

GameGuru **MAX**



User Guide

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Welcome to GameGuru MAX - the easiest 3D game creation tool on the market!

There's plenty of features to be excited about in this amazing new product, and many more to come. As we continue to work on improving version 1 we look forward to adding more features to the software, while improving existing features and the overall user experience. For now, here are some of the features you can already begin using:

Key features currently available in GameGuru MAX

- Customizable Graphical User Interface (GUI) screen editor
- 3D graphics rendering system
- Customizable character creator
- A completely refreshed game Level Editor
- Procedural based terrain generator
- Fast tree and vegetation rendering
- Powerful new model importer
- Dynamic behaviour editing for AI control
- Instant level testing
- Object search and filter system
- 3D object previews and multiple selection
- Smart object grouping
- Downloadable Community Workshop
- Game Storyboard Editor

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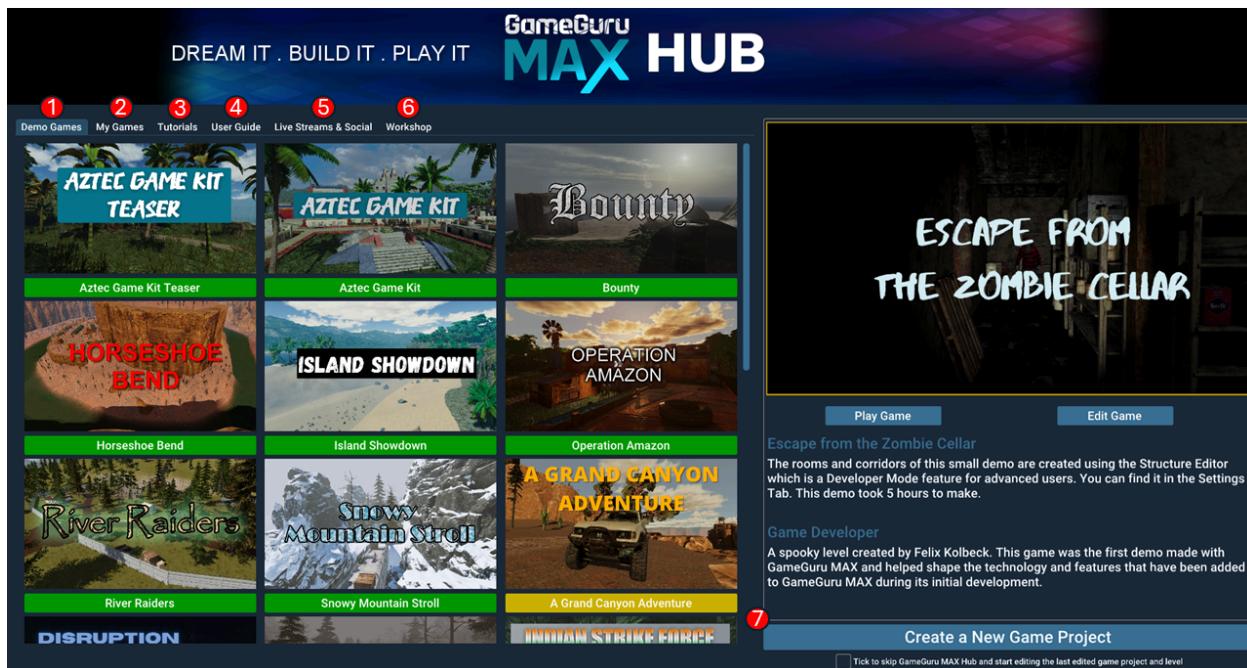
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Getting Started

GameGuru Max is the easiest 3D game creator on the market today. This document will assist you in learning the software quickly so you can begin to make the games of your dreams. GameGuru Max includes a variety of features and is best suited for First Person Shooter (FPS), Role Playing Games (RPG), and Puzzle style games. By combining these elements into your game the possibilities of what you can create are beyond measure! GameGuru Max is constantly evolving, while we strive to keep it up to date and accurate, you may experience some details such as screenshots and/or descriptions that could vary.

GameGuru Max Hub

When you load the software for the first time you will arrive at the GameGuru Max Hub screen. This hub provides you with access to a number of tabs offering a variety of content, such as Demo Games, Tutorials, this User Guide, etc. You may turn this hub off if you wish to jump straight to the [Projects](#) screen instead.



1- Demo Games

This tab displays the demo games that come with GameGuru MAX. They have been created by the community members and the team here at TheGameCreators. You can choose to play the games or edit them. If you hover over the thumbnail and short video will play showing a glimpse of the gameplay. Clicking on a thumbnail will show a high resolution image on the right panel and a description of the game is presented.

2 - My Games	The games you start to make in GameGuru MAX will show up here. You can double click on the thumbnail or on the pencil icon to load a game project. You're then taken to the Storyboard Editor from where you can continue developing your game.
3 - Tutorials	This tab shows all the video tutorials to help you learn about the various editors and features that GameGuru MAX has to offer.
4 - User Guide	Here you can find a link to this document!
5 - Live Streams & Socials	All the GameGuru MAX social channels are listed here in a convenient section. Each week on Wednesday our development team broadcast on YouTube with the latest news and a Q&A session. So please subscribe and join in.
6 - Workshop	The workshop tab will automatically check for and download any new behaviours or other contributions made by the community for you to enjoy.
7 - Skip the HUB	If you prefer to just load straight into the Storyboard then you can tick this box and the HUB will not be shown. You can re-show the HUB by using a check box in the Settings.

My Games (Projects)

Storyboard Editor

The Storyboard Editor is where you manage the various screens and levels of your games. Small image thumbnails represent these screens and they can be linked together to show the game's flow. You can customise the look and feel of each screen with your own artwork.

Here's the Game Storyboard Editor with an example game layout:



1 - Blueprint Area	This blueprint area is where you lay out the main modules of your game. Loading screens, menus and levels are shown as rectangle shapes and can be linked together to form how they interconnect and the flow of your game.
2 - Game Name	This is the name of your game. To change the name, use the Save As feature to rename it.

3 - Splash Screen	Here you define the loading screen that will appear when your game is first run.
4 - Title Screen	The title screen is a special menu screen. This is where the player will choose to start playing the game, load a previously saved game, or read about the game.
5 - Loading & About Screens	These screens run in parallel from the title screen. The player can choose to visit the About Screen but must return to the Title Screen before progressing to the Loading Screen which precedes the first level of the game.
6 - Game Levels	Here you can see three different levels all linked together. Once the player completes a level the next one in the list will be played. If the player should die or win the game then the game will move to lose or win screens respectively.
7 - Win & Lose Screens	These two screens define what the player sees when they win or lose the game.
8 - Storyboard Mini Map	The mini map lets you quickly move around the game storyboard if the layout is bigger than the screen can show.
9 - Right Panel Tools	This side menu lets you add new levels, play the game and save it as a standalone game.

Storyboard Editor - Right Panel

▼ Add and Edit Storyboard

- Add New Level
- Add New Screen
- Add New Loading Screen
- Add New HUD Screen
- Add Existing Level
- Edit Game Settings
- Reset HUD Screens
- Add RPG Screens

▼ Play Game

- Standalone Test All Levels
- Normal Single Level
- Invulnerable Single Level

▼ Export Game

- Save Standalone Game

[View Advanced Settings](#)

▼ Tutorial

Game Storyboard ▼



▶ 🔍 ⌛

▼ Keyboard Shortcuts

Storyboard Shortcuts

- 🖱 Drag screen around
- ⬆️+🖱 Select multiple nodes
- Ctrl+N Add new level
- Ctrl+L Add existing level
- Ctrl+P Play game
- Ctrl+E Save standalone

24 Edition 2

10

Add and Edit Storyboard

Add New Level	This creates and links a new level thumbnail on the storyboard under the last level in sequence.
Add New Screen	Adds a new custom menu screen that can be used however you see fit.
Add New Loading Screen	Adds an additional loading screen that can be placed in between other screens or levels.
Add New HUD Screen	Adds a custom HUD screen that can be called upon within the game using a designated key.
Add Existing Level	Sometimes you might want to add an existing level from another game project. This button will allow you to add an existing level to the game currently being edited.

Play Game

Normal	This lets you play the game from the start under normal game conditions. If you have a game with multiple levels you will be able to play through the whole game level by level.
Invulnerable	When testing a game you might want to just play it without being killed by enemies. Use this mode to play your game in "GOD" mode.

Export Game

Save Standalone Game	If you want to share or sell your game you can use this feature to create a fully independent version of your game that can be run outside of the GameGuru MAX editor.
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You can also set it as a VR standalone that will attempt to launch in VR mode on any available OpenXR device.

Note: During early release versions file encryption may not be available. Sharing an exported game may expose game assets and other files you own and used for this project.

Keyboard Shortcuts

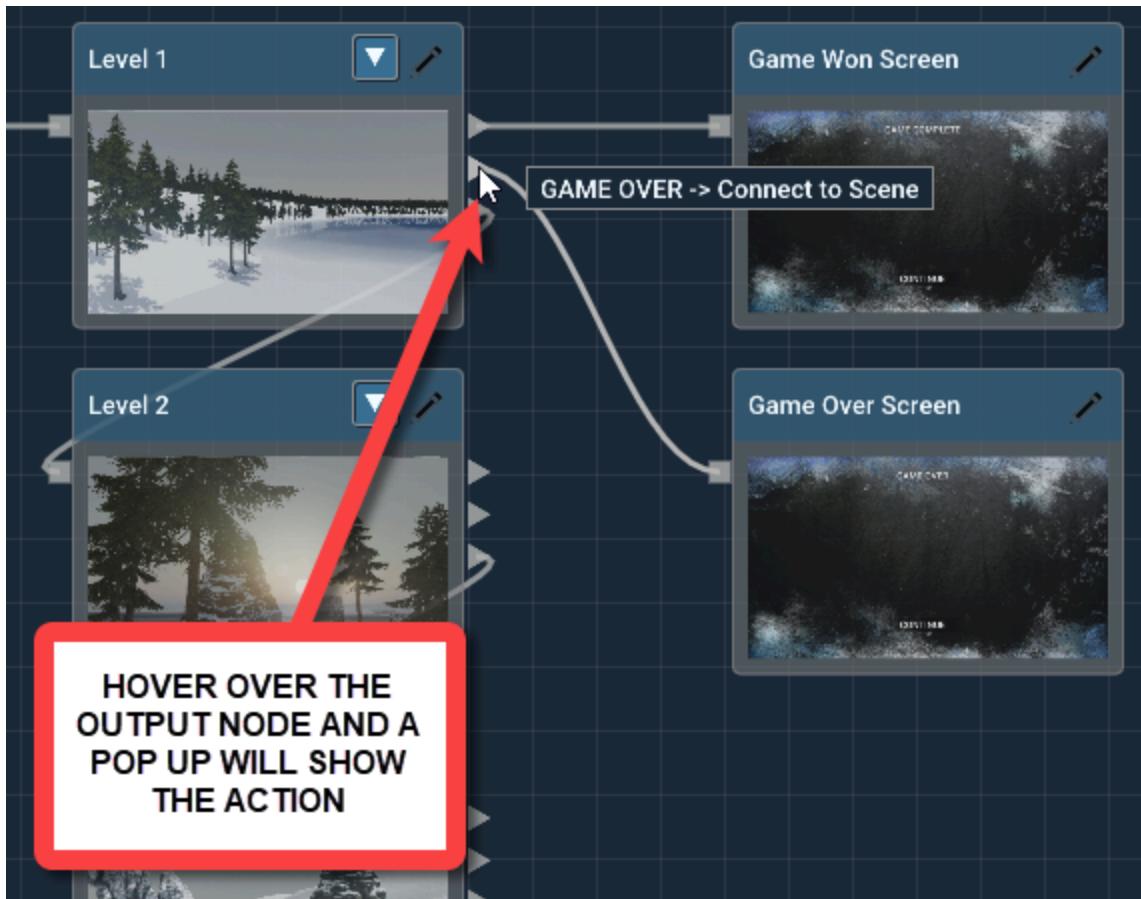
This lists the mouse and keyboard shortcuts for the Storyboard Editor.

Links between the Screens

The arrows between screens show the connections between them. You can click and drag them to change the connections. When you add new levels to your game, the new levels will automatically connect to the last level in the game.

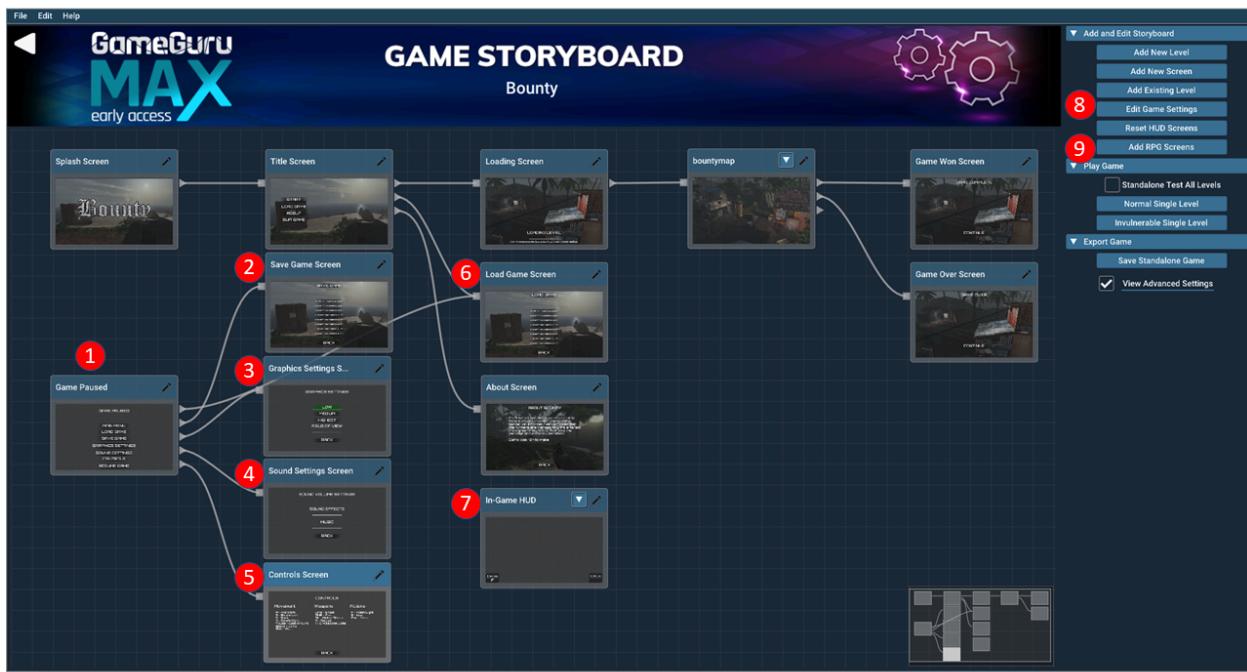


If you hover the mouse over the input and output nodes you will see information about the flow of the screens. In this example the Level 1 Scene has a GAMEOVER output. If the game ends during this level then the Game Over Screen will be shown when that situation happens. Input and Output nodes will be added to a screen whenever a valid option is added to the screen. For example, if you add a button to a screen and choose an action such as “Go To Another Level”, a new output node will be added to the screen in the storyboard to account for this new action.



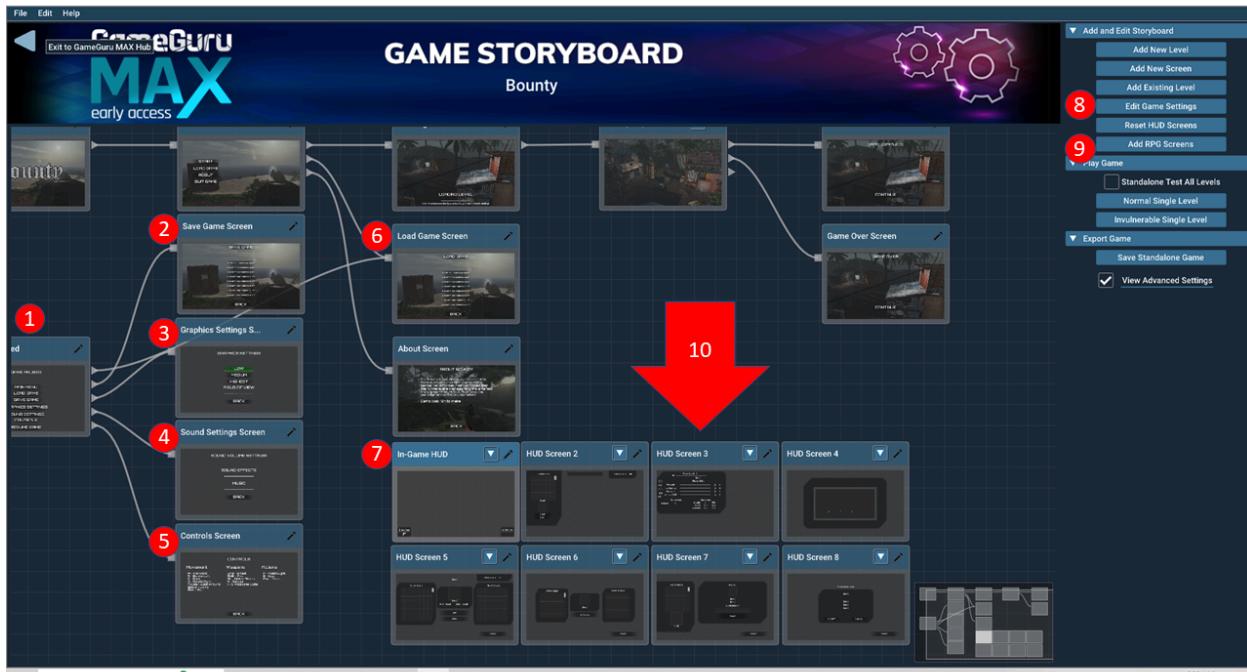
Advanced Settings

If you enable the Advanced Features of the Storyboard Editor more screens and a new menu option will be revealed. To do this, tick the box in the right hand menu for View Advanced Settings.



1 - Game Paused Screen	This screen appears in your game when the player presses the Escape key. By default it uses a transparent background allowing the game to show behind the menu. If you prefer you can choose your own background for it. The game can be resumed or other menus accessed from this screen.
2- Save Game Screen	This shows the game's save slots. The player may choose to save their progress at any time by selecting SAVE GAME from the Game Paused Screen.
3 - Graphics Settings Screen	Here the user can set the graphical quality of the game. If they have a lower spec PC they want to choose LOW or MEDIUM spec. If they have a powerful GPU then they can choose HIGH to get the best visual quality. The field of view for the game can also be changed in this screen.
4 - Sound Settings Screen	The player can control the sound levels for music and sound effects in the game from this screen.

5 - Controls Screen	This screen provides the player information about the controls for your game.
6 - Load Game Screen	Previously saved game progress can be loaded from this screen.
7 - In-Game HUD	This screen controls the way the Heads Up Display (HUD) looks when the game is played.
8 - Edit Game Settings	In this screen you can: <ul style="list-style-type: none"> ● Choose a thumbnail for your game ● Provide a description for your game ● Edit the text shown when a player reaches the boundaries of the level ● Change the icon for your game once exported to a stand alone version ● Provide a description of the Game Developer or team.
9 - Add RPG Screens	Clicking this button will reveal additional HUD screens that can be used for RPG style features such as inventory, stats, etc.
10 - RPG HUD Screens	Depicted below are the additional HUD screens added by clicking the Add RPG Screens button.

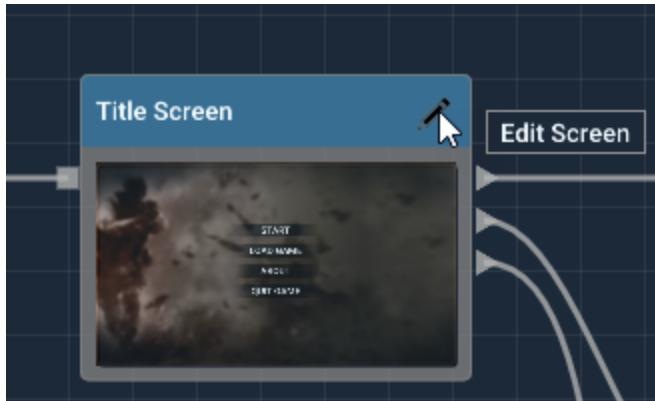


Screen Editor

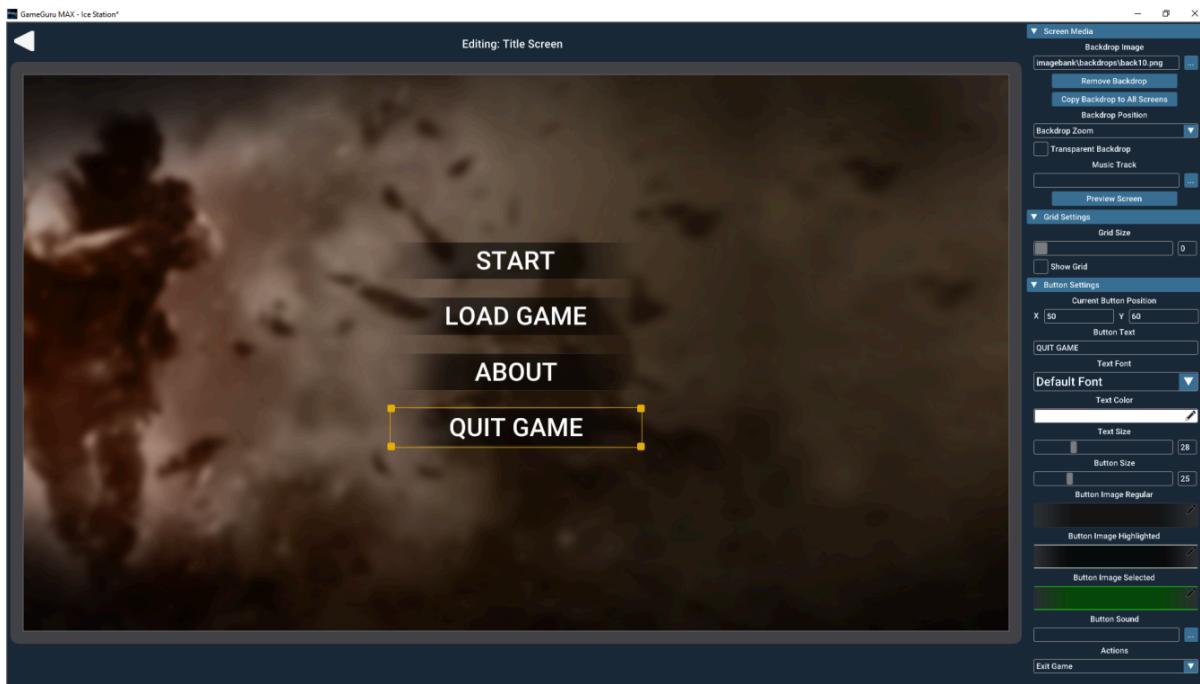
The Screen Editor lets you customise the screens in your game so that they can fit the style and look you're aiming to achieve. There are different types of screens within the Storyboard Editor:

- Splash Screen - the first image that is shown when the game first loads
- Game Menus - the various menus of the game
- Game Level - a playable, interactive level of a game (these are created with the Terrain Generator and edited with the Level Editor)
- HUD Screens - customizable and adaptable HUD screens that can be used for RPG style elements such as inventory, maps, crafting, shops, etc.

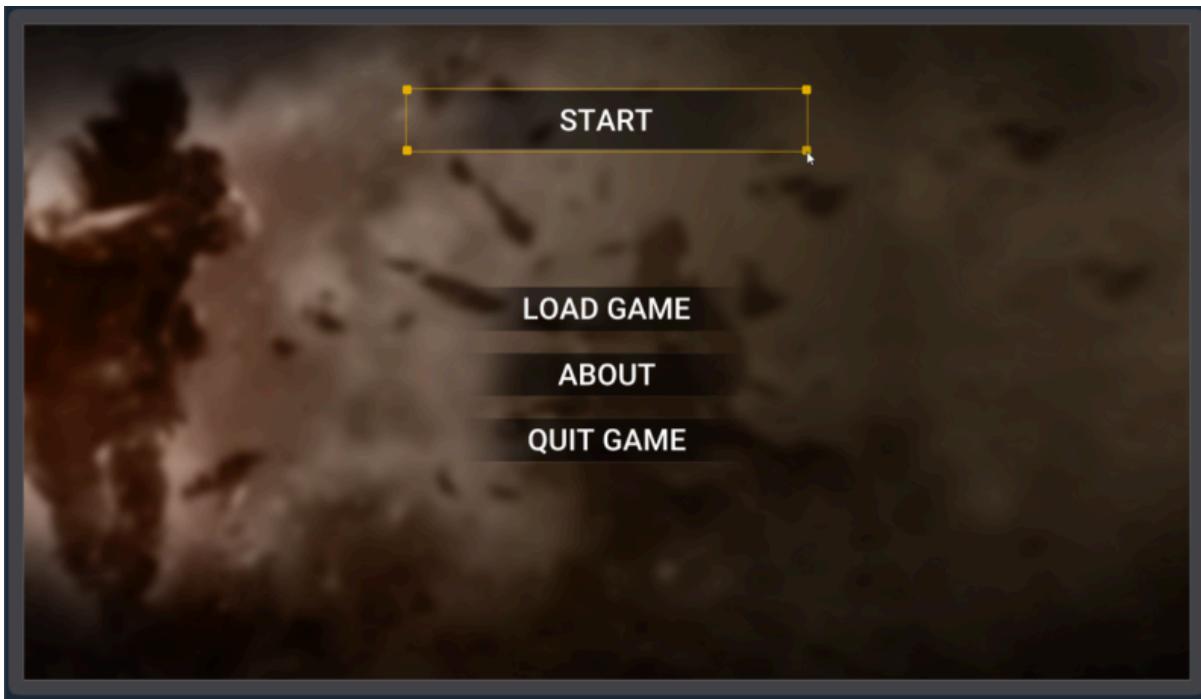
To edit a screen you can either click on the pencil icon or just click on the image itself.



The screen will be displayed in full screen mode with a range of tools on the right hand side.

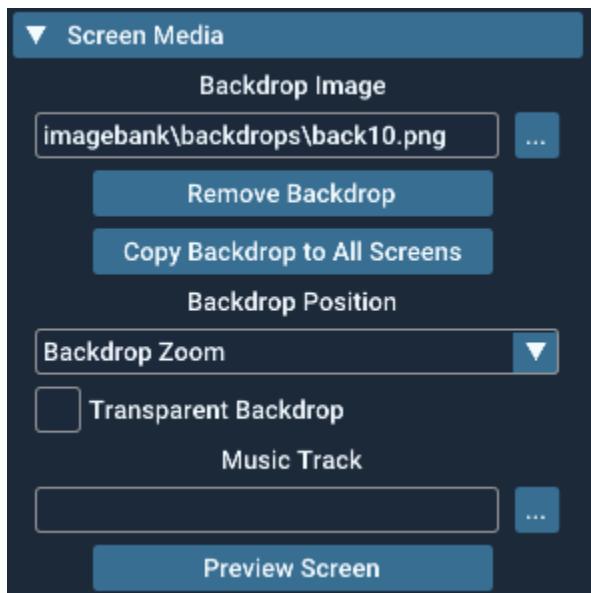


While editing a menu, buttons can be clicked and dragged into position. The yellow outline includes small squares at the corners called ‘handles’ which can be used to resize the button. In the example below the START button has been moved higher on the screen and made larger.



You'll also see a column of controls in the right hand panel.

Screen Media



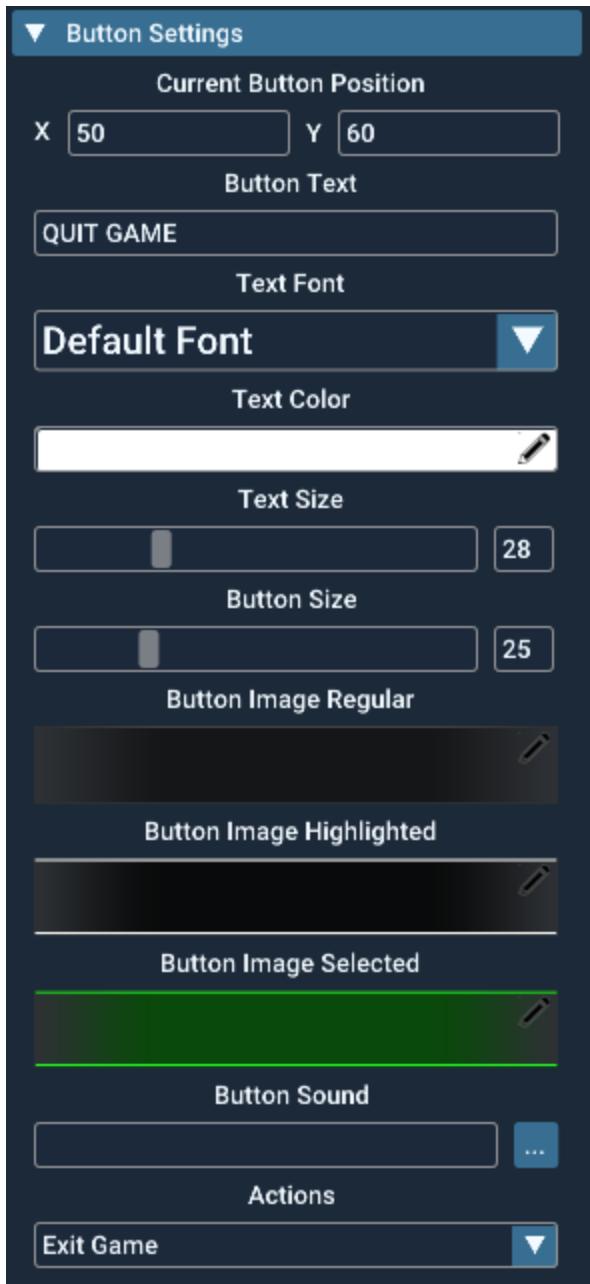
Backdrop Image	This is the image file that is used as the backdrop to this screen. You can use one of the default backdrops from the library or you can import your own image.
Remove Backdrop	This will remove the current backdrop and use a black backdrop until you select a different image.
Copy Backdrop to All Screens	If you add a backdrop image that you want to use across all the other screens, you can use this feature to copy the selected backdrop to all the other screens. You will just need to go into each screen to update their thumbnails.
Backdrop Position	If your image is small or a different aspect ratio than the menu system you can use this to make it fit. There are three options; <ul style="list-style-type: none">• Backdrop Centre - this will center the image relative to the screen• Backdrop Stretch - the image will be stretched to fit the screen which may distort the image.• Backdrop Zoom - a smaller image is enlarged

	to fit the screen and the aspect ratio is retained.
Transparent Backdrop	The screens that appear during the game when the game is paused default to Transparent. You can turn transparency off if you prefer and use a screen image of your own for the screens backdrop.
Music Track	Select a music track that will play when this screen appears.
Preview Screen	Click this to view a preview of what the screen will look like in the game.



Grid Size	A value greater than 0 will enable a grid on the screen to make it easier to position and align objects on the screen. Use this value slider to set the resolution of the grid.
Show Grid	Tick this to make the grid visible..

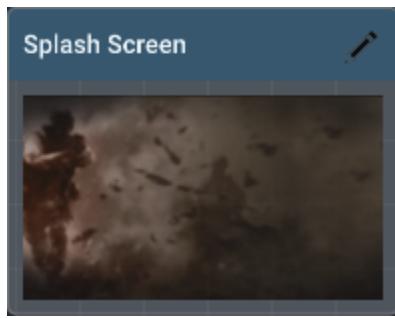
When a button is selected, its properties are shown in this section.



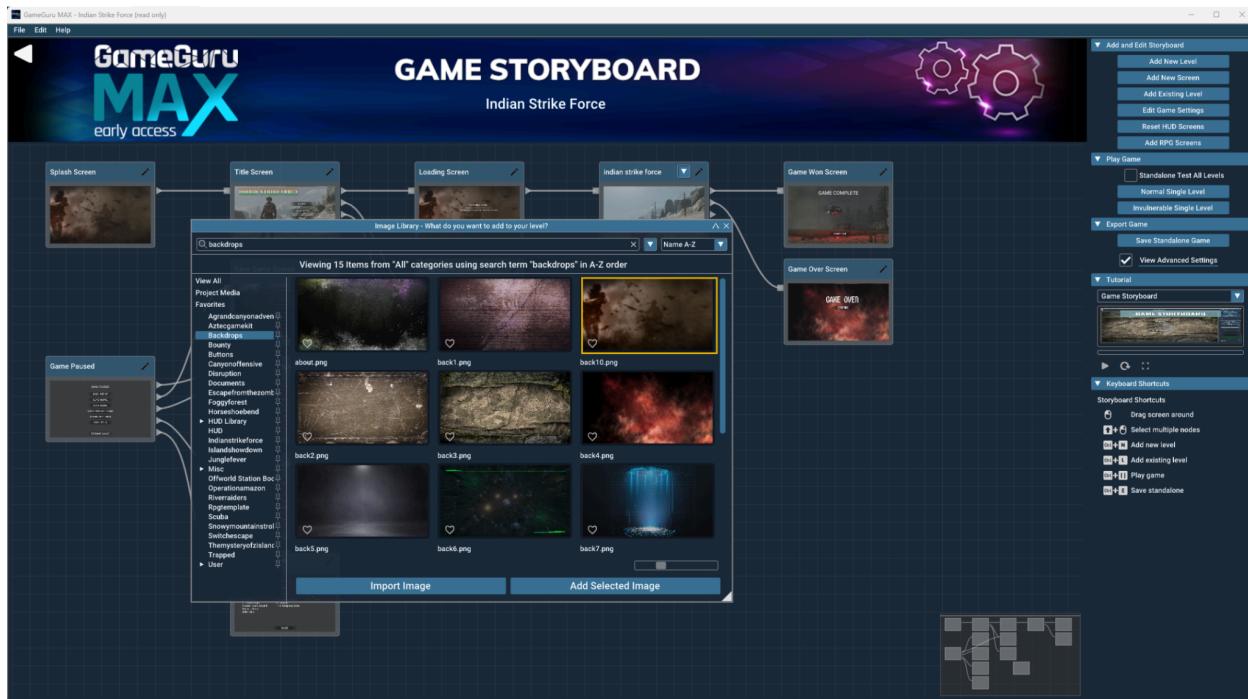
Current Button Position	The X and Y coordinates of the button on the screen.
Button Text	The text displayed on the button (i.e. "START GAME")

Text Font	The font used for the text. There are some default fonts included that you can choose from.
Text Color	The color of the text can be set here.
Text Size	The size of the text.
Button Size	This setting controls the size of the button. You may also use the yellow outline handles to drag the edges to the desired size.
Button Image Regular	This is the main image used for the button. You may select from a variety of included images or import your own.
Button Image Highlighted	This image is used when the mouse is over the button. You may select from a variety of included images or import your own.
Button Image Selected	This image is used for settings buttons to indicate that the setting is activated.
Button Sound	Select a sound that the button will play when clicked. Tip: Best to use a short and appropriate sound effect.
Actions	Indicates which action should occur when the button is clicked.

To edit a Splash Screen simply click on the pencil icon in the top right of the Splash Screen Thumbnail.



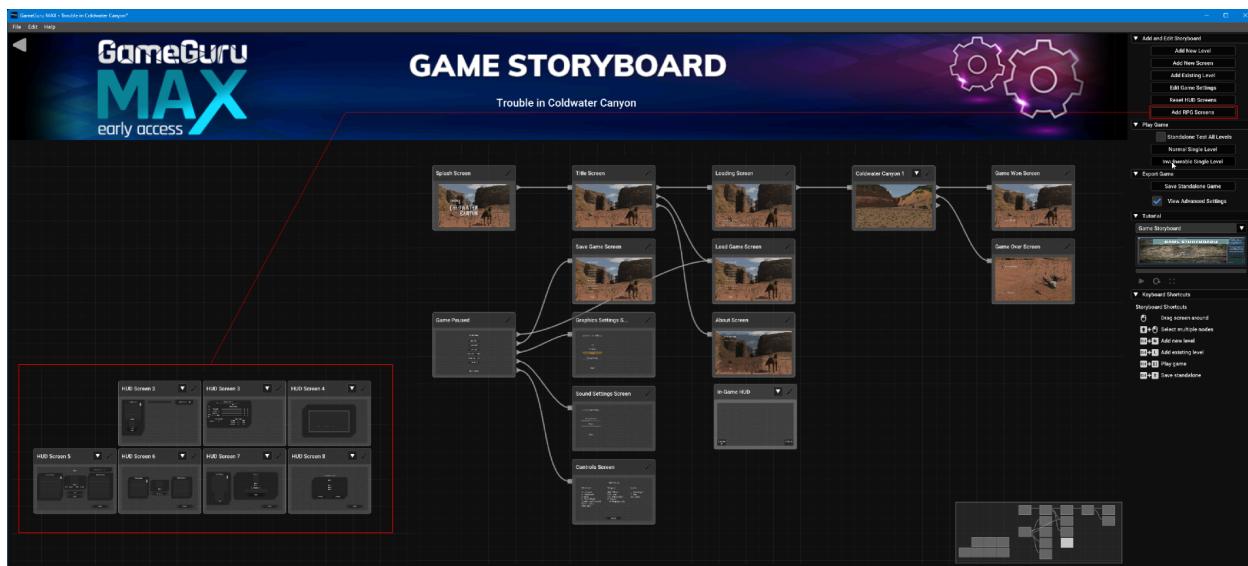
This will open up an image browser from where you can choose a Splash Screen image to be used.



If you have your own image created and ready to use as a splash screen then you can use the Import Image button to choose it from the hard drive and then use it as the splash screen.

HUD Screens

Apart from the first HUD screen (IN-GAME HUD) in Game Guru MAX other HUD screens can be made from scratch for any use required. Alternatively if you press the Add RPG Screens button a set of fully functional RPG HUD screens will be generated that can be customised to fit the desired look and feel of your game.



