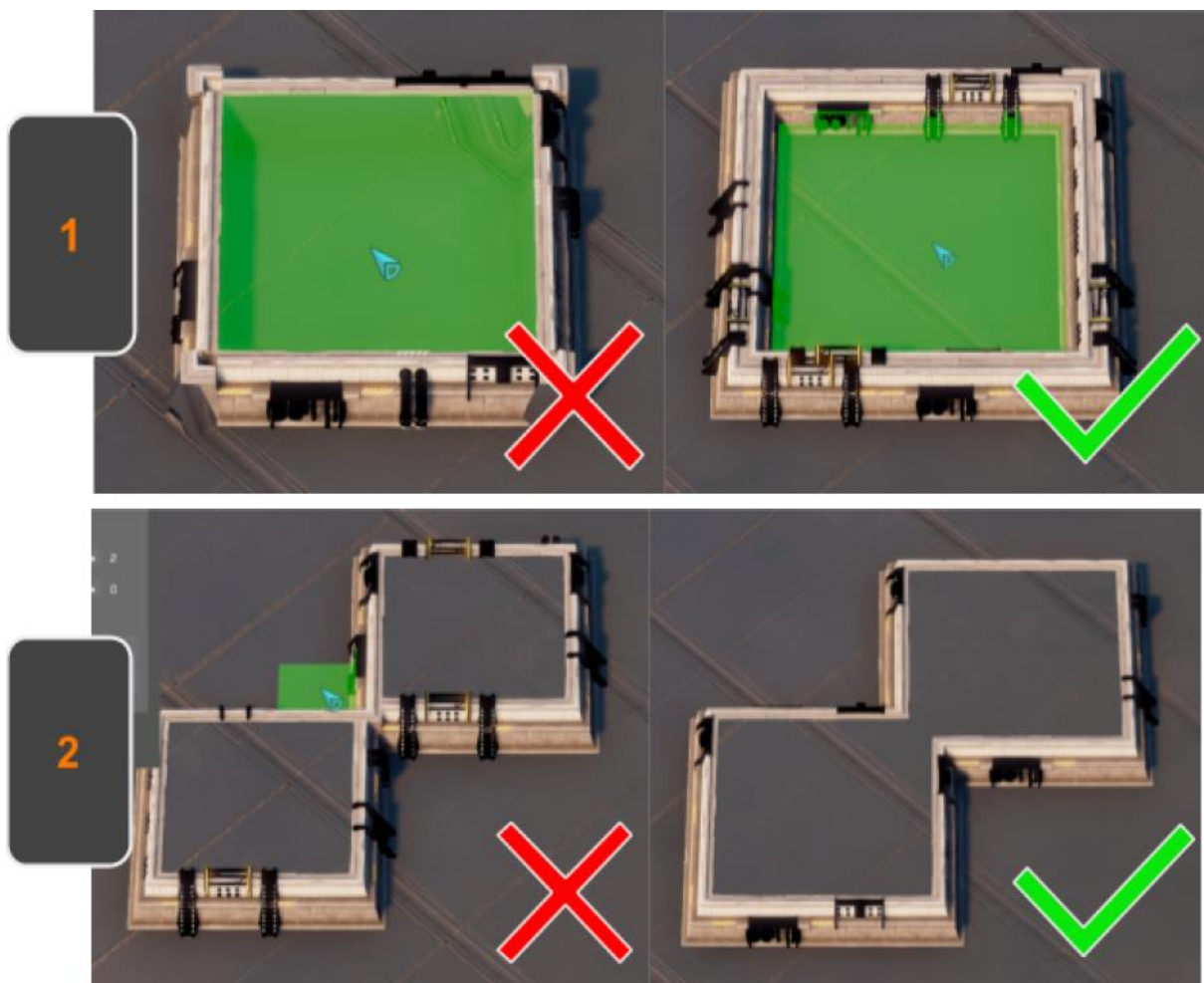

Image 3.12 Do and Don't Do in Tier Creation 30

PATH PAINTER

The Path Painter allows you to define which areas are traversable by units and which aren't.

NB: by default, all of the map is traversable, so you will also be painting the areas that units cannot go to. Erasing the paint will make areas available for unit path-finding.

Image 3.13 Ground Path Painter (Upper) and Air Path Painter (Lower)

The Ground Path Painter and the Air Path Painter are separated in the Map Editor side menu in order to be independently editable.

You will be able to see the areas currently painted in the Map Navigator. You can also allow for visuals in-map

through the Bottom Bar:
1. Red means Ground Units cannot traverse.
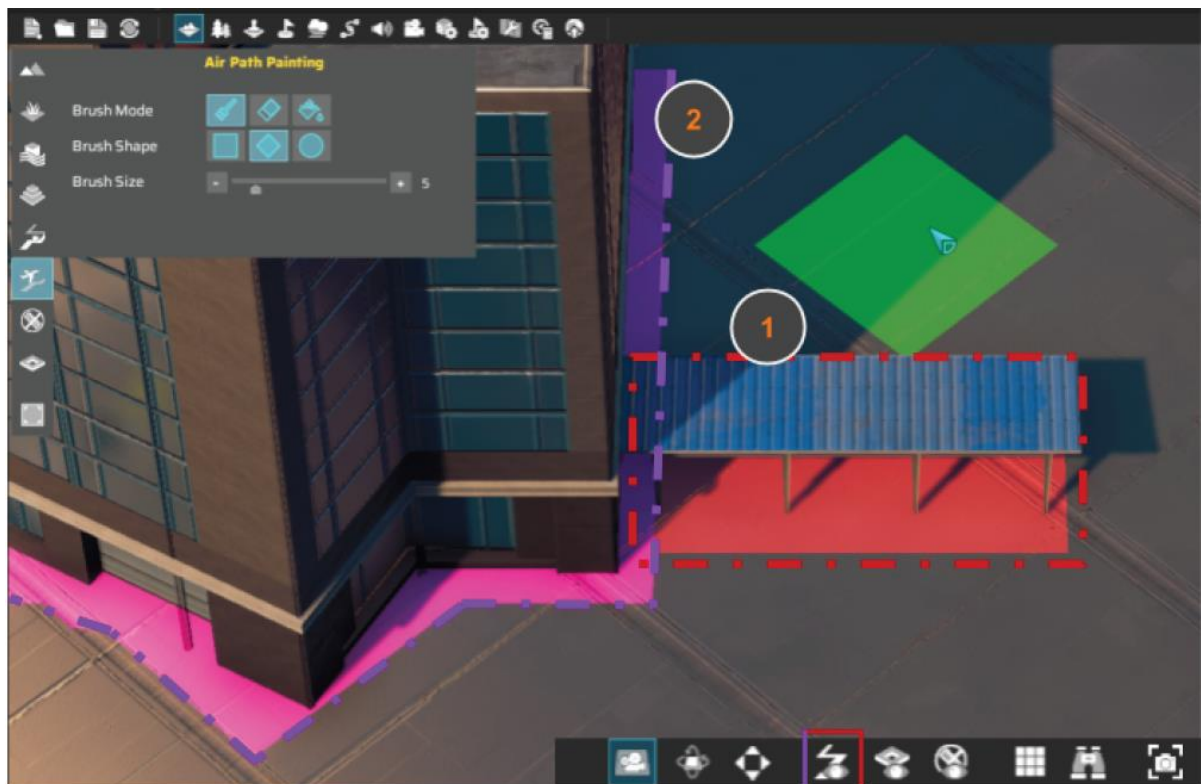2. Pink means Air Units cannot traverse.

Image 3.14 Indication of Paths on Map

UNBUILDABLE ZONE PAINTER

The Unbuildable Zone Painter allows you to define which areas the player can place constructions in.

You will be able to see the areas currently painted in the Map Navigator. You can also allow for visuals in-map through the Bottom Bar , where Green marks Unbuildable areas.
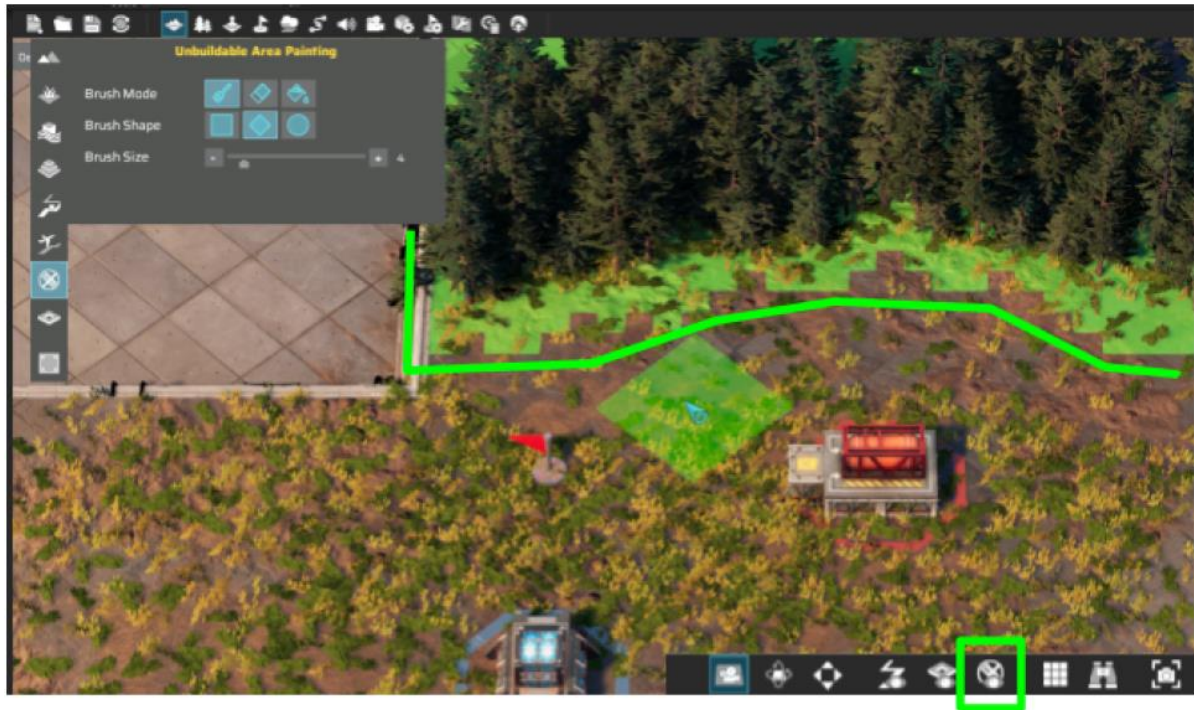

Image 3.15 Indication of Unbuildable Zone on Map

NB: As previously mentioned, by default, all of the map is buildable. You will also need to paint the areas where players cannot build.

HIDE TERRAIN PAINTER

The **Hide Terrain Painter** allows you to make areas of the terrain transparent. This tool is useful for allowing special visual modifications to the terrain, such as exposed underground machinery. The tool creates holes in the terrain which should be dressed up with map decorations to fake an effect, such as canyons or water.

Image 3.16 Hide Terrain Painter menu

You will be able to see the areas currently painted in the Map Navigator. You can also allow for visuals in-map through the Bottom Bar, where **Blue** marks **Hidden Terrain** areas. This can be useful when you want to see what the terrain looks like when not transparent and without having to erase and repaint.

Example - the **Resource Node** Buildings have pipes and fixtures underground which are meant to be exposed. You can use the Hide Terrain Painter to mask out the terrain underneath the building and reveal the industrial piping.

Image 3.17 Without Hide Terrain Painted (Left) Image 3.18 With Hide Terrain Painted (Right)

MAP RESIZE TOOL

The Map Resize Tool allows you to set a new size for your level.

NB: This operation may crop your map and delete objects and entities which are now placed off-map.
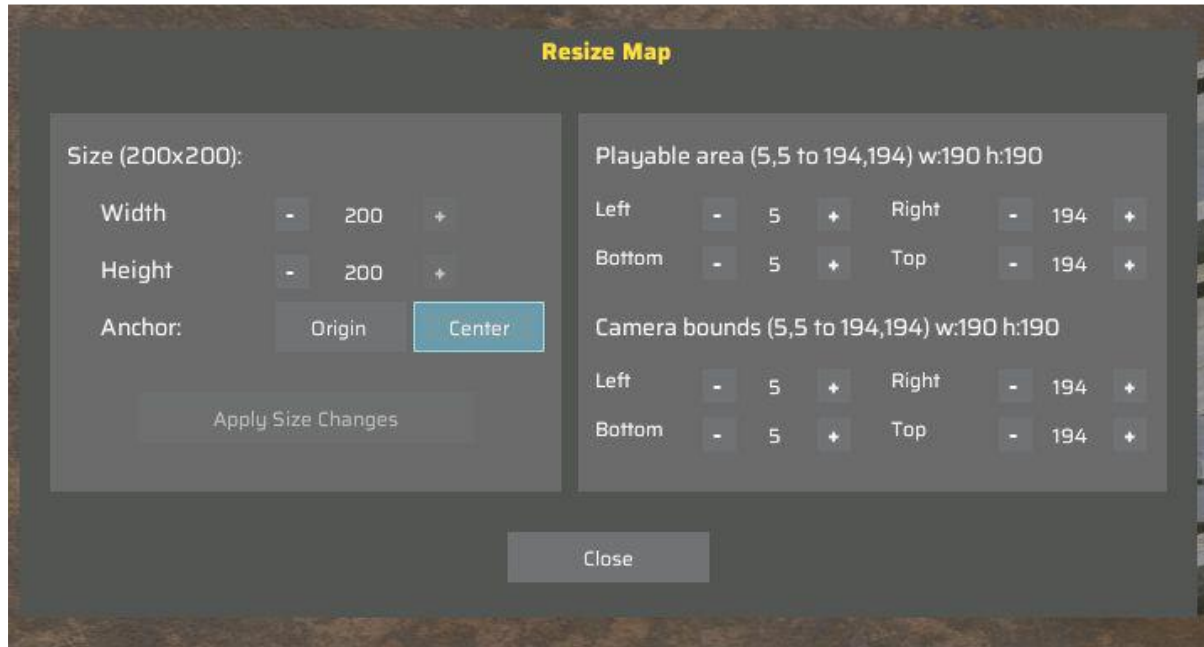

Image 3.19 Resize Map Menu

On the left, you can set the size of the terrain itself. Hitting Apply Size Changes will run the resize operation which may take a while. Make sure you save before doing so.