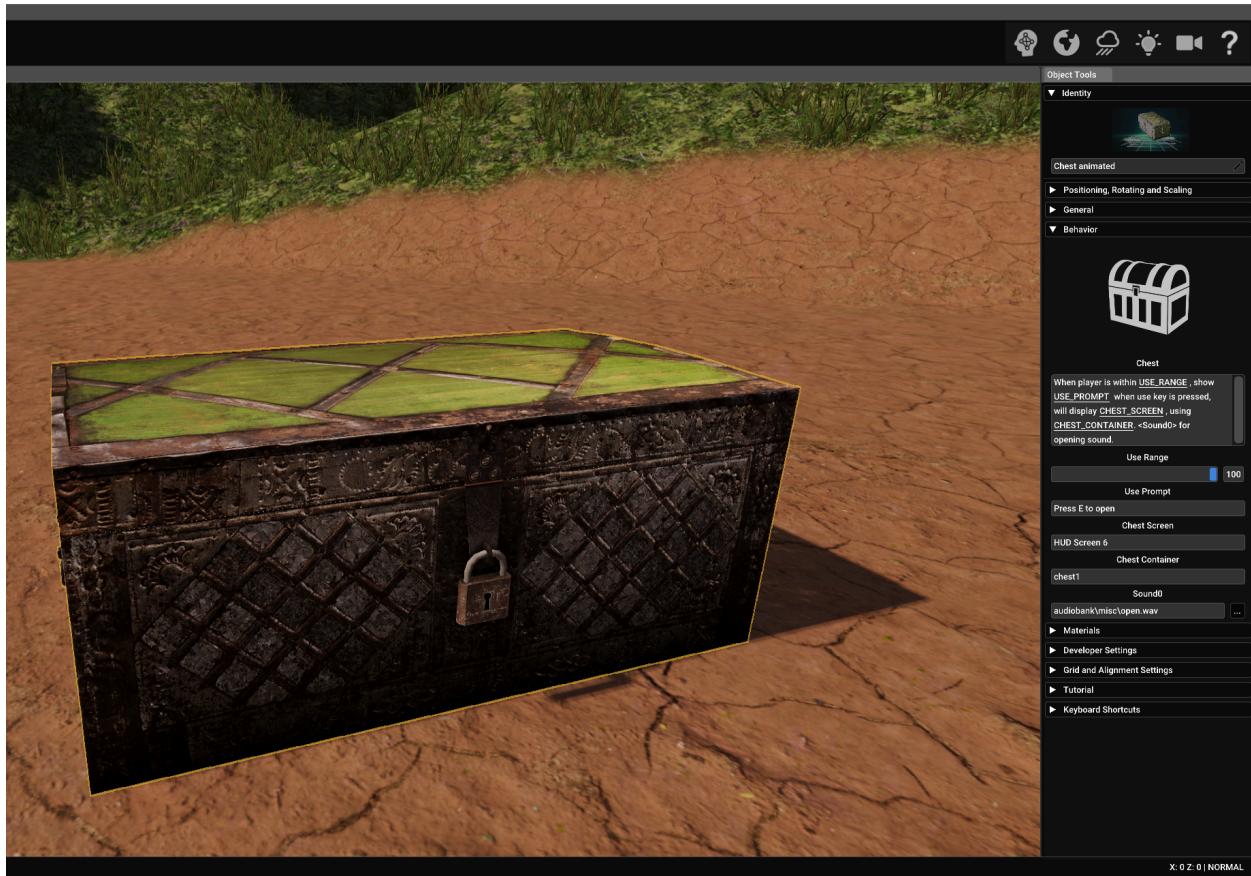
The In-Game HUD screen serves as the primary HUD for the game, displaying information such as health and ammo on hand. This screen is displayed by default when the game is running. The rest of the screens are displayed only when the right conditions are met (i.e. when the player presses a button or interacts with an object or character, etc.).

Each screen contains a predesigned template to provide an example of how the screen may be used, but is by no means the limit of how the screen may be used. Instead they have been designed to provide flexibility and choice in the way your game is designed.

These HUDs and others you may make are the link between the on screen visuals and the behaviours that may interact with specific HUDs within your game.

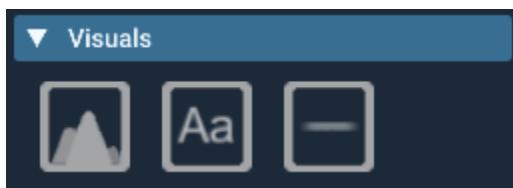
For example you may have a chest in your game that may be opened by the player and you wish to have a collection of items within that chest that can be taken or perhaps to store some inventory items into the chest for later use.

In this image a chest object has a behaviour attached to it called `chest`. This behaviour asks for the HUD Screen, in this case it's 'HUD Screen 6' and the chest container for the data is called '`chest1`'.



This now enables that chest to be interacted with via HUD Screen 6 to move or take items to and from the chest.

Visuals

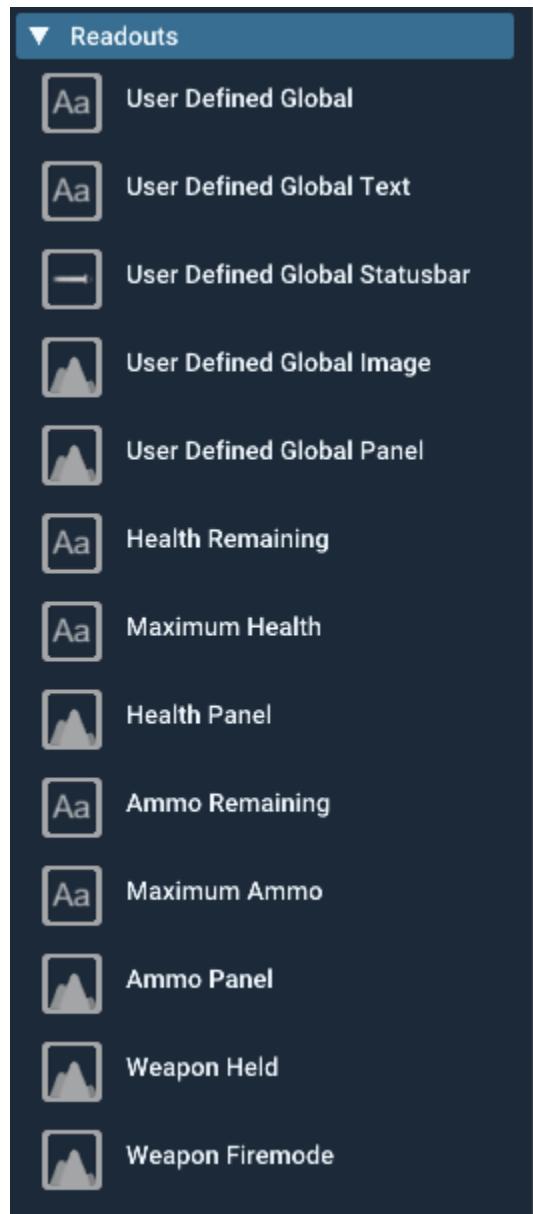


This panel provides three buttons that enable you to add new visual elements to the screen to be customised. From left to right they are:

- Add an image
- Add some text
- Add a button

Readouts

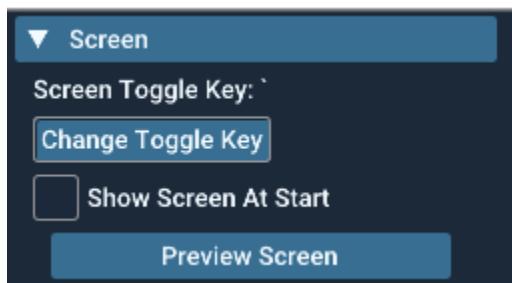
These buttons add visual representations of global variables such as Health, Ammo, Firing Mode, etc. as well as to user defined variables which will be covered in more detail later.



HUD Settings Panel

The HUD settings panel on the right applies to the selected element on the screen. Therefore the options provided will vary depending on the type of element selected, such as an image vs a button, for example. These differences will be explained in the tables below describing each section of the panel, where applicable.

Screen



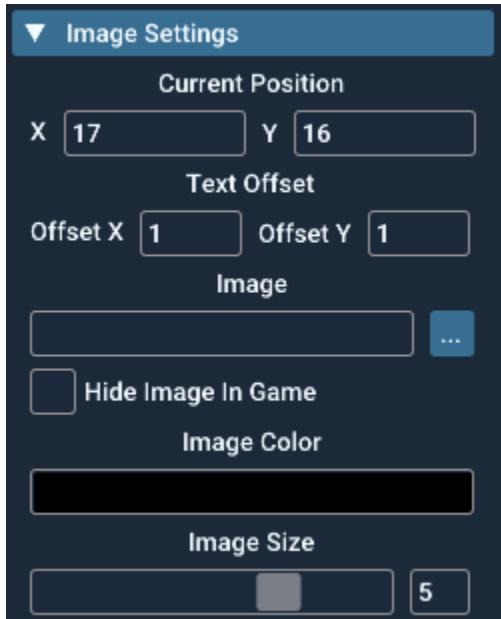
Screen Toggle Key	Displays the key currently set to display the screen when pressed.
Change Toggle Key	This button allows you to change the key binding for this screen.
Show Screen At Start	Tick this box if you'd like the screen to be displayed when the game is started.
Preview Screen	Clicking this button will render a preview of the screen being edited. A small arrow at the top left corner of the preview will exit the preview mode.

Grid Settings



Grid Size	Indicates the size of the grid being used to assist in laying out the screen elements.
Show Grid	<p>Tick this box to display the grid overlay to make it easier to see where elements align.</p> <p>Note: If the grid size is set to 0, no grid will be displayed even when ticked.</p>

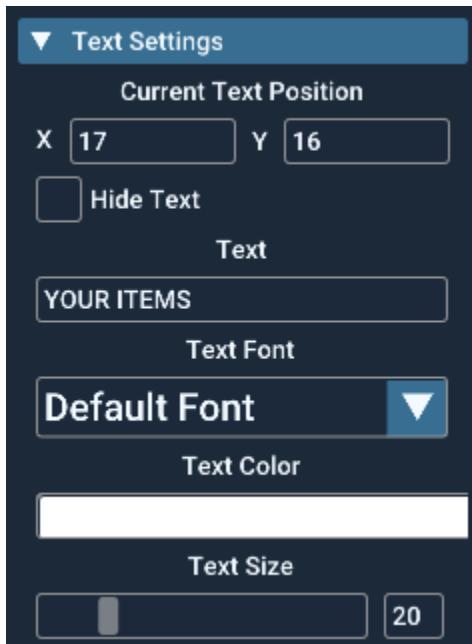
Image Settings



Current Position	Shows the X and Y coordinates of the selected image relative to the centre of the element.
-------------------------	--

Image	Click the ... button to add an image from your hard drive.
Hide Image in Game	Tick this box if you wish to hide this image in the game. An example of this is when using a map image for a mini-map, where you only want the mini-map to show the portion of the map within the widget.
Image Color	Colour selector tool to change the hue of the selected image.
Image Size	Slide bar used to scale the size of the image, ranging from 0 (not displayed) to 5 (largest).

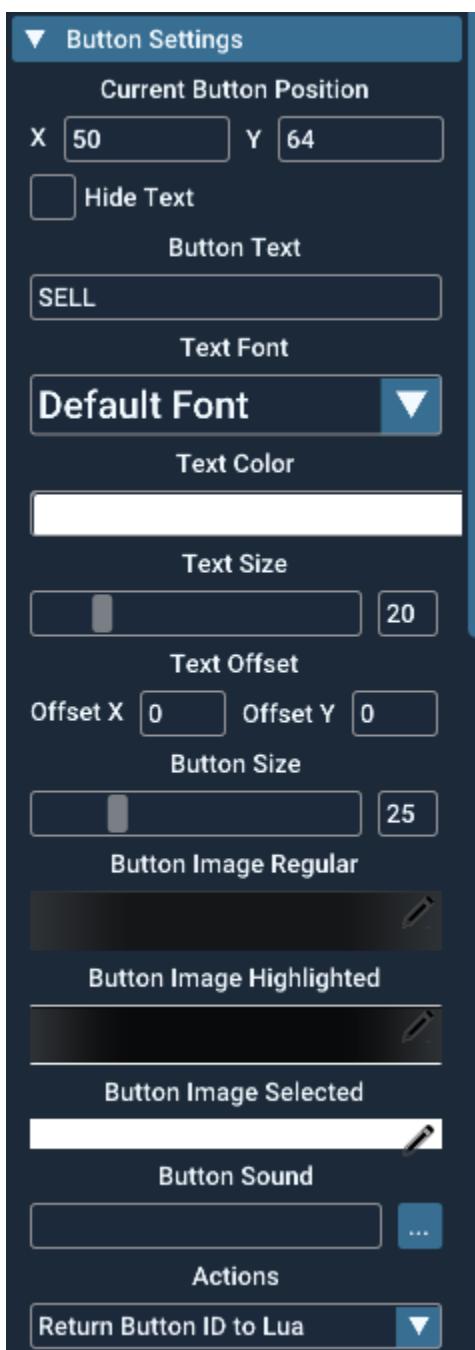
Text Settings



Current Text Position	Shows the X and Y coordinates of the selected text relative to the centre of the element.
------------------------------	---

Hide Text	Tick this box to hide the text element. For example, you may want a mana bar to be displayed in lieu of a numeric value.
Text	Enter the text you wish to be displayed by this element.
Text Font	Select the type of font for this text element.
Text Colour	Select the colour for the text being displayed.
Text Size	Slide bar for changing the size of the displayed text, ranging from 1 to 100.

Button Settings



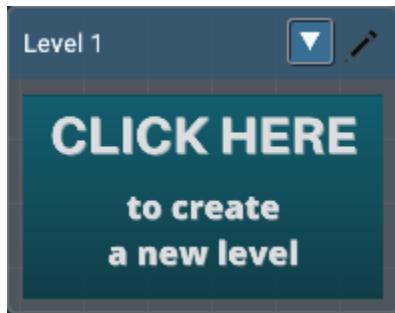
Current Button Position	Shows the X and Y coordinates of the selected button relative to the centre of the element.
--------------------------------	---

Hide Text	Tick this to hide the text on the button. This can be useful when you have an image you want on the button instead.
Button Text	Enter the text you wish to be displayed by this element.
Text Font	Select the type of font for this text element.
Text Color	Select the colour for the text being displayed.
Text Size	Slide bar for changing the size of the displayed text, ranging from 1 to 100.
Text Offset	Enter the amount of X and Y offset for the text being displayed, relative to the centre of the element.
Button Size	Slide bar for changing the size of the button, ranging from 1 to 100.
Button Image Regular	This determines the colour of the button when not highlighted or selected.
Button Image Highlighted	This determines the colour of the button when highlighted by the player's cursor.
Button Image Selected	This determines the colour of the button when it is selected.
Button Sound	Use the ... button to select a sound file to be played when the button is clicked.

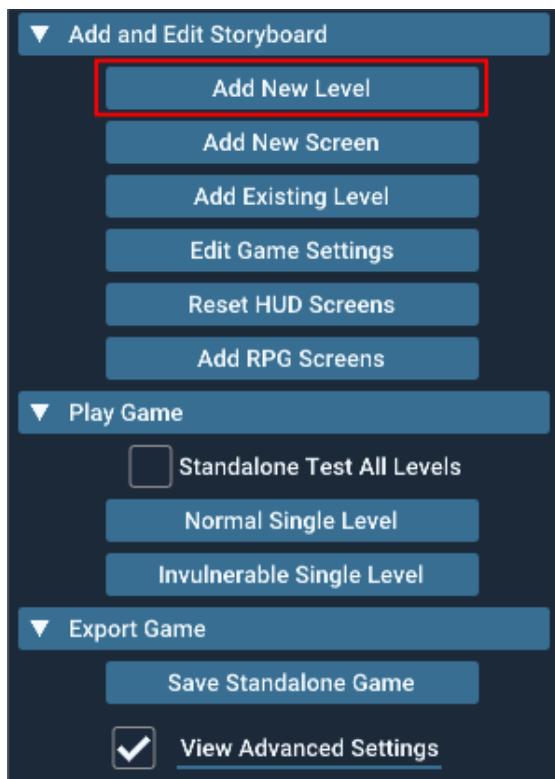
	Tip: Best to use a short and appropriate sound effect.
Action	Select the action the button will perform when clicked.

Levels

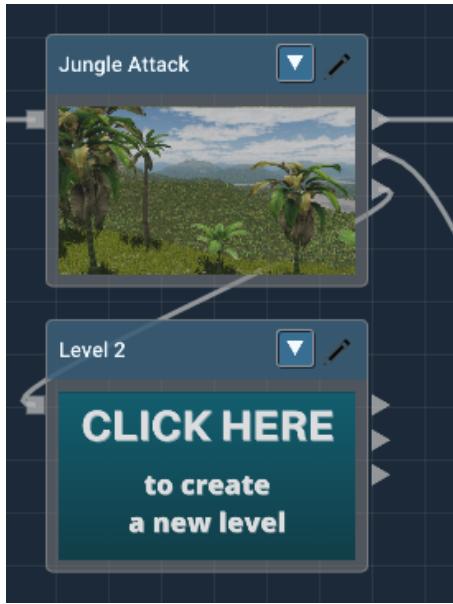
The first time you create a new game project and a new level, you will see a Level 1 thumbnail in the Game Storyboard. Clicking either the pencil icon at the upper-right or the CLICK HERE image to begin.



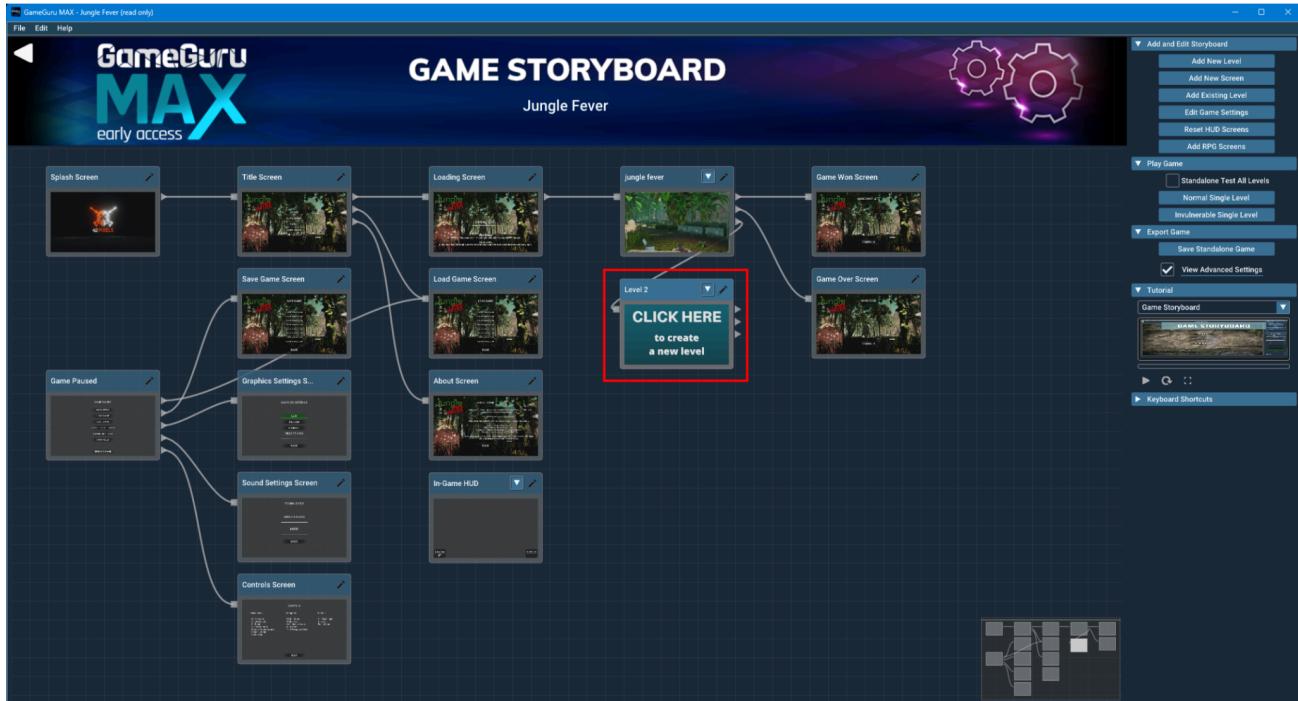
This will open up the Terrain Generator, where you can select your settings for the new level. More on that later. Additional levels can be created from the storyboard screen using the panel on the right. If you already have a level in your game and want to add another, click the Add New Level button.



This will create a new level that is automatically connected to the first level for you.



When you create a new level in the Storyboard Editor you will first enter the terrain generator screen. In this example a new level has been created with the "Add New Level" button in the right panel. In the image below this new level has been labelled "Level 2". You now need to click on the level to choose the biome style for the level.

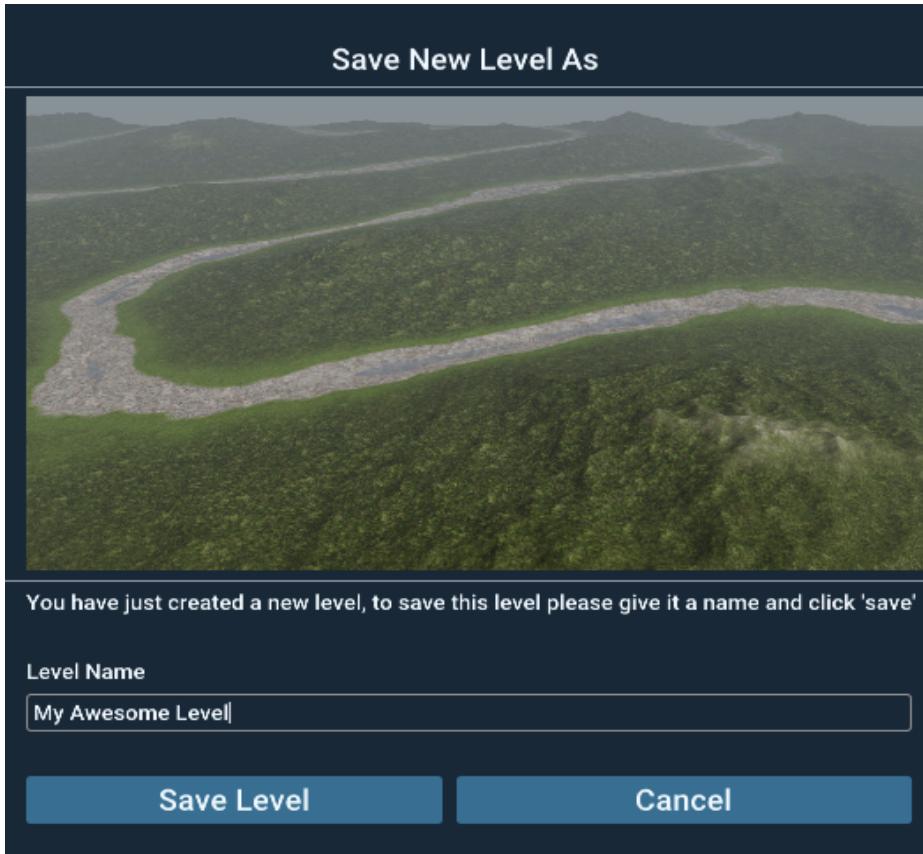


This is where you can define the type of biome that you'd like for your level as well as the starting heights of the hills and other terrain features. The terrain system uses fractal mathematics to generate random terrains to get you started. Here's an example of the editor with a random terrain seen from a bird's eye view;



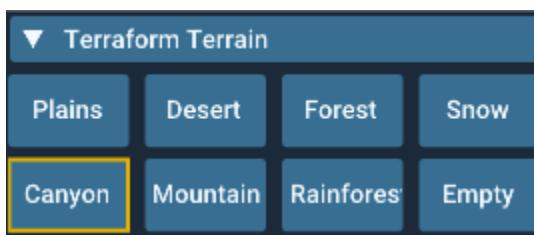
1 - Terrain Render	The main screen shows the terrain in 3D. You can use the left mouse button to drag the screen around and the right mouse button to change the angle. The W, A, S, D keys let you move around to see different parts of the map. You can also use the mouse wheel to zoom in and out for different perspectives..
2 - Edge of editable area	The yellow square defines the editable area for the level. It's within this area that your game level will be played. The size of the playable area can range from .5 kilometers to as much as 5 kilometers.
3 - Movement anchor	This indicates the center of the play area. Left click and drag this to reposition to capture the desired play area within the yellow boundary..

4 - Camera View	Toggles between a birds eye view or an angled 3D view of the terrain. Just click this icon to swap between both views. You can also move the camera around with the W,A,S, D keys and the right mouse button.
5 - Biome Themes	Here you can choose from eight terrain themes: Plains, Desert, Forest, Arctic, Canyon, Mountain, Rainforest and Empty.
6 - Terrain Shape	In this section you can edit the size of the play space (either use the slider or type the desired size). You can also use tick boxes to show or hide the editable area and the 3D boundary.
7 - Terrain Values	You can fine tune how the terrain looks with a range of different values here.
8 - Auto populate settings	Use the tick boxes to indicate whether your level should have trees and other vegetation. The default trees and vegetation that are best suited for the selected biome will be randomly populated into the level. Once the level is generated you can fine tune the placement of the trees and vegetation as you desire.
9 - Height Maps	The Terrain Generator has support for Height Maps. This is an advanced feature and is documented in this section.
10 - File management	Once you have a terrain that you're happy with you can save it to a file. You might do this if you want to use the same terrain again for another level and load it with the Load Terrain Settings button.
11 - Terrain Generation	Click the button at the bottom of the panel on the right when you are ready to make this the terrain for your level. Once clicked you'll be asked to give the level a name:



Type in a name and click the Save Level button. You will now be transported to the Level Editor. Here you can start adding objects into the level, sculpting & painting the terrain, adding trees and vegetation and a whole lot more.

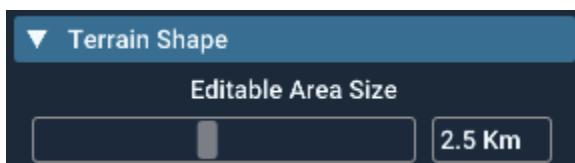
Terraform Terrain



When you click on any of these biome styles the whole terrain will be randomly created in the style chosen. You can keep clicking the same biome style to generate another random style. The height of the terrain will be set based on the biome, you can change such values in the Terrain Values section. The time of day is also randomly changed to give you an idea of how levels can look.

Terrain Shape

The size of the level is defined here. It can range from as small as .5 kilometres (km) squared to as large as 5km squared. Think carefully about the size of your levels, as you cannot change this once it's set. Having a very large level might take a long time to fill it with objects and gameplay ideas. You may not want players walking around for a long time until they reach their next challenge. A principle of good game design is to ensure that every area of your game has purpose and keeps your player entertained.

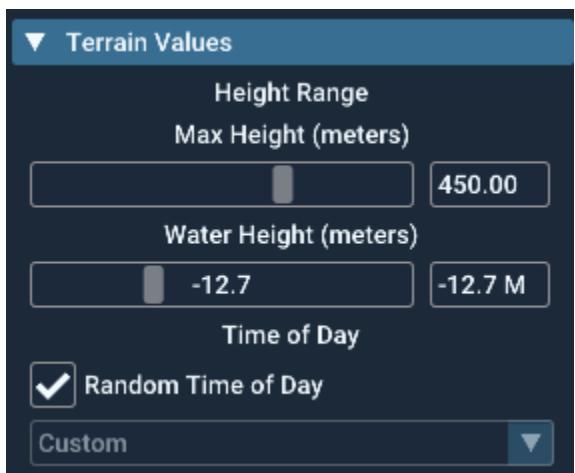


Editable Area Size

Use this slider to set the size of the editable area of the level. The player cannot leave the editable area when they are playing the game.

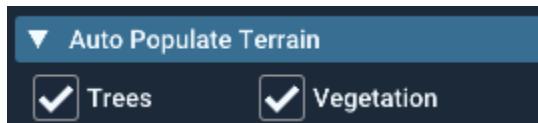
Terrain Values

Here you can change some key defaults that define how the terrain will be generated.



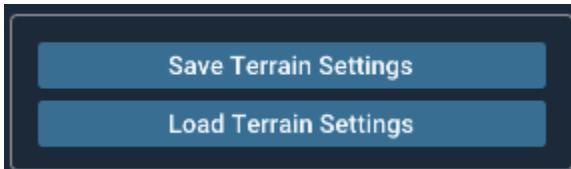
Max Height	This is the maximum height in meters that the terrain can reach using the fractal terrain generation algorithm. This has a big impact on how your level will look so try changing it and viewing how the terrain moves up and down along with this value. You cannot change this once the terrain is generated for the level.
Water Height	This is where the water line is located. If you don't want any water you can reduce it well below the terrain. Just move the slider up and down to see the water line move in unison with your changes. This value can be changed again while in the Level Editor.
Time of Day	This shows how the level will look at different times of day with different lighting. The time of day can be changed in the Level Editor; it's added here so you can visualize what the terrain might look like before committing to a design. You can un-tick the Random Time of Day check box if you want to keep viewing random terrains at a certain time of day.

Auto Populate Terrain



Trees	Tick this to show a selection of the typical trees for the biome in the level. You can easily remove trees or change them to other types once in the Level Editor.
Vegetation	Another tick box that turns on and off the grass and flower vegetation. This too can be changed once in the Level Editor.

Terrain Generation & File Management



Save Terrain Settings	This save feature allows you to save your selected settings so they can be reused for future levels.
Load Terrain Settings	Previously saved terrain settings can be loaded in with this button.

Generate Terrain for Level

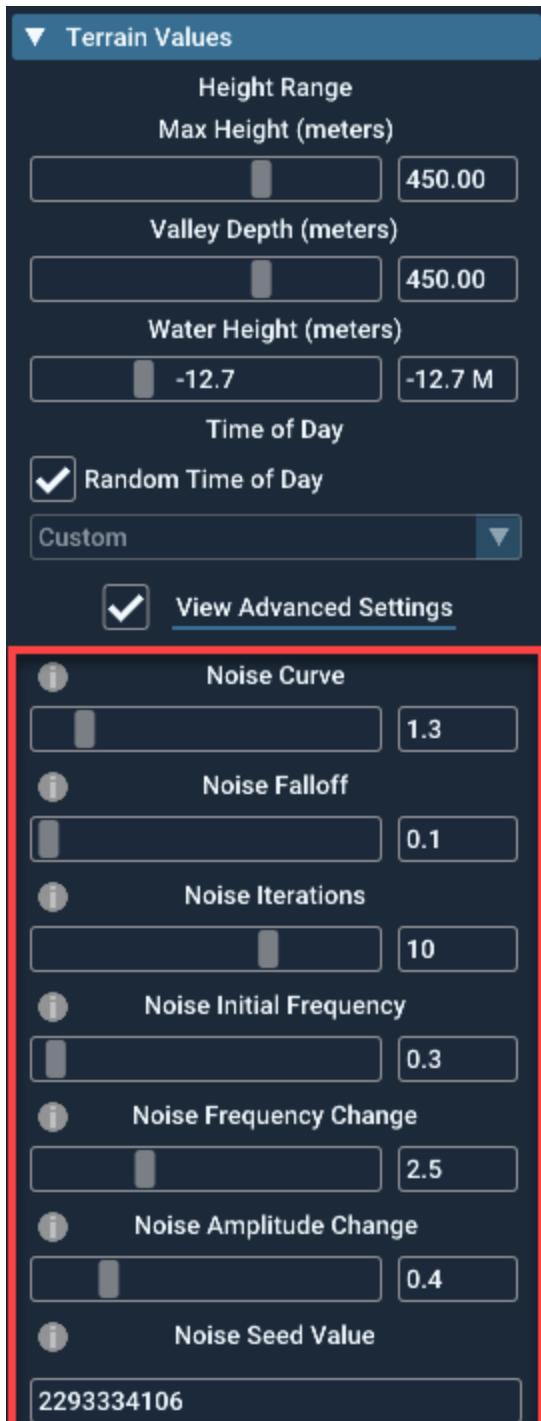
Generate Terrain and Open the Level Editor	When you are happy with your design you can click on this button and the terrain design you have made will be loaded into the Level Editor, ready for you to start adding objects and other game elements.
---	--

Advanced Settings

There are two areas with Advanced Settings in the Terrain Generator menu. These are the Terrain Values and the Height Map tools. To display these settings tick the box for View Advanced Settings.

Terrain Values

The Terrain Values directly tie into the fractal mathematics used to generate the terrains. These values can easily create unwanted results and should be used carefully. The image below identifies the distinct advanced terrain value settings within the red outlined area:



Noise Curve

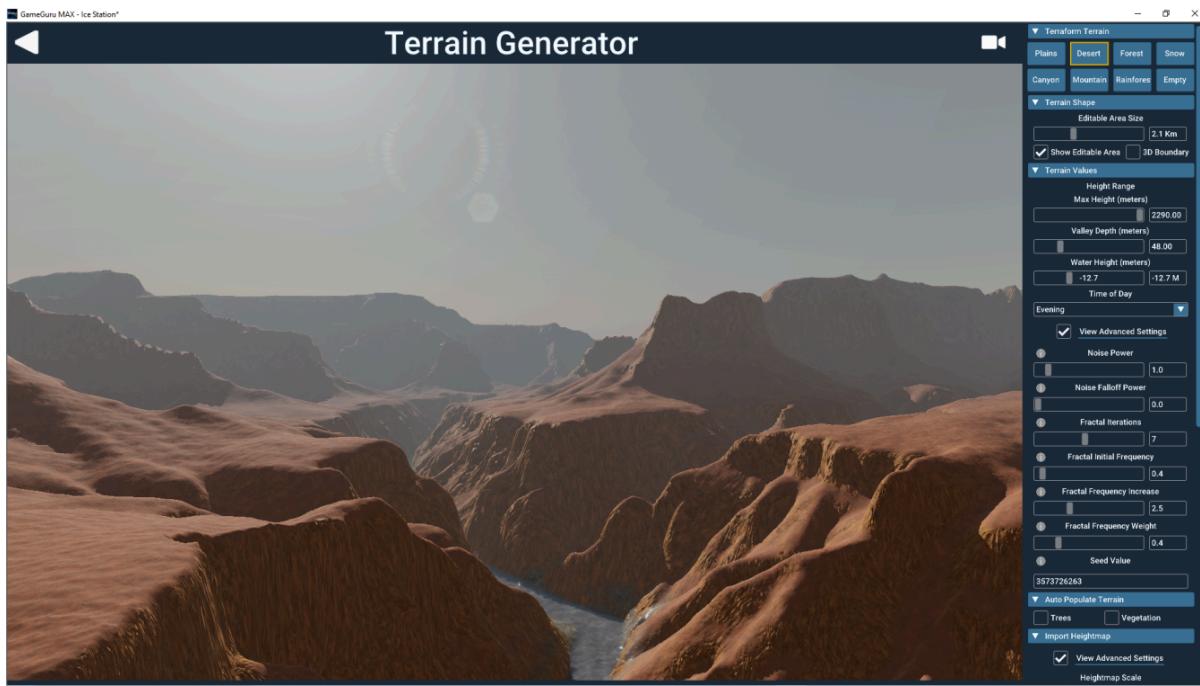
Values above one make lower areas flatter. Values less than one make higher areas flatter. A value of one does not modify the noise value.

Noise Falloff	A value of zero does not modify the noise value. Values greater than zero make lower areas smoother.
Noise Iterations	The number of iterations of noise to use which get layered on top of each other. The higher the value the more bumpy the terrain will be. Suggested values are around 10.
Noise Initial Frequency	The frequency of the first layer of noise. Larger values will have smaller terrain features. Smaller values will have larger terrain features. Smaller values often require a larger height value to get a good effect.
Noise Frequency Change	Determines how the frequency of the noise changes with each additional iteration. Typically the frequency will change by a multiple of 2.4 for each iteration. For best results this value should be changed with an internal "Noise Amplitude Change" value so that $(\text{Noise Amplitude Change}) * (\text{Noise Frequency Change})$ is close to one.
Noise Amplitude Change	Determines how the amplitude of the noise changes with each additional iteration. Typically the amplitude will change by a multiple of 0.4 for each iteration. For best results this value should be changed with the "Noise Frequency Change" value so that $(\text{Noise Amplitude Change}) * (\text{Noise Frequency Change})$ is close to one.
Noise Seed Value	A random seed that is used as an input to the noise generator to create different results.

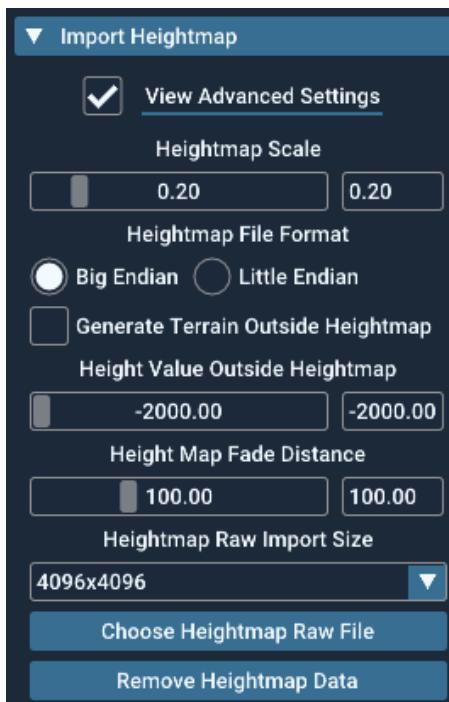
Height Maps

Height maps are data files that describe real world terrain. These can be loaded into the Terrain Generator to instantly create a realistic terrain.

For example, here's a level that's been made from a height map of the Grand Canyon in the USA:



Tick the View Advanced Settings in the Import Heightmap panel to reveal all the options.



Height map Scale	This value lets you scale the heightmap larger and smaller so it will fit well within the size of your level. The Grand Canyon heightmap can be scaled down to fit inside a smaller half a km square map for example. It's best to alter the height of the terrain in unison with this value to ensure height scale does not stretch to extremes.
Height map File Format	There are different types of file formats for height map data. You can choose which format your file import is using. If you don't know, just try one and if the results don't look correct try another format.
Generate Terrain Outside Height map	Tick this and the fractal system will generate additional terrain at and beyond the edges of the heightmap. If you tick this then another value is shown called Heightmap Fade Distance . This adds an extra border around the heightmap area which will gradually fade better into surrounding flat terrain. This avoids unsightly edges.
Height Value Outside Height map	If the above setting is not chosen then this value will be shown. It lets you match the natural height of the edges of the height map with those of the flat terrain around its edges.
Height Map Fade Distance	This value lets you fade between the edges of the height map with the fractal generated terrain around the height map data.
Height map Raw Import Size	When you import a RAW file you can specify the size of the raw file with this feature.
Choose Heightmap Raw File	Click this to open a file selector and choose a heightmap to import.

**Remove Height
map Data**

This will remove the height map from the Terrain Generator.

Terrain Editing

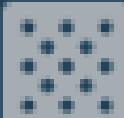
After the level is created, if you want to change any part of the terrain's shape, the painted textures that cover it or the trees and vegetation that fill it, you need to set the Level Editor into Terrain Editing mode. This is achieved by clicking on this hill shaped icon in the top left toolbar:



Once you click this icon a new panel will appear on the right showing the Terrain Tools:



In the "Edit Mode" panel there are four tab modes, these are:

	Sculpt Mode - used for changing the shape of the terrain.
	Painting Mode - allows you to paint with up to 32 different textures and change the look of the terrain
	Tree Mode - this lets you clear, add or move trees around the level
	Vegetation Mode - lets you paint grasses and flowers into the level.

You can access the Terrain sculpting tools by clicking the Terrain, Painting, Trees and Vegetation icon in the top left icon bar in the Level Editor. Pressing the "T" key also sets you into this mode. On the right you will see the Terrain Tools like this:



A circular "brush" cursor will show in the terrain like this too:



The brush tool will move along with the mouse cursor as you move it around. Clicking the left mouse button will activate the currently selected terrain tool in the area

covered by the brush. For instance, if you have the "Raise Terrain" tool selected, clicking and holding the left mouse button will cause the terrain within the brush circle to be raised, as demonstrated in this example:



The Brush Size and Sculpt Speed let you set the size of the brush cursor and how quickly or slow the changes to the terrain will happen.

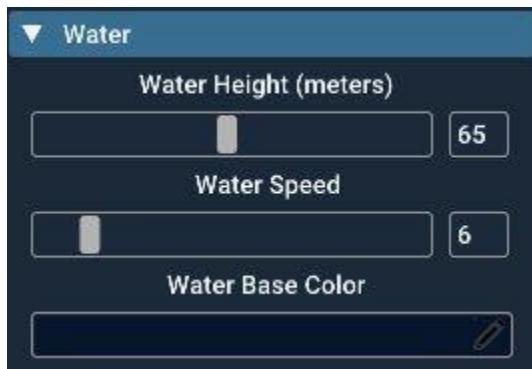
Here are all the terrain sculpting tools and what they are used for:

	Raise Terrain: This will raise the terrain within the brush circle area.
	Lower Terrain: This lowers the terrain within the brush circle area.
	Flatten Terrain: This will take the current height where you start clicking and flatten all areas to match that height. This is ideal for creating a totally flat area where you might want to create a settlement for buildings.
	Blend Terrain: After using some of the sculpting tools you can end up with some harsh edges. Use this to smooth off and blend the textures to create a more desirable result.

	Ramp Mode: This special mode will create a ramp from a start to an end position. Just click once to choose the start of the ramp and then click a second time to set the end of the ramp. A highlight will show after the first click and it will update as you move the mouse around, it gives you an idea of the shape of the ramp. You can press the ESC key to cancel the ramp.
	Random Mode: This mode will raise the terrain and add some random bumps into the terrain for a more natural result.
	Pick a Height: This lets you choose a height from the 3D scene and then use that height with the Paint with Custom Height tool.
	Paint with Custom Height: Click this and the height chosen with the Pick a Height (or the last height used) will not set the terrain in the brush cursor to this set height.
	Restore to Original Height: If you're unhappy with your edits then use this to wipe areas of your editing and restore the original shape of the terrain.

Water Settings

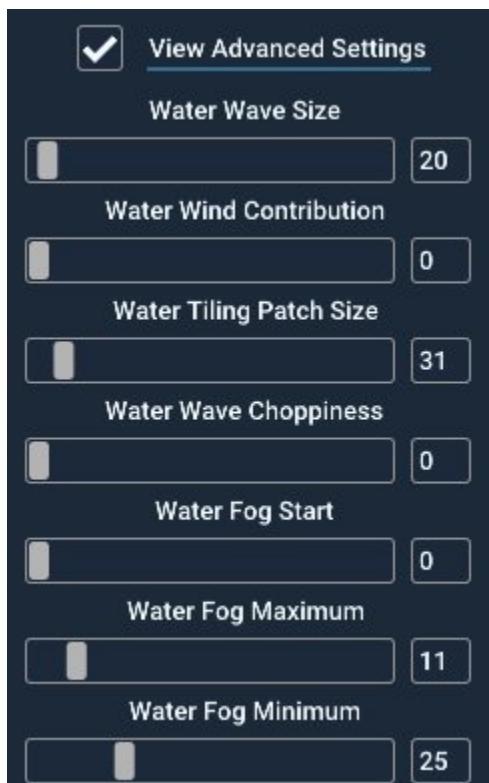
Under the terrain sculpting tools is the Water Panel.



Water Height (meters)

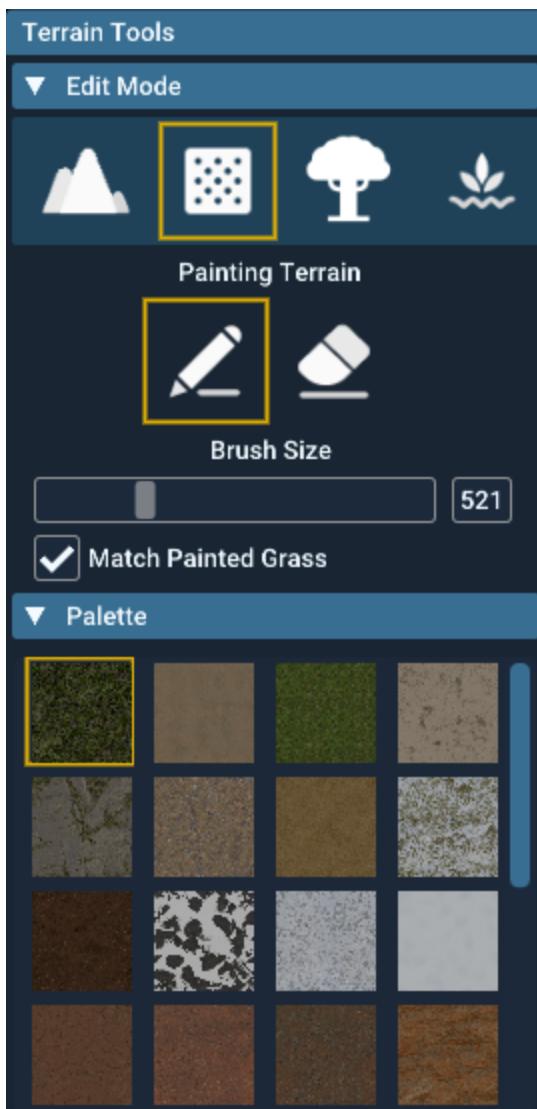
The water plane for a level has a set height and you can raise or lower it with

	this slider.
Water Speed	Water animates automatically and this value determines how slow or fast it waves around. The water plane moves left to right or right to left along the X axis of the level.
Water Base Color	The color of the water is easily changed with this color picker chooser.



Water Wave Size	The water plane moves left to right or right to left along the X axis of the level. This value ranges from 0 to 100. Values less than 50 will move the water more to the left, values over 50 will move the water to the right. Set the value to 50 and the water doesn't move.
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Water Wind Contribution	The value adds some turbulence to the water with a wind contribution variable. The larger the value, the more the flow of the water will be affected.
Water Tiling Patch Size	The repeating tile effect size is changed with this value. Higher values hide the tiling effect.
Water Wave Choppiness	This value adds some more randomness to how the water behaves and is best seen close up.
Water Fog Start	Closer than this distance under water will have the minimum amount of fog
Water Fog Maximum	After this distance under water it will be completely opaque
Water Fog Minimum	The minimum amount of underwater fog that will always be present regardless of distance



The second icon in the Terrain Tools Edit Mode icon bar is the texture painting tool. This lets you choose a different texture graphic and paint it onto the terrain. Useful if you want to add a nice gravel path through a forest or add rocky snow features high up in the hills.

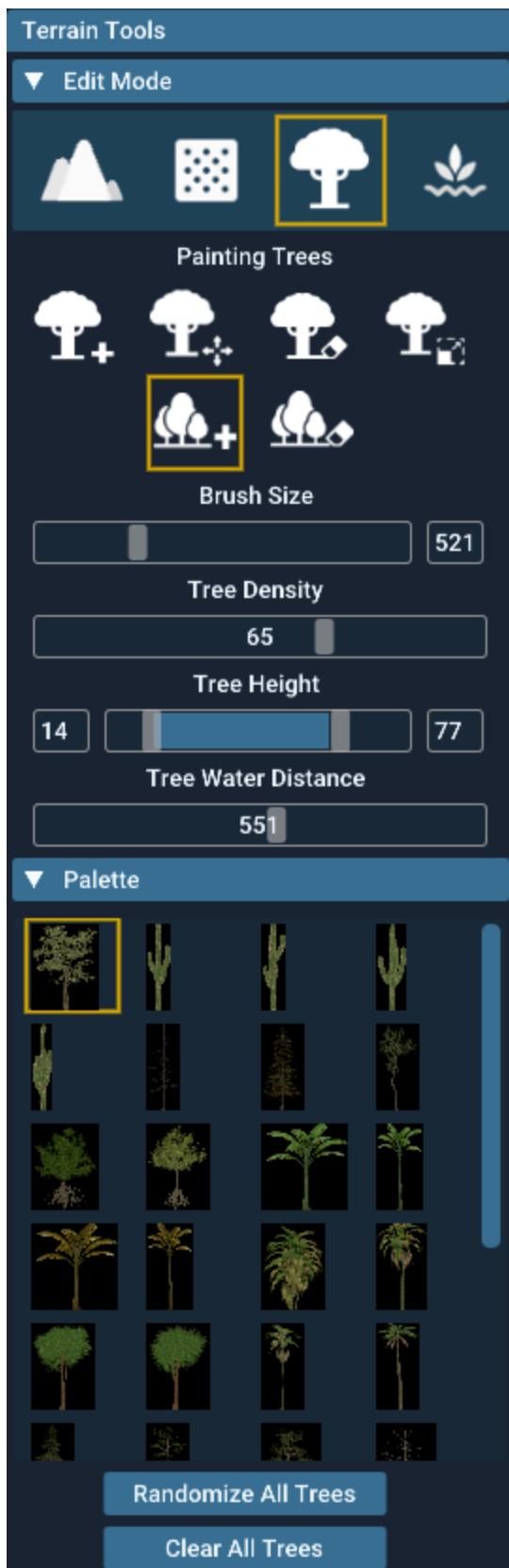


When you have the Texture tool selected, you can use it to paint the selected texture from the Palette grid onto the 3D terrain by using the brush cursor. The size of the brush cursor can be adjusted with the Brush Size slider.

	Choose this to enter "Restore" mode. With this selected, when you paint into the terrain, the original texture of the map will replace any textures you have already painted into the terrain.
Brush Size	Move this slider up and down to set the size of the brush cursor. The cursor can be very large if you set a high value, in these cases you will need to zoom out with the camera to see the scope of the area of the brush and what it will affect.
Match Painted Grass	With this ticked, the paint texture will change any grass vegetation to a style that best fits the painted texture. This ensures the paint and vegetation blend well and don't show unsightly seams between them.
Palette	This shows 32 high resolution textures. You can paint with any of them into your game level. Be careful which ones you choose to paint next to each other to ensure a smooth transition between textures.

Change Texture Folder - Click this to select a different folder within your computer to use for texture images. This allows you to substitute the built-in textures with your own.

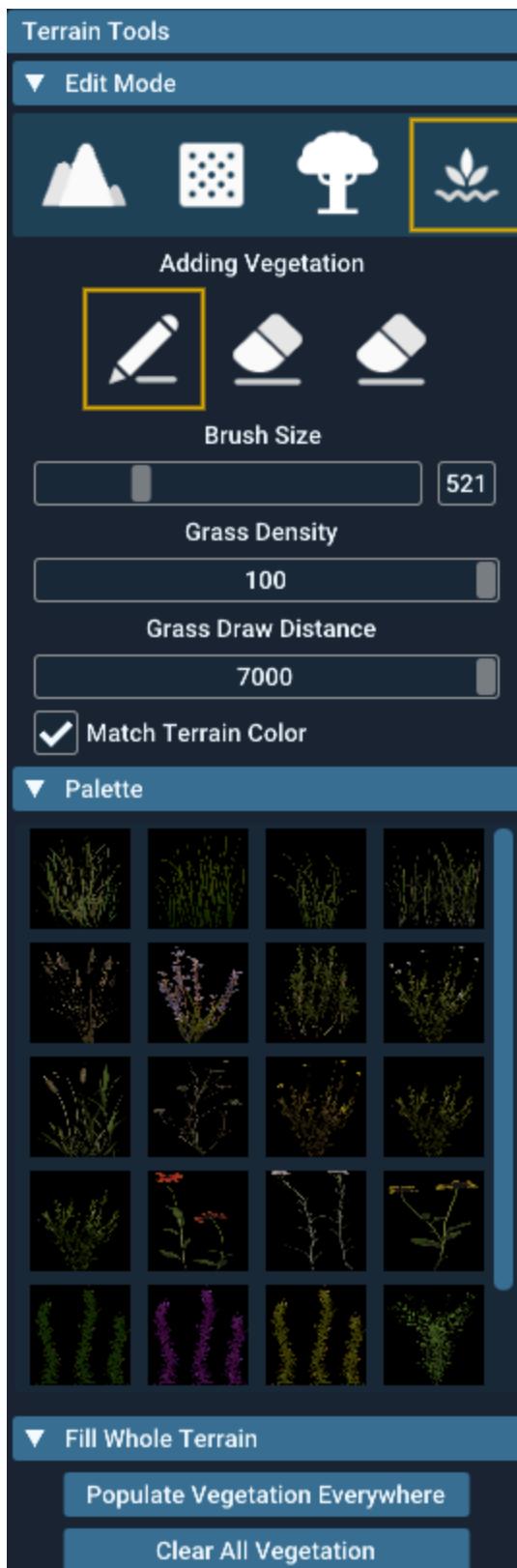
Reset Texture Settings - Clicking this button will reset the texture settings to default.



In the Edit mode toolbar, you'll find the Tree icon as the third option. This icon provides a variety of tools that enable you to populate your level with unique trees that come with their own Level of Detail (LOD) versions. These LOD objects are designed to look highly detailed when viewed up close, but will have lower quality versions when viewed from a distance. This technique allows for the drawing of thousands of trees without affecting the game's frame rate.

	This adds a single tree to the 3D world. The tree style it adds will depend on which ones you have chosen in the tree Palette section. If just one tree is highlighted in the Palette then this tree will be added to the scene. If more than one tree is chosen then it will randomly choose from them.
	You can move a tree with this tool. Just click this icon and then select a tree (left click and hold) in the 3D world and you can move it around. Release left click to leave it in the place you moved it to.
	You can remove individual trees with this tool. Just hover over a tree and when it's highlighted press left click to delete it.
	Spray multiple trees into the scene. Choose which trees you want to paint down in the Palette section and use this to instantly add trees randomly to the scene.
	This clears all trees within the brush cursor area. A quick way to wipe out a whole section of trees.
Brush Size	Use this to set the size of the cursor.

Tree Density	This decides how close trees are when they are sprayed into the scene. A higher value will result in more trees closer together. You can also add individual trees to add even more density to an area.
Tree Height	This range value lets you set the random heights of the trees. Set a low range for smaller, young trees or a high range for tall and mature trees
Tree Water Distance	This determines how close to the water's edge trees should come when being painted into the terrain. A lower number indicates the water will come closer to the tree line.
Palette	A library of LOD based trees that you can choose to populate your levels with.
Randomize All Trees	Click this and the whole level will be randomly populated with the tree(s) selected in the Palette.
Clear All Trees	Clears all the trees from the level.



The final icon in the Edit mode bar is the vegetation icon. This is for adding grass and flowers into your game levels.

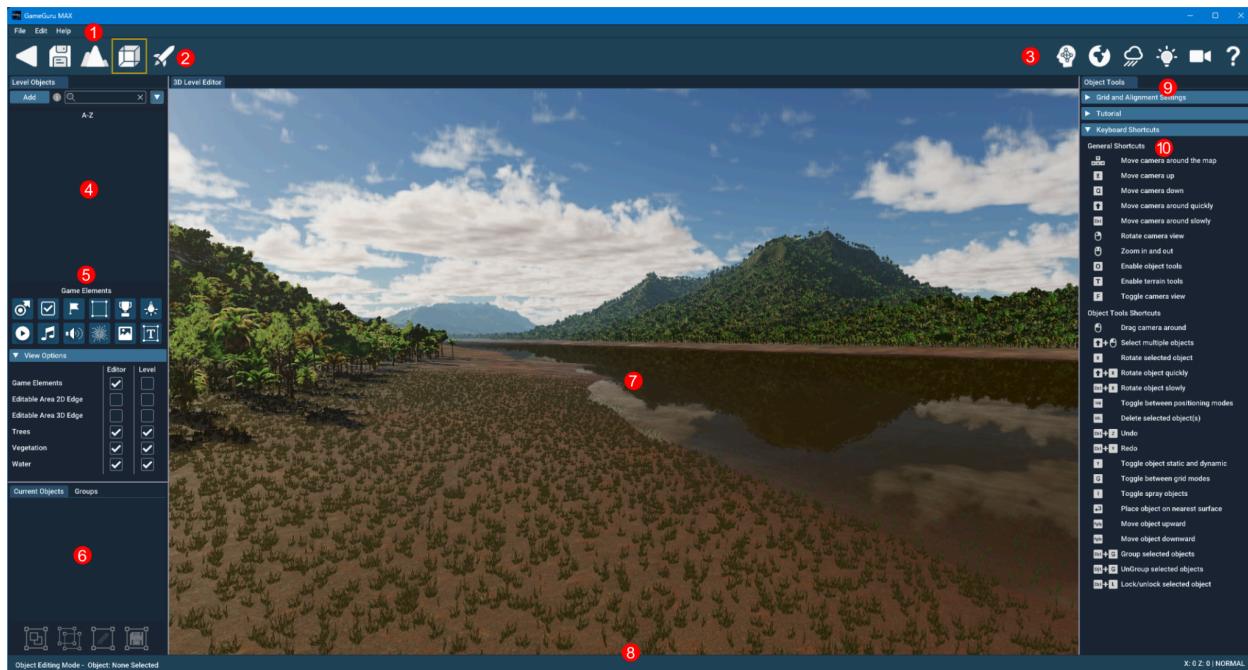
	Paint Mode lets you add grasses and flowers into the scene. As you left click, any terrain under the circular brush will be randomly filled with vegetation. The type of vegetation will be a random mix taken from any items that are highlighted in the Palette.
	Delete Mode removed all vegetation within the brush area.
	Restore Mode will revert the vegetation back to how it was originally populated into the scene.
Brush Size	The size of the brush can be changed with this slider.
Grass Density	Sets how much vegetation will be applied to the terrain. A lower value will just add some sparse vegetation. Ramping this up to 100 will ensure the highest density it applied.
Grass Draw Distance	With this slider you can extend or reduce how far the grass is drawn away from the player's position. With a mix of density and distance you can fine tune how you'd like the grass system to display in your level.
Match Terrain Color	When you select this option, the system will work to blend the grass colours as you paint, ensuring that the grass matches the surrounding terrain for a seamless appearance.

Palette	These are the different grasses and flowers that you can apply to your levels.
Populate Vegetation Everywhere	To quickly fill your level with grasses, choose the ones you want and click this button, within a few seconds the whole level will be filled with the grasses of your choice.
Clear All Vegetation	Wipe all the vegetation from the level with this option.

3D Level Editor

The 3D Level Editor is where you will spend most of your game making time. Here you can design how your game world looks, what characters will feature in your games, how the lighting and weather will be represented and lots more.

The 3D Level Editor comprises many user interface windows and icons that all help you with your game creation. The various sections have been numbered in the screenshot below along with a summary of their purpose.



1. The drop-down command menus
2. The Main Toolbar
3. Right Icon Toolbar
4. Level Objects Panel
5. The Game Element Toolbar and View Options
6. Current Objects and Object Grouping Panel
7. The 3D Level Editor Window View
8. Status Bar
9. Tools Window
10. Keyboard Shortcuts

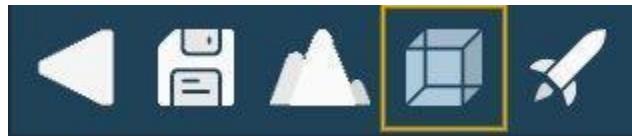
The above image shows the 3D Level Editor in a completely blank state.

Here's the same editor with some game objects added to the 3D scene:



Toolbar

The tool bar at the top left of the Level Editor connects you to vital areas of GameGuru MAX.



Here you can begin terrain editing, game object selection, controls for different game genres and the options for testing your level in first person view or even dive into your game in full virtual reality.

There's also a toolbar on the right for controlling the levels' visuals and camera view (see below for further details).

Here's a description of what each icon in the toolbar does.

Navigate Back to the Storyboard Screen



Click this icon to leave the Level Editor and return to view the Storyboard Screen where you can see and manage the full overview of all the screens and levels that make up your game.

Save Level



Click this icon to save any recent changes you have made to the level you're currently editing. Remember to save your progress frequently!

Terrain Tool



Click this icon to show the various Terrain sculpting, painting, tree and vegetation tools.

Object Tools



Click on this icon to enter into Object Tool mode which is used to move 3D objects around, add in new objects or edit existing objects.

Test Level

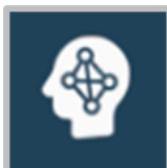


Click on this icon to run the current level in test mode. This provides an opportunity to try out implemented game designs and experience what your players will experience.

The right hand toolbar looks like this:



Visual Logic Connectors



Activating this tool will enable [visual logic connectors](#).

Environmental Effects



Click this to open up the Environmental Effects Window. This allows you to change things like the level's sky, water, post processing effects and more. For full details jump to this section in the user guide.

Weather



This icon will display the Weather Effects window. Here you can add wind, rain, snow, lighting & thunder, and even fog to your game level.

Editor Light



Click this icon to turn on an in-Editor light to help you see while you're setting up particularly dark scenes.

Camera View



This toggles the scene camera between free flight mode and top down view. More details can be read [here](#).

Help



Click on this icon to open this user manual in a browser window.

Camera Movement

It's recommended that you spend some time learning how to move around the 3D scene before you begin editing the level. In the tools window on the right is a list of Keyboard Shortcuts to get familiar with.

Moving around the 3D scene

Using either the keyboard arrow keys or the W, A, S, D keys, you can move the view camera forward, back, left and right. You can press the SHIFT key in combination to these keys to move even faster. For slower movement you can hold down the CONTROL key as you move.

Changing the camera view

Right click and hold the button down anywhere in the 3D scene, then move the mouse in any direction, to look around the scene. The camera can also be zoomed in and out using the middle mouse wheel. Pressing and holding the SHIFT key will increase the speed of this movement.

Top Down View

The Editor starts off in Free Flight Mode, meaning you are moving the camera around as if you were flying around it. Here's a simple scene with some objects placed down. As the viewer you are seeing this in free flight mode:



There will be times when you want to look down from a birds-eye view onto your level; usually when you want to position objects precisely. Press the “F” key to change into Top Down View:



The arrow keys (and WASD) will now move the camera around the map while always looking down on the map. The mouse wheel can be used to zoom in and out in this view to get closer to where you’re editing. Pressing “F” again will toggle you back to Free Flight Mode.

You can switch between free flight and top down mode by pressing the camera icon in the top right toolbar.



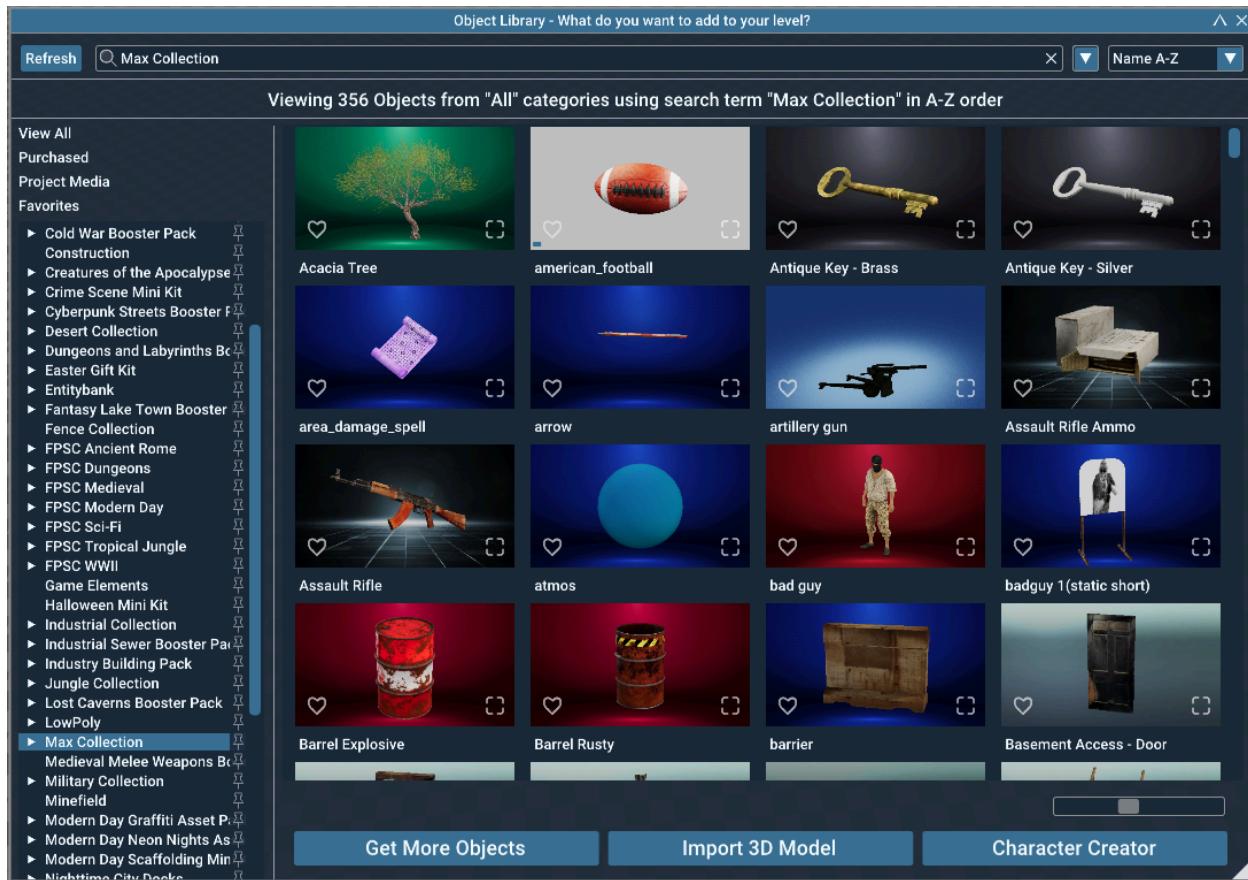
Dragging the view

If you left click and hold the mouse button you can pan the scene around. This works in both Free Flight and Top Down views.

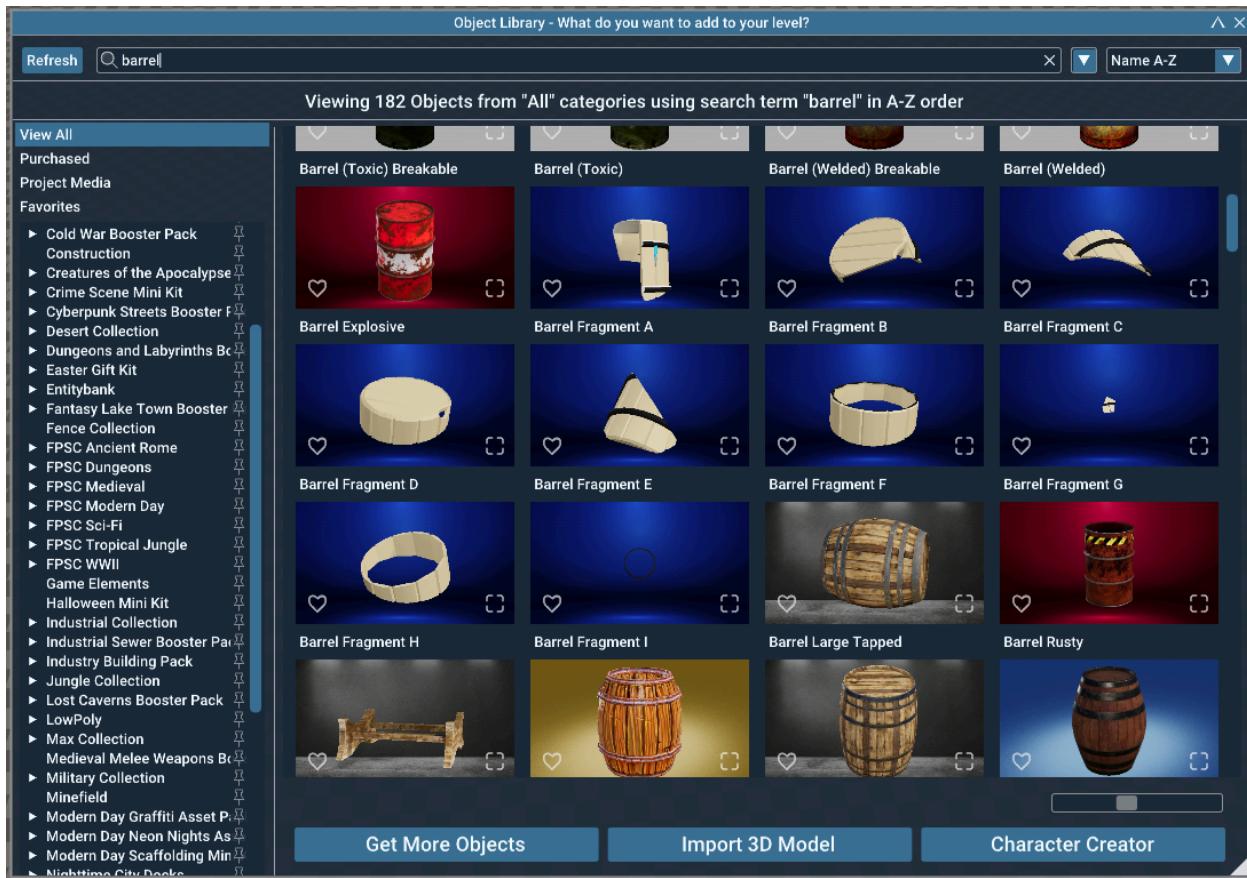
Now that you've got the hang of moving around the 3D level it's time to add in a 3D object to the world. On the left is the Level Objects Panel, at the top of this panel is an "Add" button.



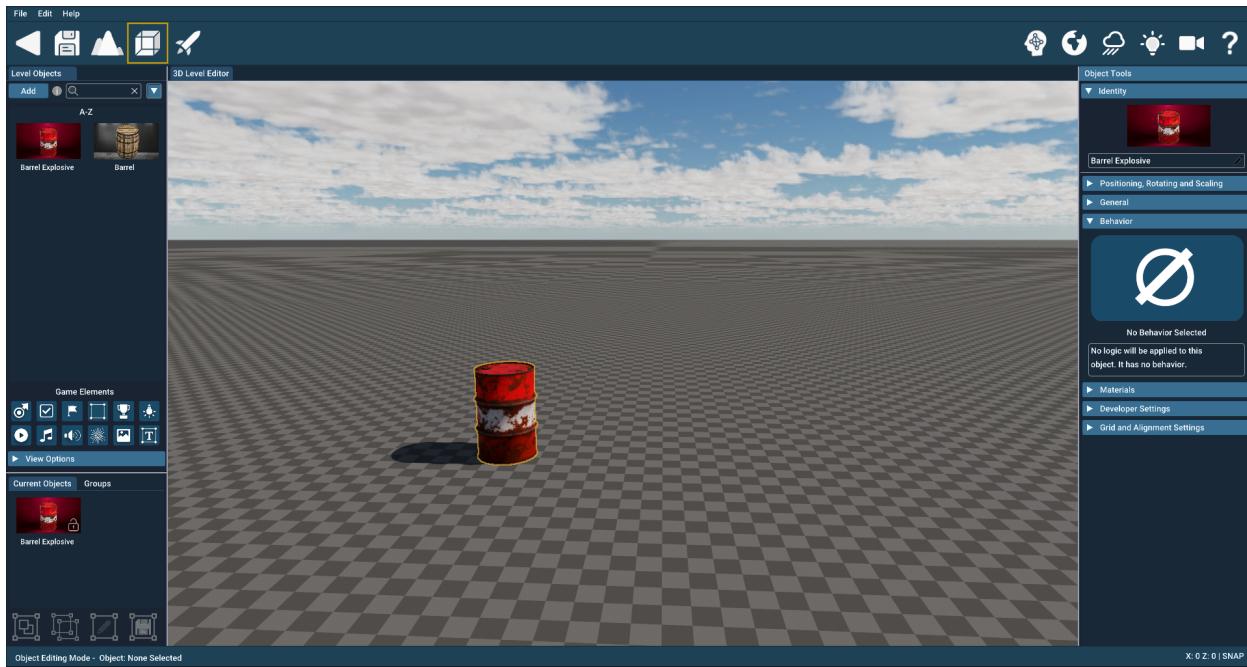
Click this to call up the Object Library Selector:



This window displays images and previews of all the objects you have installed in Game Guru Max. At the top you can enter a search term to display any object within the selected category with that term in its name.



In this example, clicking on the red barrel will cause the object library window to be hidden and you will now be holding the barrel on your mouse pointer like this;



Move your mouse pointer around and you will see the barrel move with the mouse pointer. When you are ready, left click to place the barrel into the 3D scene. The barrel will now be positioned into the 3D world and you will no longer have a barrel fixed to the mouse pointer.

Notice that the icon of the barrel is now showing in the Level Objects list and it's also shown in the Current Objects list.

You can place down multiple copies of the same object by holding down the SHIFT key as you click the object into the level.

Once an object is placed in the scene you can interact with it by left clicking it. This will select the object causing the Object Tools Panel on the right to update, showing all the information about the selected object. If you want to move the object, left click and hold on the object, then move the mouse around and the object will move with your mouse.

Objects are covered in much more details in the [object section](#) later on.

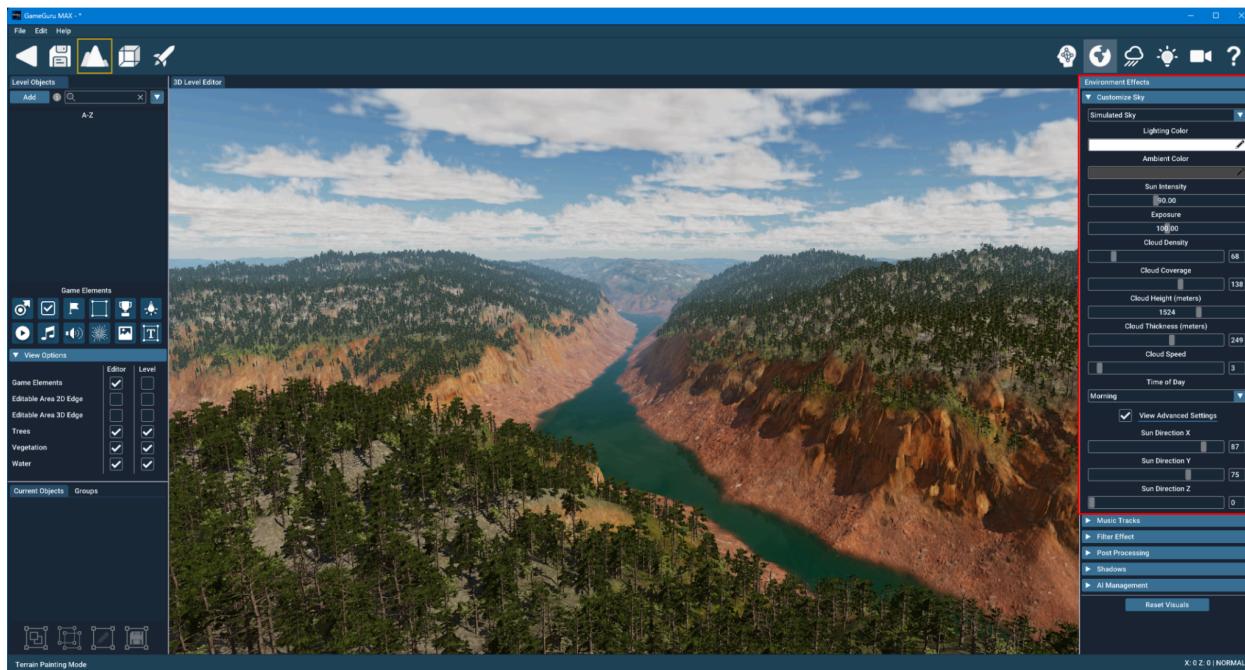
Environmental Effects

The Environmental Effects Window provides a wide range of visual effects that make it easy for you to set the perfect atmosphere for your game levels. These features are accessed by clicking on the Earth icon in the right hand toolbar.

Note: Some of the menus in the Environmental Effects pane are considered Advanced Settings and must be enabled to access. To do this, click on the Edit menu in the level editor screen and select Settings. A settings menu will open. Click on the Advanced tab and then click the Turn On All Advanced Settings button to enable these sections.



After clicking on this icon a window will appear on the right showing all the options.



GameGuru MAX offers three ways to set up skies for your game levels. You can choose from a simulated sky with rolling clouds, a static skybox or just a coloured sky. Each selection offers different options that can be adjusted to fit your needs.

Simulated Sky

As it sounds, the Simulated Sky option attempts to mimic the look and behaviour of the sky. It offers the most customization options and allows you to fine tune the experience for your player.

Lighting



These options act in combination with one another to fully customise the ambient lighting of the level. Therefore it is a good idea to experiment with different combinations to ensure you are achieving the desired result.

Lighting Color	This is the light that is being emitted from the sun into the scene. It defaults to white and can be changed to any color you like.
Ambient Color	The overall background illumination in the entire scene is determined by the colour of the ambient light. To achieve the desired lighting ambience for your level, experiment with various colour combinations of the Lighting Color and the Ambient Color.
Sun Intensity	This property controls the intensity of sunlight in the scene. A high value may result in overexposure and excessive brightness.
Exposure	This property adjusts the overall brightness of the level's lighting. Increasing the value will make the scene appear brighter.
Time of Day	<p>This dropdown controls the time of day for the level which will impact the lighting and the relative position of the sun. Options include:</p> <ul style="list-style-type: none"> ● Dawn ● Morning ● Midday ● Afternoon ● Evening ● Dusk ● Night

Clouds

In simulated skies you can create a sky full of clouds with the density and height of your choice and they can even move overhead. Here's an example of how they look:



Cloud Density	This sets how cloudy the sky will be. A low value will show just a few clouds whereas a high value will make the sky look overcast. Just move the slider up and down to see a live update in the sky.
Cloud Height	This setting allows you to adjust the altitude of the cloud layer, moving it higher or lower in the sky. Simply use the slider to make the changes and observe the real-time updates.
Cloud Thickness	This sets how thick and full the clouds appear.

Cloud Speed	This setting controls the speed at which the clouds move across the sky. A value of zero will result in the clouds appearing stationary, while a high value, such as 80, will make them move rapidly, as if a strong storm is occurring.

With just a few changes to these cloud sliders you can create very different simulated skies:

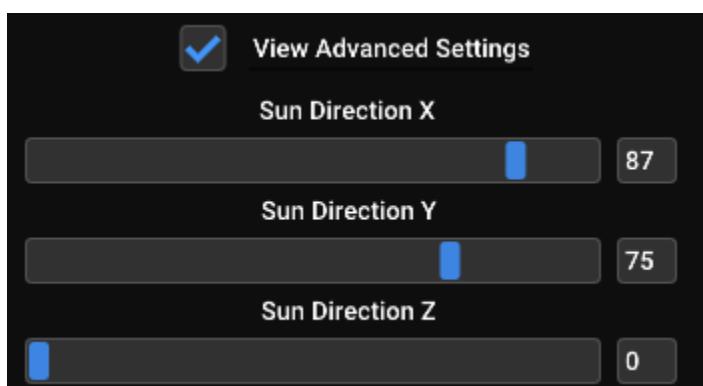


Time of Day

This dropdown allows you to select the time of day for your level, which will affect the position of the sun in the sky.