On the right, you can set the size of both the Playable Area and the Camera Bounds:

- The Camera Bounds define how far the camera can pan until it reaches the end of the map. Make sure that these bounds offer enough padding, so that the players won't be able to see the terrain edges.
- The Playable Area defines the area of the map that units will consider viable for traversing. This means that units will never try to reach a given walk point by taking a path that goes outside the Playable Area.

You should have a playable area slightly smaller than your Camera Bounds, so that units have no chance of walking off-screen.

MAP DECORATIONS TOOL

The Map Decoration Editor allows you to place objects on the map such as trees, buildings, ruins, rubble, pipes and many, many more things!
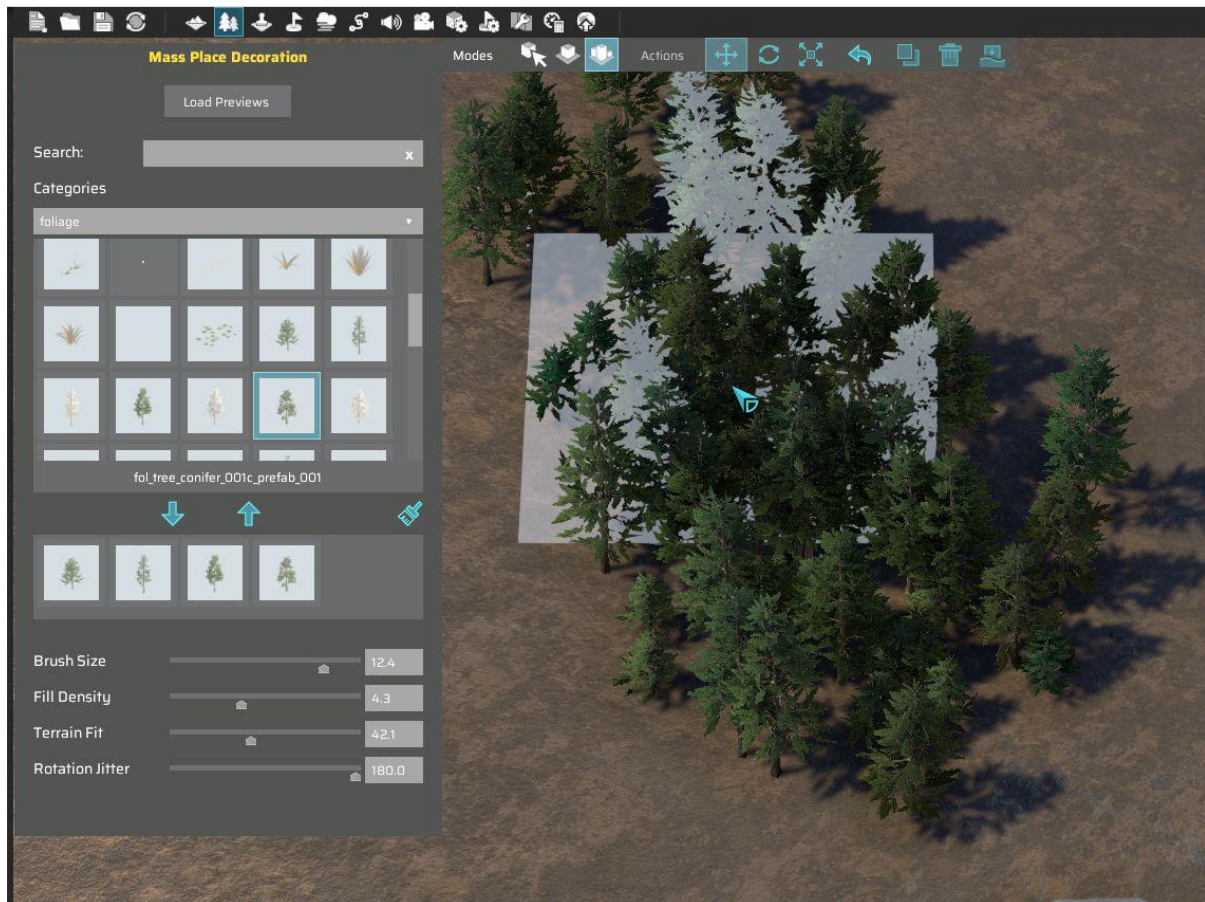
Image 3.20 Putting Trees On the Map

These decorations serve only visual purposes. They will not prevent units from walking through them and they will not prevent players from building overlapping buildings. After placing decorations and making your map aesthetically pleasing, don't forget to adjust the Gameplay Terrain Painters.

Image 3.21 Different Map Decoration Tool Modes

The Map Decoration tool is divided into 3 modes:

1.   Select & Transform
2.   Place
3.   Mass Place

DECORATION MODES

EDIT MODE

The Edit mode allows you to select and manipulate the selected decorations via the regular Transform Tools to Translate, Rotate, and Scale objects on the map.
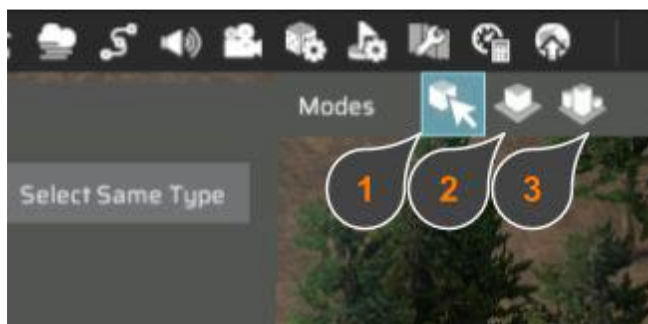
It provides some quality-of-life selection functionality, such as:

- Select Duplicates - After a Duplicate Action , the replica may appear at the exact same location of the original object, which makes it difficult to select due to overlapping. To select the replica after a duplication action, you can use the Select Duplicates button to select the replicas of this type at the same location as the original object.
- Select Same Type - Selects all placed objects in the map that are built from the same object (e.g., all grass_small_001b_prefab objects).

THE OBJECT PALETTE

In the Place and Mass Place modes, you will be mainly working through the Object Palette.
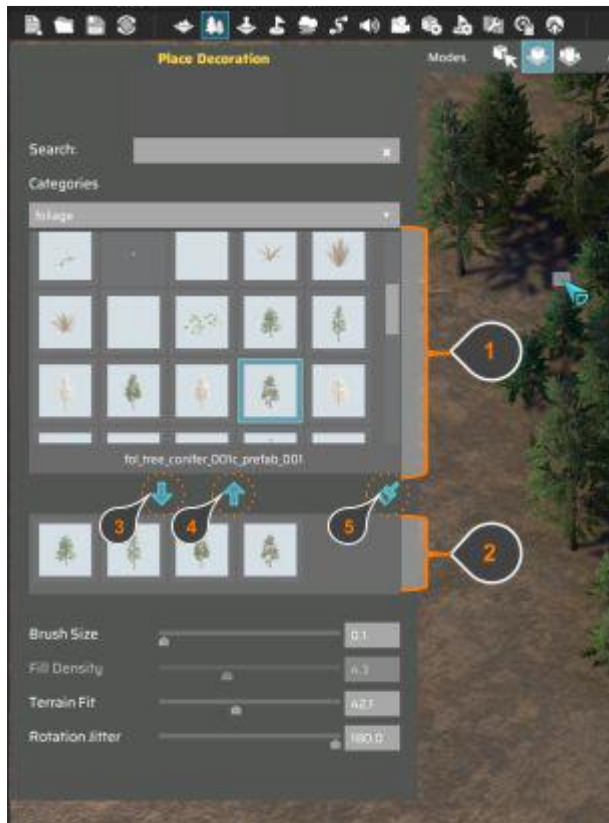
The Palette has various categories for you to browse objects on, as well as a search functionality. You can browse categories, put objects that you want into your Selected Palette and remove them when you're done placing that type of object.

You can see what objects are currently in your Selected Palette at the bottom. Use the down arrow button to bring an object from the browse window into the Selected Palette and the up arrow button to remove it.

In the image, we can see a palette that has a few trees

selected to place:

1. Browse Panel.
2. Selected Palette.
3. Add to Selected Palette.
4. Remove From Selected Palette.
5. Clear All from Selected Palette.

Image 3.22 The Pace Decoration Menu

PLACE MODE

The Place Mode allows you to place a single object into the map, giving you full control over its placement.

NB: this mode will place a single object from your Selected Palette into the map. If you're using this mode, it is best to keep your palette empty or with only 1 object in it.

MASS PLACE MODE

The Mass Place Mode allows you to randomly place all objects currently in your Selected Palette into the map via a Brush. This is useful when placing lots of vegetation e.g. authoring a forested area, etc.

The objects from your palette are placed within the preview square under your cursor and respect the following Brush Options you set:

- Brush Size - Determines the size of the square that objects will be randomly spawned into.
- Fill Density - Determines how many objects will spawn into the square.
- Terrain Fit - Determines how the spawned objects align to the terrain. With a value of Zero, the object
- will always be placed perfectly upwards, even if placed on a slant. With a value of 100, the object placement will align with the terrain underneath it.
- Rotation Jitter - Determines the angle of the random rotation of the spawned objects. With a value of Zero, the objects placed will always be facing the same direction. With a value of 180, the objects placed will have a random rotation between 0 and 180 degrees.

MASS ERASE

While in Place or Mass Place Mode, you can hold down the Alt key to delete existing decorations inside your brush instead of placing new ones.

DECAL EDITOR

The Decal Editor allows you to place decals in your map e.g. painted lines or dirt patches, which get projected onto the terrain or the decorations in your map.

Decals are a great way to introduce variety when your terrain seems to be monotonous. They're also useful to hide details on other objects.
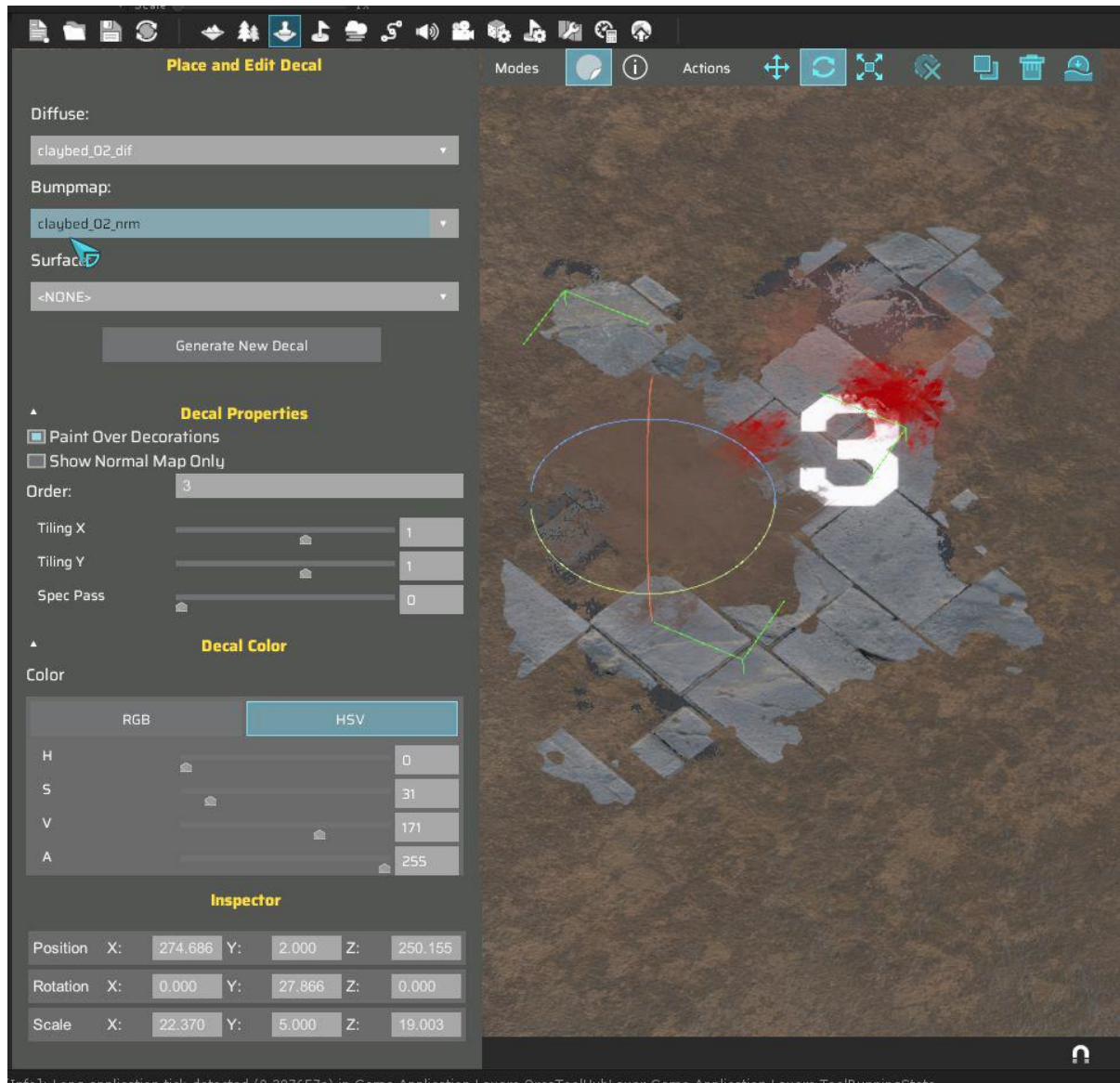

Image 3.23 The Decal Editor

In the image above, we can see what just a few decals at work can do. The big number 3, the blood splatters and even some of the dirt are decals. Notice that some dirt is placed on top of the number 3 and the blood puddles. This is possible by setting the dirt decal's order to draw on top of the other decals.

PLACE / EDIT DECAL

Decals are composed of 3 textures:

- Diffuse - this texture contains the color that is applied on the projected surface.
- Bumpmap - this texture contains the information regarding the projected surface's normals (e.g. the texture should specify that the decal is applied as rough / coarse concrete or as a smooth paint). This texture can define pixels to be dented inwards or outwards, giving the illusion that it is a 3D surface.
- Surface - This texture contains information on shininess, roughness, metallic look, etc. It specifies how this material will react to Light. Each channel of the texture maps to a single property:
    1. **R:** Metallic
    2. **G:** Occlusion
    3. **B:** Emission Value
    4. **A:** Roughness

These textures can be mixed and matched for maximum freedom, but it is highly recommended to have all of the textures match for best results. The texture are name-coded to match under specific suffixes:

- Diffuse - " texname _dif "
- Bumpmap - " texname _nrm "
- Surface - " texname _spc "

The easiest way to find the Bumpmap that matches the diffuse texture "base_helipad_01_dif" is to search for " base_helipad_01 " in the Bumpmap box, which will show you " base_helipad_01_nrm ".
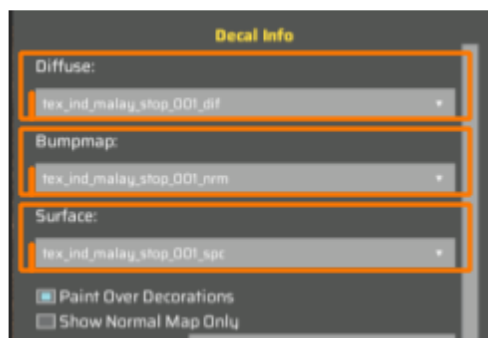
For best results, you should match the intended decal by name:

Diffuse: "..._dif"

Bumpmap: "..._nrm"

Surface: "..._spc"

Image 3.24 Assigning Assets for Decal Creation

DECAL PROPERTIES

These properties allow you to make changes on how the above texture are applied:

- Paint Over Decorations - specifies whether the decal should be applied over detected decorations within the box or just on the terrain under them. Note that decals cannot be applied on top of foliage such as trees or shrubbery
- Show Normal Map Only - specifies whether or not to draw the diffuse map and the surface map.
- Order - specifies the draw order of the decal. They can be used to define which decals get drawn on top and which are drawn under.
- Tiling X/Y - specifies how many times the textures should be drawn within the decal's bounding box.
- Defaulting to 1 means that the decal gets rendered once, being the size of the box. However, setting tiling to 2 on both the X and Y axis means the decal gets drawn 2 times in each direction - the decal draws 4 textures within the bounding box.
- Spec Pass - specifies how the decal is affected by the specular pass on the underlying terrain. This value is only used if the decal has no "Surface" texture applied to it since that texture.

DECAL COLOR

This inspector allows you to change the Hue of your decals via RGB or HSV controls. Since the Diffuse texture may already have color, using the HSV may yield more understandable results. A white color (R=255, G=255, B=255) does not mean the decal itself will be white, but rather that the decal will use the Diffuse Texture's color without changing its Hue.

Using HSV mode will make it easier to shift the hue and adjust saturation without having to worry about how the hue gets applied to the diffuse texture.

ENTITY PLACEMENT

The Entity Placement Tool allows you to place key gameplay elements in your map, such as pre-spawned units, buildings and spawn points.
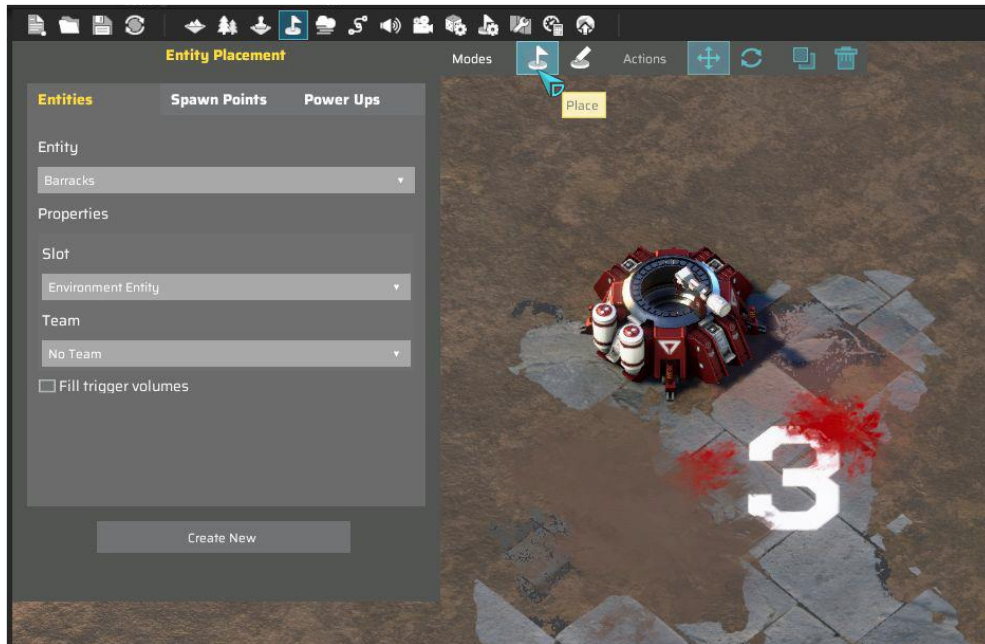

Image 3.25 Entity Placement Tool Menu

The tool is divided into three sections:

- Entities - places gameplay elements such as anchors, buildings and units.
- Spawn Points - places spawn points for players to load into the map.
- Power-Ups - places anchors where power-ups will drop.

TEAM

When placing or editing an entity, you'll see that you'll be able to assign it a Team. Depending on the game mode selected for your map, there will be 2 to 8 teams available.

Teams 1-8 correspond to player teams. You can also assign it to an NPC team, a Capturables team or have no team at all.

SLOTS

When placing or editing an entity, you'll see that you'll be able to assign it a Slot. Slots specify which player the placed entity belongs to.

EDITING AN ENTITY IN THE MAP

You can edit an entity's position and rotation on the map by using the standard Transform Tools . For example, in a 2v2 map:

- **Slot 1** - 1st player of team 1.
- **Slot 2** - 2nd player of team 1.
- **Slot 3** - 1st player of team 2.
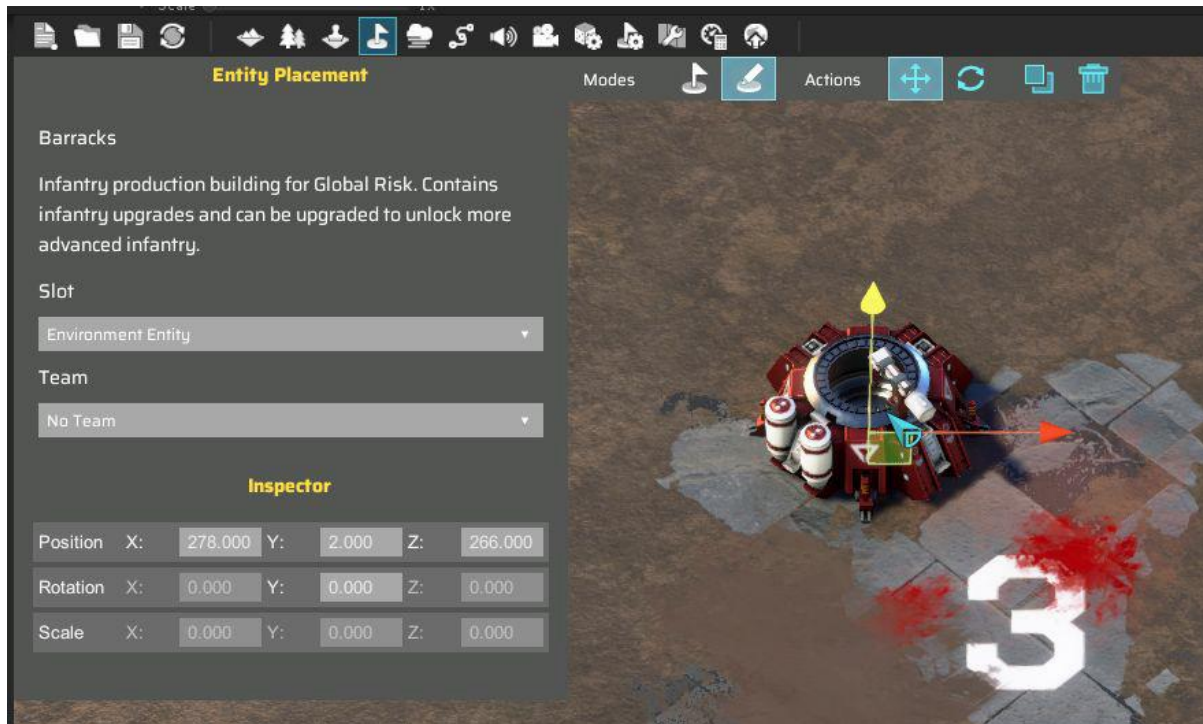- **Slot 4** - 2nd player of team 2.

Image 3.26 Edit Entity Mode, the Menu Will Also Show the Selected Entity's Info

FOG & WIND

The Fog & Wind tool allows you to add map-wide visual effects to your map. Both are previewable in real time as you set your values.
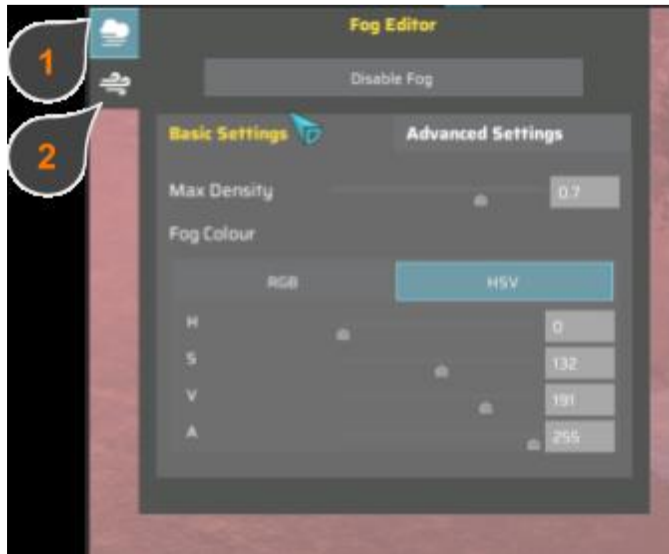
1. Fog Tool

2. Wind Tool

Image 3.27 the Fog and Wind Editor

Fog

FOG

The Fog tool allows you to add Depth and Height Fog. This means that the amount of Fog will depend not only on the intensity chosen, but also the point's distance from the camera and the distance from the ground (if using Height Fog). Under Advanced Settings, you will be able to fine-tune your fog.

Image 3.28 The Fog Editor for Fog Property Settings and Its Effects on Map

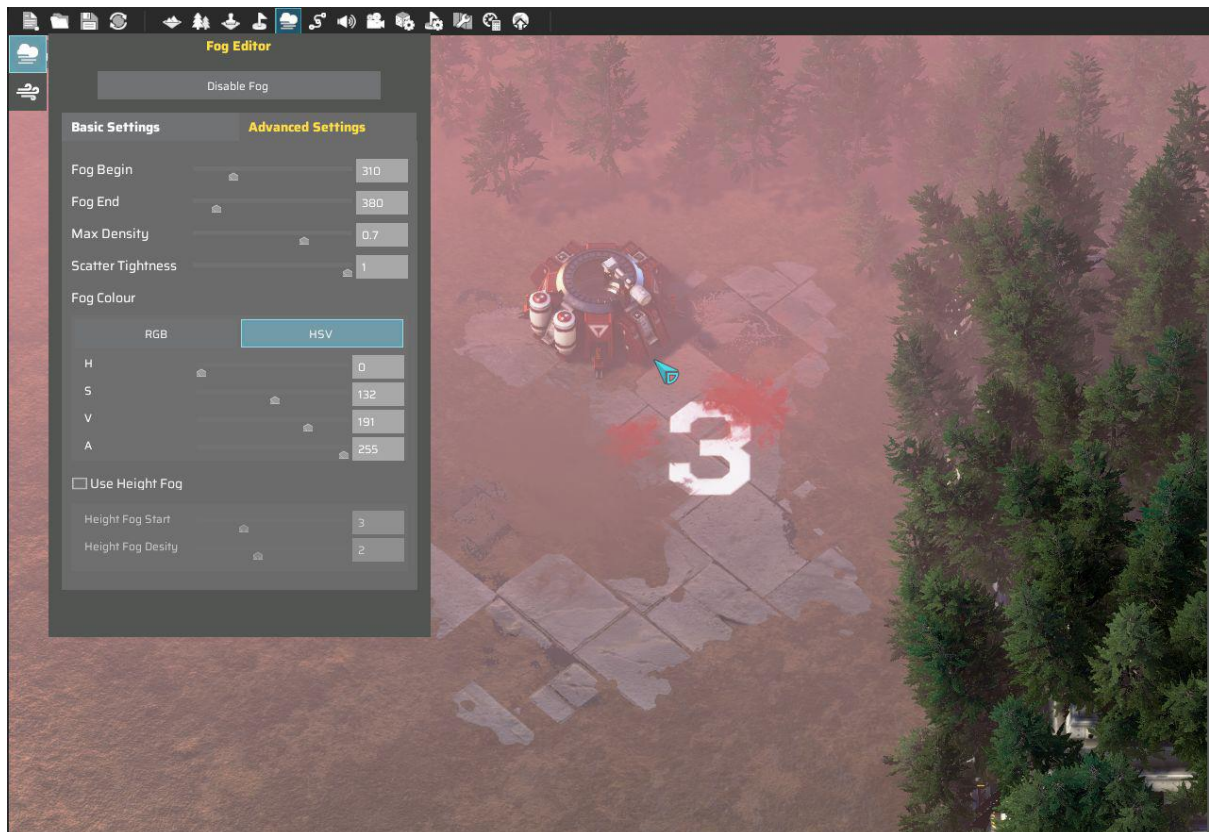**Fog Begin** determines at which distance Fog begins being visible. Under the regular camera view, the bottom of the view is around 310.

Fog End determines at which distance the Fog will reach Max Intensity. Under the regular camera view, the top of the screen is around 380.

Max Density refers to the value of the Fog when rendering things at Fog End distance. A value of 1 means that anything at and beyond Fog End distance will be completely obstructed by the Fog's color.

Scatter Tightness refers to how light affects the Fog. You can simply tune this value to get the best visual results you want and will only impact slightly on the color of the Fog.

Fog Color can be used to tint your Fog.

NB: the alpha value will not do anything, as transparency is given by Max Density.