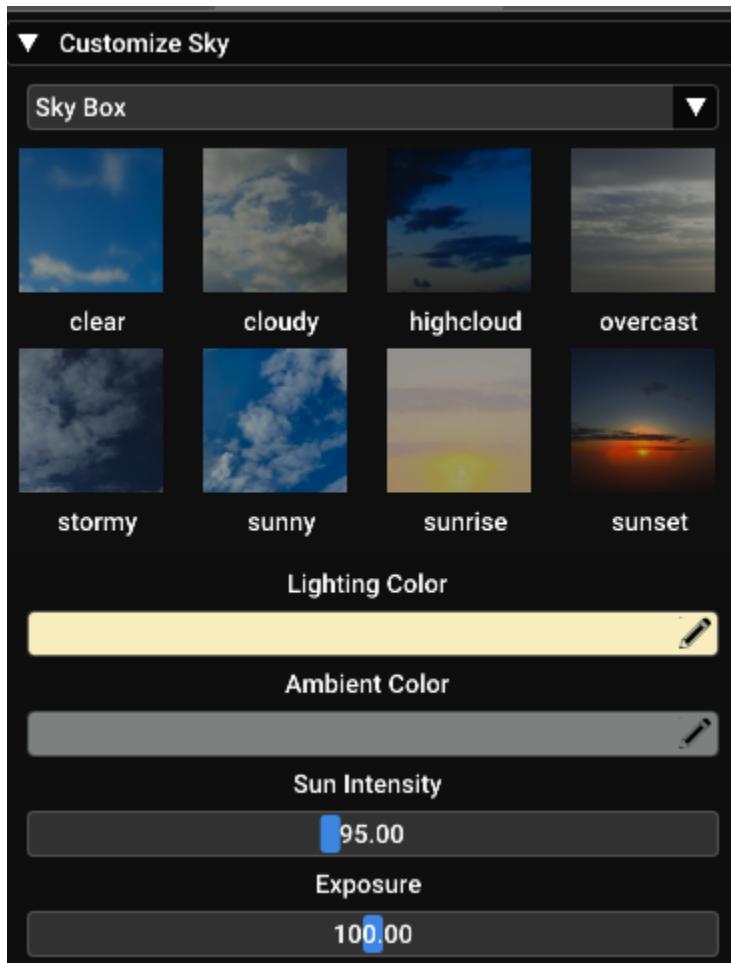
Advanced Settings

The advanced settings in the Sky section provides three sliders that can be used to set the exact sun position:



Sky Box

Sky boxes are preset images set up ahead of time to provide a dramatic look and feel to the sky with little effort. However this convenience comes at the cost of customization. Features such as moving clouds or time of day are not available with a skybox. You may still adjust the lighting colour and intensity values though.

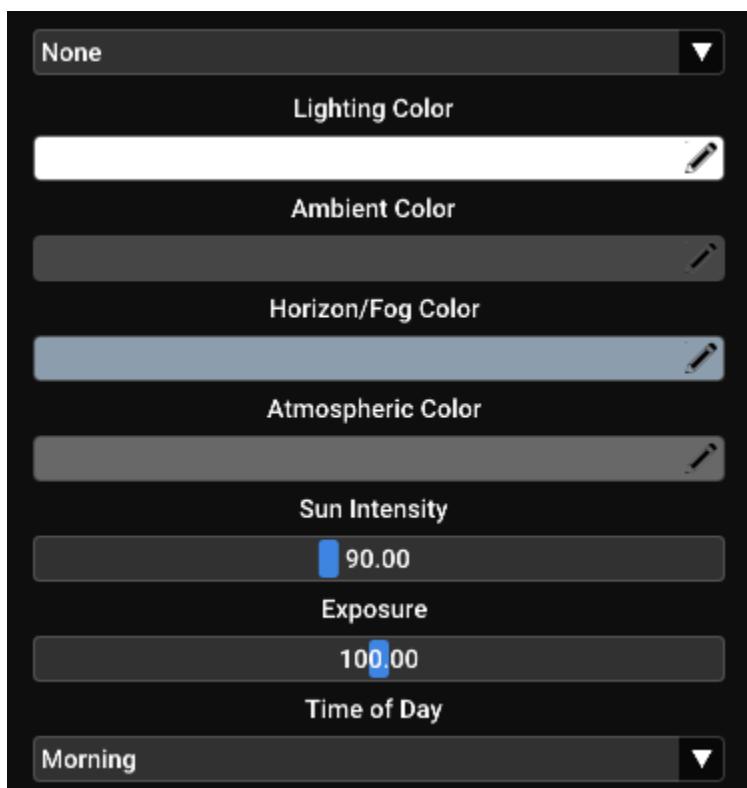


Lighting Color	This colour represents the light coming from the sun in your scene.
Ambient Color	This colour represents the ambient light of the scene. For example, you might have weather effects that act on the sunlight (like smog or dust).
Sun Intensity	This controls how intense or bright the sunlight is in the scene.

Exposure	This property adjusts the overall brightness of the level's lighting. Increasing the value will make the scene appear brighter.
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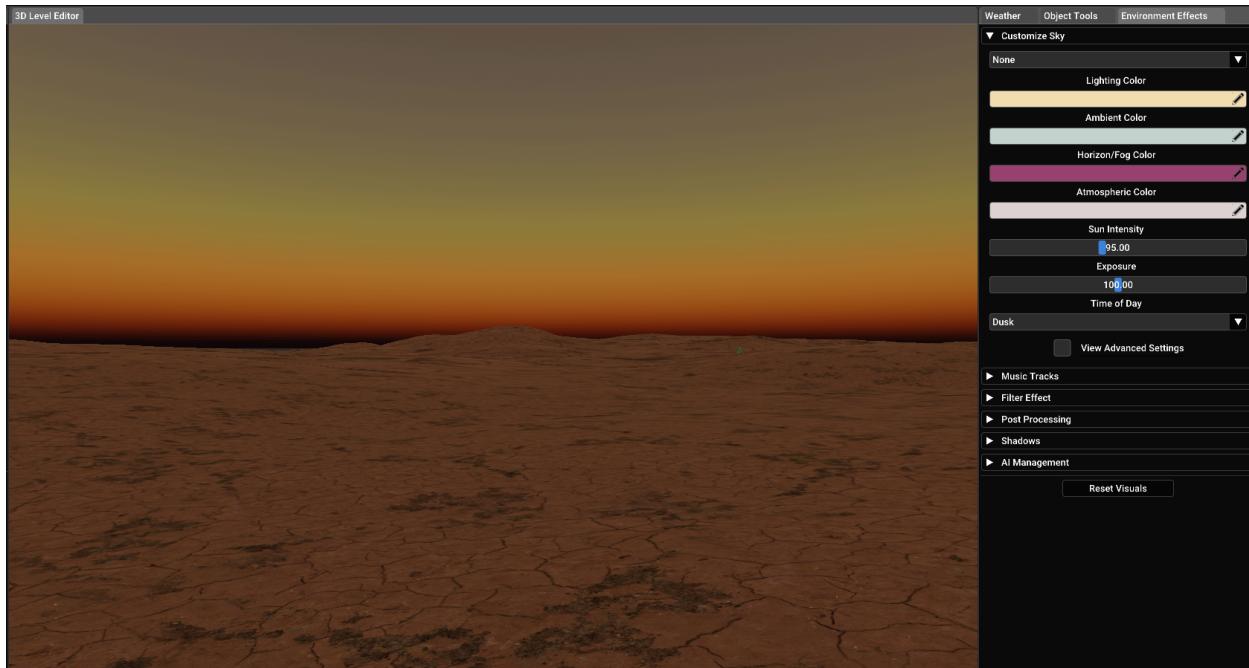
None

Selecting this option will remove the sky from your level. In some scenes the sky just isn't needed (indoor scenes for example) or isn't ideal (such as on an alien planet). This option allows you to customise the following settings:



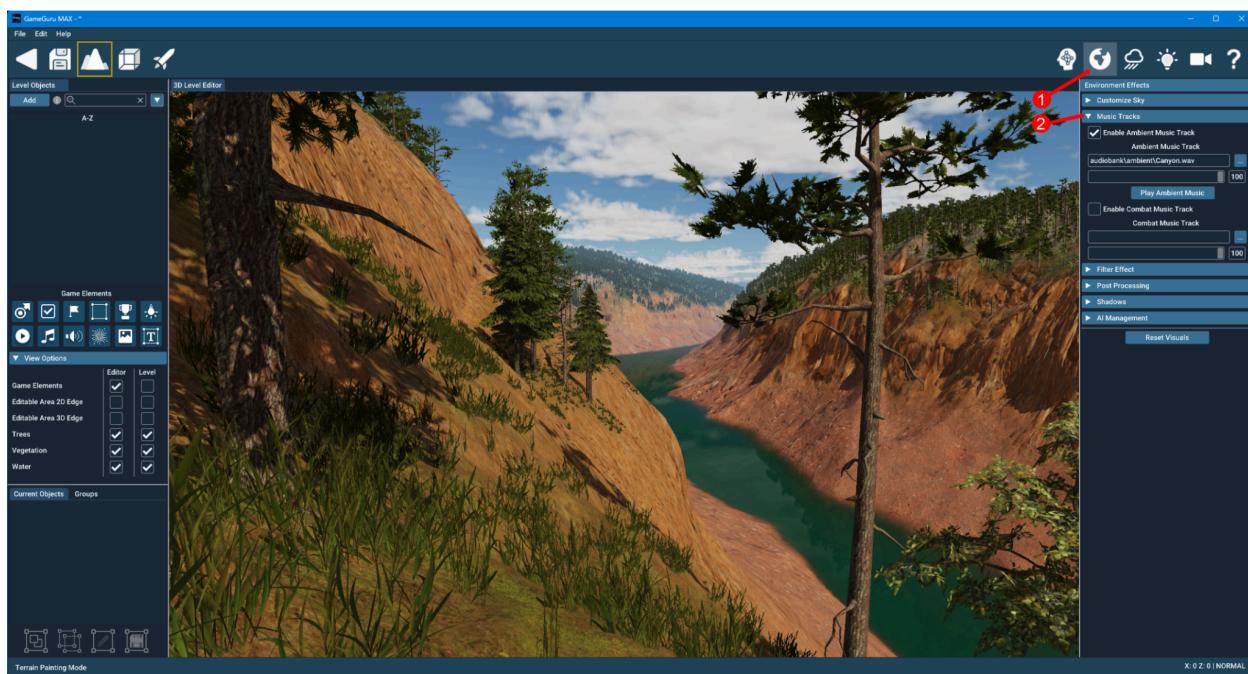
Lighting Color	This colour represents the light coming from the sun in your scene.
Ambient Color	This colour represents the ambient light of the scene. For example, you might have weather effects that act on the sunlight (like smog or dust).

Horizon/Fog Color	This adjusts the colour of the distant horizon between the ground and the sky.
Atmospheric Color	This allows you to adjust the colour of the atmosphere (top of the sky).
Sun Intensity	This controls how intense or bright the sunlight is in the scene.
Exposure	This property adjusts the overall brightness of the level's lighting. Increasing the value will make the scene appear brighter.
Time of Day	<p>This dropdown controls the time of day for the level which will impact the lighting and the relative position of the sun. Options include:</p> <ul style="list-style-type: none"> • Dawn • Morning • Midday • Afternoon • Evening • Dusk • Night

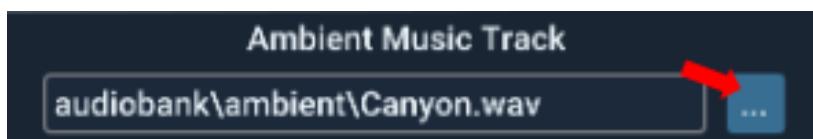


Ambient Music

Ambient music is very important to a game. It helps set the mood or feel of a level, creating tension or lifting the spirit as needed. It's as much a part of the scenery as the visuals that make up your game's levels. Like most things in GameGuru MAX, assigning ambient music to a level is easy. Since ambient music is considered an environment effect, you would first click the "Environment Effects" button on the top-right menu bar and then tick the "Enable Ambient Music Track" box in the panel:



Just because this section is entitled, "Ambient Music Track" does not mean you are restricted to only using music. You can, for example, play the sounds of moving water if your level takes place near a river, or chirping birds if in a forest. Of course, music can be selected as well. To make your choice, go to the Ambient Music Track input field and click the button at the end with the three dots:



This will open the GameGuru MAX Music and Sound Library:



From here, you can either select one of the supplied music or sound files or, using the button at the bottom-left, "Import Music And Sound", import one of your own sound files to use in your level.

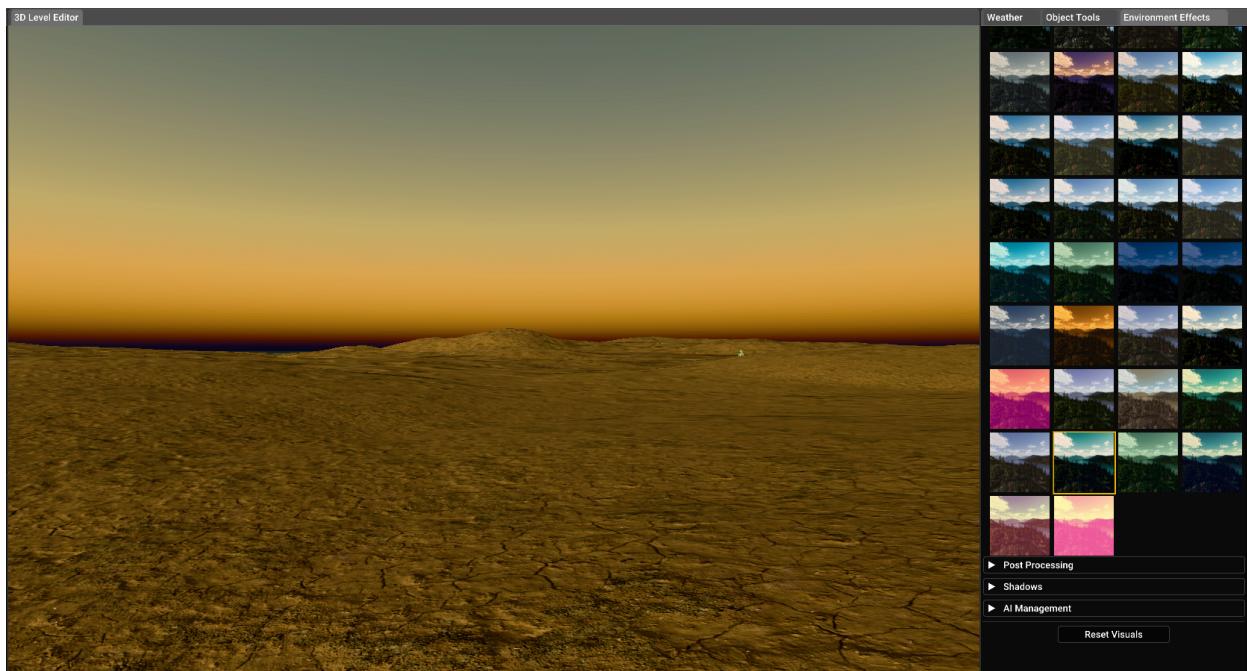
The slider below where you selected your music or sound track allows you to set the volume from 0 to 100 percent, with 100 setting the highest volume. If you want to preview your music, you may click the "Play Music Track" button.

Enable Ambient Music Track Checkbox	This checkbox enables or disables the playing of ambient music or sound for your game level.
Ambient Music Track Input Field	This field is used to assign a music or sound file as ambient music to the level. You may either select a file from the GameGuru Max sound library or import your own file.
Play Music Track Button	The "Play Music Track" button is used to play a sample of the music without having to test the level.
Enable Combat Music Track	With this option ticked you can play a different music track when the player gets into a combat situation. The track will keep playing until the combat is over.

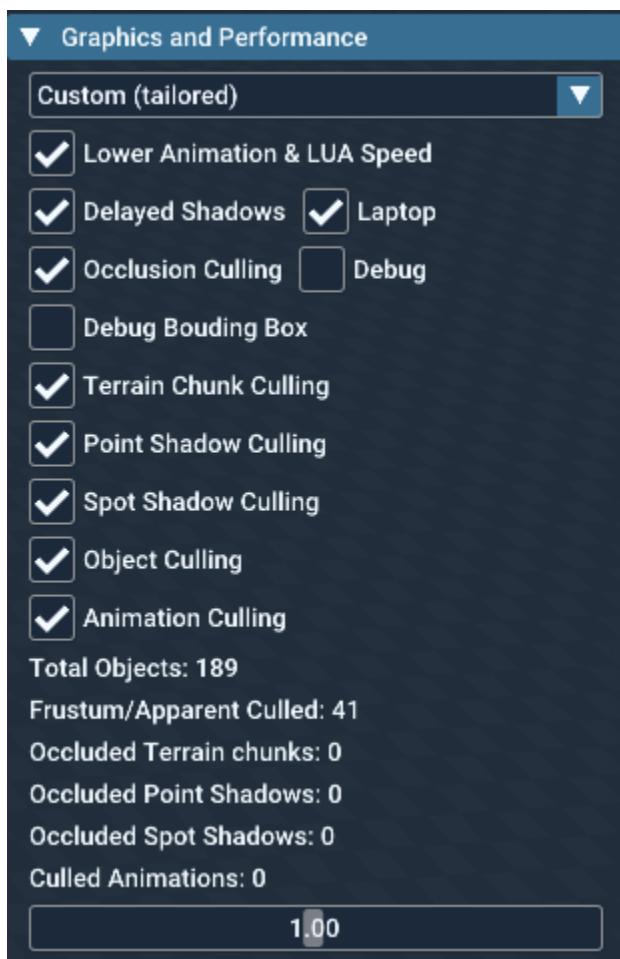
Combat Music Track	Assign the audio file that will be played when combat begins if combat music is enabled..
Combat Music Volume Slider	This controls the volume of the combat track when enabled.

Filter Effect

This section includes a number of preset filters that can be applied to your scene to alter it even further. Here is an example of the same scene screenshot above with the “Teal Orange Contrast Table” filter applied.



Graphics and Performance



Performance Dropdown	Preset performance settings to allow for either Highest (Best Quality), Low (Best Performance, or Custom settings).
Lower Animations & LUA Speed	Lowers the updating of LUA and Animations to 30 FPS to increase speed when using many animations.
Delayed Shadows	Reduces the number of cascading shadow updates to increase FPS.
Laptop (Not available for	Makes even fewer cascading shadow updates.

Highest Preset)	
Occlusion Culling	Culls objects behind other objects for fewer draw calls.
Debug	Ticking this box in conjunction with Occlusion Culling provides information at the bottom of the settings window for the number of objects being hidden.
Debug Bounding Box	Ticking this box in conjunction with Debug will show a bounding box around each object in the scene.
Terrain Chunk Culling	Culls terrain chunks that don't need to be rendered, such as terrain that is too far away or otherwise unseen.
Point Shadow Culling	Culls shadows generated from Point lights that don't need to be rendered because they would not be visible.
Spot Shadow Culling	Culls shadows generated from Spot lights that don't need to be rendered because they would not be visible.
Object Culling	Culls objects that are too far away from the player to be seen.
Animation Culling	Culls animations that are too far away from the player to be seen.
Result Totals	This area displays the results of the settings above. The numbers will dynamically update based on the viewport of the editor window.
Max Object Apparent Size (slider)	Indicates the maximum apparent size of an object before they are culled.

Post Processing

Post Processing is considered an advanced setting. Therefore it must be enabled in the GameGuru Max Advanced Settings screen before it will appear as an option in the environmental panel.



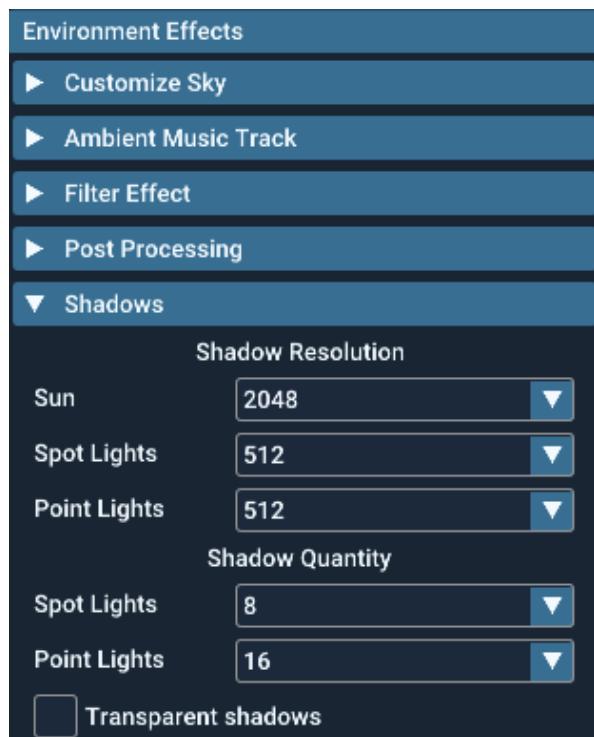
VSync	Enabling Vsync (vertical sync) caps the graphics card frame rate to match the refresh rate of the monitor. This is done to avoid an issue known as “tearing” which is when a new image is rendered before the previous image is finished. However, Vsync can also introduce some input lag, as the graphics card may need to wait until the monitor is ready to display a new image.
Bloom Enabled	Bloom creates a glow around edges when the player faces the sun. This is more noticeable when moving from inside to outside. Lower values give off more of a bloom effect. Here's a scene with no bloom: 
	The same scene with bloom added: 
Bloom Threshold	The Bloom Threshold is a measure of how bright an object or area must be before the bloom effect is applied.
Bloom Strength	This is a measure of how strong the Bloom effect will be applied to the scene.

SSR	SSR (screen space reflection) simulates reflections of objects in real-time rendering. Enabling this option activates a post process SSR, which is faster but less accurate. It is most noticeable around the edges of objects.
Reflections	Reflections are calculated by taking data from lights in the scene and determining how they react with the sky and terrain.
FXAA	This activates a post process screen space anti-aliasing called Fast Approximate Anti-Aliasing (FXAA), smoothing jagged edges in your final scene. This is a very subtle effect and can be hard to notice.
Light Shafts	This effect will cast god rays past any obstruction that moves between the camera and the sun position.
Lens Flare	Adds a lens flare effect which is seen when the camera points towards the sun. 
Auto Exposure	Automatically adjusts the exposure of a scene based on the overall brightness and contrasts. This allows the game to maintain a consistent level of brightness and exposure across different parts of the scene, improving visual quality and making the scene more immersive and realistic.
Auto Exp Rate	This sets Auto Exposure Rate, which determines how fast the brightness is adjusted in the scene.

Auto Exp Level	This setting allows you to tweak the auto exposure level. Lower settings are darker while higher settings are lighter.
Gamma	Allows gamma correction to adjust the final visual of your scene. Gamma correction is the process of adjusting the luminance levels of a scene to compensate for the non-linear way in which the human eye perceives light. This improves the visual quality by causing darker areas to be easier to see, or evening out brighter scenes.
MSAA	Activates Multi-Sample Anti-Aliasing which is a GPU method of smoothing out jagged edges on rendered geometry.
SSAO	Ambient occlusion is a phenomenon in which ambient light is blocked or scattered by objects in a scene, causing areas of shadow or darkening. Screen Space Ambient Occlusion (SSAO) works by approximating the amount of ambient light that is blocked or scattered by objects in a scene, by analysing the depth and normal information of each pixel on the screen. This enhances the visual quality of a scene without requiring significant additional computational resources, which is why it is enabled by default.
AO Power	This controls the power of the SSAO effect, ranging from 0 to 8.

Shadows

The settings in this area affect the way shadows are displayed in your scene. They are broken down by Shadow Resolution and Shadow Quality settings.



Shadow Resolution

Sun

These are the shadows cast by the sun in outdoor scenes, but they may also affect indoor scenes. The quality of the shadows depends on the number selected in the dropdown menu, with higher values indicating better quality shadows. However, generating high-quality shadows requires more processing power from the game engine, which may adversely impact the frame rate. Lower values may improve the frame rate at the expense of lower quality shadows.

Spot Lights	This dropdown menu is for selecting the quality of shadows created by all spotlights used in your level. The higher the number, the bigger the impact on frame rates, but the better the shadow quality.
Point Lights	Just like Spotlights above, this dropdown allows you to determine the maximum quality of the shadows cast by all point lights in your level.
Shadow Quality	
Spot Lights	This number determines the maximum number of spot lights nearest the player that can cast a shadow at a time. The higher the number, the greater the demand on the GPU. The maximum number of spot lights casting shadows is 16.
Point Lights	Use this dropdown menu to limit the number of point lights that can cast shadows nearest the player. The maximum number is 16.
Transparent Shadows	This checkbox makes it so that transparent objects, such as stained glass windows, can cast coloured shadows. This can have a large impact on frame rate depending on the available GPU power.

AI Management

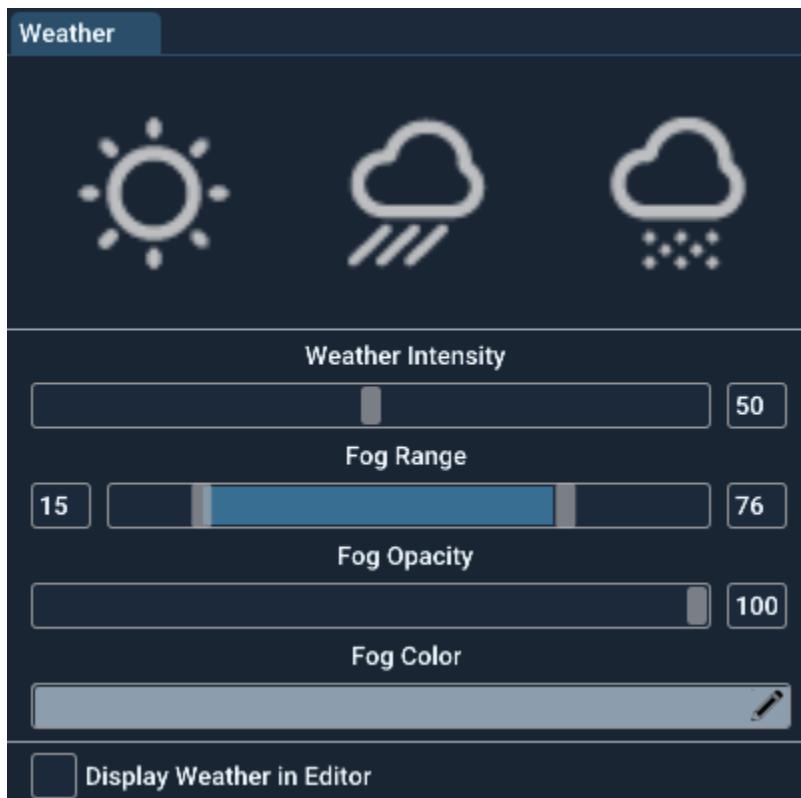
This is a debug feature that allows you to tick the “Show Navigation Debug Visuals” option. When ticked, this feature will display the navigation mesh in the scene while testing the level and can be helpful in identifying problems with character navigation.

Weather

GameGuru MAX gives you some control over the weather in your game. To access it, click the "Weather Settings" icon on the top bar:



Which will reveal this panel:

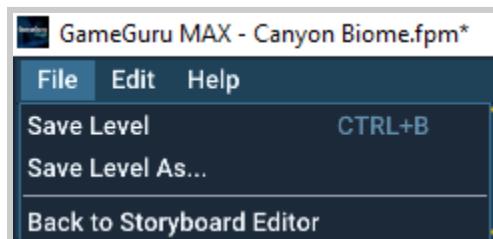


	Click this for a sunny day with no adverse weather conditions such as rain or snow.
	Click this icon to turn on the rain effect in your level.

	Click this icon to turn on the snow effect in your level.
Weather Intensity	Use this slider to adjust the intensity of your chosen weather effect (rain/snow). The higher the number, the greater the intensity of the weather.
Fog Range	The Fog Range slider allows you to set a beginning and ending distance for fog in your level.
Fog Opacity	Use this slider to determine how visibly dense fog is in your level.
Fog Color	Clicking this bar will bring up a color picker allowing you to choose any colour you like for your fog.
Display Weather in Editor	Tick this box to see the weather effect in the game editor screen.

Menus

Many of the features of GameGuru MAX can be accessed from the drop-down menus.



Here's an explanation of each menu option under the File Menu.

Save Level	Save the current level to your hard drive. The shortcut key alternative is Control+Q.
Save Level As...	This allows you to save the level by providing a specific name to it (opens file explorer to the directory where levels are stored). This can be helpful when wanting to preserve a backup copy of a level at a specific save point or while exploring different options in your game set up or mechanics.
Back to Storyboard Editor	Leaves the Level Editor and shows the Game Storyboard Editor. If there are any unsaved changes, a prompt will appear asking if you wish to save first.

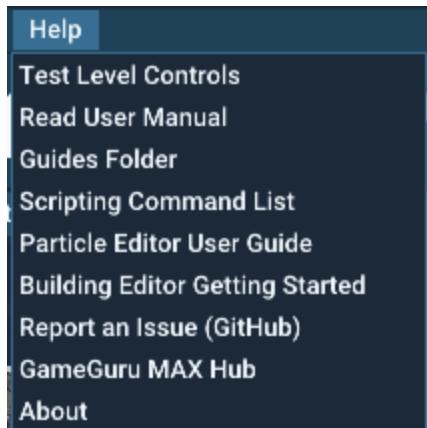
Typical editing features are available from this drop down menu.



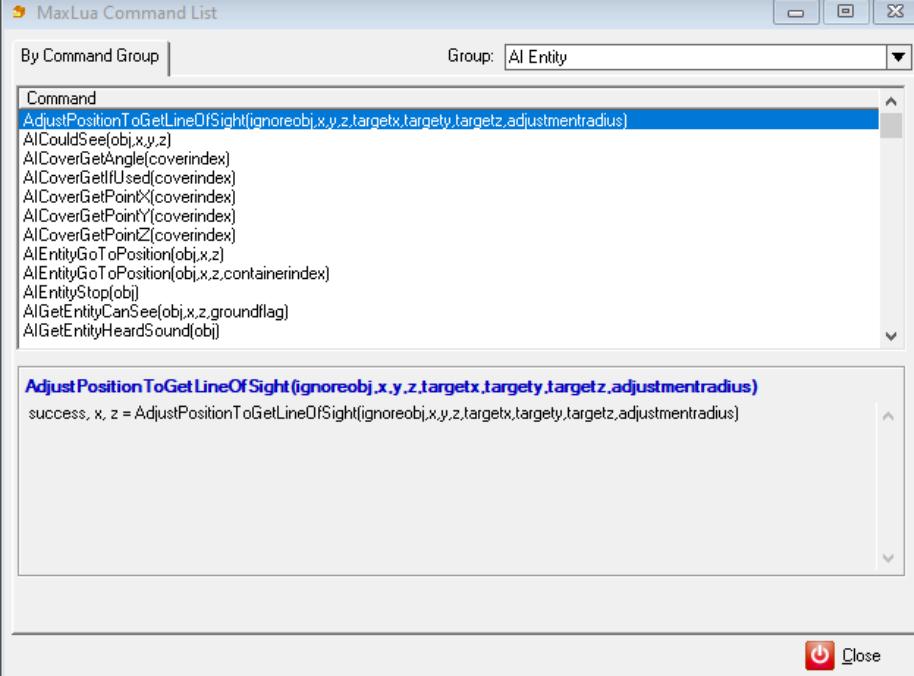
Undo	This will “undo” the last edit you made within the editor. For example, if you moved an object or a group by mistake, you might want to put it back exactly where it was before, so just click this or press Control+Z to undo that action. You can undo multiple times too. Undo will work with objects, terrain sculpting, tree editing and vegetation editing.
Redo	If you have used undo to revert back, you can use this or press Control+Y to carry out that editing action again. Redo will work until you get to the point where there are no more redo actions to take.
Cut	This (or Control+X) will remove the selected object(s) from the 3D world and copy them into the clipboard.
Copy	This (or Control+C) makes a copy of the selected object(s) and stores the copy in the clipboard.
Paste	Use this (or Control+V) to create a new version of the object(s) that are stored in the clipboard into the 3D scene.

Delete	Removes any selected object(s) from the 3D world. You can use Undo to reverse any unwanted Delete operation. The Del key on the keyboard performs the same action.
Character Creator	Click this to open up the Character Creator, which is used to make many types of game characters that can be your allies, enemies or neutral NPCs in your game. There's a choice of male, female and zombie character skins.
Particle Editor	This option opens the particle editor screen which becomes available after purchasing the DLC. This screen allows you to create your own custom particle effects. For details view the Particle Editor section.
Building Editor	Opens the building editor screen which allows you to create custom 3D rooms or buildings and save them as interactive objects which can be used in your game. For details view the Building Editor section.
Marketplace	This will open up the Marketplace screen from which you can find new game assets for your projects.
Settings	This option opens the settings screens where you can fine tune the GameGuru MAX editor to your preference. For details view the Settings section .

There's plenty of help and advice on how to use GameGuru MAX to make games available from this menu.



Test Level Controls	Displays the keyboard controls available when testing a level, such as how to move around in the level.
Read User Manual	Opens this online user guide which you can read and quickly search for help on specific topics.
Guides Folder	Opens a folder within the GameGuru Max installation folders containing a variety of written guides on specific topics.
Scripting Command List	Opens a commands list database containing all of the LUA commands available for Max. The commands are grouped by topic to make it easier to browse.

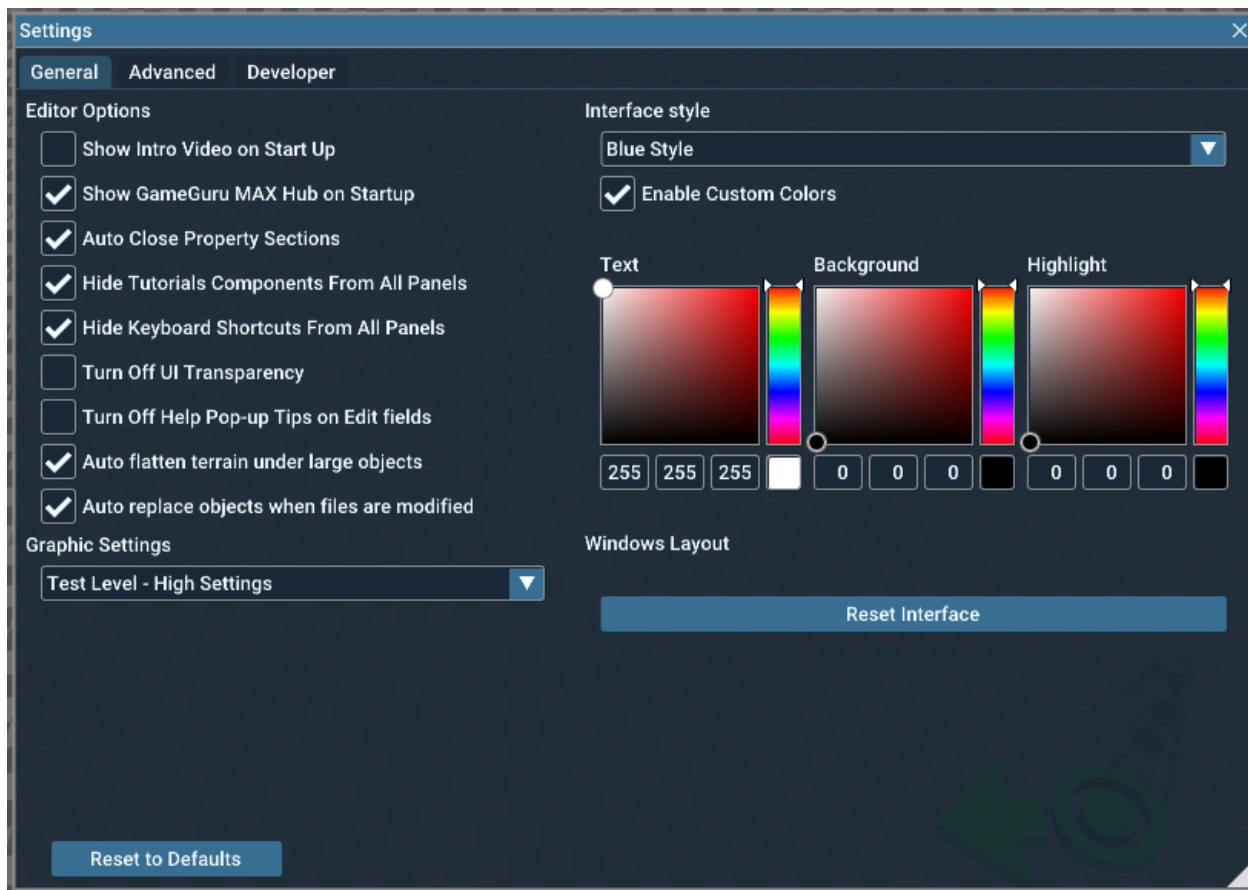
	
Particle Editor User Guide	Opens a written user guide detailing the use of the Particle Editor system.
Building Editor Getting Started	Opens a browser window to a YouTube video explaining how to use the Building Editor.
Report an Issue (GitHub)	<p>If you discover a problem in GameGuru MAX, you can report the issue directly to the development team using this feature. A browser window will open to the official GameGuru MAX GitHub issues web page. The team will investigate the issue and report their findings directly back to you.</p> <p>You will need a registered GitHub account to submit issues. Please check the current list of issues <i>before</i> submitting your own to avoid the same issue being reported multiple times.</p>
GameGuru Max Hub	Returns you to the GameGuru Max Hub screen.
About	Information about the developers and artists who have all worked together to create GameGuru MAX.

Settings

You can access GameGuru MAX's settings from the Edit Menu.



After choosing this menu option the Settings window will appear.



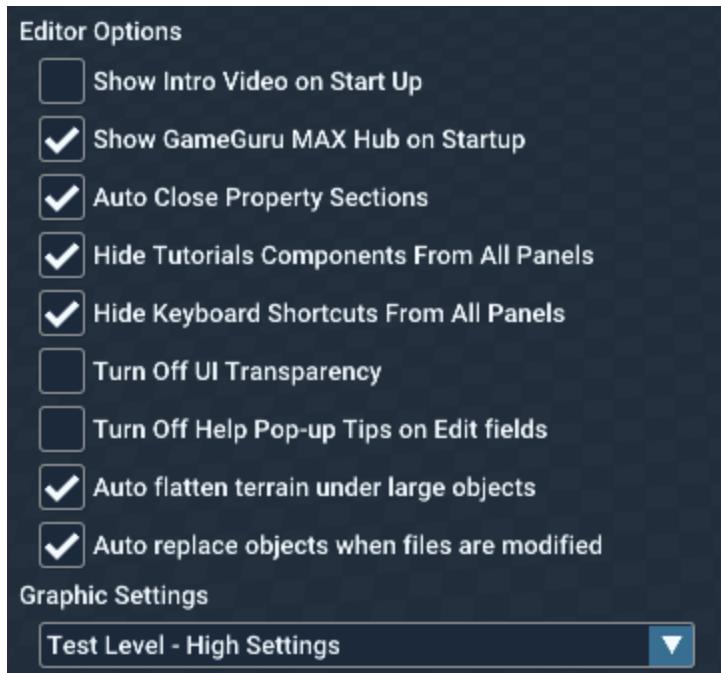
The settings window is split into three distinct tabbed areas, General, Advanced and Developer.



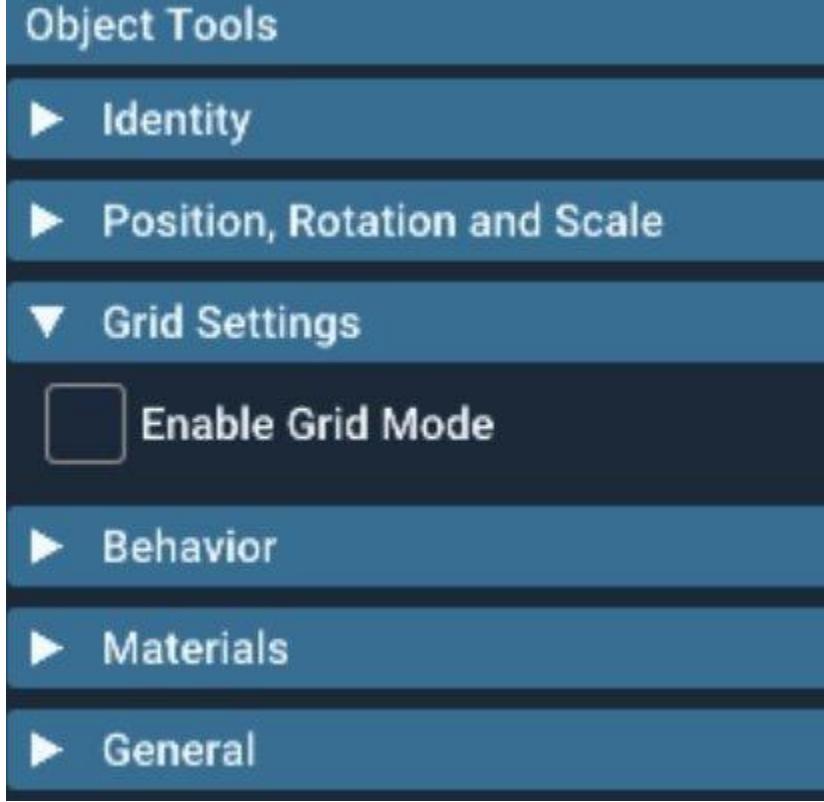
- General Settings are mainly for User Interface (UI) style options.
- The Advanced Settings allow you to turn on extra features. They are hidden to begin with to avoid overwhelming beginner users with advanced features.
- Developer Settings are even more complex and are intended for more technically advanced users..

General Settings Tab

This tabbed section provides access to general settings like the UI color scheme and other options.

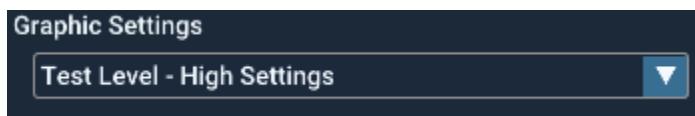


Show Intro Video on Startup	The introduction video will play every time you load up GameGuru MAX. Here you can turn it off by un-checking this option.
Show GameGuru Max Hub on Startup	With this ticked, every time GameGuru Max is loaded it will begin at the Hub screen, which includes access to demo games, tutorials, all of your previously saved projects (if any), and more. For details view the GameGuru Max Hub section.

Auto Close Property Sections	<p>On the right hand side of the user interface, many of the options are managed in their own sections. They have a heading and they can be opened and closed as you like. Here you can see the Grid Settings section is currently open and the others are closed:</p> 
Hide Tutorials Components from All Panels	<p>When you have watched all the tutorial videos you can hide them from showing in the UI by ticking this option.</p>
Hide Keyboard Shortcuts from All Panels	<p>The list of keyboard shortcuts are shown in the right hand panel. Once you are aware of their use you might want to turn them off by unticking this setting.</p>

Turn off UI transparency	The settings and other windows have a transparency effect that lets you see through to what's behind them. Tick this if you'd prefer to have a solid background and no transparency effect.
Turn off help pop-up tips on Edit Fields	The pop up help texts are useful to guide you as you learn how to get the most out of GameGuru MAX. When you are comfortable and no longer need these tips, tick this box and pop up tips will no longer show up when you hover your mouse over editable fields..
Auto Flatten Terrain under Large Objects	Objects such as buildings really need the terrain to be flat and smooth. To save you time, this feature will flatten the area where the building or other large object will be placed into the 3D world. If you move the object the terrain will be restored to its original state. You can turn this off if you want the terrain to cut into your building instead.
Auto replace objects when files are modified	With this selected, an object placed in a scene will be replaced automatically in the event the files supporting the objects are modified in some way.

Graphic Settings



Low/Medium/High Settings	Set the rendering performance with this option. A low setting will cut down on the graphical rendering. The high setting will ensure the highest
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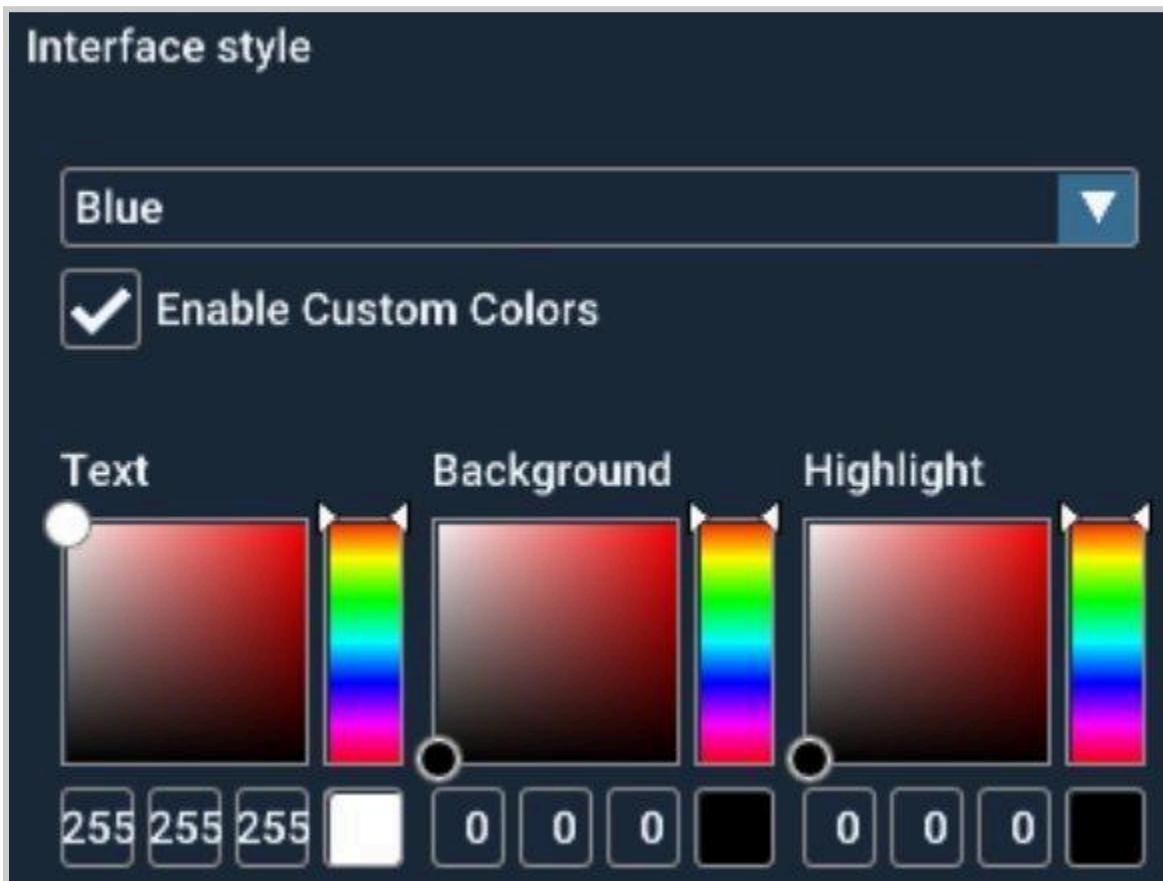
quality is achieved with textures, shadows and more.

Reset to Defaults

Reset to Defaults

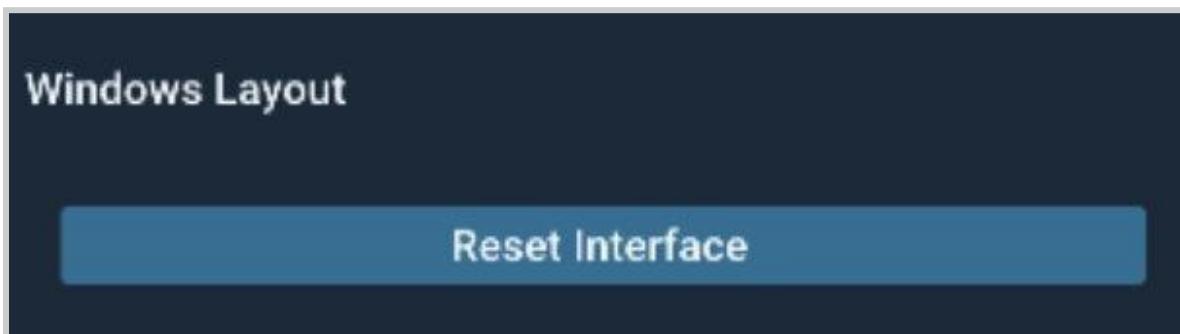
If you have changed a lot of the settings and would prefer to revert back to the default settings then you can press this button and all the settings will be back to how they were when you first installed GameGuru MAX.

Interface style



Interface Style drop down	This drop down list has a selection of different predefined UI styles to choose from.
Enable Custom Colours	Tick this box to design your own color scheme using color palettes for the text, background and highlight colours.
Text / Background / Highlight	Simply click into the color box to preview how a colour will look. The side rainbow bar sets the colour and the box area lets you select a range of that colour. You can also enter the RGB (Red Green Blue) values of a colour in the number boxes. RGB values range from 0 to 255.

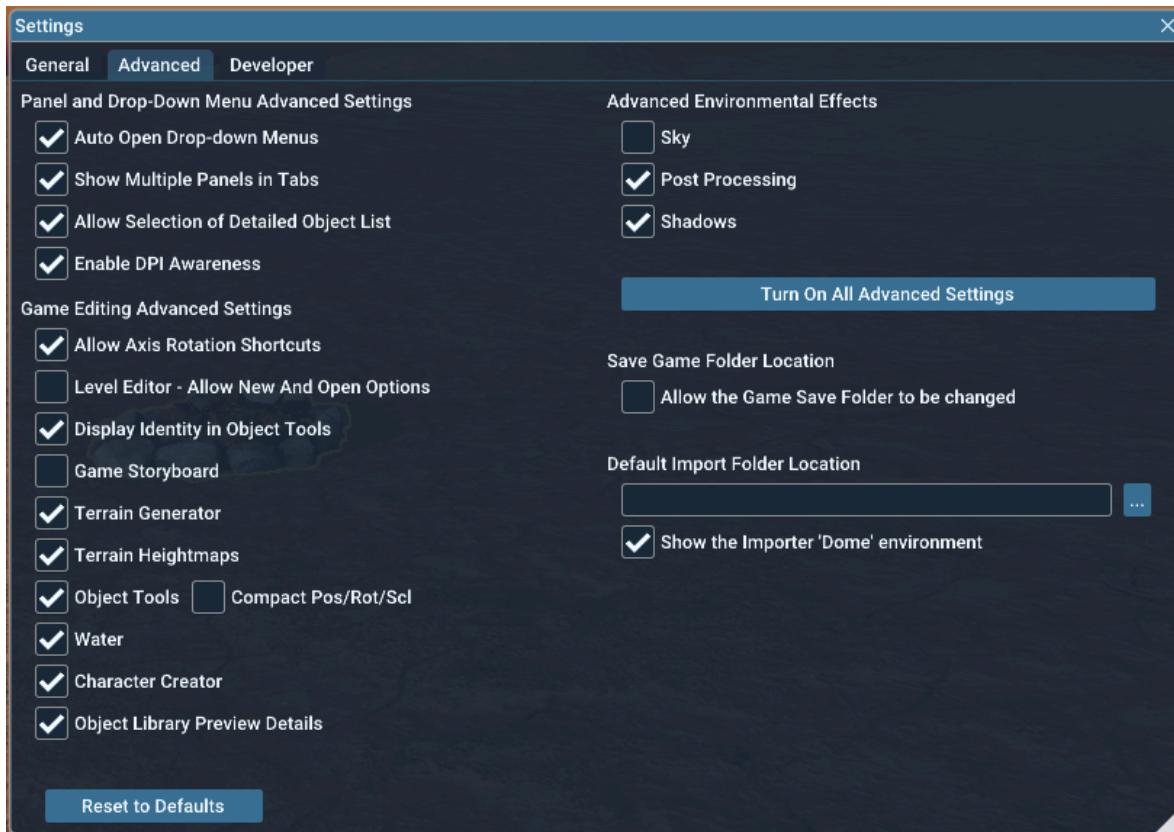
Windows Layout



Reset Interface	Resets the UI to the default settings.
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Advanced Setting Tab

This will add a lot of additional features to the software. Be sure you're confident you know what these do before switching them on and off.



Panel and Drop-Down Menu Advanced Settings

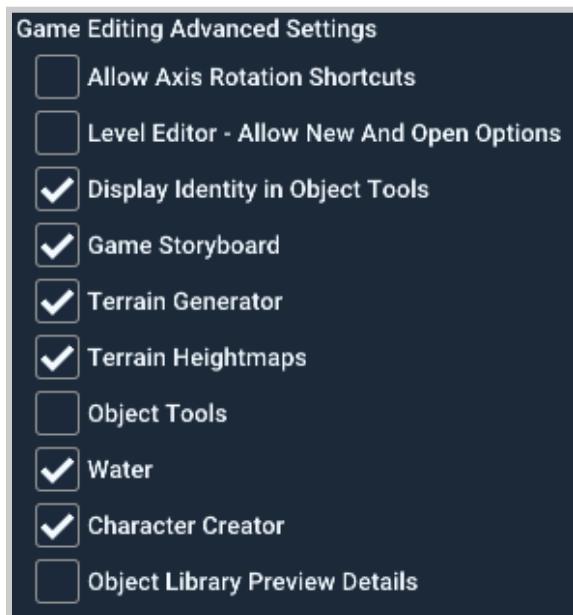
- Panel and Drop-Down Menu Advanced Settings**
- Auto Open Drop-down Menus
 - Show Multiple Panels in Tabs
 - Allow Selection of Detailed Object List
 - Enable DPI Awareness

**Auto Open
Drop-Down Menus**

The menus will appear as soon as you hover over the titles. If you don't like this behaviour, simply uncheck the option and click the title to display the menu.

Show Multiple Panels in Tabs	The right panel displays the most recent and relevant information for the object or subject you wish to edit. If you enable this option, you can display multiple tabs, allowing you to view the environment settings, weather, and object properties all at once.
Allow Selection of Detailed Object List	This option creates a tree structure list of all the objects in the Level Objects window to make it easier to locate objects.
Enable DPI Awareness	If you find that icons and buttons appear too large on lower resolutions, you can check this box and restart GameGuru MAX. This will cause the application to scale the user interface based on your PC's screen's DPI (dots per inch) resolution.

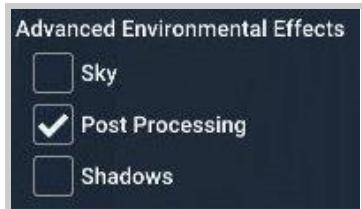
Game Editing Advanced Settings



Allow Axis Rotation Shortcuts	There are six keys that can be used to rotate the selected object or group. Tick this and you can use keys 1,2,3,4,5 and 6 to rotate the object. 1,2 - rotates the object around the X axis 3,4 - around the Y axis 5,6 - around the Z axis
Level Editor - Allow New and Open Options	By default, the options for creating a new level and opening existing levels are hidden. If you prefer to make new levels and open existing ones directly from the Level Editor instead of the Storyboard Editor, simply enable this option to gain access to them.
Display Identity in Object Tools	Object identities (names) will be shown in the object tools window if this is ticked.
Game Storyboard	Advanced features will be displayed in the Game Storyboard when this option is ticked.
Terrain Generator	Choose this option to gain access to values that control how the fractal terrain system works.
Terrain Height maps	Access the Height map importing features in the Terrain Generator with this setting.
Object Tools	Additional Object Tools are displayed when this is ticked.
Compact Pos/Rot/Sci	Tick this box to change the Position/Rotating/Scaling section of the object settings to a more compact view.
Water	Tick to display additional water related settings.
Character Creator	With this option ticked, more animation features are made available.

Object Library Preview Details	Extra Object details are shown in the Object Preview Windows when you are importing an object.
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Advanced Environmental Effects



Clicking this icon will bring up all the options you can change about the level's environmental effects. Some options are classed as Advanced and these are hidden by default.

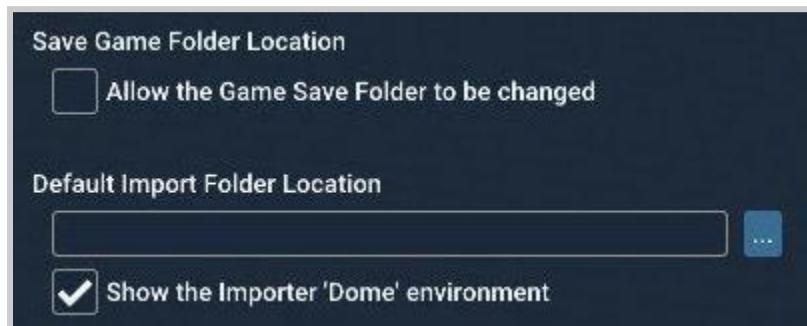
Sky	If you enable this option, you can use three sliders to adjust the sun's X, Y, and Z position. These sliders will be located at the end of the "Customise Sky" feature list.
Post Processing	All the post processing effects will be made available when you tick this. Post processing are the visual effects that can be made to the scene after it's rendered to the screen.
Shadows	Access advanced shadow options when you tick this box.

Turn ON/OFF All Advanced Settings

Turn Off All Advanced Settings

This is a quick button to turn on or off all the Advanced Settings.

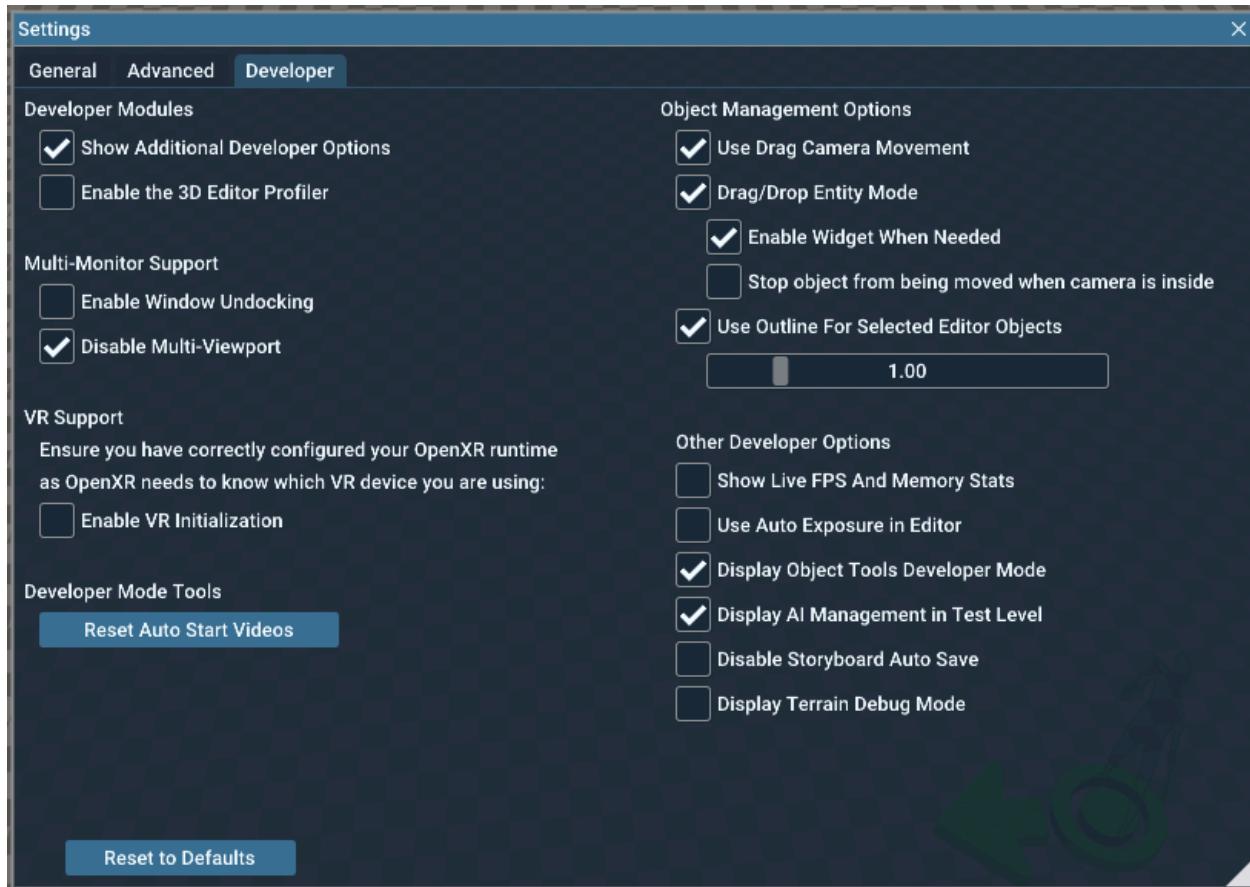
Save Game Folder & Default Import Folder Locations



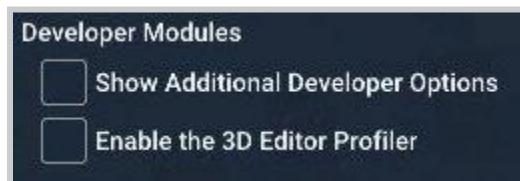
Custom Write Folder	<p>By default, GameGuru MAX saves your games to the following location:</p> <p>C:\Users\username\Documents\GameGuruApps\GameGuruMAX</p> <p>Note that "username" will vary based on your PC.</p> <p>If you wish to save your files to a different location, simply check this box and select your preferred location. Make sure the folder you choose has both read and write permissions. Once you have set the new folder, you must close GameGuru MAX and restart it for the change to take effect.</p>
Default Import Path	<p>By default, GameGuru MAX will open a file browser at this location:</p> <p>C:\Program Files\GameGuruMAX\Max</p> <p>To import from a different location, click the "..." button and select the desired folder. From that point on, the model importer will start at the new location.</p>

Developer Settings Tab

Be aware these settings are for developers only, so be very sure you want to change any of these settings before using this section.



Developer Modules



Show Additional Developer Options	<p>If you tick this then some extra Developer options will appear at the base of this window. These are features that are not fully complete and are being held here until they are ready to be placed into the main software in a more complete state. Currently these are the two options you will see if you tick this:</p> <ul style="list-style-type: none"> ● <i>The Structure Editor</i> - this is a tool for creating buildings. We are planning to overhaul this later in the development cycle. ● <i>Reset Auto Start Videos</i> - This doesn't do anything right now.
Enable the 3D Editor Profiler	<p>If enabled, a profiler will appear in the left-side window and provide useful information such as the current frame rate and number of draw calls used to render the scene. This is primarily intended for the programming team at TheGameCreators to ensure efficient engine performance, but it can also be used by game developers to determine if they have overloaded the engine with too many high-polygon meshes.</p>

```
FPS: 60.0
DrawCalls: 166
DrawCallsShadows: 54
DrawCallsTransparent: 0
Scene Meshes: 259
Scene Materials: 260
Scene Transforms: 416
Scene Hierarchy: 118

Profiler:
-----
CPU Frame: 2.75 ms
Fixed Update: 0.06 ms
Update: 2.17 ms
Max: 2.05 ms
Frustum Culling: 0.01 ms
Input: 0.23 ms
Render: 0.21 ms
Compose: 0.06 ms

GPU Frame: 13.93 ms
Bloom: 0.18 ms
Scene MIP Chain: 0.08 ms
Skinning: 0.01 ms
Z-Prepass: 0.77 ms
Ocean - Simulate: 0.42 ms
Shadow Rendering: 0.13 ms
Environment Probe Refresh: 0.00 ms
Planar Reflections: 0.19 ms
Entity Culling: 0.08 ms
Planar Reflections Z-Prepass: 0.07 ms
Opaque Scene: 1.98 ms
Atmospheric Scattering Textures: 0.06 ms
Volumetric Lights: 0.20 ms
Transparent Scene: 0.16 ms
Depth Pyramid: 0.41 ms
Particles - Render: 0.00 ms
Particles - Render (Distortion): 0.07 ms
Outline: 0.07 ms
```

Multi-Monitor Support

- Enable Window Undocking**
- Disable Multi-Viewport**

Enable Window Undocking	The default configuration of the user interface prohibits rearranging its various windows on the display. You can customise the UI to your preference by unchecking this option. If you need to undo any changes, there's a "Reset Interface" button available in the General Settings tab. The UI is fixed by default and stops you from dragging the various windows around your display(s). Tick this and you can set the UI up the way you prefer. If you get into a mess then you can use the Reset Interface button in the General Settings tab.
Disable Multi-Viewport	If ticked, will prevent undocked windows within the editor to be moved to a secondary monitor or viewport.

VR Support

VR Support

Ensure you have correctly configured your OpenXR runtime as OpenXR needs to know which VR device you are using:

Enable VR Initialization

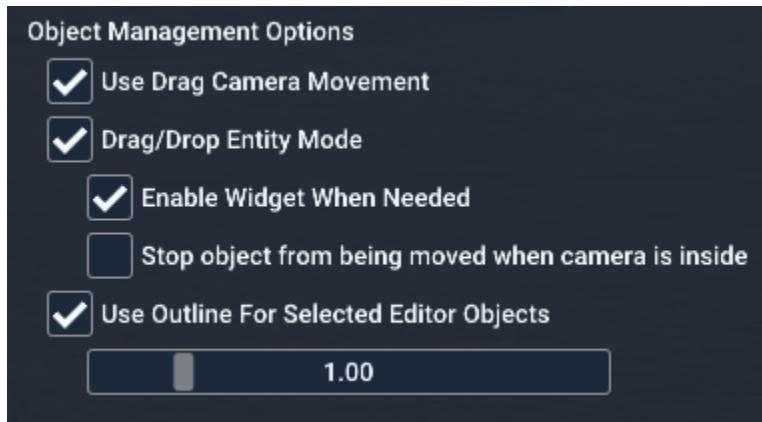
Enable VR Initialization	If ticked, will enable VR Initialization for use with VR game development.
---------------------------------	--

Developer Mode Tools

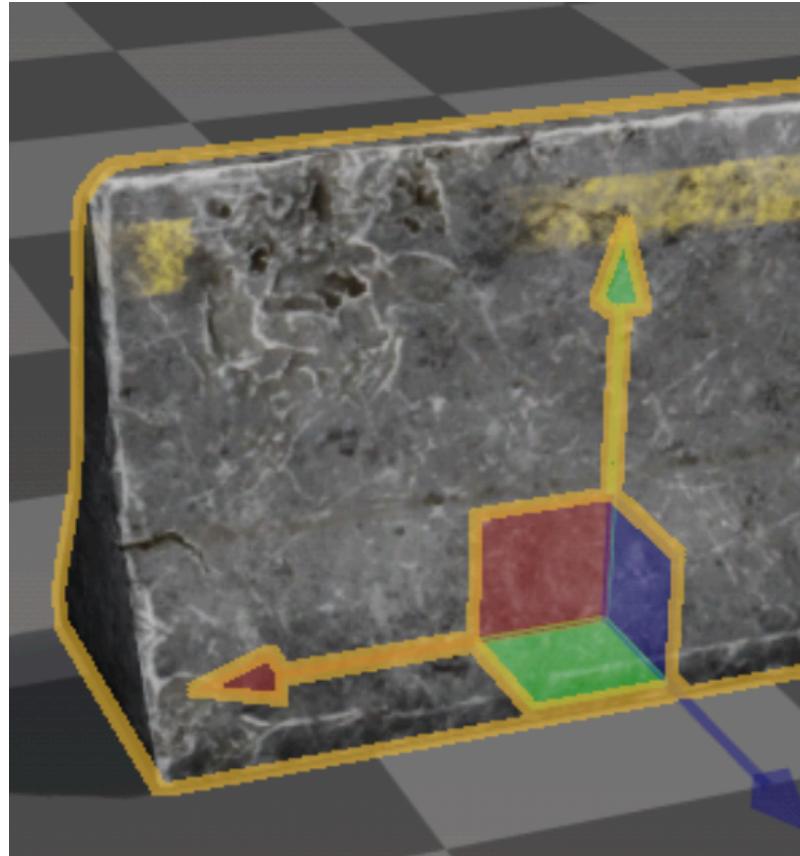
**Reset Auto Start
Videos**

All built-in video tutorials are flagged to play automatically just once for new users, then can be accessed to play manually afterwards. This button will reset introduction videos throughout the software so they will play once automatically when using the software.

Object Management Options



Use Drag Camera Movement	By default, this option is checked, allowing you to navigate the 3D scene by clicking and dragging with your mouse. If you uncheck this option, left clicking will instead be used for selecting multiple objects by drawing a selection box (also known as a "rubber band") around them. This is ticked by default and means that when you left click into the 3D scene you can drag the scene around with the mouse. Untick this and the left click will act as a way to select a group of objects with a rubber band.
Drag/Drop Entity Mode	When this option is checked, you can left-click an object in the scene and move it by dragging it with your mouse. If it's turned off, left-clicking an object will only select it, and you'll need to use the 3D widget that appears to manipulate its position. Left click an object and drag it around when this is ticked. Turn it off and the method changes to a left click to select an object and a 3D widget will appear that you use to move the object around with. This is what the widget looks like when activated:



The arrows allow you to move the object in that axis only.

The squares move the object in the axis of that square only.

Enable Widget When Needed

If both "Drag/Drop Entity Mode" and "Enable Widget When Needed" are checked, you'll be able to use both the drag and drop method as well as the 3D widget to move objects around in the scene. This allows for a combination of both approaches and can be useful depending on the situation. You can mix both the dragging mode with the widget by ticking both Drag/Drop Entity Mode and this Enable Widget When Needed setting.

Stop object from being moved when camera is inside	If this is ticked, when the camera is inside an object such as a building, you cannot select the building. You can only select it from the outside. This helps when you are adding internal items to the object and don't want to accidentally move the object by mistake.
Use Outline For Selected Editor Objects	A yellow outline indicates which object or group of objects is selected. If you untick this option then a more subtle outline box will show the selected object or group. You can set the thickness of the yellow outline with the slider value.
Display Developer Object Properties	By default, objects in the scene have certain settings that are pre-configured and don't need to be adjusted. However, if you'd like to see and modify these settings, you can enable the relevant section by clicking this. Objects have many settings that are set by default and don't need to be changed. If you prefer to view and edit these settings then you can turn this section on by clicking this setting. For full details of these developer object properties check this section of the user guide.
Display Terrain Debug Mode	This will open up a new window that shows more terrain features for controlling the layering of textures and other visual effects.

Other Developer Options

Other Developer Options	
<input type="checkbox"/> Show Live FPS And Memory Stats	Enabling this feature will display current Frame rate and Memory usage at the top right corner of the editor. This allows you to monitor the performance of your work in real-time. By keeping track of these statistics, you can easily identify any performance issues and make changes to optimise the experience for your users, even on less powerful computers.Ticking this on will show live Frame rate and Memory statistics at the top right of the editors. It will help you see how well MAX is performing with the level you are creating.
<input type="checkbox"/> Use Auto Exposure in Editor	During level editing, it may be beneficial to keep the exposure constant in order to clearly see the effects of any changes made. The Auto Exposure flag in the Environment Effects section affects the brightness and darkness of the environment. By leaving this flag unticked, the exposure will remain unchanged, providing a stable environment for editing and allowing for a more accurate representation of the changes made to the scene.If the level you are using makes use of the Auto Exposure flag in the Environment Effects section, then you might want to
<input checked="" type="checkbox"/> Display Object Tools Developer Mode	
<input checked="" type="checkbox"/> Display AI Management in Test Level	
<input type="checkbox"/> Disable Storyboard Auto Save	
<input type="checkbox"/> Display Terrain Debug Mode	

	stop the exposure from changing as you edit your level. Just leave this un-ticked and the light exposure will not change in the editor.
Display Object Tools Developer Mode	This will provide access to additional object tool options when ticked. Extra Object Tool features will be shown in the Object Tools section if this is ticked.
Display AI Management in Test Level	By ticking this option while in Test Level mode, a user can access the AI Management system, including the Behavior editor, by pressing TAB twice. This system provides tools to control the actions and movements of AI entities in the scene or level. When in Test Level mode and with this ticked, if you press TAB twice you will gain access to the AI Management system which includes the Behavior editor.
Display Terrain Debug Mode	Debugging terrain tools will be shown in the Terrain Tools section if this is ticked. This is mainly for the team at TheGameCreators to use.
Disable Storyboard Auto Save	This turns the Auto Save option on and off.

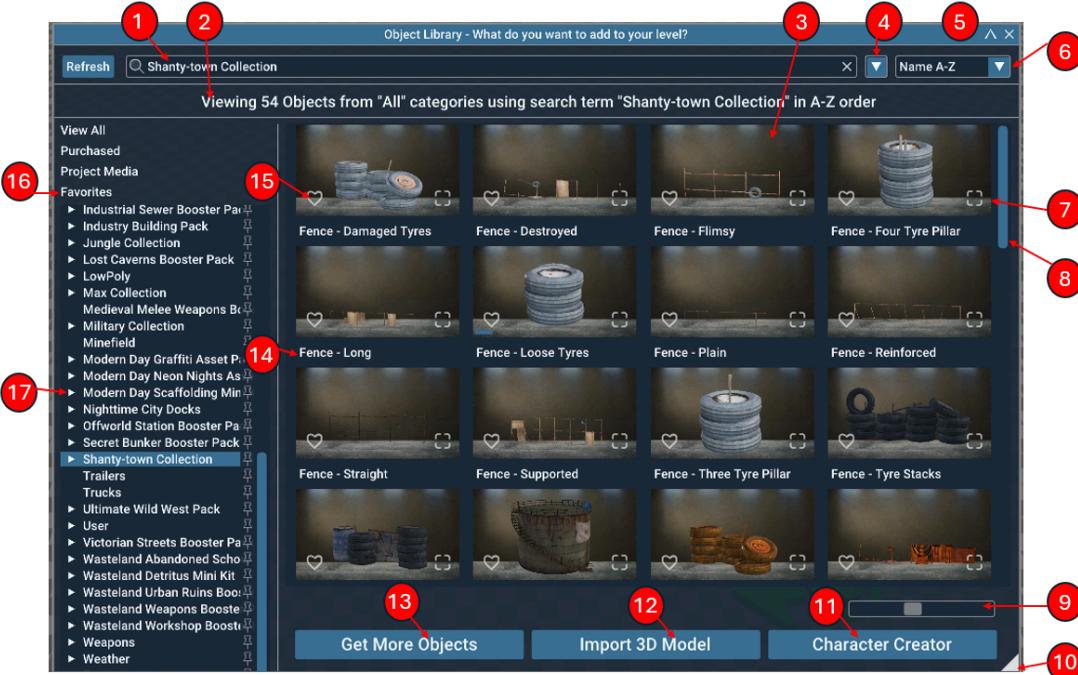
Game Objects

The games you make will consist of many hundreds if not thousands of objects. In GameGuru MAX there are many types of objects, from the characters you design and add to your 3D worlds, to lights you add to a scene to add a dramatic feel.

Types of Objects

- *3D Objects* Models can be either - static or dynamic object models. An example of a A typical static object might be a building or a desk, whereas a dynamic objectmodel could be an animated character or rolling boulder.
- *Game Elements* - These objects play a crucial role in determining the mechanics of a game. A Start Marker serves as a reference point for the player's starting location in the level at the beginning of the game. Trigger Zones, on the other hand, activate specific events when certain conditions are met, such as playing a voiceover sound as the player enters a specific area of the level map. Light Objects, as their name suggests, provide

Objects Library



1 - Search	Type in text to search for a specific named object. For example, typing "tree" will show all objects with this in their object name description.
2 - Description of search results	This text shows you what is being displayed based on the search string, various filters you can set and the category section that's highlighted. In the image above it shows "Viewing 54 objects from "All" categories using the term "Shanty-town Collection" in A-Z order".
3 - Icon image of an object	A 2D representation of the objects. If you hover the mouse pointer over this image a 3D rotation preview will animate the object so you can see it in more detail.
4 - Search history	A quick way to access past search keywords that you have typed in.

5 - Maximise	Make the Object Library full screen by pressing this. Once it's full screen this icon changes to a down arrow icon so you can revert to the smaller library screen size.
6 - Ordering	A dropdown menu with different ways to sort the displayed results of the search.. The default value is "Showcase" which displays some of the best objects in the core library. Sorting options include: <ul style="list-style-type: none"> • Showcase • Category • A to Z • Z to A • Date created (ascending) • Date created (descending)
7 - Larger preview	This icon will open up a separate window so you can view the selected object in more detail.
8 -Horizontal scroll bar	A scroll bar used to move the list of objects up and down to see additional objects. You can use the mouse wheel to scroll up and down the list of objects or you can click and drag the slider bar.
9 - Zoom	This slider changes how many columns of thumbnails fit into the window. It ranges from 1 to 9.
10 - Resize Window	Left click and drag to resize the window. Useful if you want to move the window to one side so you can drag and drop objects into the 3D scene.
11 - Character Creator	Click this to open up the built-in Character Creator screen.

12 - Import 3d Model	This opens up the built-in Object Importer screen, allowing you to bring in objects designed in modelling software.
13 - Get More Objects	This button launches the Market Place which includes links to websites where you can acquire new game assets.
14 - Object name	This is the name of the object.
15 - Favourite	Click the heart icon to add the object to your favourite objects list. This will make finding objects you use regularly much easier.. You can then view all your favourites by clicking on the Favourites category in the object category tree structure list.
16 - Favourites	This category includes any object that has been marked with the heart icon to indicate it as a favourite object.
17 - Object category tree	This list shows all the categories in your object library. If you want to see every object in the library just click on the View All category. Some categories include subcategories which can be accessed by clicking the small arrow appearing on the left.. You can also pin categories or sub-categories which will cause them to show at the top of the list for easier access.

Selecting Objects

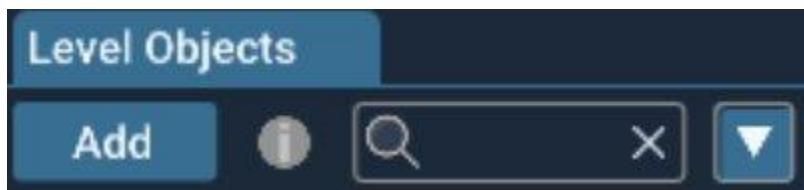
Left clicking on any object will select that object and attach it to your mouse pointer so it can be placed into the 3D scene. The Object Library will also disappear from view.