Height Fog allows you to add fog based on the height of the terrain, such that tiers and objects above a certain level will be above the fog

WIND

The Wind tool allows you to tune how vegetation and other objects can animate due to Wind forces. To test changes, place some trees and see the effect of the wind on the tree's animations.
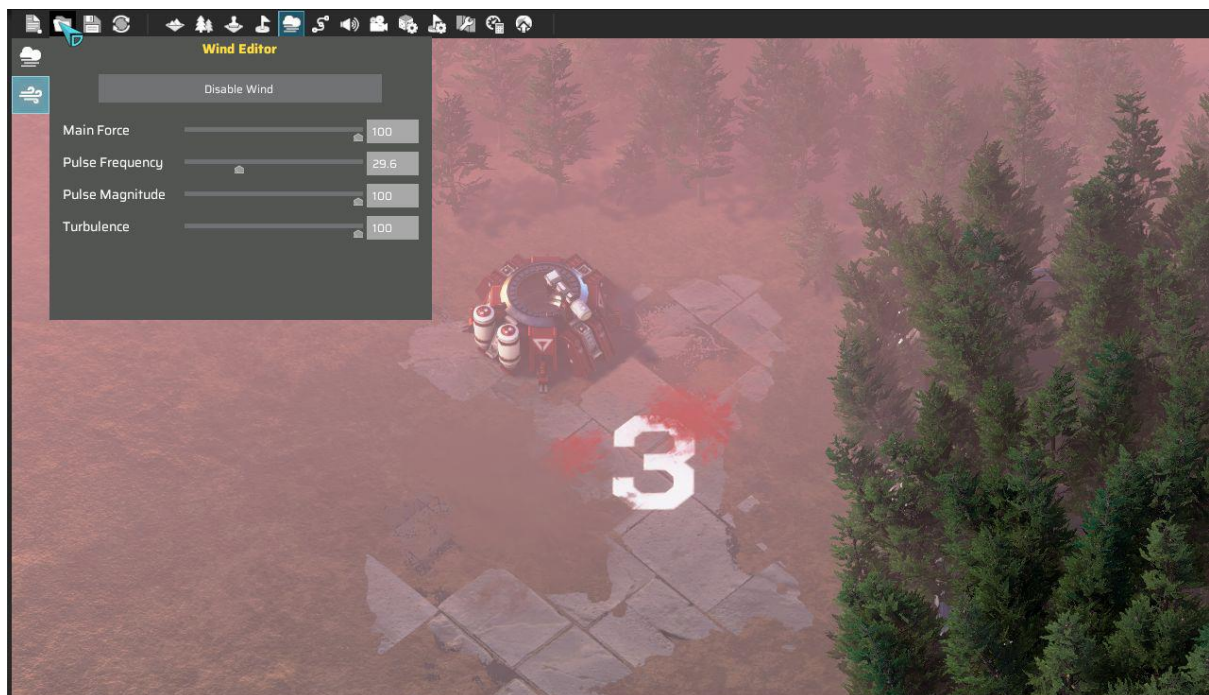

Image 3.29 The Wind Editor Menu

In the image above, you would see the trees swaying and the leaves shimmering from the effects of the wind

NB: When you disable the wind or change the wind effects to a very low value - it will take certain time for the wind effect change to show (usually 1-2 mins).
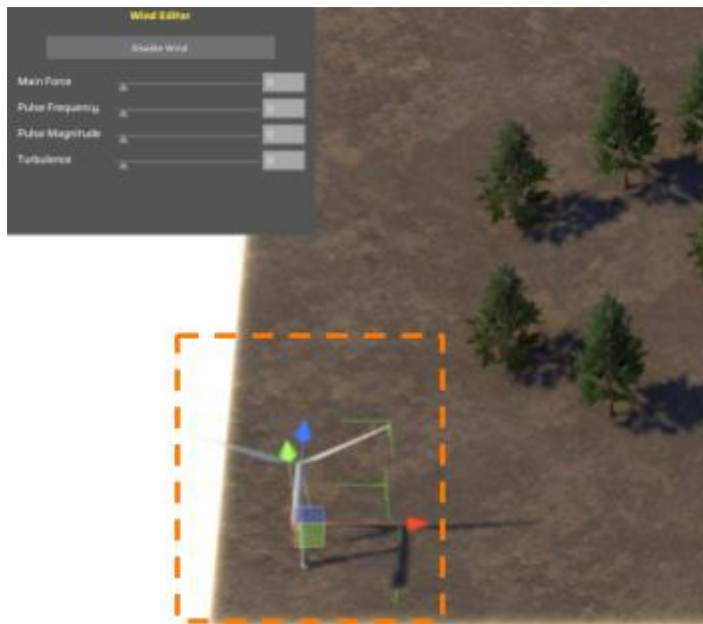
Image 3.27 The Windmill Object When the Wind Is Enabled

A movable windmill object will show up at the bottom left corner of the map editor when you turn on the wind effect. You can change the wind direction by move/rotate the windmill.

SPLINES

The Spline Tool allows you to place splines (aka "Paths") that can be used to draw repeating Decals. This is useful to put down decals such as painted lines along roads.

Image 3.30 A "Spline" is just a fancy word for a smooth Path that goes through a set of points...

CREATING A SPLINE

When you have the Spline Tool enabled, you can double-click anywhere on the map to create a new spline.

EDITING A SPLINE

You can select any existing spline to begin editing. When you have a Spline selected, you can select its Path Handles (the circle gizmos along the path) to adjust the spl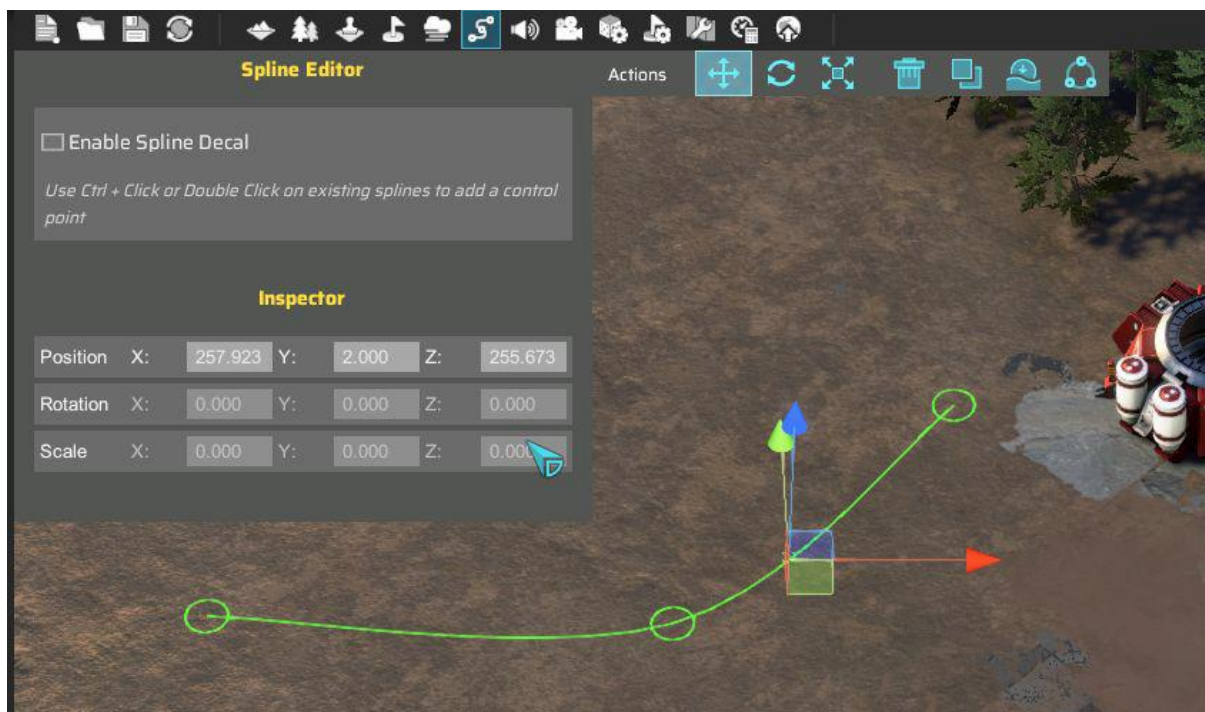ine's path. When a Path Handle is selected, the circle will become pink. Using the Translate operation of the normal Transform Tools will move the selected Path Handle and the whole spline will adjust to make a path that goes through all Path Handles.

Selecting a spline by clicking on the line instead of the circle Path Handles allows you to move the whole spline

uniformly.

Holding down the Ctrl key when pressing anywhere on the selected spline will create a new Path Handle at that point, which can then be moved to adjust the path.

Image 3.31: A spline is driving the positioning for a repeating decal. The decal is showing the word "Warning" in Malay.

We can see one of the points of the spline is pink. This means it is currently selected and being manipulated.

This particular path is marked as "circular", as per the tool options next to the Transform Operations buttons at the top. We can select any of the spline points, and Ctrl+Click anywhere on the spline to create a new control point

SPLINE DECALS

Toggling Enable Spline Decals marks this spline to be used to drive positioning of a repeating decal.
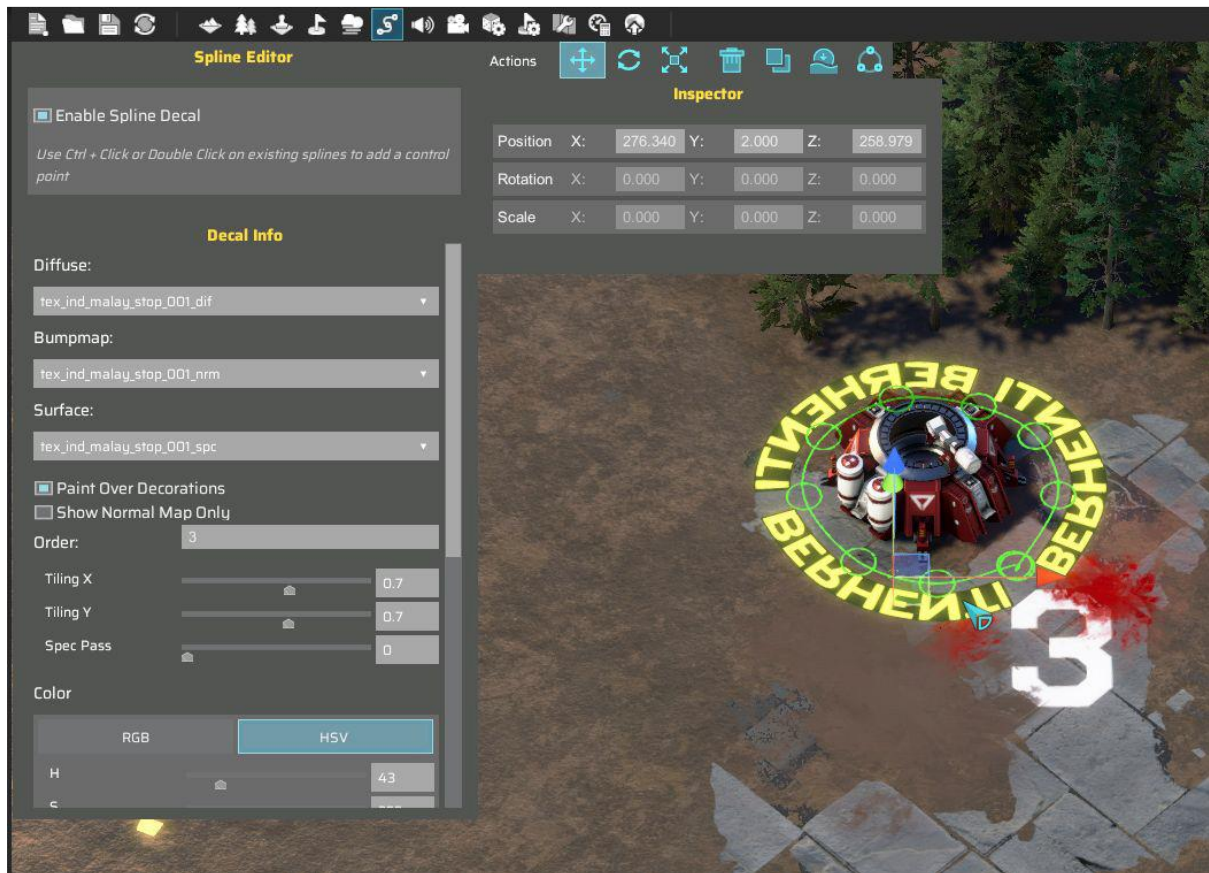

Image 3.32 Adding Decals to Splines and Create Continuous Decal Patterns.

The options in this decal are similar to the Decal Editor. In addition to these, the Spline Decals allow tuning some parameters that relate to the path itself:

- Width - specifies the width of the path. This defines the thickness of the line passing along the Path Handles.
- Height - specifies the height of the box that will be applying the decal.
- Angle Tolerance - specifies how the placed decals conform to small variations in angle along the spline. A small value means that the decals will perfectly align with the spline direction. However, this may not always be desired as it can mean that decals are deformed around tight bends. A higher value means that each instance of the repeating decal will maintain their own orientation to avoid deformation.
- Wrap X Axis - specifies that the wrapping axis should be X. By default, the decals are repeated along the Y axis of the given textures. However, toggling this on means that decals will now be placed left-to-right in texture space, rather than down-to-up.

AUDIO TOOL
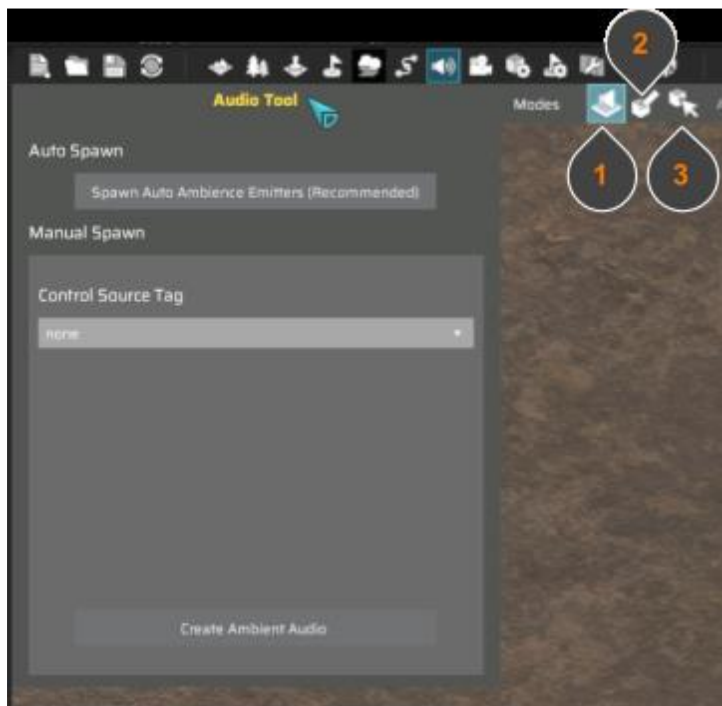
The Audio Tool allows you to choose a soundscape that suits your level. You can generate and/or place

Audio Emitters around the map to determine the

mix of audio ambience layers.