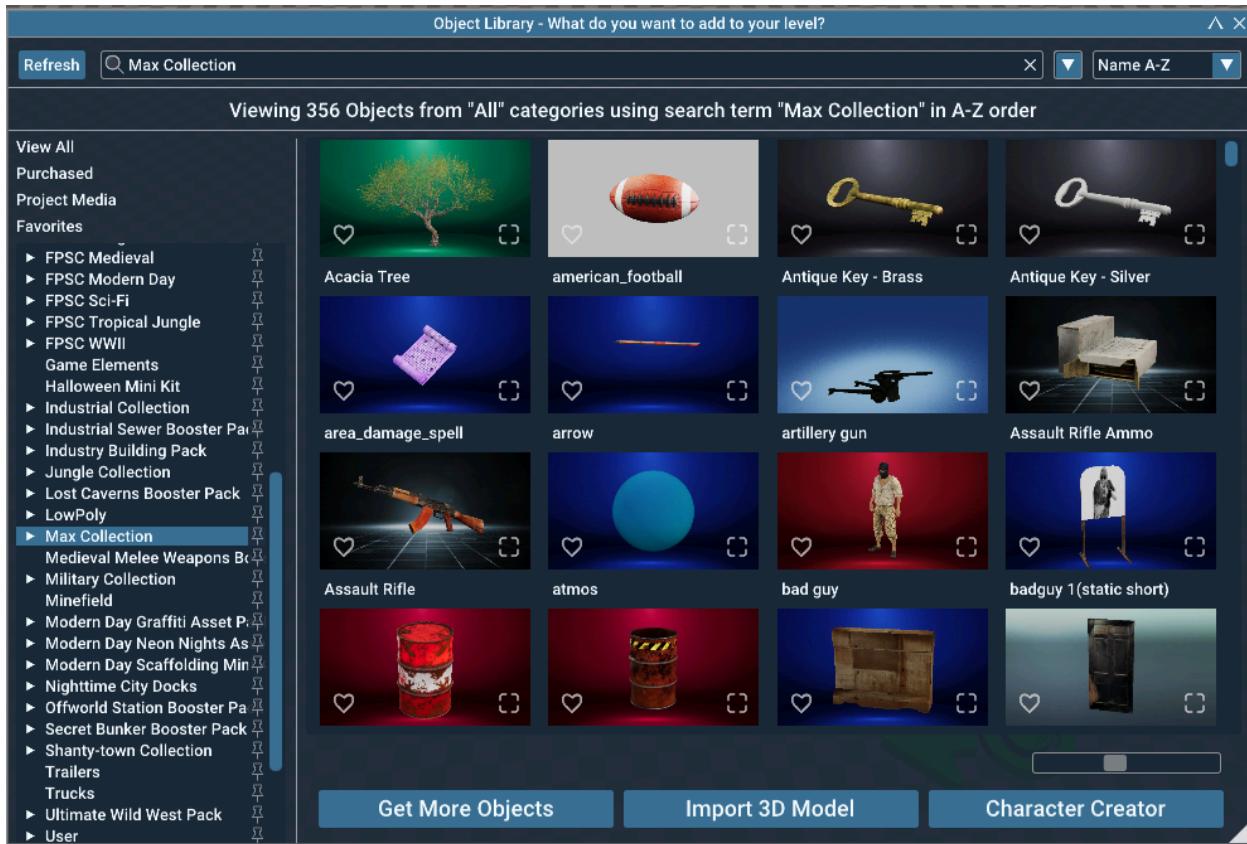
You can select multiple objects by holding down either the SHIFT key or CONTROL key on the keyboard when selecting objects.

Object Mode

You must be in Object Mode before you can make changes or add new objects. To enter Object mode you can press the “O” key. Object mode is automatically chosen when you add an object from the Level Objects Panel.

On the left is the Level Objects Panel, and at the top of this panel is an “Add” button. Click this to call up the Object Library Selector.





This window displays image thumbnails and rotating 3D previews of all the objects you have installed in your entities folder.on your hard drive.

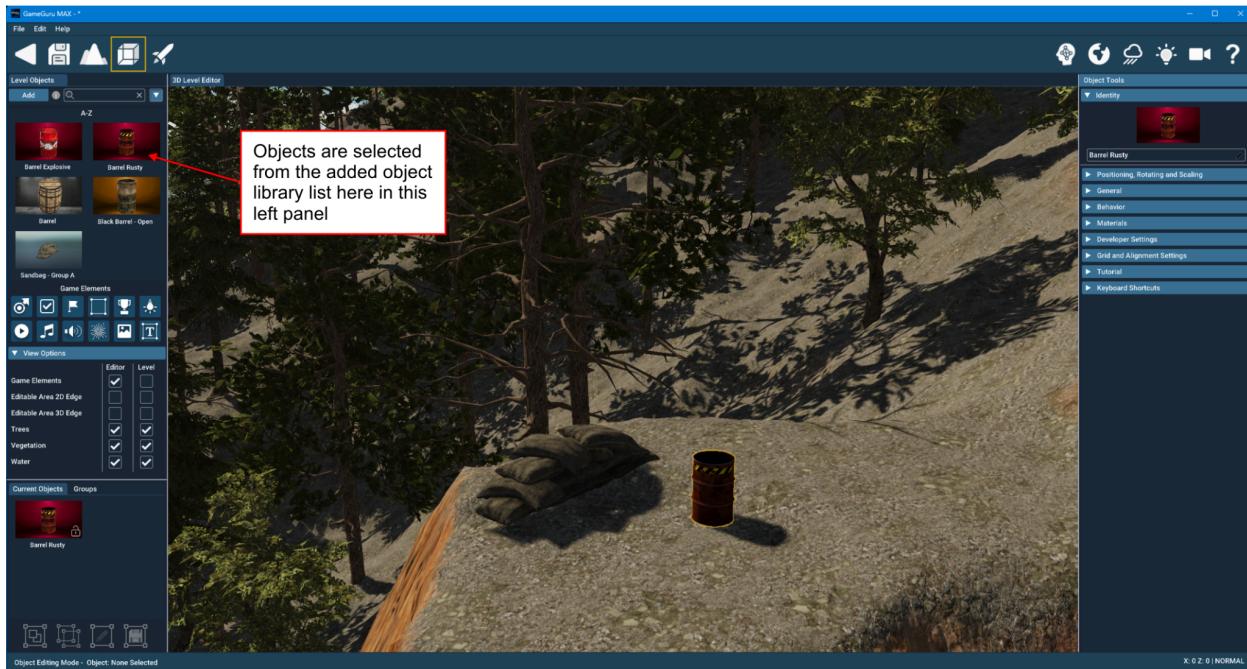
Left click an Object to select it. When you do this, the Object Library will disappear and you will be holding the object on your mouse, ready for you to place it into the 3D scene.

You can add more than one Object at a time by holding down the CONTROL key to select multiple Objects. Just left click to highlight each Object. When you have chosen all the ones you want to add, press on the button in the bottom right that will show “Add x Objects to Level”.

The SHIFT key allows for efficient selection of multiple consecutive objects by clicking the first and last objects in the desired range.

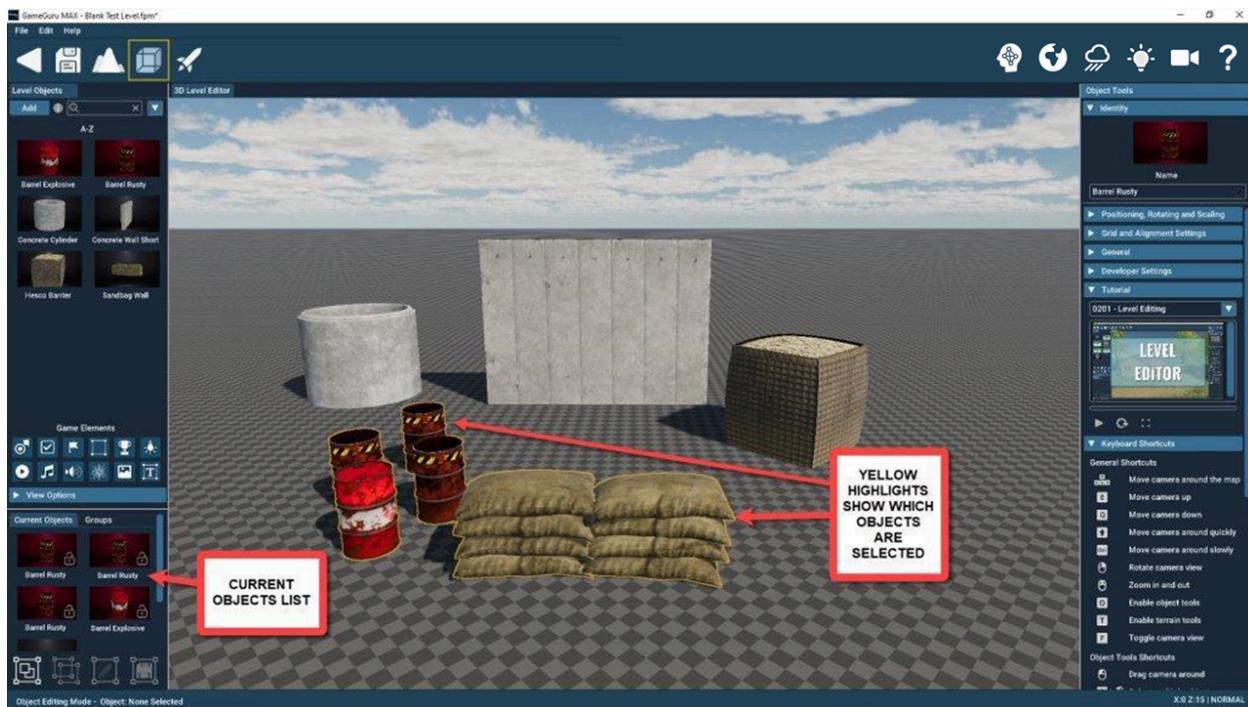
When adding multiple objects, they are stored in the Level Objects Panel and not directly in the 3D environment. To access them, you must select each one individually from the side panel.

In the example below you can see many icons of the objects listed in the Level Objects Panel:



Adding Objects

Under the Level Objects Panel is a panel that displays the current objects and any groups of objects in the scene. When you select one or more objects, this panel will list all the currently selected objects. Here's an example in which a rusty barrel and some sandbag objects have been selected.



The current objects list can help you quickly make a new copy of an object from the scene. You might have a lot of objects in a scene and so instead of selecting it again from the Level Objects panel, you can click on the object in the level scene and then drag in a copy from the current objects list.

The default dragging and dropping mode employs the "SMART" mode, which automatically locates the highest surface as you drag the object around. Typically, this surface is the terrain, but if there are objects on the terrain, the top of those objects will be identified as the surface. When you release the left mouse click, the object is placed on the found surface.



When an object is selected, the Object Tools window displays all relevant information about that object. When an object is selected, the Object Tools window updates to show you all the relevant information about that object.

Under the selected object's name is a section that pertains to the Position, Rotation and Scale of the object.

Object Positioning

Once objects are placed into the 3D level you will want to move and edit them.

Clicking on an object will select it, indicated with a yellow highlight around the object like this: If you move the mouse over an object and left click on it, the object will be highlighted with a yellow highlight like this:

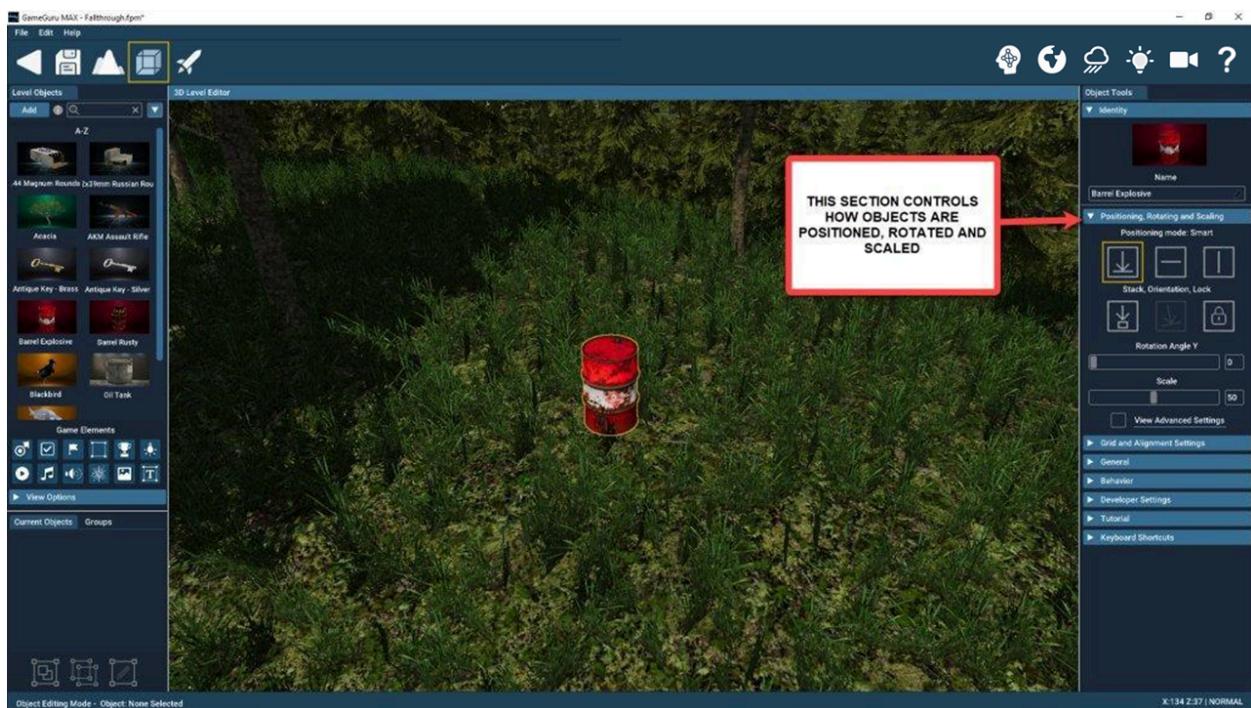


To move this barrel you simply left click on the barrel and drag the barrel around. When you let go of the left mouse button the object will be released from the mouse pointer.

You can use a rubber-band selector if you want to move more than one object. To do this you need to hold down the SHIFT key and then left click and drag a box around all the objects you want to move. In the image below you can see the white box has surrounded 5 barrels.



Once they are all selected they will have an outline around each item selected. Just left click on any of the selected objects and you can drag them all around at the same time.



Positioning Mode determines how the selected object can be moved around the 3D level. The default is Smart Mode and has a yellow box around it to show it's using this mode.

Here are the various modes you can use for positioning an object:



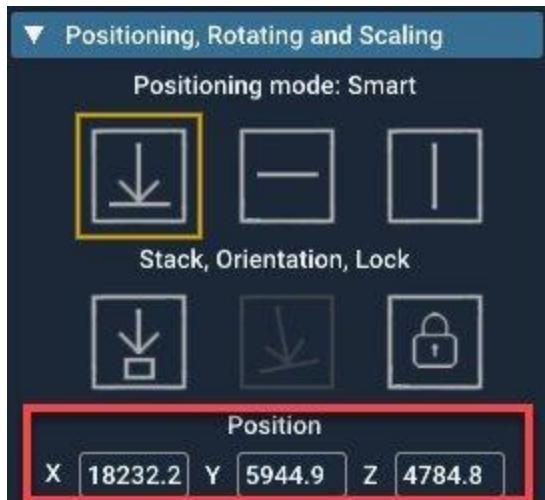
Smart Mode: When dragging an object around the level, the nearest surface is automatically detected, which can be the terrain floor or the top of another object. This mode ensures that the object is positioned precisely on other objects or the floor, eliminating the possibility of creating gaps. When an object is dragged around the level, the object will find the nearest surface. This could be the terrain floor or on top of another object. Using this mode you are more certain to position an object directly onto other objects or the floor and avoid the issue of leaving gaps.

	Horizontal Mode: In this mode the object can only be moved in the horizontal plane. Useful if you don't want to change its current height.
	Vertical Mode: In this mode the object can only be moved in the vertical plane. Useful if you don't want to change its current horizontal axis. The object can only be moved up and down in this mode.
	Stack Option: This is an optional on/off mode. When it's turned on it will make it much easier to stack objects on top of each other. This is used in conjunction with Smart Mode and does not work with Horizontal and Vertical modes.
	Orientation Option: If this is toggled on, it will orient the object so that it is aligned with the surface underneath it. This feature only works when you have the Stack Option turned on too.
	Lock & Unlock Objects: After an object is placed you might want to lock it so that you don't move it by mistake. Use this icon to lock and unlock any objects

You can quickly change between Smart, Horizontal and Vertical Modes by pressing the TAB key. If you press SHIFT+TAB the selector will move in reverse, handy if you want to quickly move between the modes repeatedly.

Advanced Settings

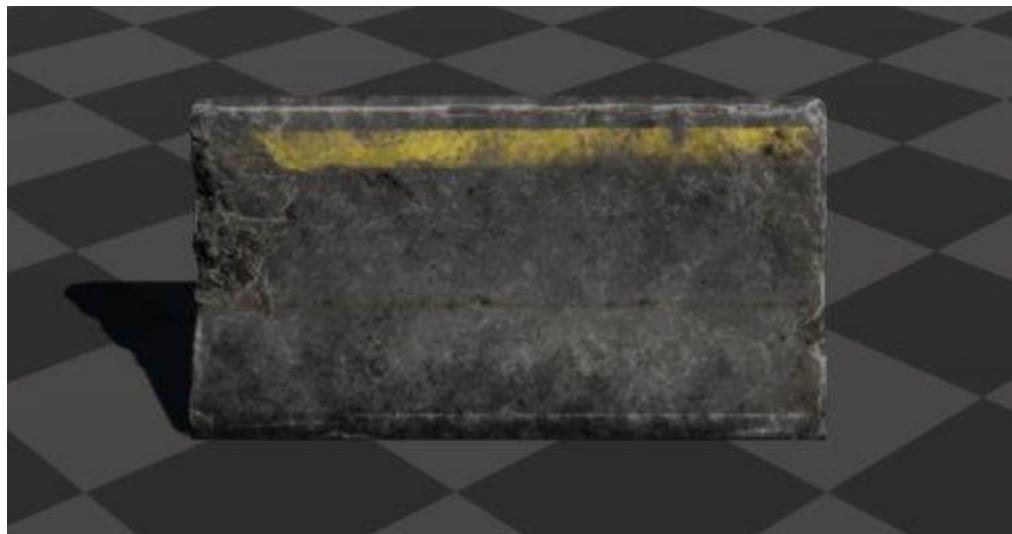
In the Advanced settings you can turn on Additional Object Tools. If this is ticked then you will also be shown the actual 3D position of the object as shown here in the red outline.



The Grid

There will be times when you'll want a more accurate way to place down objects into the game scene. For such occasions you can use the built-in grid system.

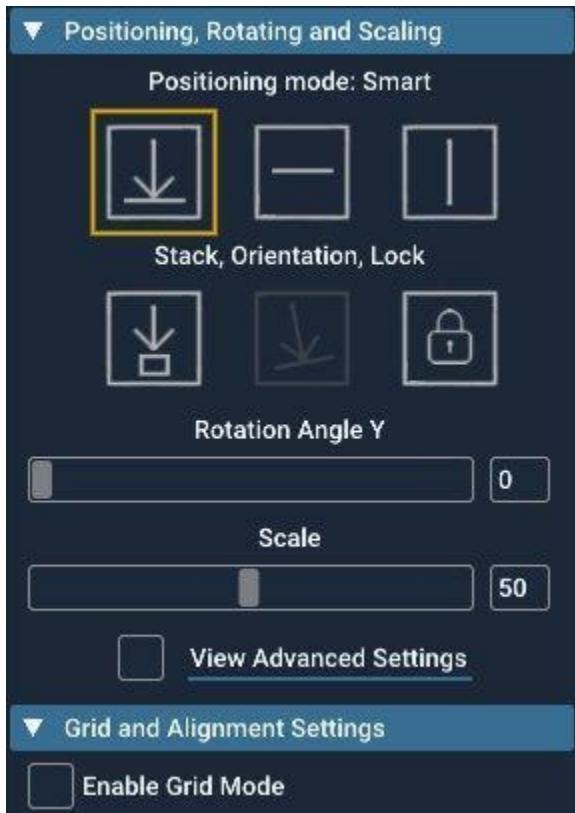
Take for example this concrete barrier object



Suppose you want to arrange five objects next to each other. The traditional approach of dragging in five identical objects and positioning them manually can be time-consuming and prone to inaccuracies. A more efficient solution is to utilise the grid system. Let's say we want to place five of these side by side. We could drag in five of the same objects and carefully place them down pixel by pixel. The problem with

this method is that it's time consuming and prone to placement errors. The smarter way is to use the grid system.

Click on an object, and the Object Tools pane will display on the right. Under the Position, Rotation and Scale section you will find the Grid and Alignment Settings.



Tick the Enable Grid Mode box option and the grid settings will expand out like this.



With Enable Grid Mode ticked the placement of objects will now follow the settings chosen here. There are two settings to choose from (*Use Grid Positions* and *Snap Mode*) - only one of them can be used at a time.

Use *Grid Positions* will force the positioning of any object based on the standard 100x100 grid size. This is the default grid size used by GameGuru MAX. Let's see how the concrete barrier looks when it's positioned using this mode.



The barriers are arranged in a straight line with spaces between them, which might be the desired arrangement. But what if you want the five barriers to be positioned end-to-end? This is where the Snap Mode comes in handy. The barriers are in a straight line and there are gaps between them. This might be just how you want them but what if you wanted all five to be end to end? Well this is where the Snap Mode comes to the rescue.

Here's the same barrier placed down using *Snap Mode*.



This time the objects are placed end to end with no gaps between them.

Advanced Settings

You might want to control exactly where the gridlines position in the 3D scene. These sliders allow you to set specific offsets.



Rotating Objects

When an object is placed into the level it's not likely to be in the correct position or angle immediately. Rotating an object will be something you'll do many times.

There are a number of ways you can rotate an object.

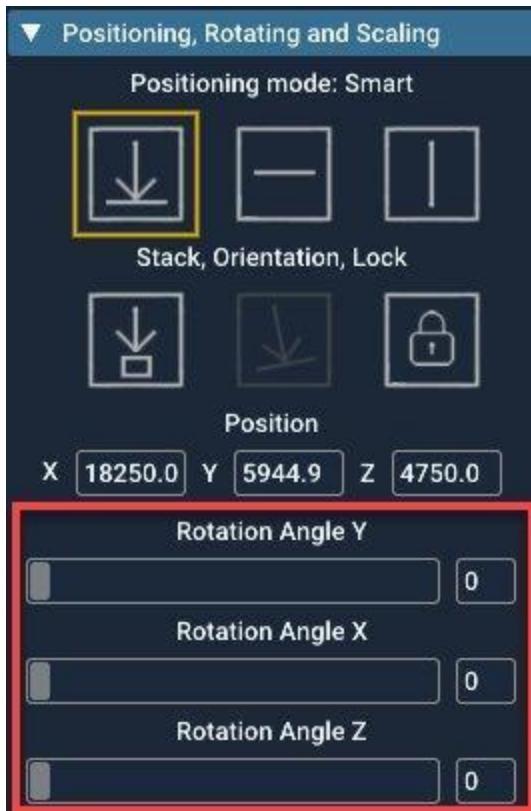
1. Select an object and press the “R” key. This will rotate the object 45 degrees clockwise. Press SHIFT+R to rotate quickly or press CONTROL+R to rotate slowly.
2. Click on the object and then click on Rotation in the Position, Rotation and Scale area in Object Tools. A slider will appear which can be moved left and right to set the rotation angle of the object from 0 to 360. You can enter the rotation value into the number box too.



In most cases rotating around the Y axis of the object is all you will need to do. If you want to alter the object's rotation on itsit's X and Z axis then you will need to turn on the extra features in the Advanced Settings.

Advanced Settings

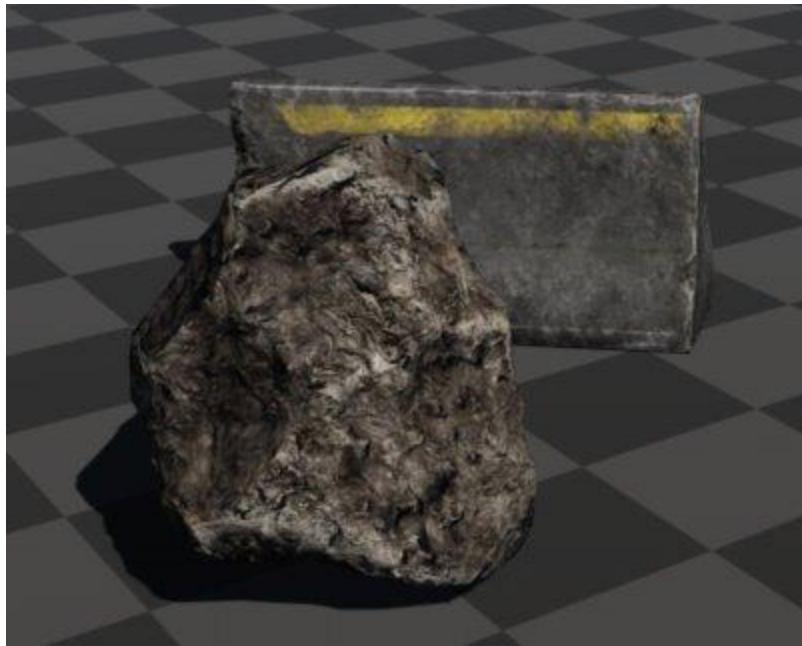
With the Advanced Settings turned on you'll be able to rotate the object in all three of itsit's axes. As you can see below, all three axes are available now.



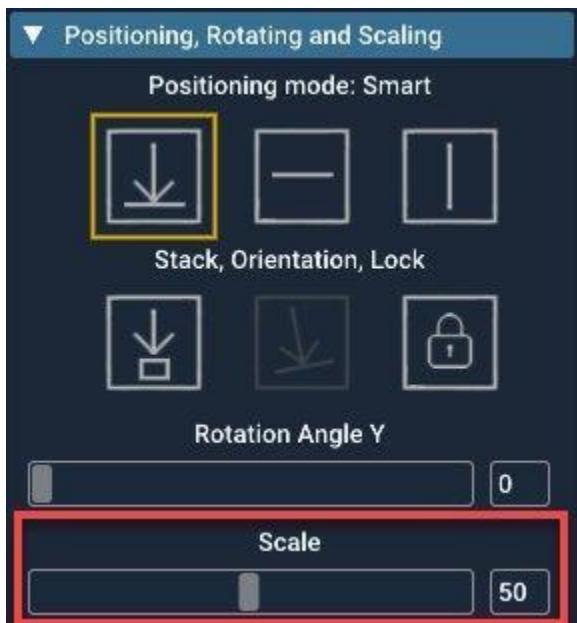
Object Scale

The default 3D objects that come with GameGuru MAX are set up to be the correct scale in relation to all the other objects in the library. There will be times when you'll want to change the size of objects and this is achieved by using the scaling tools.

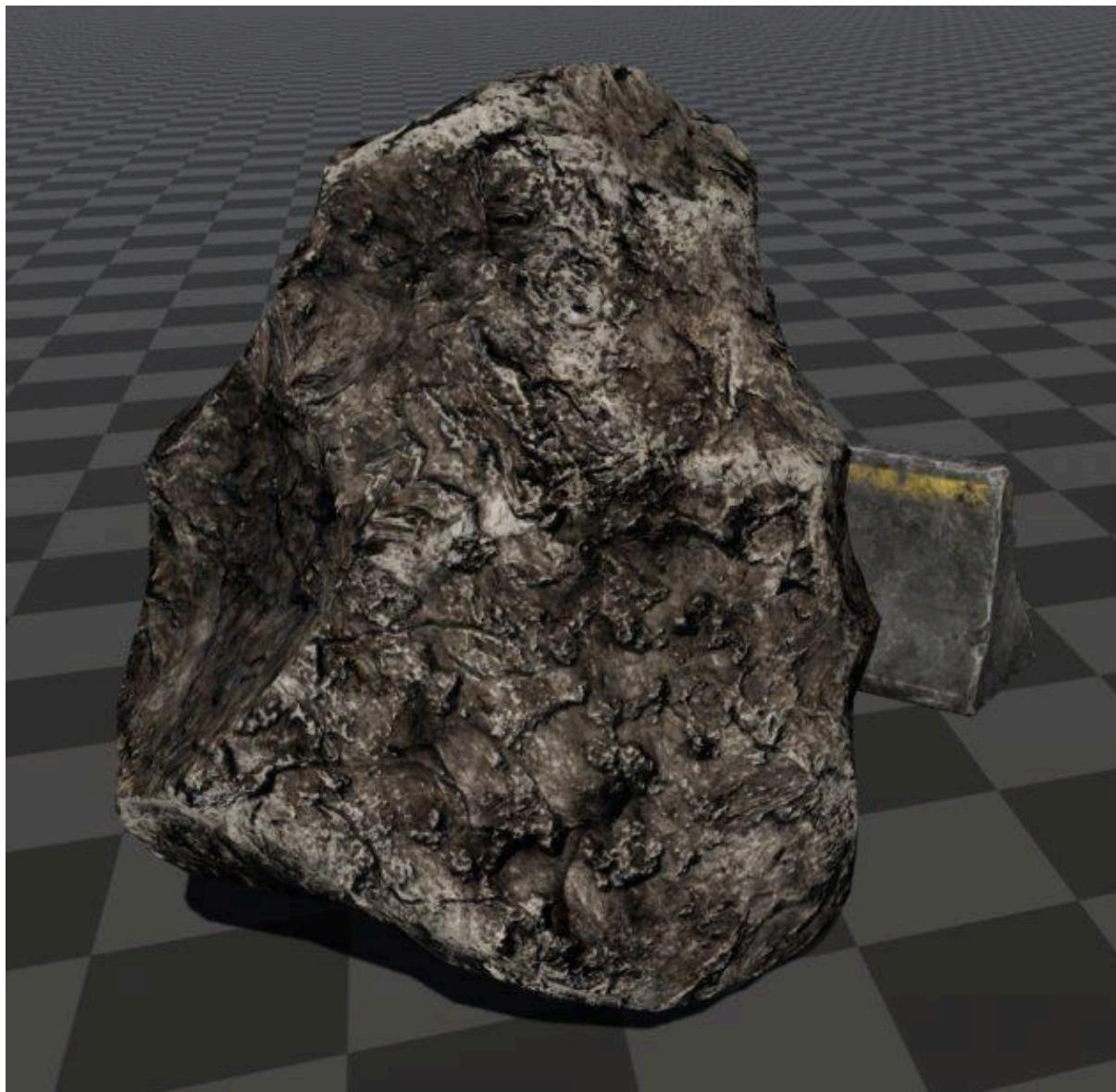
Here's an illustration of how scaling works. Let's say we want to double the size of the rock in front of the concrete barrier. Here's an example of scaling in action. We want the rock in front of the concrete barrier to be twice its current size.



Click on the rock to select it. The Scale options will become available in the Object Tools pane on the right. The next step is to click locate the “Scale” slider in the Object Tools Window.



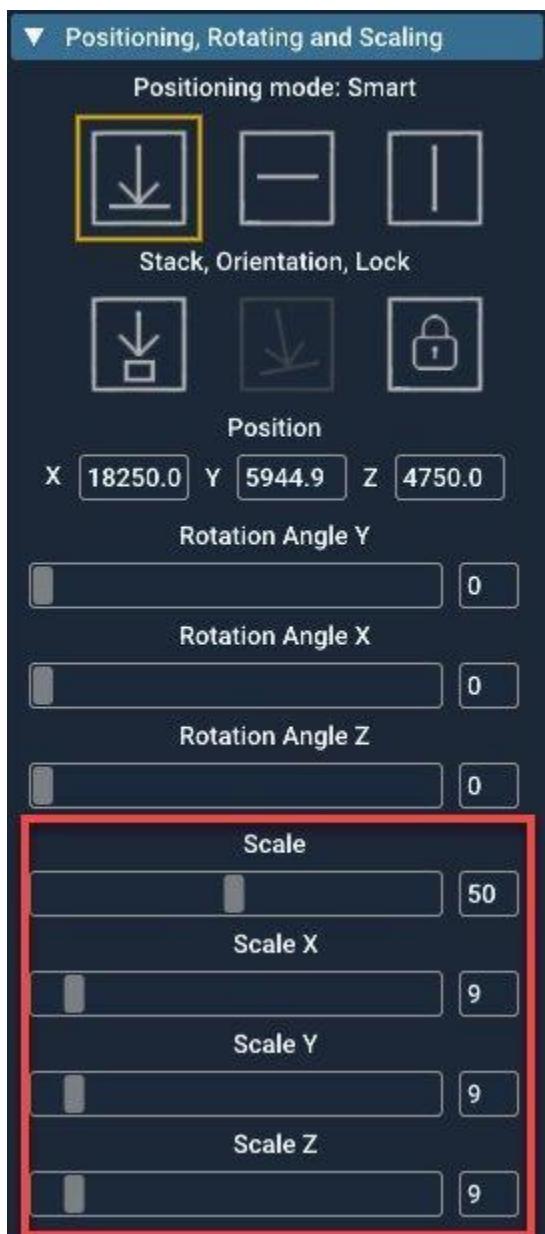
By increasing the Scale value from 50 to 55, then the rock will grow larger and will end up looking like this.:



Scaling is a valuable tool, but caution should be exercised to avoid over-scaling objects. As objects increase in size, their textures may appear less defined and blurrier, leading to a reduction in quality. Scaling is a very useful tool but you should be careful not to over scale objects. When objects increase in size their textures can start to look less detailed and more blurred and low quality.

Advanced Settings

With the Advanced Settings turned on, you will see additional sliders allowing you to scale individual axes of the object.



Under the Game Elements icons in the left section of the Level Editor is the View Options Panel. This lets you manage what is shown in the Level Editor and when you use Test Level. When it's fully opened it looks like this:

▼ View Options		
	Editor	Level
Game Elements	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Editable Area 2D Edge	<input type="checkbox"/>	<input type="checkbox"/>
Editable Area 3D Edge	<input type="checkbox"/>	<input type="checkbox"/>
Trees	<input type="checkbox"/>	<input type="checkbox"/>
Vegetation	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Water	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Terrain	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

The left column lists the different items that can be shown or hidden. The Editor and Level columns represent the Level Editor and the Test Level modes.

You may find it useful to hide things like the trees and grass when you're adding objects to the level. When you test a level you might want to see where the game elements are located so you would tick those on.

Grouping Objects

This feature will save you a lot of time in your game designing by allowing you to pre-arrange objects and save the arrangement so that it can be placed as a single object.

Take for example this layout of 3D objects. This could be a look out area for enemy characters in your game.

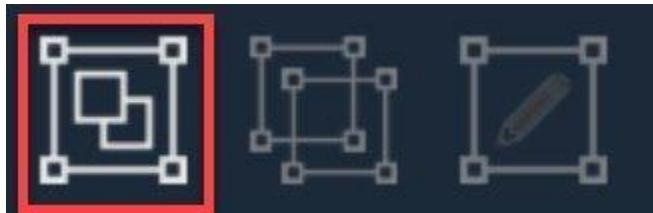


Now let's say we want to re-create this same layout elsewhere in the level. We could just make it again by selecting one object at a time and placing them down. The problem with that method is that we'd have to remember the design, we would most likely not get the exact placements correct and it will take a lot of time.

This is where object groups come in to save the day! To recreate the above layout, all you need to do is select all the objects at once (either by left mouse button clicking with the Control key held down or with the rubber band selector). Here the objects have been selected by dragging the white rubber band around them (press control and hold, then drag the box around all the objects and let go).



Once the objects are highlighted, click on the *group objects* icon (found at the base of the left side panels):



A group thumbnail will appear which represents the group of objects, like this:

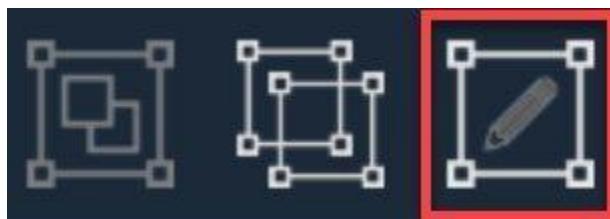


You can now click and drag this icon. As you move the mouse to the right into the 3D level window a new version of the group will be attached to the mouse pointer. Move it

around and when ready, let go of the left mouse button to place it down. This new copy of the group is an exact copy of the original group.

When you click on any individual object within a group, all the objects in the group become selected. You can re-position, rotate, scale and edit properties of the group.

If you want to make changes to a group you first select the group and then click on the Edit Group icon.



You can now edit any of the objects within the group. To finish up you need to click on the Edit Group icon again to end the editing process.

If you're finished with a group and don't ever want to use it again, you can use the un-group icon to separate all the objects out of the group with this icon.



Locking a group

When a group is first created the initial group is the parent group. This means that all copies are made from it. You can lock the parent group to ensure it doesn't get changed by mistake. There is a small lock icon in the bottom right of the group icon. Just click on that and the group will be locked. If you try to move or edit the group a red surround will show to indicate the group is locked.

Rotating a group

When you rotate a group, the rotation will spin around the object you selected within the group.

Keyboard Shortcuts

Control+G - Group selected objects

Control+Shift+G - Ungroup the selected group

Removing Objects

Here are the different methods for removing objects from the 3D Level.

1. Left click an object and then press the DEL key on your keyboard.
2. Left click and drag an object to the left side. When the mouse enters the Level Objects Panel a trash can icon will appear. Release the left mouse button and the object will be deleted from the level.



3. Press SHIFT and left click and drag a rubber band around all the objects you want to remove from the level. With the objects selected, either press the DEL key or drag the objects to the left side of the screen.

Once objects are placed into the 3D level you will want to move and edit them.

Clicking on an object will select it, indicated with a yellow highlight around the object like this: If you move the mouse over an object and left click on it, the object will be highlighted with a yellow highlight like this:



To move this barrel you simply left click on the barrel and drag the barrel around. When you let go of the left mouse button the object will be released from the mouse pointer.

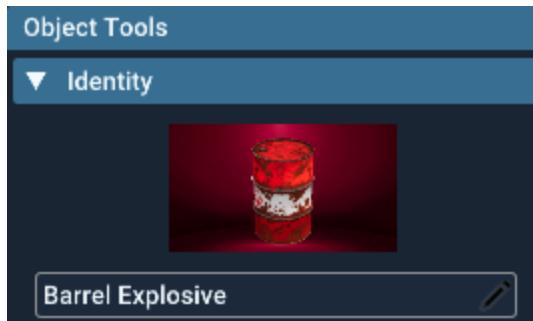
You can use a rubber-band selector if you want to move more than one object. To do this you need to hold down the SHIFT key and then left click and drag a box around all the objects you want to move. In the image below you can see the white box has surrounded 5 barrels.



Once they are all selected they will have an outline around each item selected. Just left click on any of the selected objects and you can drag them all around at the same time.

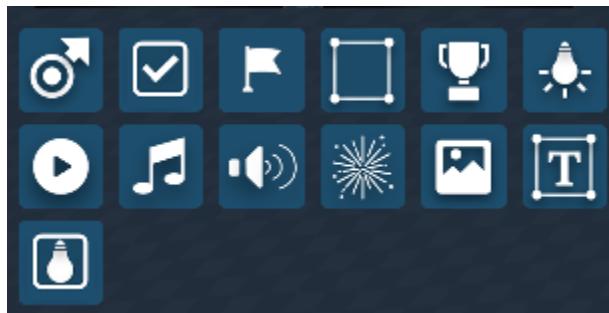
Object Identity (Name)

Each object can have a text description label and an icon for its identity. Here's the red barrel's identity:



It's possible to rename any object. This could come in handy when referencing the name of an object within a custom script, or simply to distinguish one object from a similar object.

Game Elements



This toolbar offers immediate access to special game element objects. A settings configuration area specific to each of these objects will appear in the right hand panel when added to the scene.