The Audio Tool is separated into 3 modes:

1. Create

2. Edit

3. Info

Image 3.33 Different modes in the Audio Tool.

NB: You cannot audition the ambience SFX in the Level Editor.

CREATE & EDIT

The Create Mode allows you to place audio emitters on the map. You can do this automatically through the Auto Spawn or manually via independently placed emitters.

Emitters are objects that mark a location to determine which layer of the ambience is heard in proximity to that position. The Control Source Tag chosen for that Emitter will determine what layer of SFX the camera's proximity will effect.

Example – if a particular area of the map has a large amount of piping, I can drop an audio emitter with a control source tag 'apcs_cs_amb_prop_industrial_pipes'. The camera's proximity to this emitter will determine the volume of the industrial pipes SFX layer.

Once you have created or selected an emitter, you can edit them via the regular Transform Tools. You can decrease their Max Range from the default setting.

Edit Mode allows you to change the selected emitter's Control Source Tag and position.

INFO
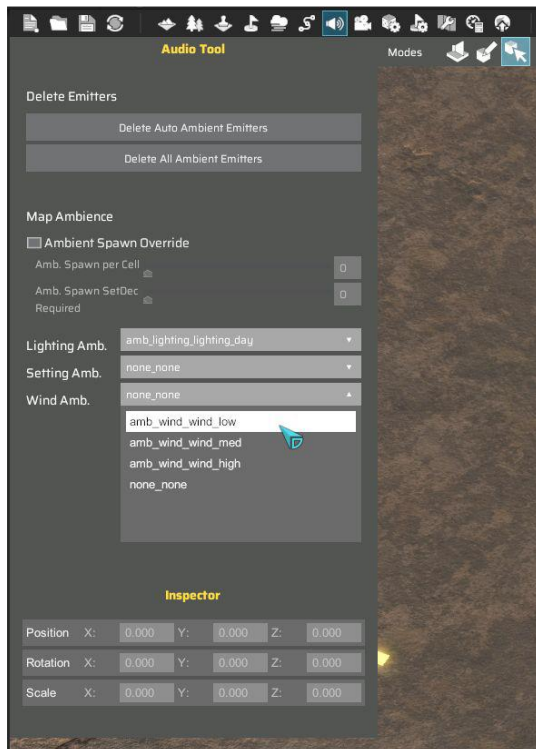
Info Mode allows you to create your map's ambience by choosing banks of audio ambiences based on a combination of 3 components: Setting, Lighting, and Wind.

MAP AMBIENCE

The Map's ambience is made up of 3 components:

• **Lighting Amb**: An Audio bank to play regarding the time of day conditions of the map (e.g. night-time / day-time ambiences).

• **Setting Amb**: An Audio bank to play regarding the type of setting of the map (e.g. ocean / snow / urban ambiences).

• **Wind Amb**: An Audio bank to play regarding the wind intensity of the map (e.g. low / high wind ambiences).

Image 3.34 Selecting Assets for Audio Emitters

Info Mode also allows you to easily delete existing emitters in bulk via the Delete buttons at the top; manually-placed and/or automatically-generated ones.

AUTO SPAWN PARAMETERS

You can generate emitters automatically based off currently placed Set Decorations. To set specific rules for the quantity of emitters generated, you'll need to toggle Ambient Spawn Override to on , which will enable you

to edit the following properties:

- Amb. Spawn per Cell determines how many emitters can be spawned per cell.
- Amb. Spawn SetDec determines how many set dec pieces must be present for an emitter to be spawned.
- The default values are 5 emitters per cel and 1 SetDec piece required per emitter type.

CAMERA EDITOR

The Camera Editor Tool allows you to switch between Camera Modes and to set bookmarks for each mode.

By creating bookmarks you are able to quickly jump from one place of the map to another. This is useful to keep your map organized and your workflow fast. By naming your camera bookmarks well, you can organize your map to address issues by area more effectively.

The bookmarks are separated by camera mode, since different camera modes are usually used for different work purposes.
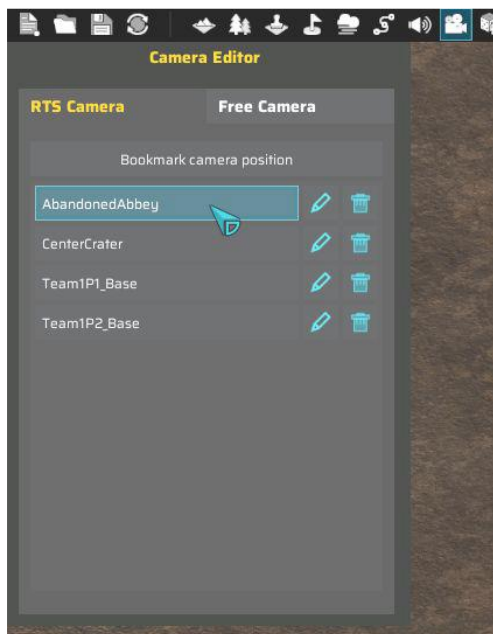
In the image, we can see that the author has created 4 bookmarks to easily frame each zone with the camera whenever they want to work on it.

It is a good idea to separate your map into areas that facilitate communication and game readability among players. Keeping your map organized is not only good for your workflow, it is good for your map!

The tabs at the top can alter from RTS Camera to Free Camera and vice-versa, same as the hotkey " C".

Image 3.35 Adding Camera Bookmarks

GAME MODE CUSTOMIZATION
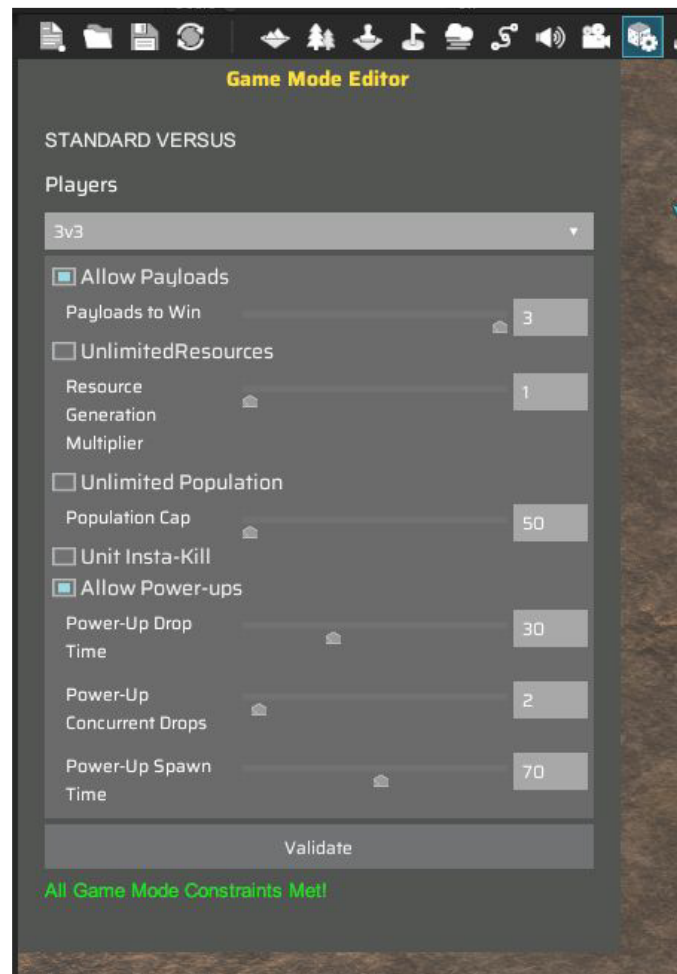
Image 3.36 Configure Game Mode in Game Mode

The Game Mode Customization Editor allows you to tweak certain gameplay values for your map (e.g. the suggested max player count, timer durations, power-up behaviors, etc).

The afforded tweakable values heavily depend on the Game Mode you select in the Map Creation Wizard. Different Game Modes offer very different tunable parameters from each other.

In the image to the left we can see the parameters afforded for customization of the Standard Game Mode. These parameters allow you to specify whether the map supports payload deployment, whether it boosts resource collection, whether it provides infinite resources, whether it caps the population, etc.

The available parameters change depending on the Game Mode of the map e.g. for Battlelines maps.

GAME MODE CONSTRAINTS

In order for your map to function properly in the selected game mode, you will need a few Entities placed. The Game Mode Customization Editor will let you know if there is anything wrong with your map.

Examples:

- Having enough Spawn Points to support the team sizes you want.
- Ensuring that a map that claims to allow payloads has the entities for the payloads to spawn at and to deploy to.

You can see these directions below the tweakable parameters every time you save your map, or whenever you click the Validate button shown in the screenshot.

IMPORTANT

Game Mode Constraints must be met if your map is to be playable at all. If your map does not meet all Game Mode Constraints, it will prevent you from publishing it!

Image 3.37 Invalid Game Mode Configuration
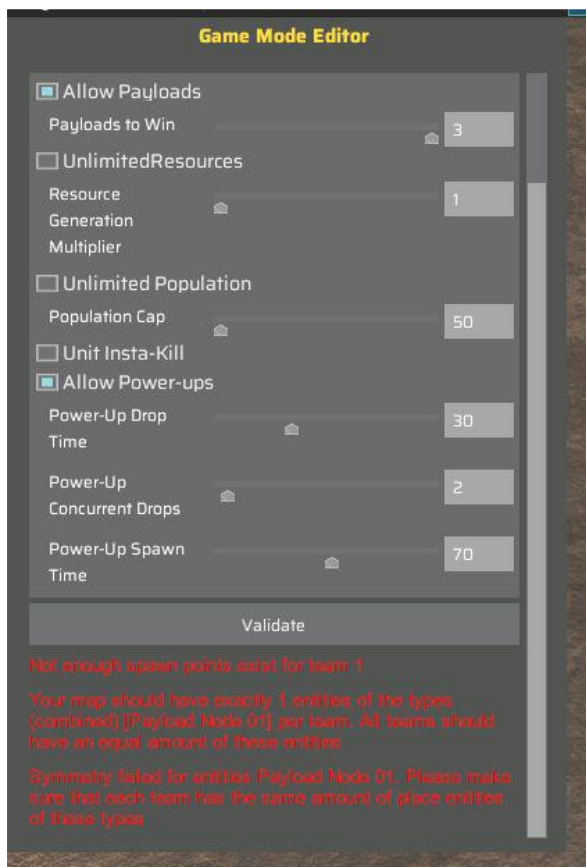
In the image to the left, we see a map that does not meet certain constraints. Read the wording of the warnings carefully!

"Not enough spawn points exist for team 1" This means that you're missing spawn points. If your map says it supports 3v3 play, it needs exactly 6 spawn points, and that each spawn point is

assigned to the correct team.

"Your map should have exactly 1 entities of types (combined) [Payload Node 01] per team" This means that you're missing an entity payload_node_01 in one of your teams. This is required because your map specifies that it allows payloads, but it is missing an entity required for

payloads to work properly.

"Symmetry failed for entities Payload Node 01"

Some constraints state that teams need to be symmetric. In this case, one of the teams has more payload deployment locations than the other. Verify

that you have the correct amount of payload_node_01 on the map and that those entities are assigned the correct teams.

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GAME MODE STARTING RESOURCES SETTINGS
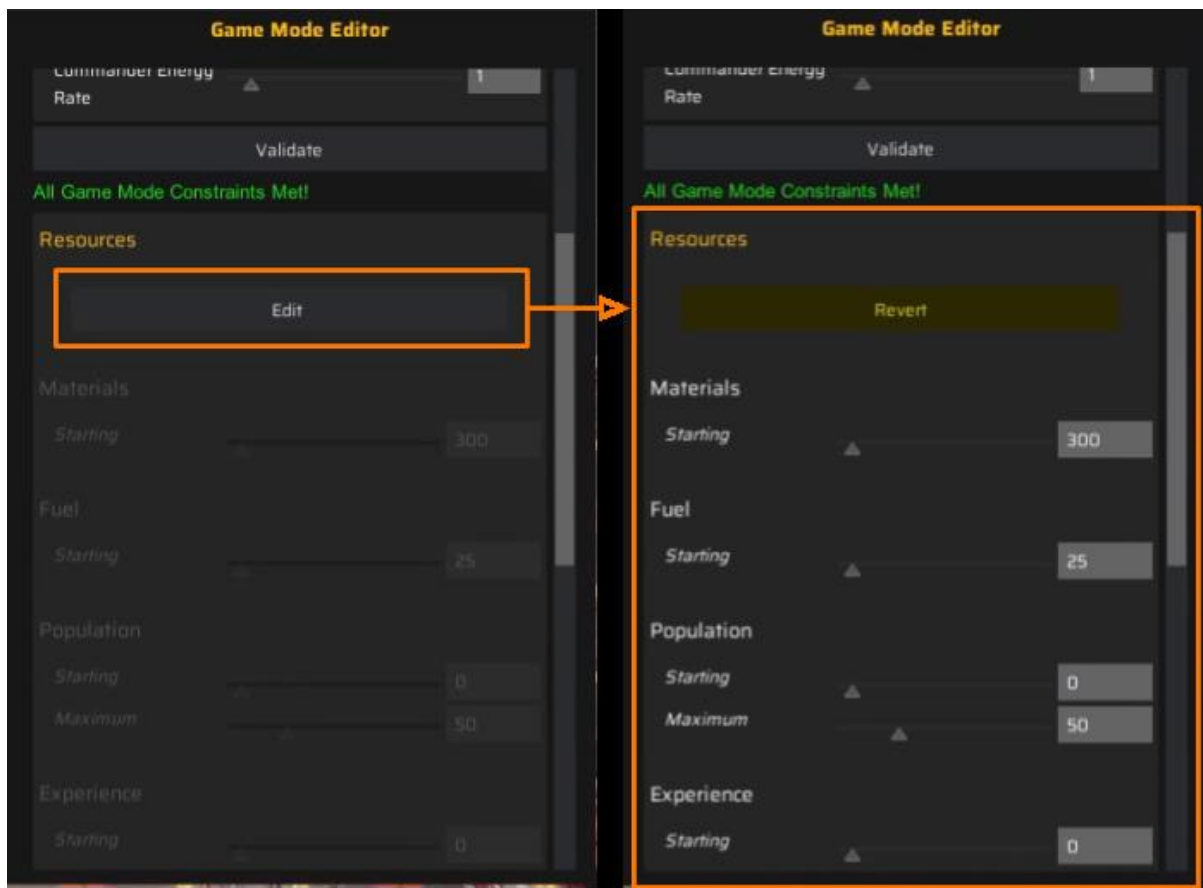
Image 3.38 Editing Starting Resources Settings

You can enable the editing of Starting Resources of the map by clicking on the Edit button in the Resources section of the Game Mode Editor. These settings will let you set the amount of commander resources to start with for the matches of the created map. Not only the starting values of the resources below for the created map are modifiable through this menu, but also the maximum amount of some of them.