Here's what each of these icons represent:

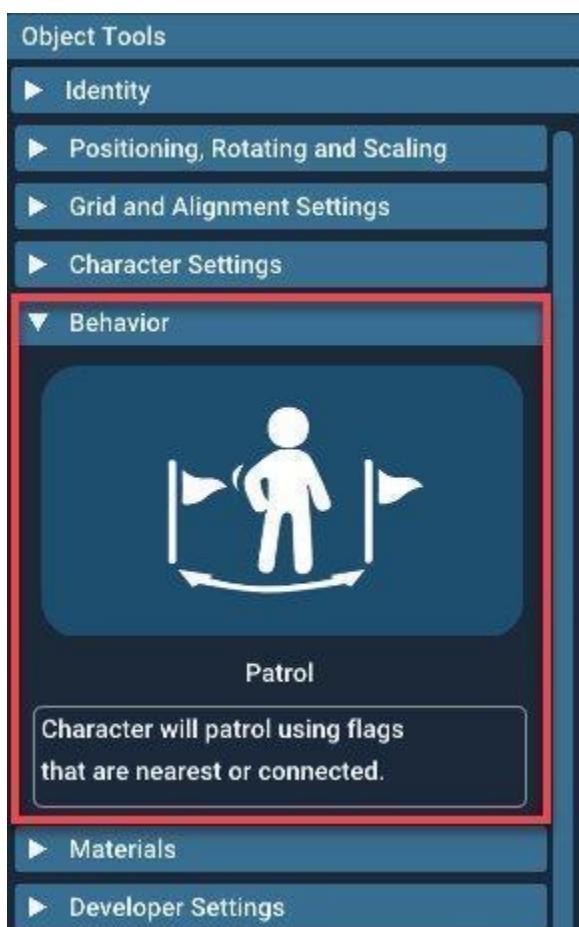
	The player's start position. This marker will determine where the player begins in the level and the direction the player is facing. You can drag this element into the 3D scene and change the direction by rotating the arrow. Make sure to place the start position away from obstacles to avoid the player being stuck inside other objects when the game starts. There are two customizations you can make with this game element; The player movement speed and which weapon, if any, the player will have when the game starts..
	The player checkpoint marker is used for saving the player's progress as they make their way through your game. Once the player reaches a checkpoint, all their stats are saved. Should the player die in the game, they will respawn back to the last checkpoint they reached with the stats they had when they reached this location.
	Waypoint flag markers are used by A.I. Characters with movement behaviour so they can patrol around an area of a level by following the path of.
	This standard Trigger Zone can be used to initiate an event when the player enters a specific area in the game's level.
	The Win Zone is used to define a location on the game level where the player will win the level. Once the level is won, the next level in the

	game will load up and can be played. If it's the last level then the player will see the game win screen.
	The light source object can be added to the 3D scene to add a source of light to the game. By default the light is set as a point light, which means it emits light in all directions. You can modify the light and change it into spot light, directing the light into one direction. In most cases this will be placed near a 3D object that might logically emit light, such as a lamp.
	This creates a video zone object. When the player enters this zone, a video that you have assigned to this object will play on screen. This is great for adding some narrative or a cut scene to your games. The video formats supported are .mp4 and .WMV.
	This creates a music zone element which triggers a music track assigned to this object. Music formats supported are .mp3, .wav and .ogg
	This is a sound zone. A sound effect will play when the player enters this zone area. This is ideal for adding sound effects and voice over dialog which can set up a great atmosphere to your games.
	Particle effects can be introduced into your game levels with this object. There are a range of predefined effects to choose from included in Game Guru Max. Additionally, the Particle Toolkit DLC allows you to create and import your own custom particles.
	When the player enters this area you can present an image to them with this zone. For instance, imagine a game where the player comes across clues like a map or letters written with help and advice on them. You can do all this with this image zone object. Supported formats include PNG, DDS, BMP, JPG, TIF and GIF.
	Text zones can be used to show a written message to the player when they enter the zone.
	Adds an environment probe to the scene which can be sized to fit the desired space. This feature is used to capture and store information about the surrounding environment, particularly for rendering purposes. It captures lighting and reflections in a specific area of the game world to enhance realism and visual fidelity.

Behaviours

Behaviours are the fundamental artificial intelligence (A.I.) logic of a game. They dictate how objects behave within the game, determining when events such as sounds are triggered, and controlling various other in-game actions and events.

You will find the Behavior section in the Object Tools list of an object. Here's the behaviour of a character for example:



A pictorial icon gives a visual clue as to what this behaviour will do. Below the icon is a written description that details the behaviour.

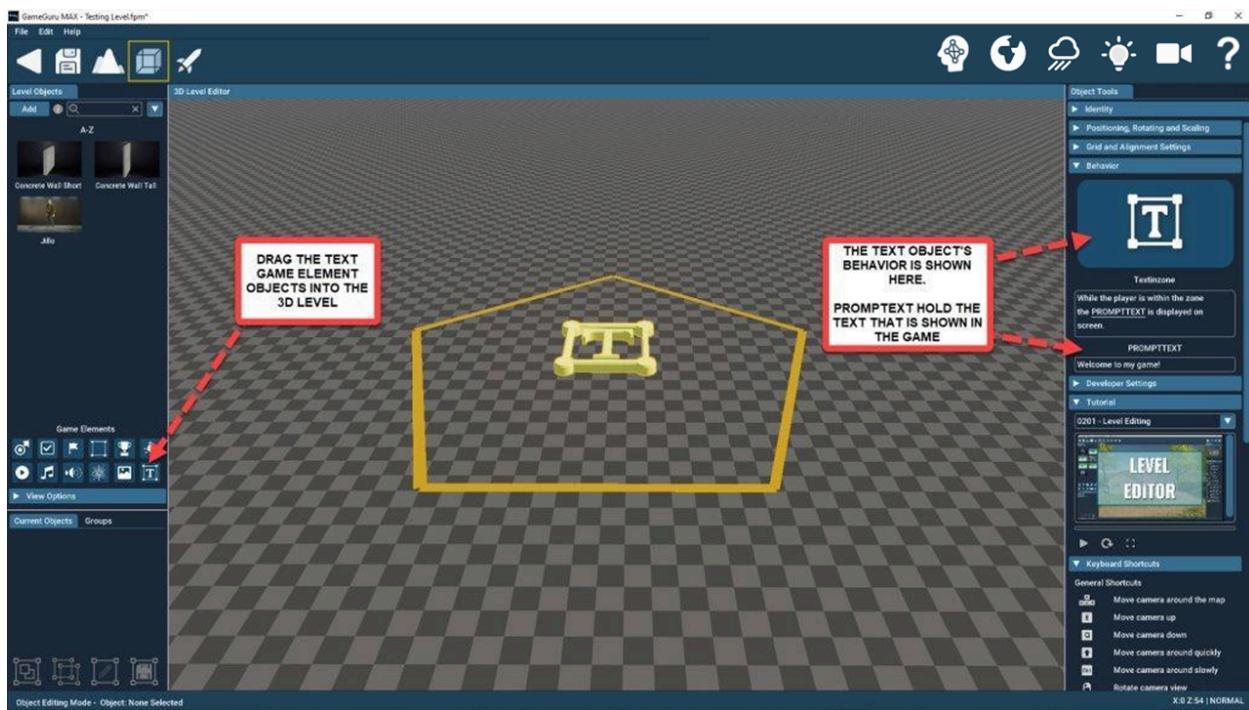
The image above is the behaviour for a character and it's behaviour text reads as:

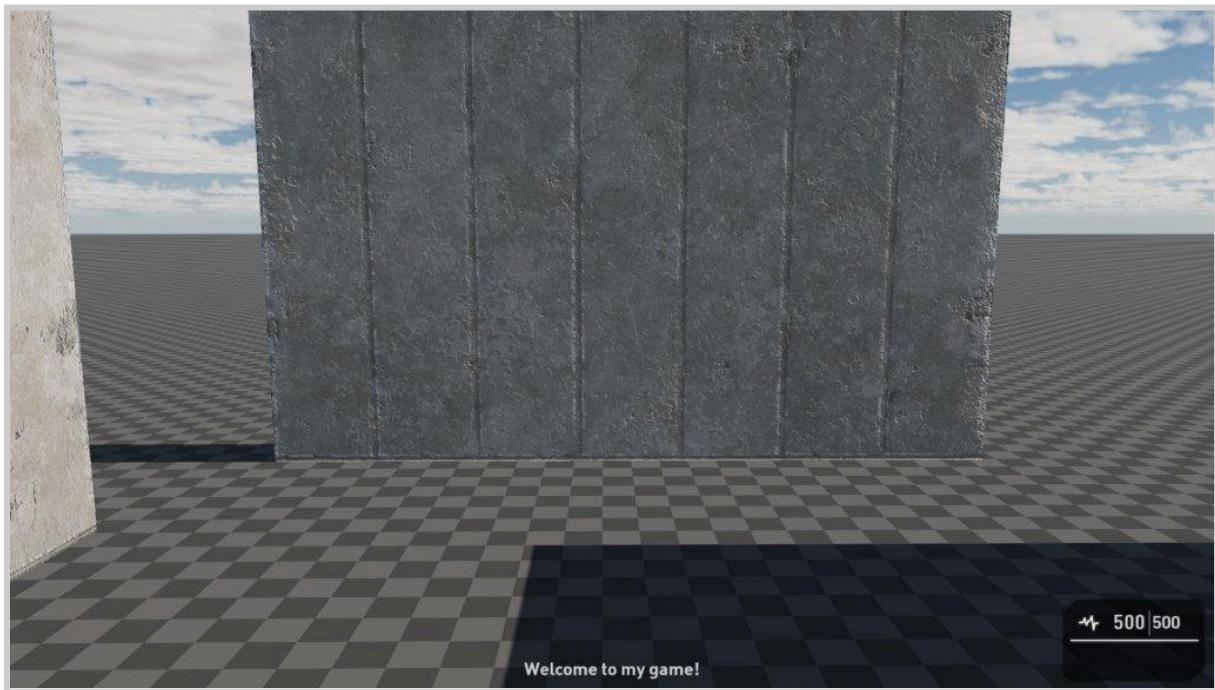
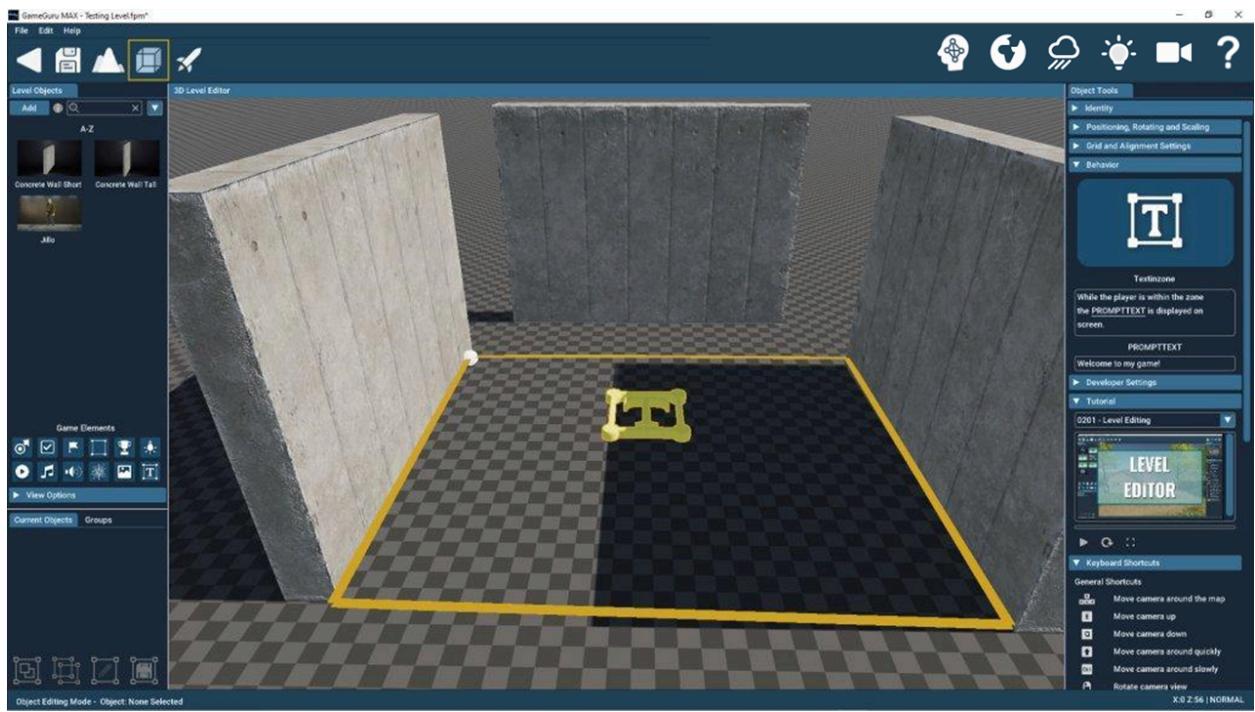
Character will patrol using flags that are nearest or connected.

This means that this character will start walking between any flag markers (see [Game Elements](#) for details) that are close by to the character.

Game Element Behaviours

When you add a Game Element Object into the 3D scene, the properties of the object will be shown on the right hand side Tools Panel. The section titled Behaviour shows the current behaviour that this object will use when the game is running. In the screenshot below you can see that a Text Game Element Object has been dragged into the 3D scene. Its behaviour will take any text you write into the *PROMPT TEXT* field and show that during the game when the player moves through the defined zone area.



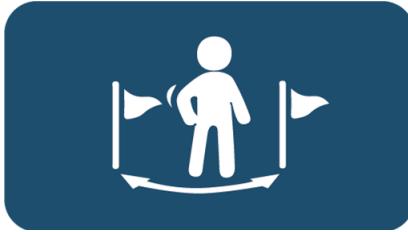


Changing a Behaviour

To change the behaviour of an object, simply click on the currently assigned behaviour. A menu will appear allowing you to select another behaviour to try. Note that not all behaviours are suitable for all objects, but behaviours may be applied to any object type, such as characters, lights, audio, zones, etc. A supplemental behaviour guide is provided in the guides folder (Help Menu > Guides Folder) that goes into more details about each behaviour and is updated frequently.

Character Behaviours

Here are just some examples of the character behaviours that you can choose for any characters you add to your game. There are many more included with GameGuru Max.

	Patrol The Character will walk on patrol between marker flags if they are close by to where the character starts in the game.
	Walk Away When the player is within <i>RANGE</i> distance, this character will walk away from the player. The character will stop walking away when it reaches the <i>STOPDISTANCE</i> away from the player.
	Stand Idle The character remains idle, standing in the same location.on the spot.



Wander aAround

When the player is within RANGE distance, the character will start wandering about. A RANGE of zero will cause the character to start wandering from the moment the game starts.



Zombie Attack

This behaviour is specific to the Zombie characters. It will make the Zombies notice the player when the player is within RANGE and give up chasing if the player is beyond the MAXIMUMRANGE. You can set the Zombie starting speed, the sounds the Zombie makes and if you want the Zombie to begin feeding off the floor when it's spawned.



Soldier Attack

This controls how characters act as soldiers. If they are enemy soldiers, they will engage the player when they're within RANGE distance. You can also have them following a path before they encounter the player to make them look like they are busy. Other options allow you to define if they can retreat when they are hurt or stand their ground, flank the player, have an altered phase before fully engaging and if the player can kill them with one head-shot. It's also possible to change the voice overs they shout out.



Melee Attack

This controls how characters act for melee combat, they will engage the player when they're within RANGE distance. You can also have them following a path before fully engaging and if the player can kill them with one head-shot. It's also possible to change the voice overs they shout out.



Stand and Speak

When the player is within RANGE distance, the character will face the player and play the audio assigned to SPEECH1.



Trader

Traders are a character whom the player can interactively buy or sell items with when the player is within RANGE distance.



Patrol and Speak

The character will patrol using any flags nearby and when it reaches the end the sound file assigned will be played.



Get Close and Speak

When the player is within view range distance of this character it will move towards the player. Once the character is within RANGE distance, the audio assigned to SPEECH1 will play.

Light Behaviours

Lights can have their own unique behaviours, such as one that is on constantly to a strobing, flickering, or pulsating effect. Lights can have their own special behaviours. From a static light that burns 24/7 to a strobing and pulsating flashing light.

Here are some examples of the light behaviours you can assign to your light objects.

	Flame Light Light will vary as though emitted from a candle or camp fire, with control over variance <i>INTENSITY</i> .
	Pulse Light Light will toggle on and off when it is sent a pulse signal by being activated.
	Rotate Light Rotates the light around the Y axis at a specified <i>SPEED</i> . You can also specify whether the rotation is <i>ANTICLOCKWISE</i> .
	Strobe Light Light strobe will bounce from <i>MINRANGE</i> to <i>MAXRANGE</i> at a specified <i>SPEED</i> .

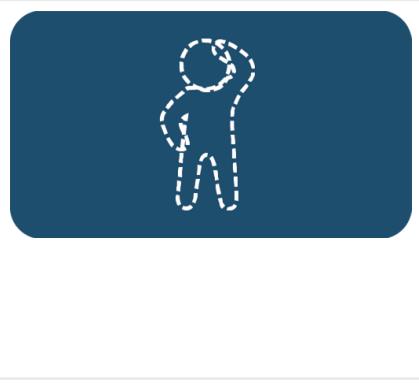
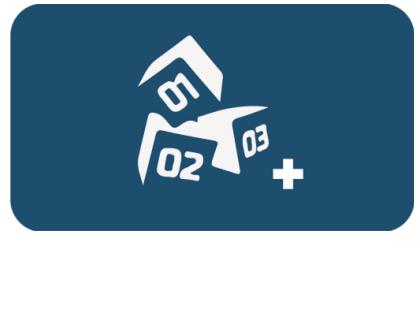
	<p>Flicker Light</p> <p>Flickers the light as though supplied by a faulty electrical connection. Specify the <u>FAULTS</u> in the electricity supply.</p>
	<p>Constant Light</p> <p>The light stays on all the time.</p>
	<p>Glow</p> <p>This object will vary the strength of any emissive texture applied to it between</p>

Object Behaviours

These are some examples of behaviours that can be assigned to most standard 3D objects.

	<p>Key</p> <p>This object will be treated as a key object for unlocking doors. Plays the audio assigned to SOUND0 when the object is picked up by the player.</p>
	<p>Door</p> <p>Causes the door to swing open or closed. The player must be within the RANGE of the door. When the player interacts with the door, the animation and audio assigned to SOUND0 plays.</p>

	<p>Collision is also turned off after the assigned DELAY duration.</p>
	<p>Spin</p> <p>Spins the object on its Y-axis at the rate of SPINSPEED. You can also specify whether the rotation is ANTICLOCKWISE.</p>
	<p>Hover</p> <p>The object will hover up and down its Y axis by HOVERHEIGHT units.</p>
	<p>Invisible</p> <p>Hides the object from view during the game and the collision will still be active so you should turn physics off if not needed.</p>
	<p>Move Away</p> <p>Pushes the object away from the player when the player moves within RANGE distance of the object.</p>
	<p>Move Near</p> <p>Pulls the object towards the player when the player moves within RANGE distance of the object.</p>

	<p>Loop Way Point</p> <p>Makes the object loop around the nearest way point path and loops the audio assigned to SOUND0. The volume is based on the player's maximum distance RANGE to the object, between MINVOLUME and the MAXVOLUME.</p>
	<p>Invisible Prompt</p> <p>This object will be made invisible and a text prompt will be shown when the player is within RANGE of the entity. The prompt text used will be taken from the NAME field in the object's properties.</p>
	<p>Collection Count</p> <p>Identifies the object as a collectible and used as the win condition for the game. When an object with this behaviour is collected, the audio assigned to SOUND0 will play.</p>

Player Related Behaviours

These behaviours are related to the player. For example, as the player reaches a trigger zone an event may be triggered, like playing a sound or revealing a new location.

	<p>Reached Checkpoint</p> <p>If the player enters the zone, the save point of the player is updated to this location.</p>
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	<p>Player in zone</p> <p>Plays audio assigned to SOUND0 when the player enters the zone and activates any objects set in the ID USED property. Can remove the zone afterwards or can be set to multi trigger</p>
	<p>Win zone</p> <p>When the player enters this zone, the audio assigned to SOUND0 will play and the level is complete. IF USED in a standalone game, this will end the game. Will also activate an object specified in the IF USED field if the player enters the zone.</p>

Sound Effect Behaviours

These behaviours control the playing of sound effects or looping them over and over. Music tracks can also be triggered to play too.

	<p>Ambiance in zone</p> <p>When the player enters this zone, any zone with the same script which is currently playing ambient/background music/sounds stops and audio from the audio assigned to SOUND0 is looped. Will also activate an entity specified in the IF USED field if the player enters the zone.</p>
	<p>Ambiance once in zone</p> <p>When the player enters this zone, any zone with the same script which is currently playing ambient/background music/sounds stops and audio from the audio assigned to SOUND0 is played. Will also activate an entity specified in the</p>

	<p><i>IF USED</i> field if the player enters the zone.</p>
	<p>Sound in zone</p> <p>When the player enters this zone, any zones with the same script which is currently playing ambient/background music/sounds stops and audio from the audio assigned to SOUND0 is looped. Will also activate an entity specified in the <i>IF USED</i> field if the player enters the zone</p>
	<p>Sound repeat in zone</p> <p>When the player enters this zone, any zones with the same script which is currently playing ambient/background music/sounds stops and audio from the audio assigned to SOUND0 is looped. Will also activate an entity specified in the <i>IF USED</i> field if the player enters the zone</p>
	<p>Fade in sound</p> <p>Plays the audio assigned to SOUND0 at the volume based on the RANGE distance the player is away from the object. The sound will fade in between the MINVOLUME and the MAXVOLUME values.</p>
	<p>Loop 3D sound</p> <p>Loop the audio assigned to SOUND0 at the volume based on the RANGE distance the player is away from the object. The sound will fade in between the MINVOLUME and the MAXVOLUME values.</p>



Fade out sound

Fade out the audio assigned to SOUND0 based on the RANGE distance the player is from the entity. The sound will fade out between the MINVOLUME and the MAXVOLUME values.

Weapon Behaviours

These behaviours can be attached to a weapon type object or ammo to designate them as such.



Weapon

This behaviour can be attached to a weapon object that, when collected, will add the weapon a selectable weapon choice.



Ammo

This behaviour can be attached to an ammo object that when collected will replenish the ammo of a specific weapon.

Zone Behaviours

These behaviours are all zone trigger based. With them you can display images, text or videos.

	<p>Image in zone</p> <p>While the player is within the zone the image found in the path set in IMAGEFILE is displayed on screen. Will also activate an object specified in the IF USED field if the player enters the zone (you need to turn on the Developer control for this).</p>
	<p>Text in zone</p> <p>While the player is within the zone the PROMPT TEXT is displayed on screen. Will also activate an object specified in the IF USED field if the player enters the zone.</p>
	<p>Video in zone</p> <p>When the player enters this zone the video from VIDEO SLOT will be played. Will also activate an object specified in the IF USED field if the player enters the zone.</p>

HUD Behaviours

HUD behaviours are just standard behaviours but may have links to User Defined Variables or HUD Screens to allow for HUD interactions during gameplay. Some examples are:

	<p>Chest</p> <p>When a player interacts with a chest it will activate the designated HUD Screen and data container for removing or placing items to or from the chest to the player inventory</p>
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Crafting Table

When a player interacts with a crafting table it will activate the designated HUD Screen and data container for crafting items from collected resources.

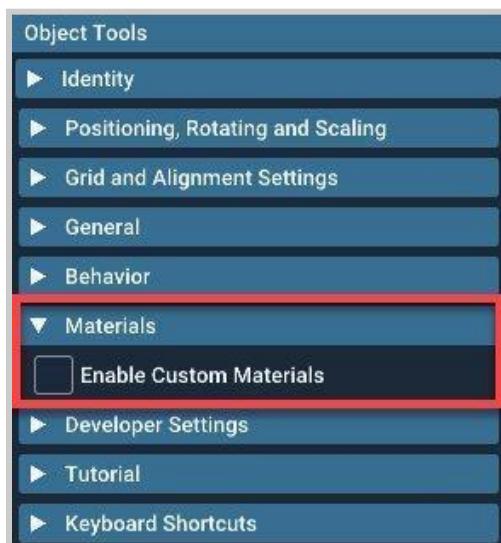


Trader

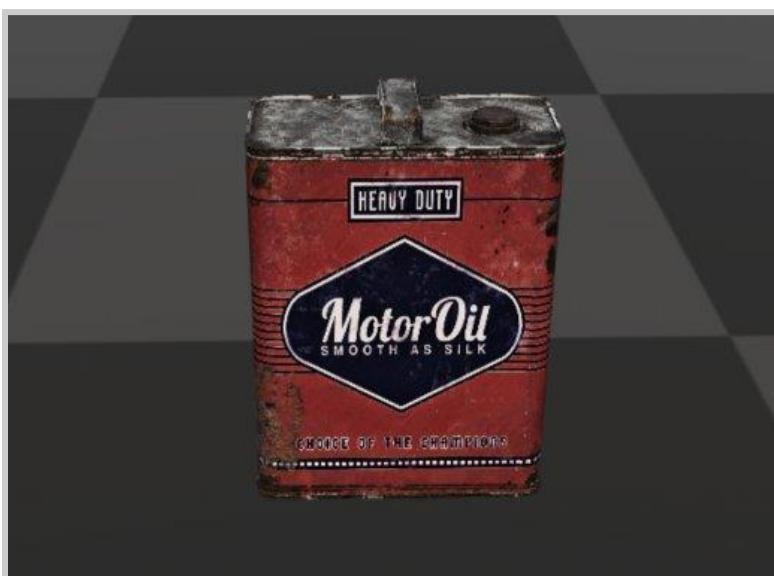
This behaviour is attached to an NPC to become a trader. When a player interacts with the NPC it will activate the designated HUD Screen and data container for trading eg: buying or selling of items with the trader.

Materials

3D Objects can be made up of geometric shapes, animations and various image textures. If you want to edit or even change the textures used by an object then you need to tick the Enable Custom Materials option in the Object Tools Window in the Materials section:

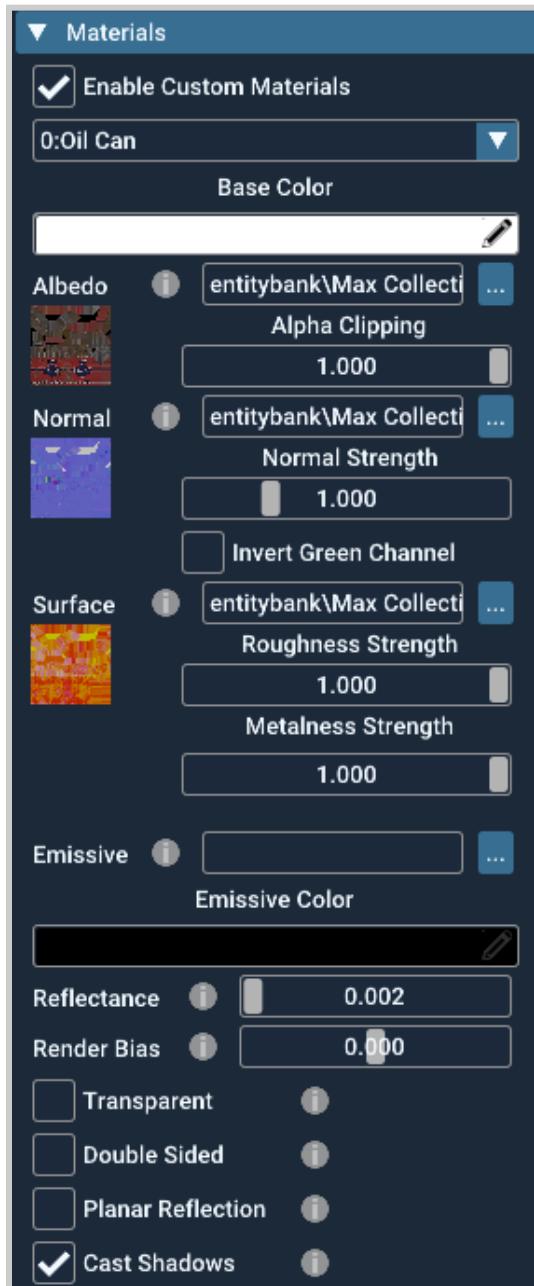


The list of items that appear under custom materials are best explained with the help of an example object. Here we have an oil can model from the core set of assets that come with GameGuru MAX.



The object is called “Oil Can” in the object library.

- Add the object to a blank level and click on it.
- When the Object Tools Window appears, open the Material section and click on *Enable Custom Materials*.
- You will see this list of options:



Base Color

This is an additive color that you can choose to change how the object looks. It will change how the Albedo texture looks and it's a quick and simple way to create lots of different types of the same object.

Here we've changed the oil can and made three extra variations by just changing this color value:



Albedo



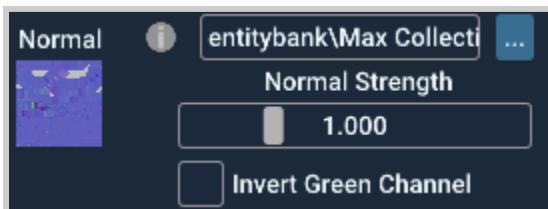
On some surfaces you need more than just a single colour. Using an albedo texture file allows an object to have multiple colours applied to different areas of the object. The colours in the albedo texture represent the base colour of the surface, which is then modified by other material properties like roughness and metalness.

Normal

A Normal is a vector that is perpendicular to a surface at a particular point on that surface. In other words, the normal represents the orientation of the surface at that point.

Normals are important in 3D graphics because they are used to calculate how light interacts with surfaces, and how the surface appears to the viewer. Specifically, they are used in a technique called shading, which is used to simulate the way that light interacts with objects in the real world.

Normals also play a role in determining how surfaces appear to be textured, and can be used to create effects such as bump mapping and normal mapping to simulate surface details that are not actually present in the geometry of the object.



Here you define the normal texture for the model. The *Normal Strength* settings lets you fine tune how strong this visual effect looks on an object.

Invert Green Channel: The green channel of a normal map is interpreted differently between the various graphics APIs. Inverting the green channel allows you to convert a normal map that was made for one API (for example OpenGL) into a usable format for MAX (DirectX).

Emissive

Emissive refers to a material property that describes the amount of light that a surface emits on its own, independent of any light that is shining on it.

When a material is emissive, it means that it generates light from its surface. This light can be of any colour or intensity, and it can be used to create a variety of visual effects in a 3D scene. For example, an object with an emissive surface could be used to represent a glowing object, such as a light bulb, a computer screen, or a neon sign.

This option controls the strength of any emissive texture applied to the surface. You can change the emissive texture and its base colour (see below). By adjusting the emissive property of a surface, it is possible to create a range of visual effects, from subtle glows to bright, intense lighting.

Emissive textures tend to be used to create bright areas of an object.



Surface



Surface refers to how the surface of the 3D object reacts to light. Whether or not the object is made of metal, or how rough or smooth the object is contributes to this effect. For example, a smooth stone will reflect light differently than a rough stone.

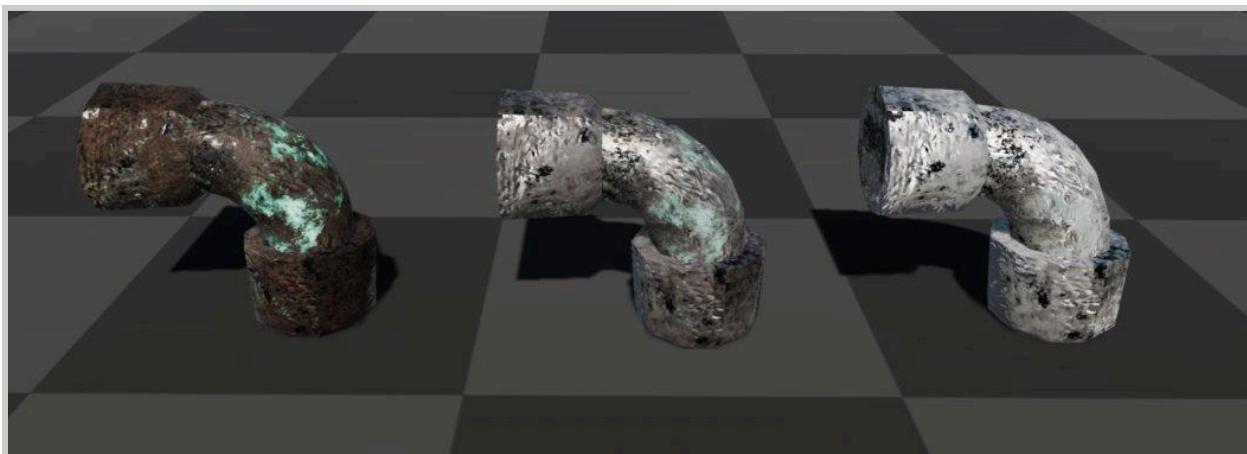
The surface of a 3D object can be described by a variety of properties, including its colour, texture, reflectivity, and transparency. These properties are typically defined by materials, which can be applied to the surface of the mesh to determine its appearance.

PBR (physically based rendering) textures don't all follow an exact file format. Because of this some textures will have to be selected individually to ensure GameGuru MAX can render the PBR properly. Objects that have been designed with PBR in mind should be accompanied by the necessary textures.

Roughness	This texture controls how rough the surface will be when rendered.
Metalness	This texture defines how metallic parts of the object are. Using a combination of the roughness and metalness sliders you can make objects look more realistic with light bouncing off the objects simulated metal surface.
Occlusion	An Ambient Occlusion map determines which areas of a model should receive less ambient light compared to others. This is useful for objects with small grooves and corners that should look darker than the rest of the model.

Reflectance

This feature offers a quick way to make some objects look shinier. For example, a higher reflectance applied to this pipe object makes it appear like it's made out of chrome or stainless steel.



You can adjust a mesh's Render Bias to solve issues related to depth. This is useful for things like transparency, where objects disappear when viewed through a transparent

material. In this case, you can add render bias to the transparent object to force the renderer to draw the objects in the correct order.

Transparent

Toggles a surface between completely opaque and semi-transparency controlled by the alpha of the albedo texture.

Double Sided

Double sided allows a texture to be seen on both sides of a model's polygonal face. Thus, if you have a model made of a single plane, without Double Sided, you would only see the model from one side. The other side would be completely transparent. With Double Sided ticked, you would then be able to see the model from both sides. This is useful for things like a window made up of one pane of glass, or a fence that uses a single plane with a wire fence texture on it.

Planer Reflection

Rather than use an environment cube, a planar is a single plane of reflection ideally used for puddles and mirrors.

Cast Shadows

Will toggle whether the object casts a shadow onto other surfaces.

Advanced Object Settings

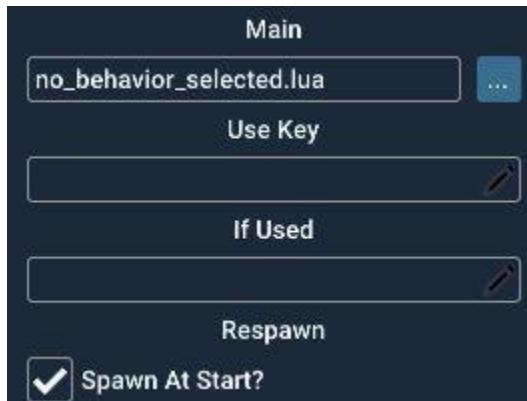
Some of these features are only available by enabling the Developer Settings. It is recommended that you only do this once you feel comfortable understanding what these settings do.

General



Occluder	If this option is enabled, the selected object becomes an Occluder in the 3D scene. It's best to set larger objects as occluders because when the player is close to them, they hide other objects behind them. As these hidden objects are not visible to the player, they don't need to be rendered, resulting in faster rendering of the scene.
Occludee	If ticked, the object is added to the list of objects that will be occluded if they are out of sight due to an occluding object.

Main



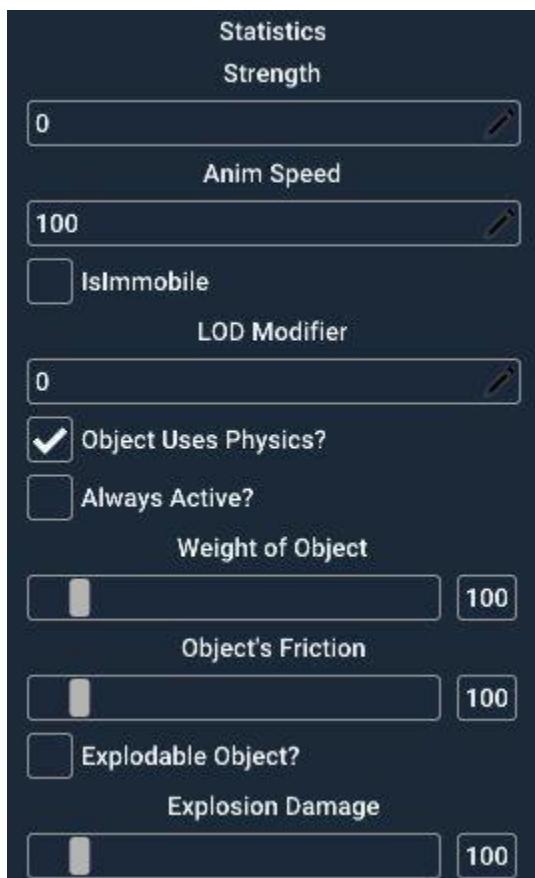
Behind all objects are special code scripts that run the logic for how the objects work. Characters have their own AI logic, doors have code scripts that decide how they can be open and closed, animals need instructions on how to react to the player getting close to them, and so on. The scripts in GameGuru MAX use the [LUA programming language](#). You will not need to know how to write these scripts but if you're interested then jump into the GameGuru MAX forums where you can read up on them in the [scripts section](#) to find out more.

Main	This is the main script that the object will run when it's active in the game.
Use Key	Here you enter the name of an object that the player has to collect for them to activate this object. The classic example is that of a door object that's locked. Until the player collects the object "Metal Key", this object "Old Wooden Door" cannot be opened.
If Used	When the player activates this object, any object listed in this field will be activated. Imagine a situation where the player reaches a doorway. Placed in that doorway is a trigger zone labelled "Zone1". The Zone1 trigger object has an "If Used" field with the name of a Zombie Character "Scary Zombie". This zombie is placed in the room where the player is but is not active at the start of the game. So when the player reaches the trigger zone the zombie will be activated and start to attack the player. There are many uses of this field and you can initiate many objects by using a semicolon ";" after each object name.