The modifiable resources and values are as following:

- Materials
  o Starting value
- Fuel
  o Starting value
- Population
  o Starting value
  o Maximum value
- Experience
  o Starting value
- Energy
  o Starting value
  o Maximum value
- CMDR Energy
  o Starting value
  o Maximum value

- Powerup
  - Starting value
  - Maximum value
- Ultimate Ability Charges
  - Starting value
- Active Ability Charges
  - ○ Starting value
  - ○ Maximum value

You can revert the changes using the Revert button. The values will be reset to default.

ENTITY CUSTOMIZATION EDITOR

The Entity Customization Editor is a combined editor of Unit Customization and Structure Customization. In this Editor, you will be able to edit existing units/structure's properties and abilities, as well as make unit variants and assign corresponding variant units production ability to structures.

UNIT CUSTOMIZATION

The Unit Customization Editor allows you to edit certain values on players' units when playing your map and also to forbid certain units from being available in the lobby rosters.

The tool can be accessed via the toolbar. On the left you can see all units available for roster selection on the left and an empty window on the right. By selecting a unit, you'll be able to inspect it.

1. Selected Unit
2. Overridden Unit
3. Forbidden Unit
4. Forbid Unit Toggle
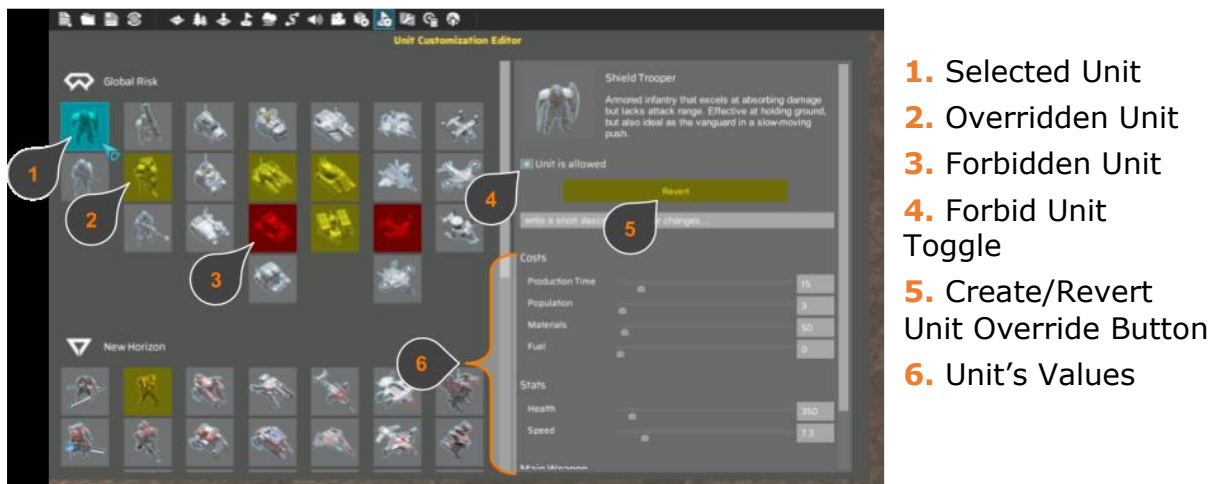5. Create/Revert Unit Override Button
6. Unit's Values

Image 3.39 The Unit Customization Editor (List of Units on the Left Side and A Unit Inspector For Selected Unit on the Right Side)

FORBIDDING UNITS

To forbid the selected unit from being available in the lobby, uncheck the Unit is Allowed toggle. Once you save your map, you should notice this unit no longer appears available when selecting a roster in the lobby.

**NB:** at least one unit has to be available for each slot.

EDITING UNITS

To Edit a unit's gameplay values (e.g. health, speed, attack power, etc.), you have to first mark it as an Override Unit. You can do this by clicking the Edit button below the forbid-units toggle. This converts the Edit button to a

Revert button. The Revert button allows you to reset your changes to the original values, for reference or permanently.

On the roster window to the left, you will see that as you forbid units and override them, the unit icon backgrounds are color coded to show which have been edited and which have been forbidden.

NB: Don't forget to save your map!

CREATING/REMOVING UNIT VARIANTS
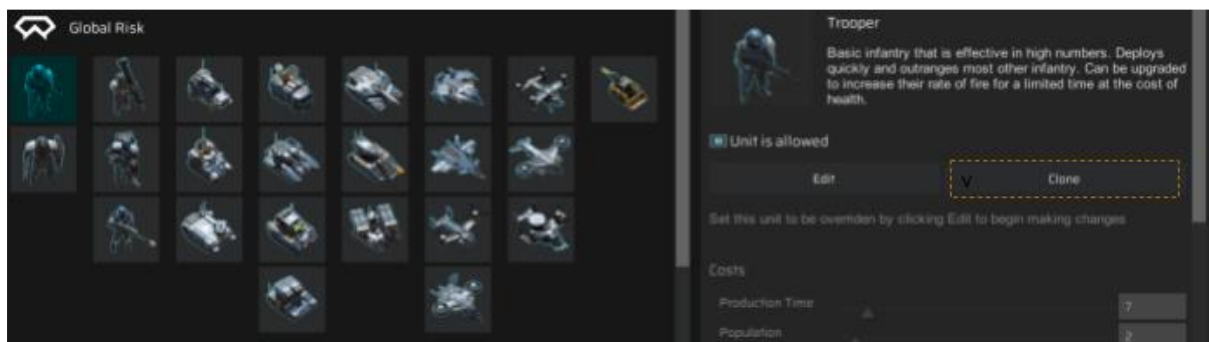
To make a unit variant of the selected unit, click the "Clone" button in the unit inspector of the selected unit.
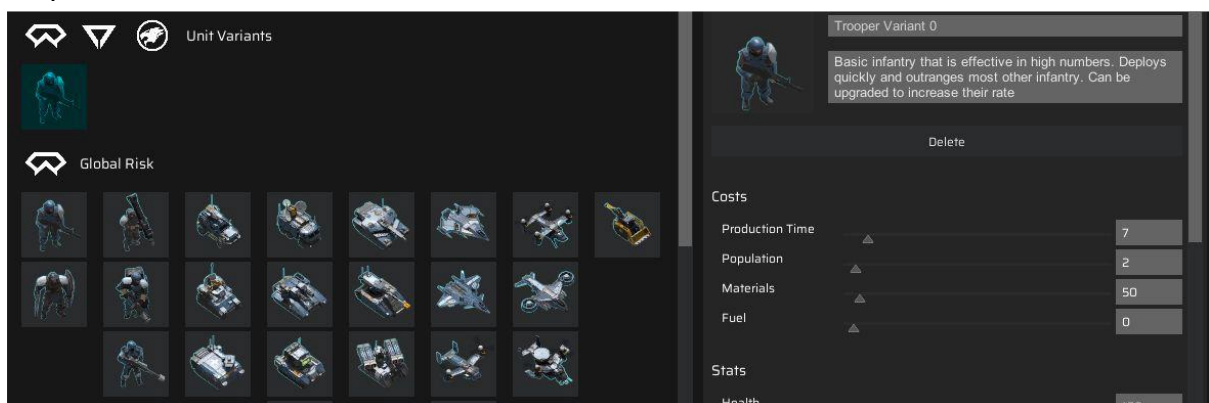
A unit variant duplicated from the original unit then will appear in the unit dashboard in a section named "Unit Variants". You can edit the information and property of this variant and then save the change - this unit variant then will be available to access in this map.

For the unit variant you created, an ability of producing this unit variant will also be added to this map. You can add this ability to a structure in the structure editor in order to produce this unit in game.

To see how to add abilities to structures, please see the Editing/Adding/Removing Structures' Abilities" section below.
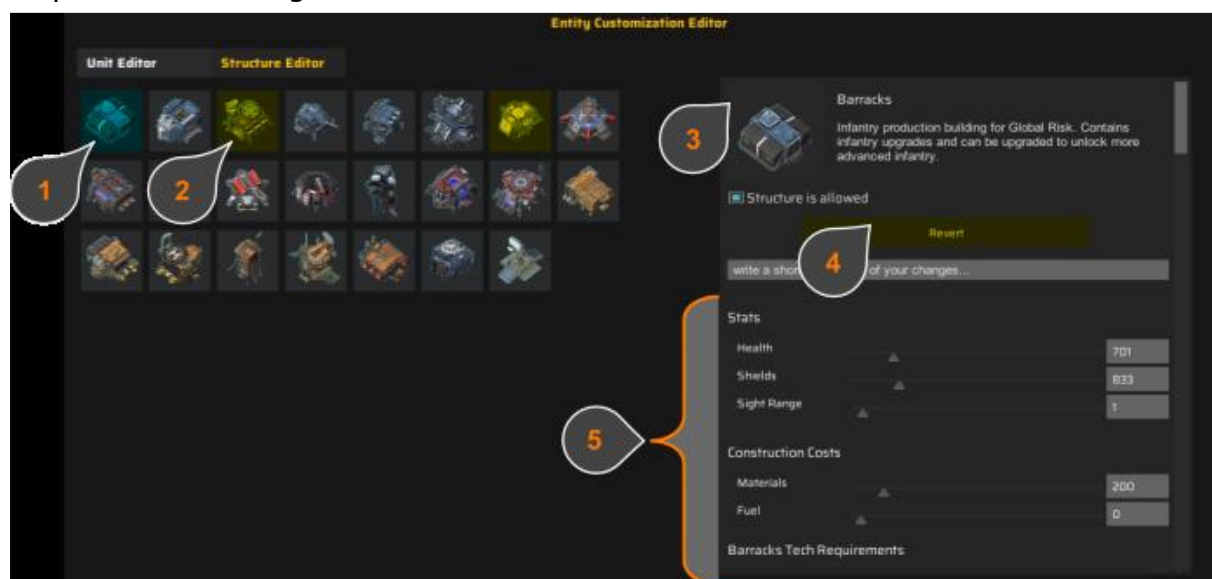
STRUCTURES CUSTOMIZATION

Similar to the Unit Customization Editor, Structure Customization Editor also contains a Structure Selection Dashboard and a Selected Structure Inspector.

The Structure Selection Dashboard has a list of structures that are available for you to edit. Once a structure is selected, it's properties will show up in the inspector for editing.

The Structure Customization Editor (Structure Dashboard on the Left Side and Structure Inspector For Selected Structure on the Right Side)

1. Selected Structure

2. Overridden Structure

3. Selected Structures Basic Info

4. Create / Revert Unit Override Button

**5.** Structure Properties to Edit

Currently, you can:
1. Edit basic properties of the structures, as following:
   a. Structure health
   b. Structure shield
   c. Structure sight range
   d. Structure production costs
   e. Tech requirements to build the selected structure

2. Edit the abilities attached to structures, including the unit-production abilities and upgrade abilities:
   a. Edit each ability's grid slot appearing in the command panel in game
   b. Edit each ability's Cooldown time
   c. Edit each ability's Tech requirements to enable this ability
   d. Revert each ability's tech requirements list using the "Revert List" button
   e. For the upgrade abilities, you can also:
      i. Edit each ability's production time
      ii. Edit each ability's production costs
   f. You can also add to the current ability list using the drop-down menu to select an available ability (that's not already on the structure) and click the "Add" button at the bottom of the ability list.
   g. You can also remove an attached ability from the list by clicking the "Remove Ability" button under each ability.

EDITING STRUCTURES

Similar to Unit Customization Editor, you first need to mark the structure as override structure by clicking on the "Edit" button in the structure inspector. The Override Structure's color will appear in yellow in the structure dashboard. If you decide to discard your changes or revert your changes done previously, you can click do so by clicking the "Revert" button for the selected structure.

Editing/Adding/Removing Structures' Abilities You can edit the abilities of a structure in the structure inspector. You can also add abilities to or remove abilities from a structure.
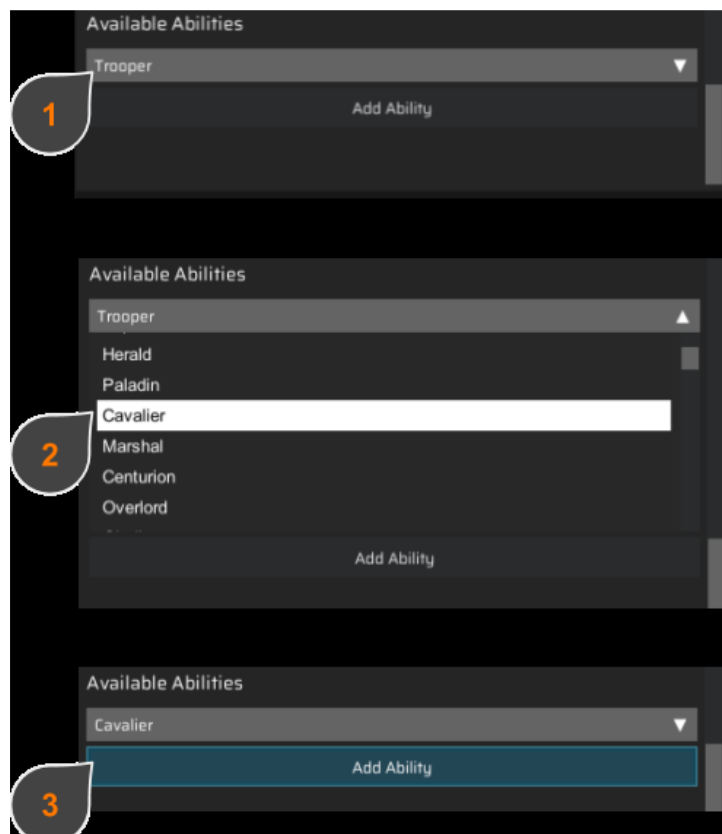
To add an ability to the selected structure:

1. At the bottom of the structure inspector, click on the available structure list

2. Select the ability to add

3. Click on the "Add Ability" button.

To remove an ability from the selected structure:
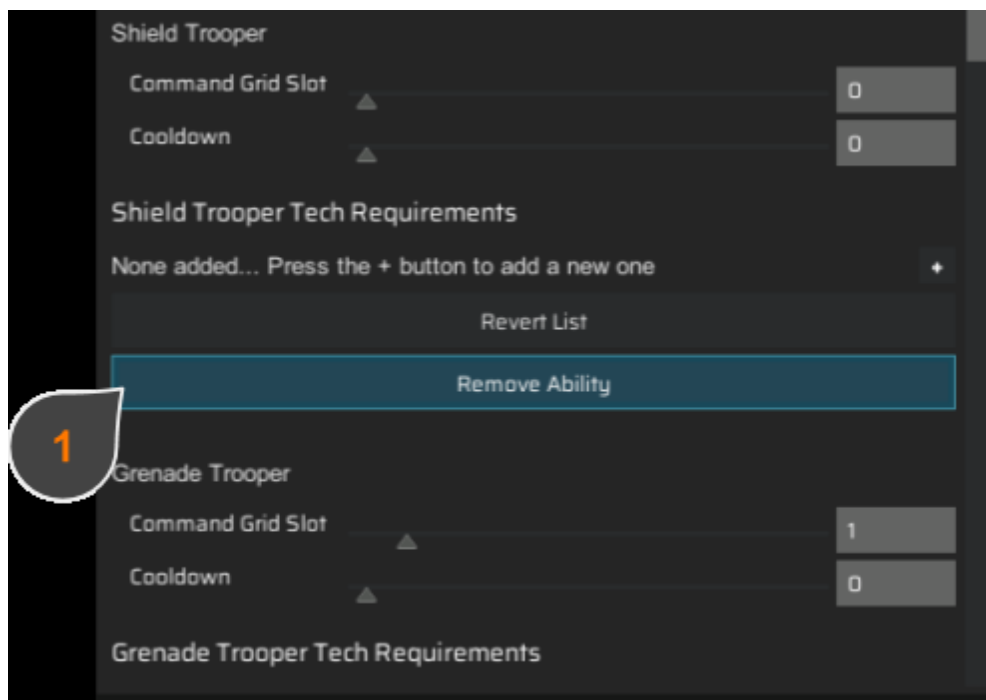
1. Remove Ability Button

Under each ability there's a "Remove Ability Button", simply click it to remove this ability from the selected structure. Note: The "Revert List" button is for reverting the tech requirements list of this ability.

Don't forget to save the change by saving the map in order for them to be in effect in-game.

NB: There is even UI for allowing/forbidding a structure, but currently allowing/forbidding structures function are not available.

LEVEL PROPERTIES

The Level Properties Editor allows you to define some level settings e.g. what asset themes your level uses, what the map name and description are etc.
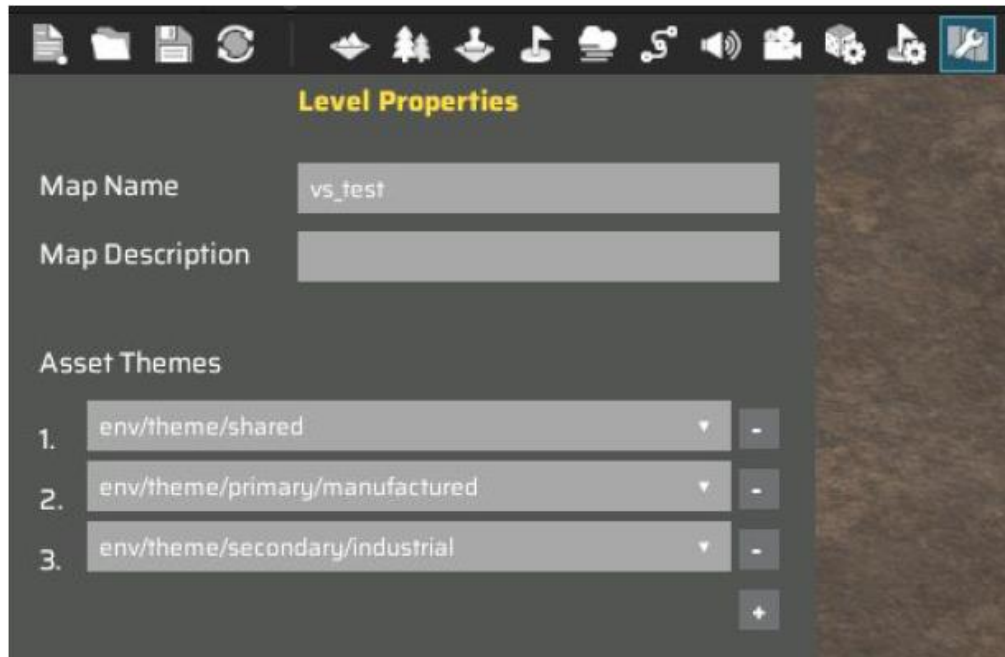

Image 3.40 Level Properties Menu

These are the Name and Description that players will be seeing when they create or join a lobby of your map.

It's a good idea to give an overview of your map in the description, especially if you have unit customizations that vastly alter the flow of the game

ASSET THEMES

When you make edits to the asset themes, you will see buttons appear to **Reset** your changes to the level's current themes and to Validate the current setup. **Validate** will get rid of empty and duplicate entries in your themes. Once validated, you can **Apply** your theme changes. This operation is not reversible, so you should do it at the start of making a new map.

NB: changing asset themes can lead to broken assets in your level. If you specify that your level no longer uses certain asset themes but the map is currently using decorations from that theme, they may disappear or appear pink.

LIGHTING

Below the Asset Themes, you can choose a Lighting profile for your level. There are multiple for selection, which vastly alter the way your level looks.

For night time lighting profiles, it's a good idea to dress up your map with several light sources in the Map Decorations Tool.

LEVEL BUDGETS

The Level Budgets Window allows you to benchmark your level at a glance. Here you'll see how many placed items your map has and what the suggested amount is.
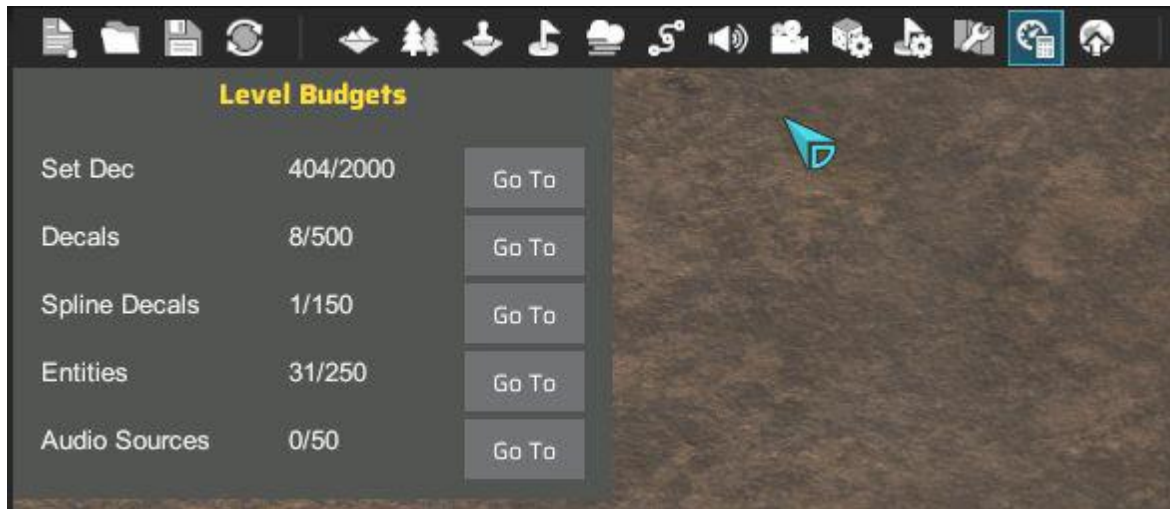

Image 3.41 The Level Budgets Tool

Clicking on the Go To button next to each budget will open the appropriate tool needed to edit the items the

budget pertains to.

IMPORTANT

You may be prevented from publishing your map if you are over these limits, as the game needs to run smoothly across many different computers with different capabilities and specifications.

PUBLISH MAP TOOL

The Publish Map Tool allows you to publish your finished map to Steam Workshop.

To be able to publish a map, the following conditions need to be met:

- Your Steam account must own a copy of Crossfire: Legion
- Crossfire: Legion must be installed.
- Steam client must be running.
- You must be connected to the Internet.
- The map currently loaded in the Level Editor must be valid and meet all the game mode-specific constraints.
- The current map name should not exist.

PUBLISHING A MAP

To publish a map, open it in the Level Editor, and switch to the Publish Map Tool.

Make sure the **Connection** status is "Connected" .
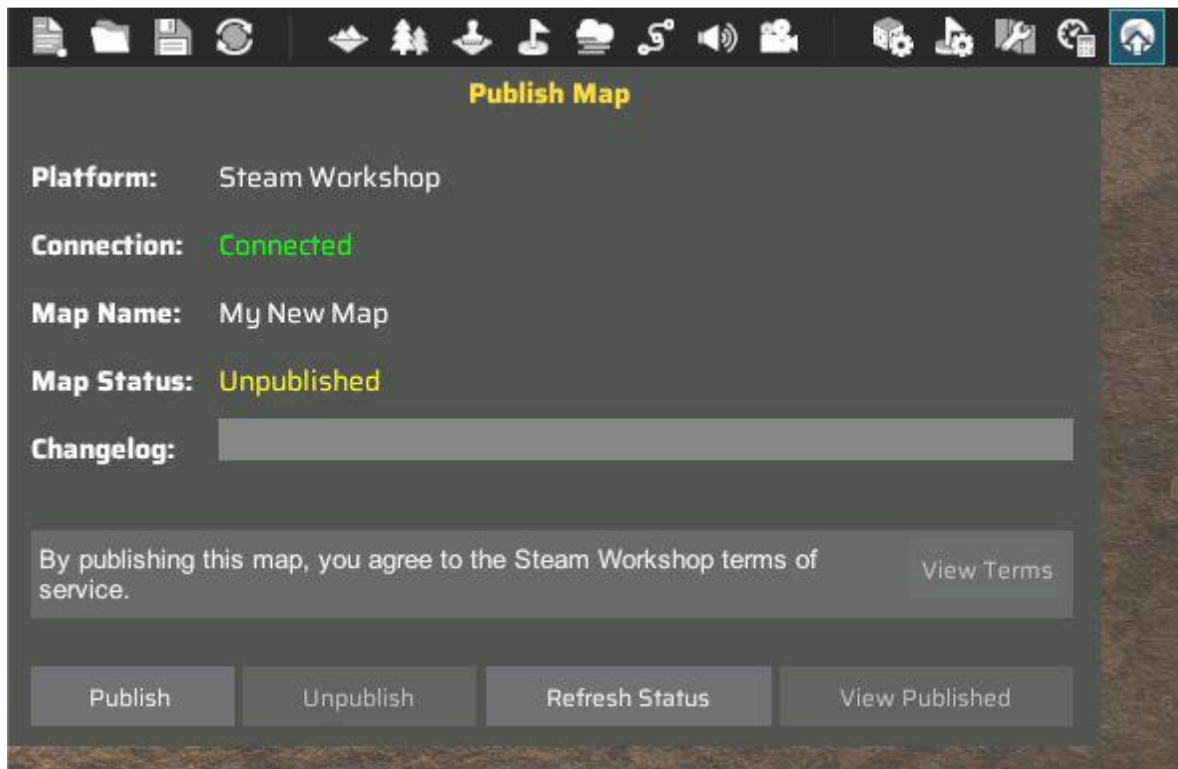
Image 3.42 The Publish Map Tool

Make sure there is no map validation warnings displayed, if there are any - use the **Go To** button to switch to the corresponding tool and fix the issue.
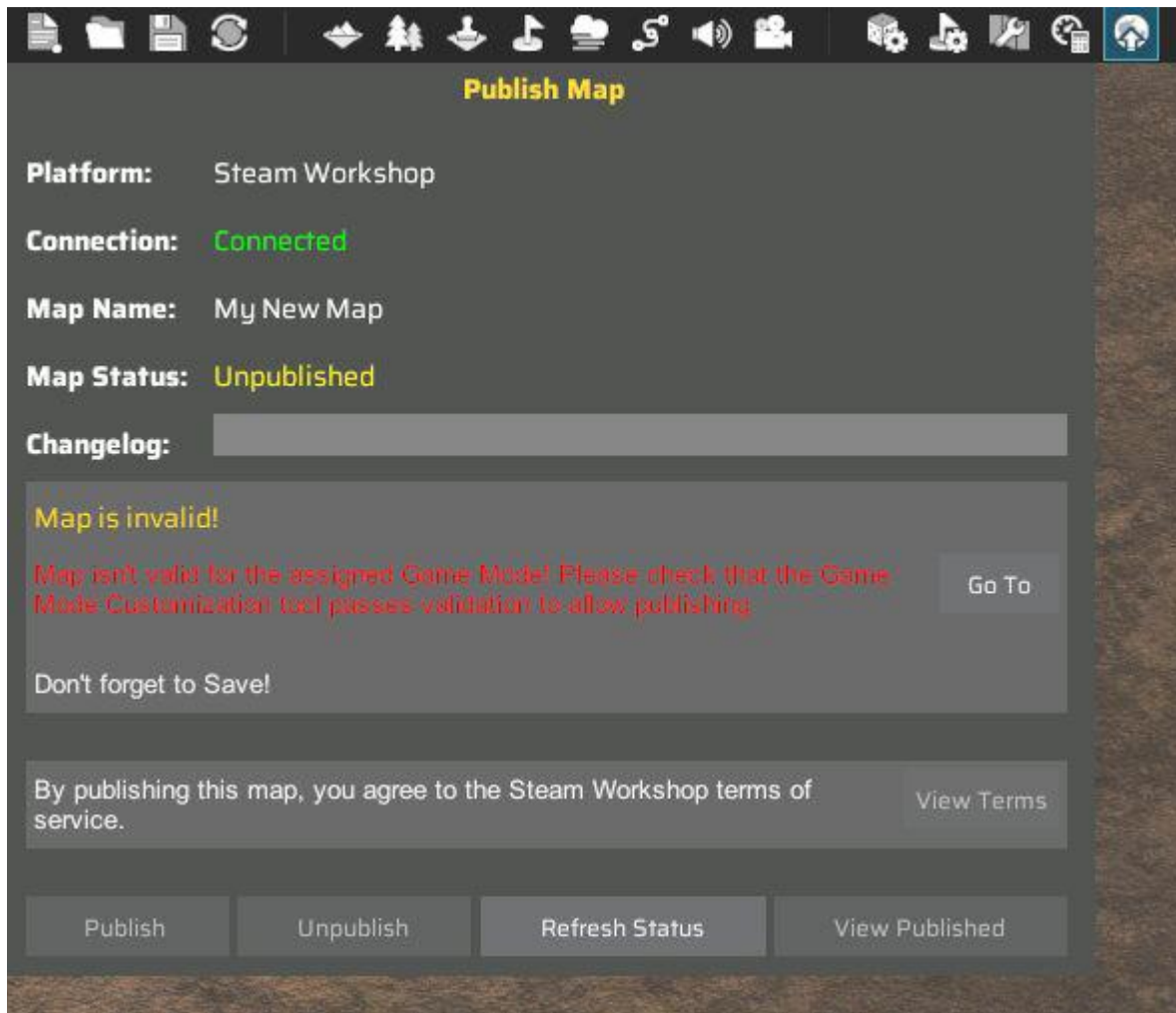
Image 3.43 Indication for an Invalid Map

By publishing a map you are agreeing to the platform (Steam Workshop) terms of service - please make sure to review them prior to publishing a map: either by using the View Terms button in the Publish Map Tool or following this link: http://steamcommunity.com/sharedfiles/workshoplegalagreement.

Press the **Publish** button to publish the map. Depending on the speed of the internet connection, this may take from a few seconds to about 1 minute. The **Map Status** will change to " Published " once this process is over.
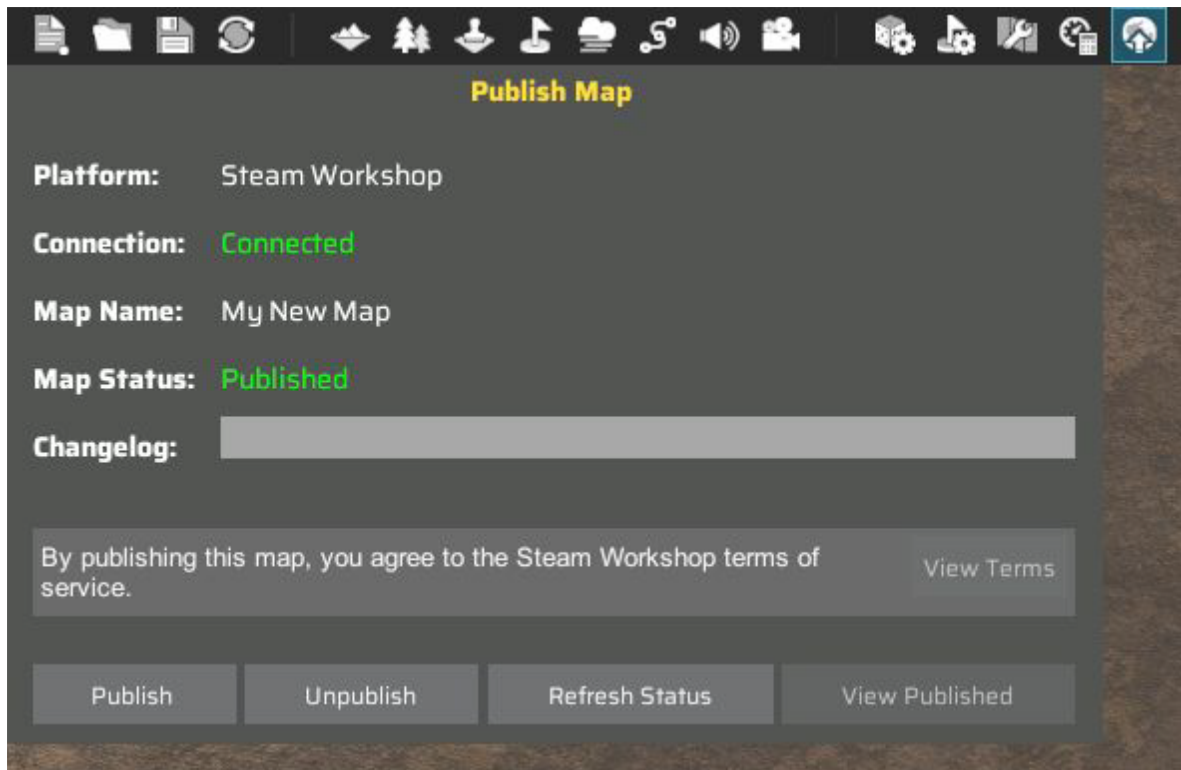
Image 3.44 A Published Map

After the map is published, you will be able to view it in the Steam Workshop using the View Published button.

There you can change the map visibility and other details.

The Steam Workshop supports three visibility options for published items:

- Hidden: only you can see it.
- Friends-only: you and your Steam friends can see it.
- Public: everyone can see it.

By default, the Level Editor will try to publish your map with the " Public " visibility. However, if your steam account is " limited ", the visibility will automatically be changed to " Friends-only ".

NB: "limited" accounts can't publish "Public" maps.

More info on limited Steam accounts:
https://support.steampowered.com/kb_article.php?ref=3330-iagk-7663

UPDATING A MAP

To update an already published map, follow the same steps as for publishing. You can supply a description of the changes in the **Changelog** field.

NB: make sure to save the pending map changes prior to publishing them. The Publish button uploads the currently saved map, and does not upload any unsaved changes.

UNPUBLISHING A MAP

To unpublish a map, i.e. remove it from the Steam Workshop, load the map in the Level Editor and press the **Unpublish** button.

DUPLICATE MAP NAMES

Published map names must be unique. The Publish Map Tool won't allow you to publish a map with a name

that already exists. In such case the Publish button will be disabled and you'll see a warning. You can change the map name in the Level Properties Tool, save the map changes and try publishing again.
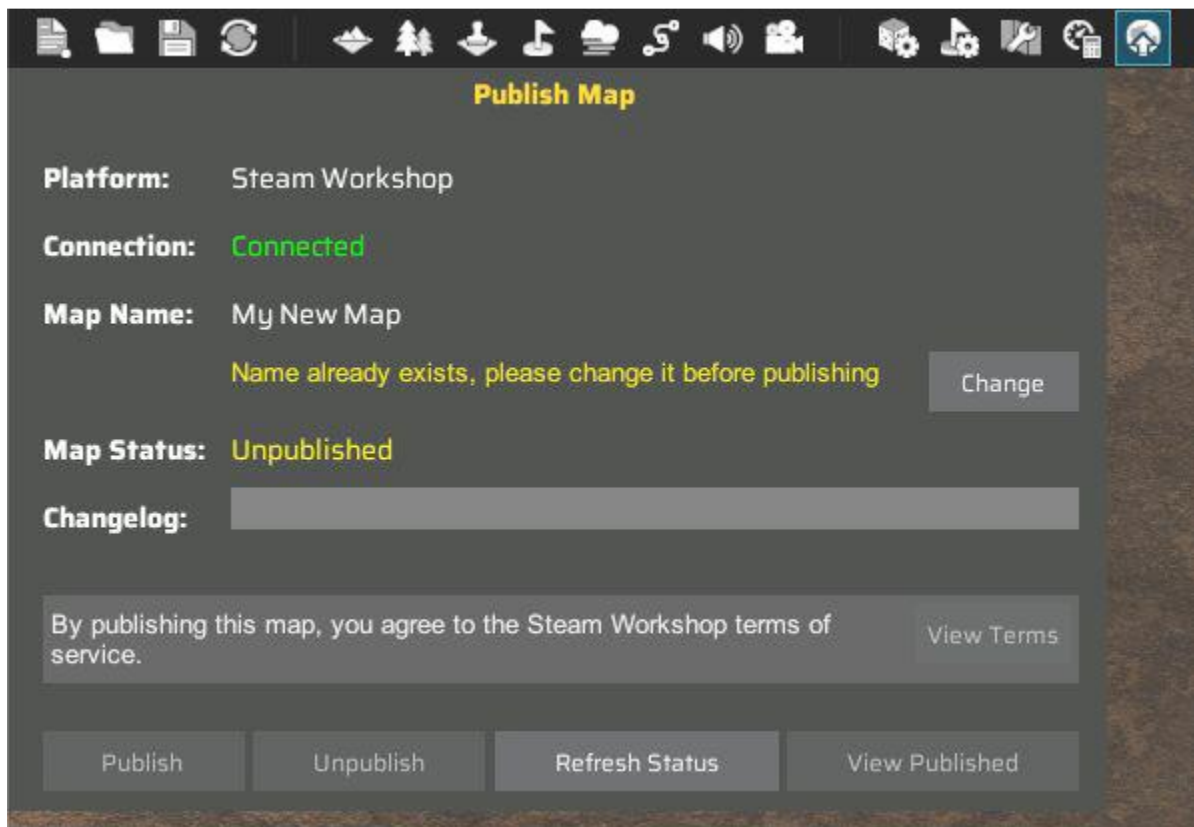
Image 3.45 Duplicate Map Name Warning

STEAM WORKSHOP VISIBILITY

The Steam Workshop portal for the game will not be fully accessible until the public release of the game, so you won't be able to access it directly through the community portal. Until then, you can use the following link to access the workshop and list all public user-created maps:

https://steamcommunity.com/workshop/browse/?appid=1072190

Well done if you have read this far. It's a deep dive, a lot of work but this tool is only limited you your imagination. We're all excited to see what you create, so please do share with us on our socials channels.

SHORTCUTS

Scope	Command	Shortcut	Notes
Global	Select object under cursor	Left Click	
Global	Add object under cursor to current selection	Ctrl + Left Click	
Global	Show Map Tool	Alpha 1	
Global	Show Map Decoration Tool	Alpha 2	
Global	Show Decal Tool	Alpha 3	
Global	Show Entity Placement Tool	Alpha 4	
Global	Show Fog and Wind Tool	Alpha 5	
Global	Show Spline Tool	Alpha 6	
Global	Show Audio Tool	Alpha 7	
Global	Show Camera Editor Tool	Alpha 8	
Global	Show Game Mode Editor	Alpha 9	
Global	Show Unit Customization Editor	Alpha 0	
Global	Toggle Grid	Ctrl+G	
Global	Save Map	Alt+S	
Global	Map Save-as	Alt+Shift+S	
Global	Toggle camera Mode (Editor/RTS)	C	
Global	Toggle all UI	Ctrl+Alt+H	
Map, Decoration	Decrease Brush Size	Minus	
Map, Decoration	Increase Brush Size	Equals	
Map, Decoration	Decrease Brush Level	Left Bracket	
Map, Decoration	Increase Brush Level	Right Bracket	
Decoration	Erase mode	Alt	Hold Alt

Audio, Decoration, Decals	Gizmo Snap Preset 1	**Keypad 1**	Translate = 1 unit (0.5 cells) Rotate = 15 degrees
Audio, Decoration, Decals	Gizmo Snap Preset 2	**Keypad 2**	Translate = 2 units (1 cell) Rotate = 45 degrees
Audio, Decoration, Decals	Gizmo Snap Preset 3	**Keypad 3**	Translate = 5 units (2.5 cells) Rotate = 90 degrees
Audio, Decals	Cancel Current Operation	**Escape**	
Audio, Decoration, Decals, Entities	Delete Selection	**Delete**	
Decoration	Cycle Tool Modes	**Q**	Switch between selection, single piece placement, and multiple piece placement modes.
Decoration, Spline, Decals	Snap selection to the terrain	**K**	Spline: Place select spline nodes on ground. If no nodes are selected, places all nodes on the ground for the selected spline
Decoration	Undo last paint operation	**U**	
Spline, Decoration, Entities, Decals, Audio	Focus camera on selection	**F**	Zooms too close too fast - check settings, Conflicts with spline command Focus the camera on the object(s) currently selected
Spline	No nodes selected: delete spline Nodes selected: delete spline nodes	**Delete**	(supports undo/redo with CTRL + Z/Y)
Spline	Add spline node to selection for currently selected spline in conjunction with a Left click.	**SHIFT**	
Spline	Toggle selected spline looping	**Ctrl+L**	Toggle looping for spline (must have > 2 nodes to enable looping)
Spline	Create a new spline.	**Double Click**	
Spline	Create a new spline point (if the click is on a spline).	**CTRL + Click**	
Spline	Duplicate spline.	**CTRL + D**	

Spline	Select spline and/or node.	Left Click	
Spline	Add spline node to selection for currently selected spline	**SHIFT + Left Click**	
Spline	Add new node to location on spline.	**Double Click (Left)**	If not over a spline, create a new spline starting from the center of the screen to the mouse position.
Spline	Move selected nodes. If no node selected, drag the edge of the spline.	**Left Click Drag**	
Editor Camera	Move forward	**RMB+W**	Freelook camera mode
Editor Camera	Move back	**RMB+S**	Freelook camera mode
Editor Camera	Strafe left	**RMB+A**	Freelook camera mode
Editor Camera	Strafe right	**RMB+D**	Freelook camera mode
Editor Camera	Move up	**RMB+E**	Freelook camera mode
Editor Camera	Move down	**RMB+Q**	Freelook camera mode
Editor Camera	Camera look around	**Right click and drag**	Freelook camera mode Rotate the camera (FPS style)
Editor Camera	Camera orbit around selection	**LMB+Alt**	Freelook camera mode
Editor Camera	Camera pan	**Middle mouse click and drag**	Freelook camera mode Pan the view along the current camera plane.
EditorCamera	Zoom in/out	**MWL (LShift for precision)**	Freelook camera mode
Editor Gizmo	Activate **Translate** gizmo	**W**	Activate the Translation gizmo
Editor Gizmo	Activate **Rotate** gizmo	**E**	Activate the Rotation gizmo
Editor Gizmo	Activate **Scale** gizmo	**R**	Activate the Scale gizmo
Editor Gizmo	Activate Global transform	**G**	
Editor Gizmo	Activate Local transform	**L**	

Editor Object Selection	Append to selection	Ctrl + Left Click	Add object under cursor to current selection
Editor Object Selection Setdec, decals, entities, audio	Duplicate selection	Ctrl+D	Duplicate selection in place.
Decoration, decals, entities, audio	Enable step snapping for gizmos	Ctrl	While held down, allows you to perform step snapping
Scale Gizmo	Scale along all axes	**Shift**	Modifies the gizmo While held down Scale on all axes.
Editor Undo Redo	Undo	Ctrl+Z	Gizmo operations only
Editor Undo Redo	Redo	Ctrl+Y	Gizmo operations only