Respawn

Spawn at Start?	When the level begins, all objects with this ticked will be shown and active. You might want to hide some objects until certain conditions occur during the level and so you would turn this off and activate the object via a trigger zone or some other game event.
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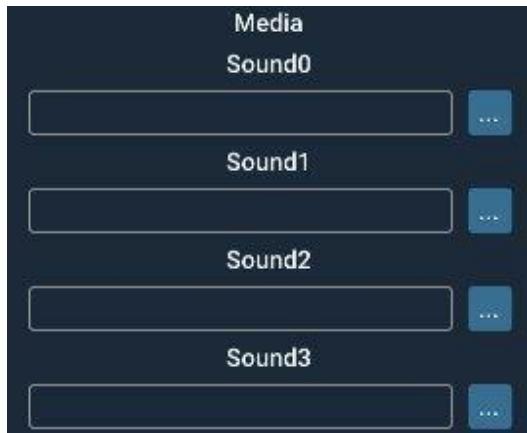
Statistics



Strength	This determines the strength of the object, or how many hit points it has. For static objects, if strength is set to zero then the object will be invulnerable.
Anim Speed	If the object has animations, this will control how fast or slow the animation plays.
Is Immobile?	This determines if the object can move during the game. In some cases you might want some objects to be movable and others to be static and never move.
LOD Modifier	LOD stands for Level of Detail. Objects that are close to the player have high-quality details, while objects that are further away can have lower details since they are harder to see (similar to real life). To optimise performance, it's recommended to create objects with multiple LOD meshes. This setting determines when the LOD transitions occur, with the default value being zero. If the transition of some objects doesn't look aesthetically pleasing, you may consider adjusting their LOD transition.
Object Uses Physics?	If the option is ticked, the object will be affected by the physics system, meaning it will respond to physical forces like gravity, collisions, and so on. If the option is unticked, the object will not be affected by any physical forces and will remain in place.

Always Active?	Enabling this option will make the object active in the level at all times, regardless of its distance from the player. This can be useful if you want the player to be able to see the object in the distance, but keep in mind that active objects consume system resources, so it's important to use this option judiciously to avoid negatively impacting game performance.
Weight of Object	Set the weight of the object. This value is then used in the physics simulation. The default weight is 100 (<i>think percent</i>). A value less than 100 will make it lighter and a value higher than 100 will make it heavier.
Object's Friction	This sets the objects friction value of the object. A lower value will lessen the friction effect and a higher value will increase the friction of the object.
Explodable Object?	If this is ticked then the object will explode if its strength falls to zero. Applies only to dynamic objects.
Explosion Damage	If the object is marked as explodable then this value sets the range and amount of damage the exploding object will deal when it explodes.

Media

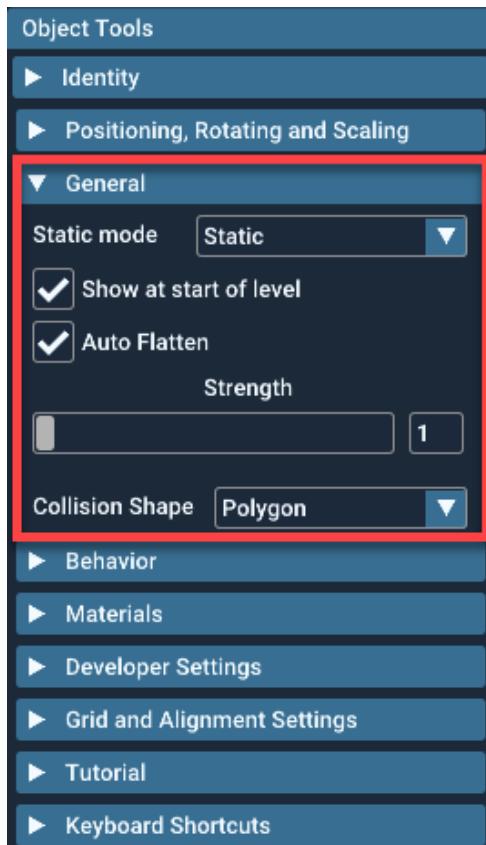


Objects can be assigned audio files to play when triggered. Triggering audio to play is done with scripting, such as behaviours or custom code. An object can have multiple audio files assigned and triggered based on the logic of the code.

Sound 0	The audio file for Sound0
Sound 1	The audio media file for Sound1
Sound 2	The audio media file for Sound2
Sound 3	The audio media file for Sound3

General Settings

These General settings define how the object will react during the running of the game.



Static Mode

Static mode setting has three possible states - Static, Physics On and Physics Off. The setting decides what type the object will be in the game.

- Static - the object will always remain in place and it will never move or be affected by physics forces
- Physics on - the object become dynamic and will react to physics such as gravity or other objects colliding with it
- Physics off - the object is still dynamic but it will not move. This is useful when you want to interact with an object but don't want it to move due to physical forces

Show at start of level

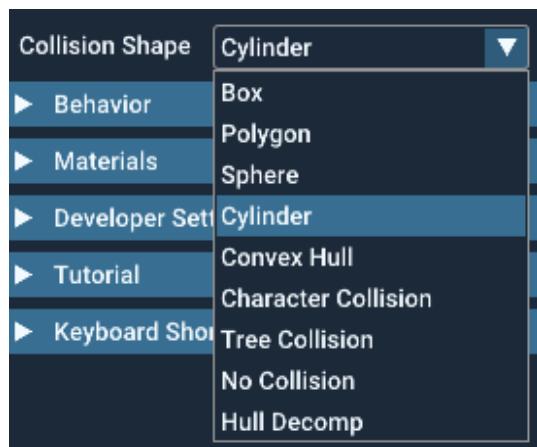
At the start of a game, certain objects may not need to be visible or active. By unchecking this button, you can hide the object, and use game events to show it once a specific action occurs. For example, you could use this feature to reveal new enemies to the player once they reach a particular area in the game. This can save resources and improve performance. When a game begins you might not want some objects to be visible and active. You can untick this button to hide the object and then use a game event to show the object once something happens in the game. A good example would be to show new enemies to the user once they reach a certain area of a game.

Auto Flatten

This will appear in the panel with some large objects like buildings that are setup to create a flat area in the terrain underneath them. It's a convenient way to make space in the scene for the object and it also wipes out any vegetation and trees. Sometimes you might not want this to happen. Just un-tick this option and the terrain will revert to its original shape.

Collision Shape

By using this drop-down box, you can easily change the physics collision shape for an imported object. This can be useful if you didn't choose the best or most appropriate shape for the object initially. The possible choices are depicted here:



Importing Objects

While the core asset library contains well over a thousand 3D objects, you will most likely want to import your own or third party 3D models and use them in your games. GameGuru MAX has an easy to use importer to help you bring in the models.

Supported Mesh and texture formats

The importer supports .OBJ, .FBX, .glTF, .X, .GLB and .DBO mesh formats. The associated textures must be in [PNG](#), [JPG](#) and [DDS](#) formats.

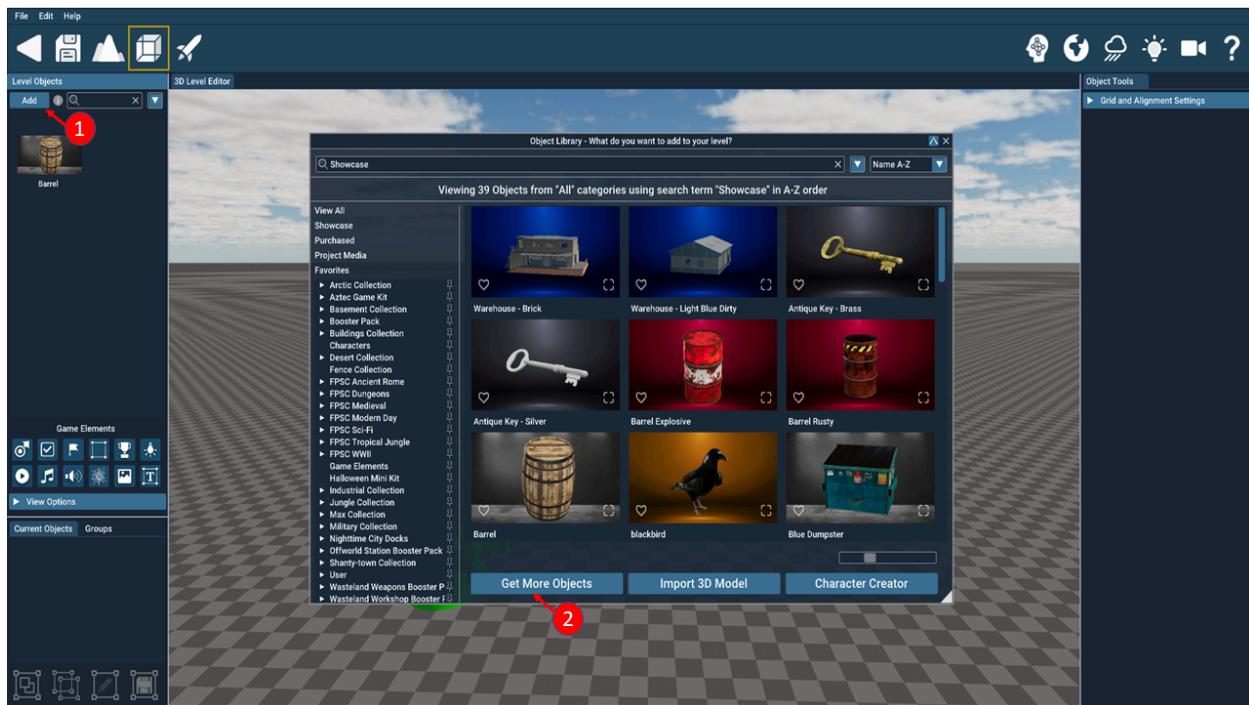
.OBJ	This is a geometry file format originally developed by Wavefront Technologies for its Advanced Visualizer animation package. The file format is open and has been adopted by many other 3D graphics applications.
.FBX	The FBX file format was developed by Kaydara and has been owned by Autodesk since 2006.
.glTF	glTF (GL Transmission Format) is a royalty-free specification for the efficient transmission and loading of 3D scenes and models by engines and applications. It was created by the Khronos Group.
.X	This file format was created by Microsoft to store mesh, textures and animations as part of their DirectX game technologies. It's quite an old format and isn't quite as popular.
.GLB	GLB is a binary file format of 3D models saved in the glTF format. It describes 3D models, cameras, materials, animations and meshes in a binary format. It avoids the issue of increase in file size which happens in the case of glTF.
.DBO	The DBO format was created by TheGameCreators for easier object management.

The importer makes use of the [Assimp](#) importer library to read and convert the 3D models into the DBO format.

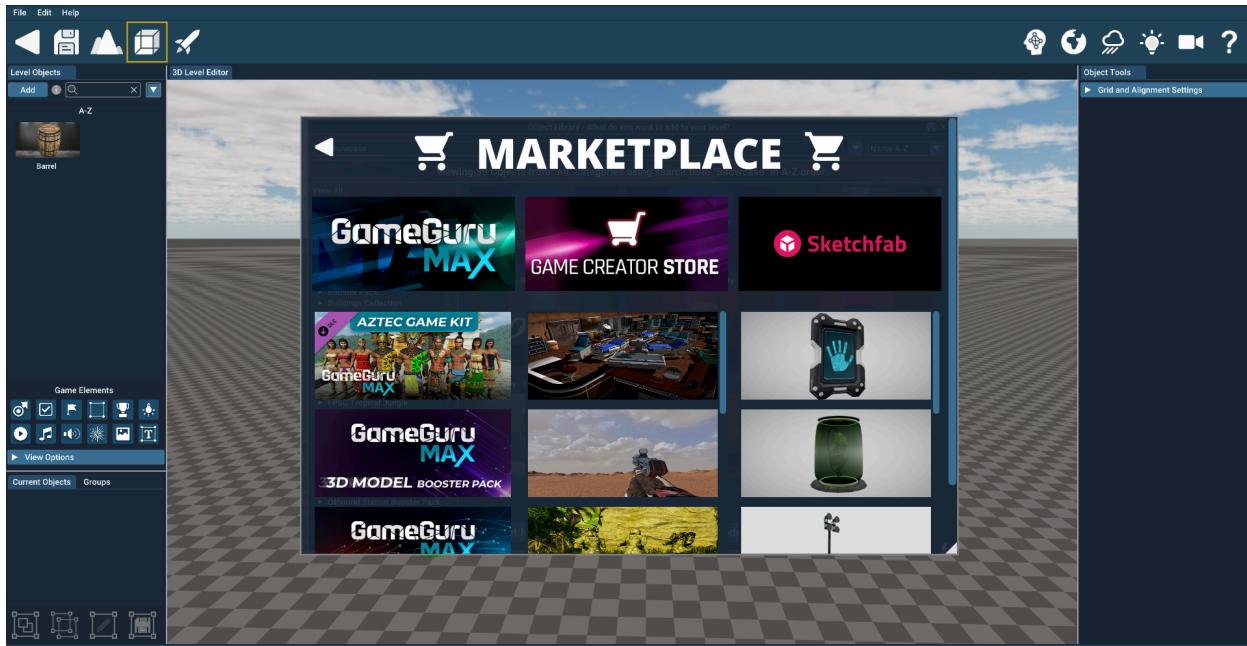
How to access the Importer

Click on the Add button in the left hand Level Objects panel to bring up the Object Library. You may also press Ctrl + I.

Next, click on the Get More Object button



This next screen will appear offering different ways to find new objects. The screen is split into four sections, with the importer on the right hand section titled **IMPORT YOUR OWN** (we'll discuss the other options in this menu later).



The IMPORT YOUR OWN panel will show blank thumbnails if this is the first time you've used the feature or it will show thumbnails of models you have previously imported. At the base of the panel is the *Import 3D Models* button. Click on this to start the import process.

The Importing Process

Once you have called up the importer you will be presented with a file selector. You need to select the file that you want to import. It's important to realise that 3D models are made up of different types of files - the 3D mesh file and the various texture files. If your source files are not prepared properly then you might run into issues trying to import them successfully.

Here we'll walk through a relatively simple object import so you can understand the different settings and the decisions made at each step.

STEP 1 - downloading the files

This old water tower is a free to use 3D model that can be downloaded from [CGTrader.com](https://www.cgtrader.com)



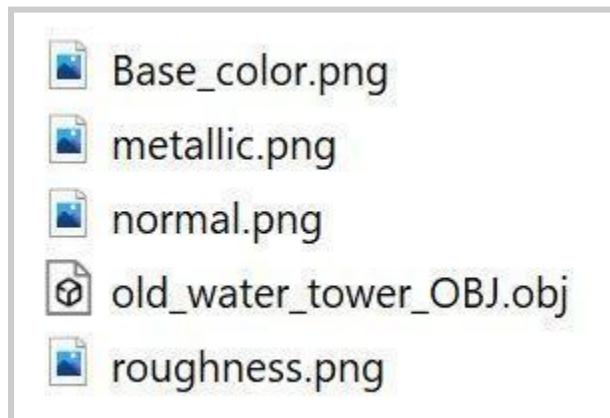
Click on the Free Download button and the files for this model will be made available to you. They will show like this;

Old water tower 3D Model Files

old_water_tower_FBX.zip	(90.8 KB) Download
water_tower_textures.zip	(14.3 MB) Download
old_water_tower_OBJ.zip	(56.2 KB) Download
old_water_tower_blender.zip	(348 KB) Download

You just need these two files *old_water_tower_OBJ.zip* and *water_tower_textures.zip*.

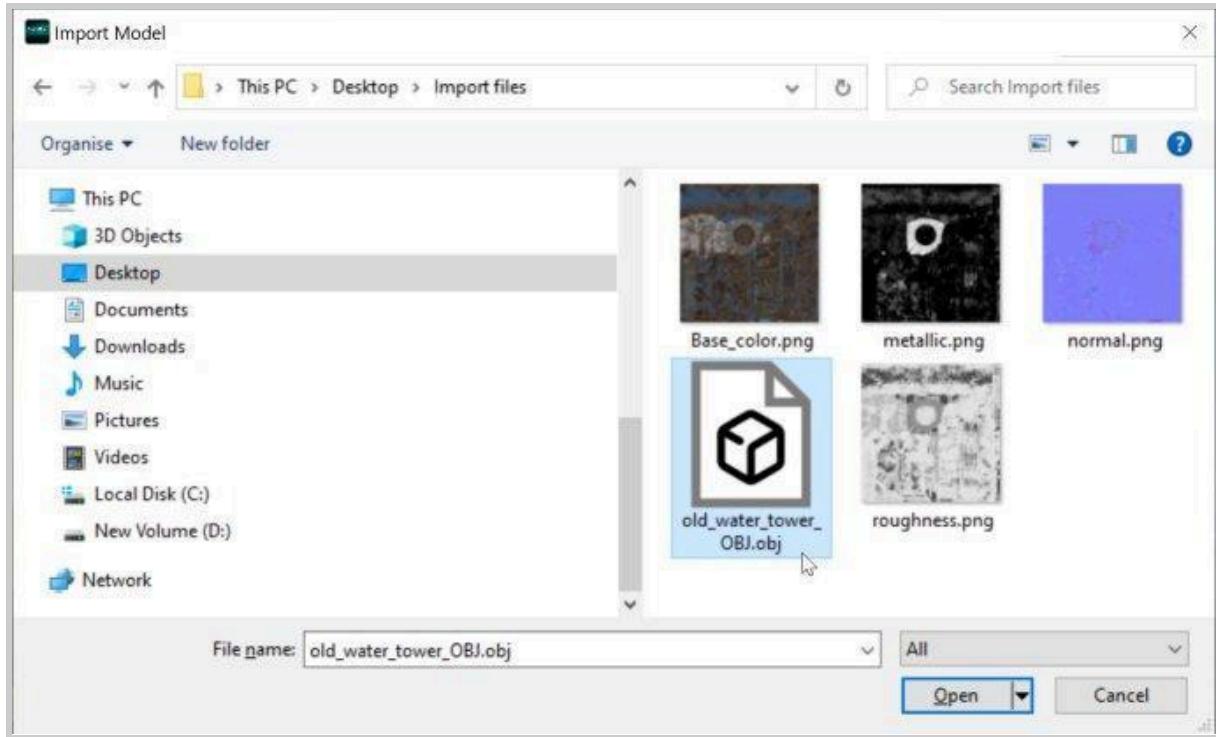
The files are zip files, it's best to unzip them into a folder. You should now have these files on your hard drive;



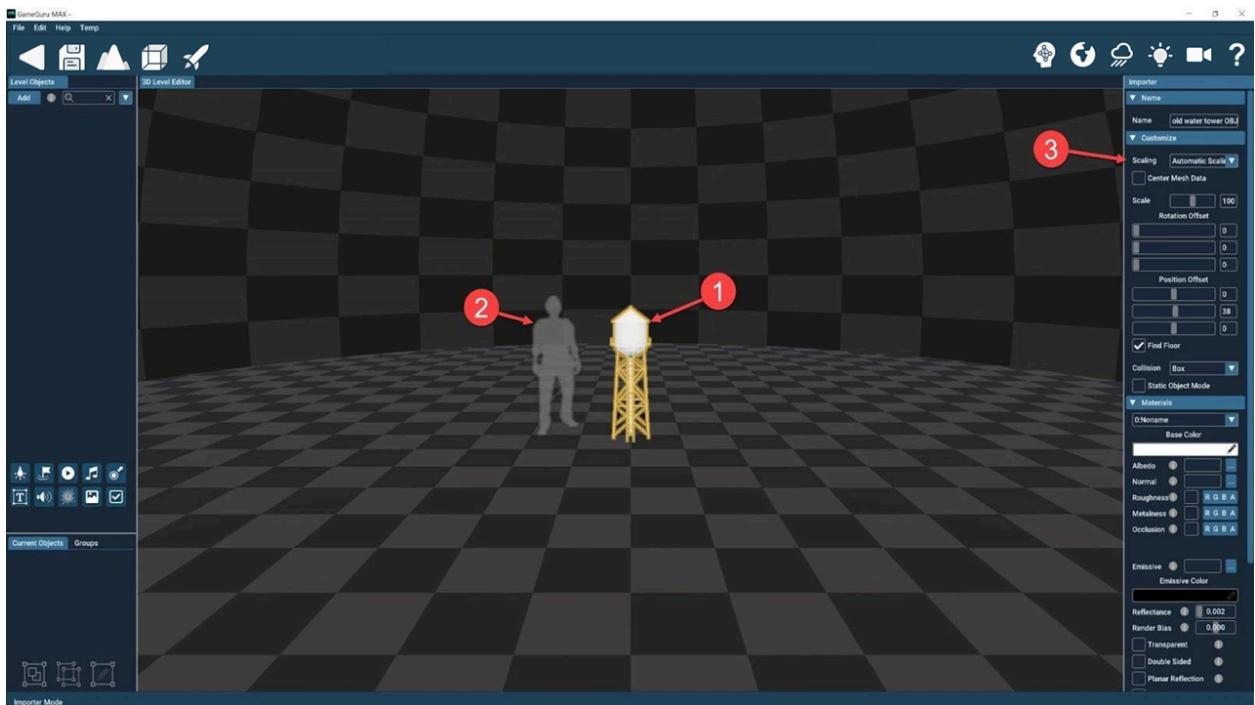
old_water_tower_OBJ.obj is the 3D mesh file. The other files are the texture files that describe how the model should be coloured and the materials that describe its look.

STEP 2 - Choosing the 3D mesh file

Now it's time to call up the importer. Do this by pressing Control+I or accessing it via the Object Library. The file selector will be presented and you now need to choose the *old_water_tower_OBJ.obj* file.



After selecting the file it will be loaded and the object will be displayed inside a special import screen like this:



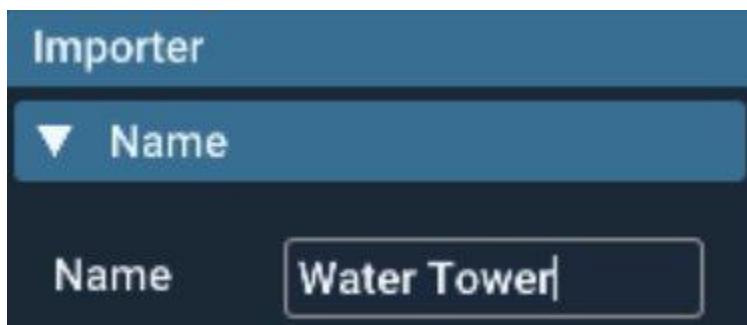
1. This is the imported mesh file.

2. To help you judge the sense of scale, this character silhouette is shown alongside the imported model. Clearly the new model is too small compared to the character, it will need to be scaled taller.
3. The importer panel is where you can fine tune the object's properties before it's fully imported.

It's clear that the imported model is too small and none of the textures are synced with the model. We'll now explore the Importer panel and go through all the options one by one.

STEP 3 - Naming the object

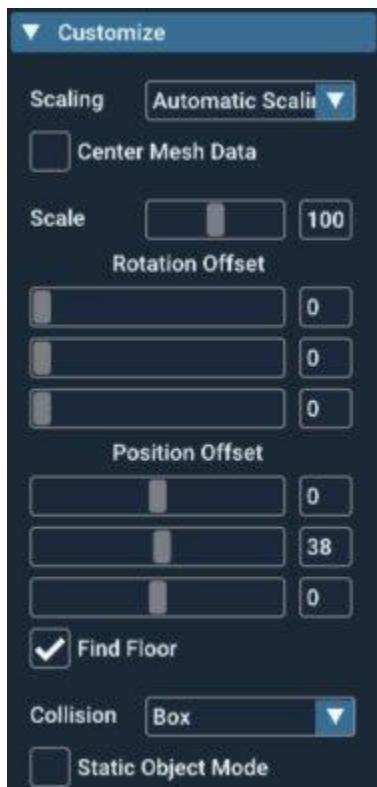
Name



Name	The Importer will take the filename of the object you are importing and use that as the initial name. You may want to edit this name to better suit the model for when it's in your object library. In the example we'll rename it to <i>Water Tower</i>
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STEP 4 - Scaling and setting the object's collision

Customize



Scaling

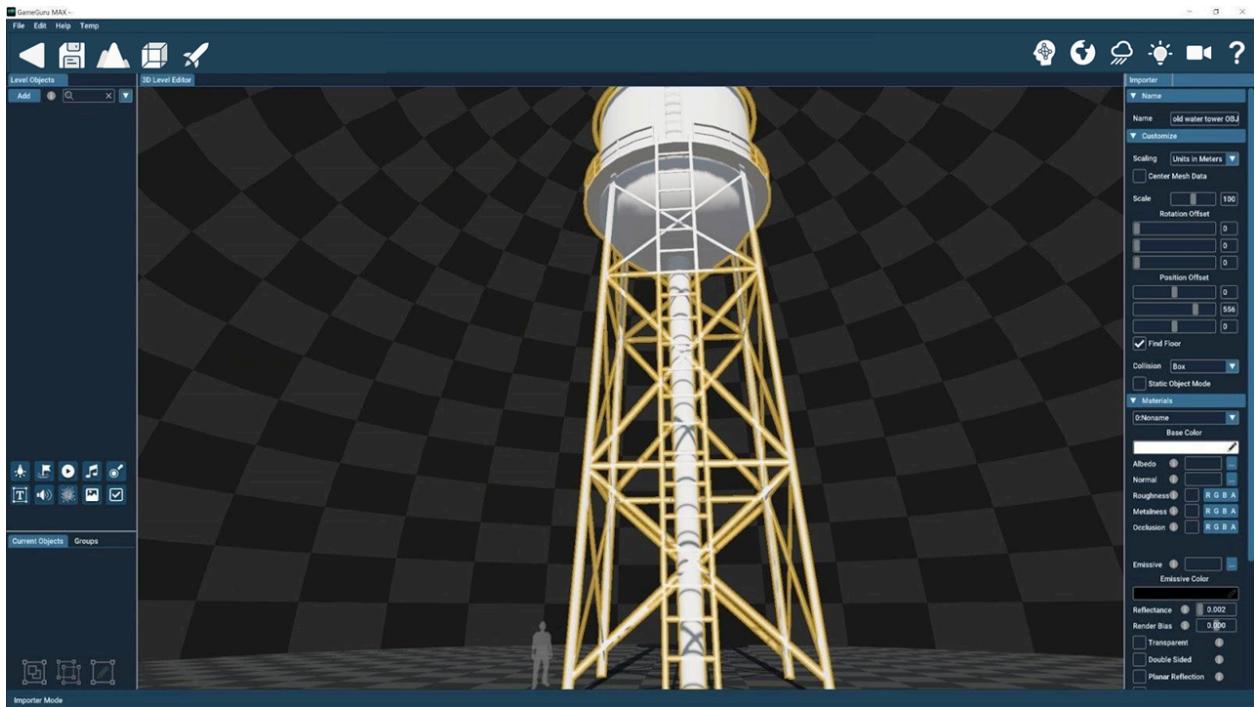
GameGuru MAX will try to work out the correct scaling for the imported model but this is not always possible. When that happens, you can either use the scaling dropdown to try out different preset scaling options:

- Original scaling - This is the scaling that was extracted from the file. When the model was created it might have been set so that 1 unit = 1 cm, 1 metre and so on.
- Units in Metres - This sets the unit scaling so 1 unit = 1 metre
- Units in Inches - Sets the scaling so 1 unit = 1 inch

	<ul style="list-style-type: none"> • Units in Centimetres - Sets scaling to 1 unit = 1 centimetre • Automatic Scaling - This scaling mode tries to convert the scaling to 1 unit to the GameGuru Max scaling system.
Center Mesh Data	<p>Use this when a model has been created away from the origin axis of 0,0,0. When you tick this option the vertices in the mesh will be changed so that they are at the origin.</p> <p>Note: This does not work on any object that has animation.</p>
Scale	Use this slider to scale the object smaller or larger.
Rotation Offset	If the object is not in the correct rotation, you can use these three sliders to set the correct rotation default position.
Position Offset	These three sliders let you change the position of the object in case it's offset.
Find Floor	This is a quick way to ensure the model aligns with the floor.
Collision	<p>Choose the type of collision for the object. The choices are;</p> <ul style="list-style-type: none"> • Box - best suited for objects with a box shape, like crates or pallets, as it offers an efficient and fast collision detection choice. • Polygon - a more accurate collision choice

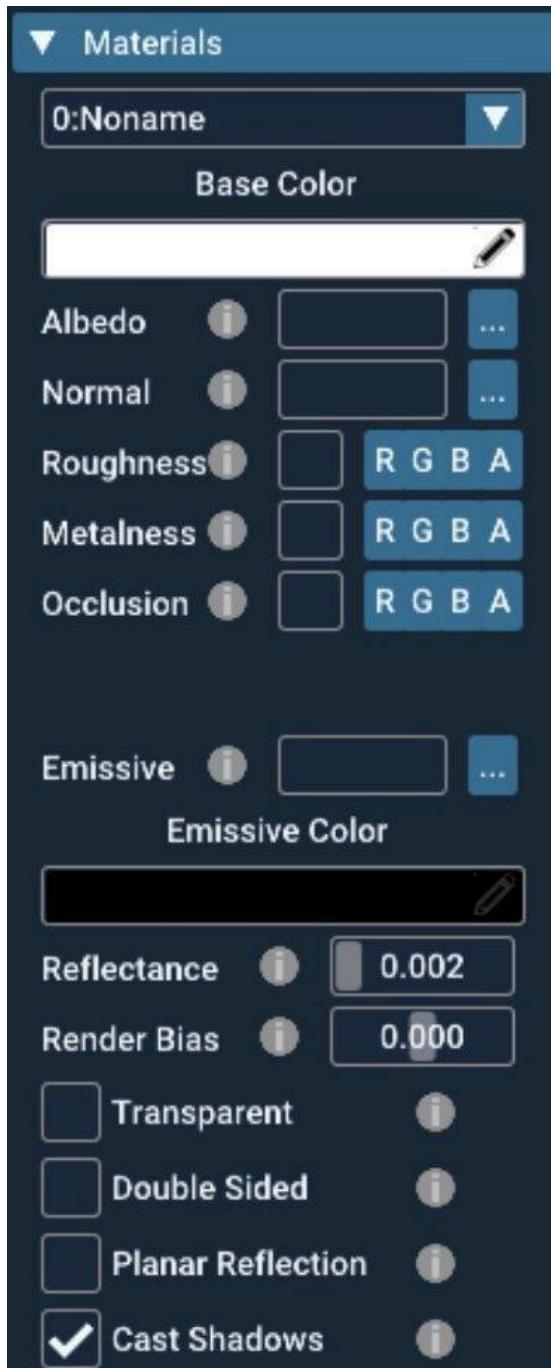
	<p>with the side effect of being less performance friendly.</p> <ul style="list-style-type: none"> • Sphere - use this for spherically shaped objects like balls. • Cylinder - used when the object is cylindrically shaped. • Convex Hull - for objects that have curved opening; a waste bin for example. • Character Collision - this should be chosen when importing a character based model. • Tree Collision - trees are treated in a special way to ensure the player only collides with the main trunk of the tree so as not to get caught up in the branches. • No Collision - for objects like small bushes or small items that you don't want the player to collide with.
Static Object Mode	Tick this box if you intend for this object to be a static object that isn't affected by the physics system - for example rocks, trees and other non-movable objects.

Once the Water Tower model is updated to use the scaling choice *Units in Meters*, the model clearly displays properly at the right size as can be seen here;

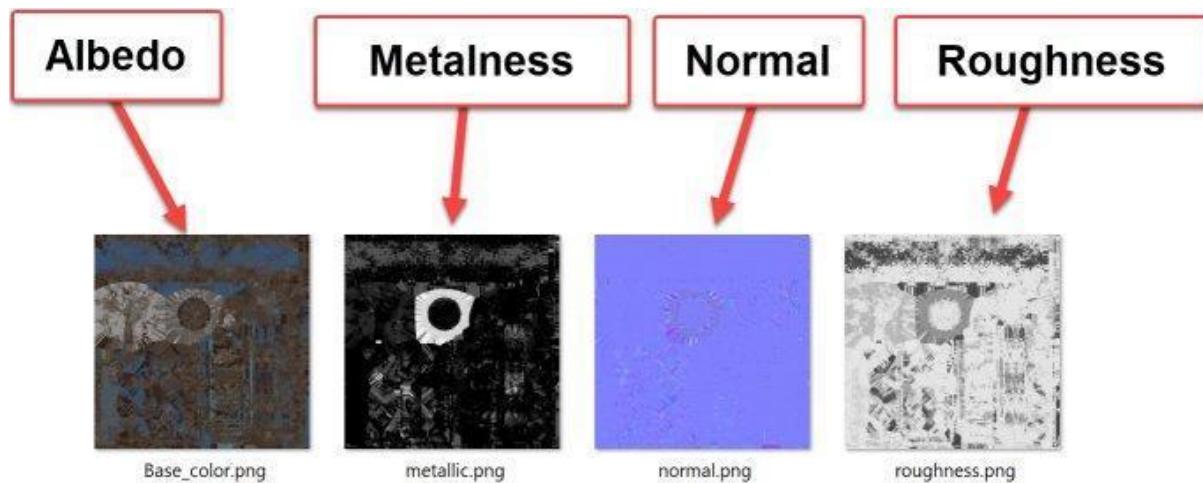


STEP 5 - Setting up the object's textures

The next step involves linking the model with its corresponding textures. While some models may automatically connect with the textures, for the water tower model, it needs to be done manually. To accomplish this, you need to access the Materials section, which deals with the texture setups.



This model comes with four texture files:



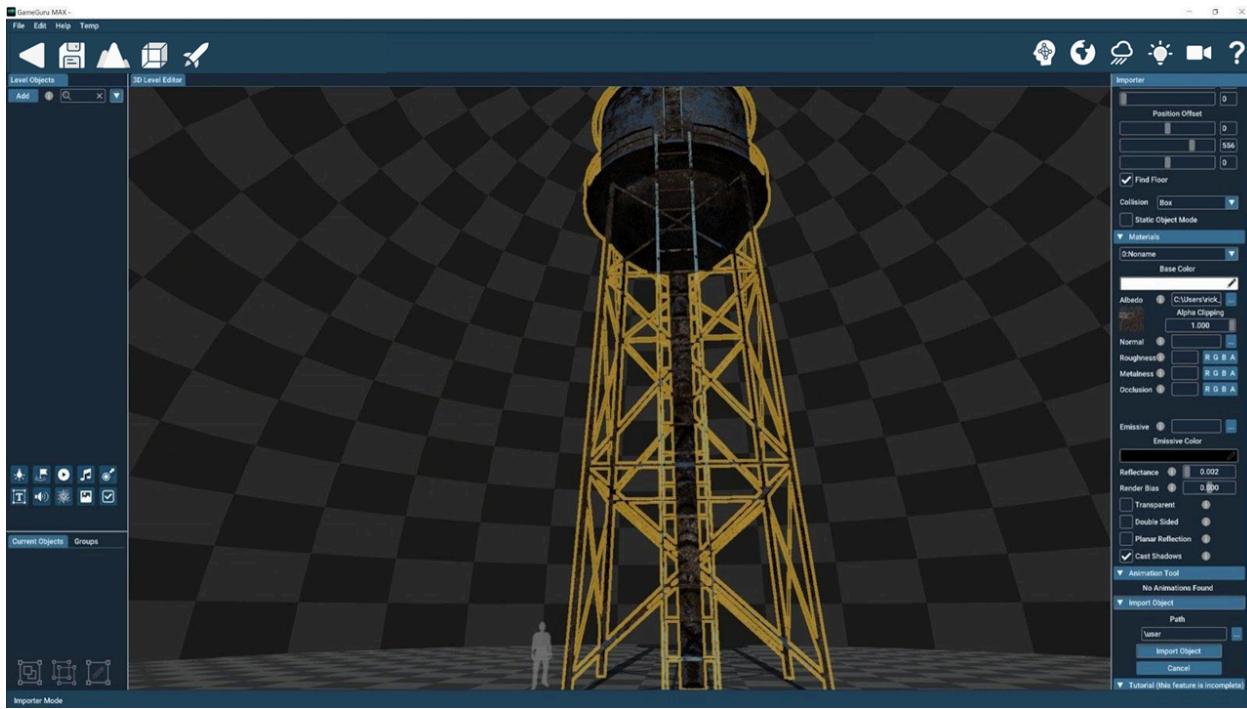
GameGuru MAX creates a surface texture made up of up to four components:

1. Occlusion
2. Roughness
3. Metalness
4. Reflectance

Commonly, these come in a texture per component form i.e. an occlusion texture, a roughness texture, a metalness texture and a reflectance texture. These textures have 4 image channels each (RGBA). Most of the time, the 4 channels contain the same information. For example in the roughness texture, R=G=B=A. However, to save space, some software tools (e.g. Unreal) will actually merge multiple components into the same texture (e.g. roughness and metalness in the red channel and blue channel respectively). So the importer has multiple sets of RGBA buttons so you can extract the necessary surface texture component needed.

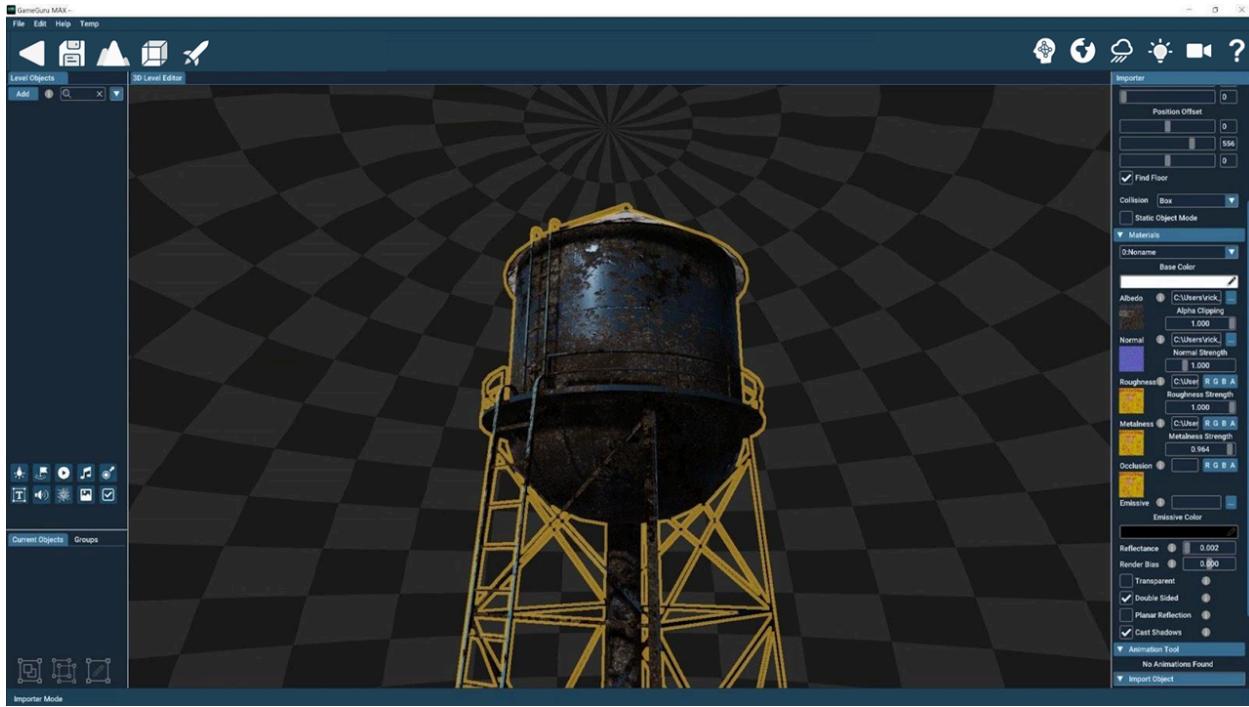
Once you have set up these channels, GameGuru Max will build the surface texture which then gets used on the model.

To begin, let's set up the Albedo texture, which consists of the colours used in the model. The following screenshot displays the model updated with the Albedo texture, which the artist named "Base_color.png".



The next texture to setup is the *Normal* map. This demo model does not make much use of the normal map and so the change is not noticeable.

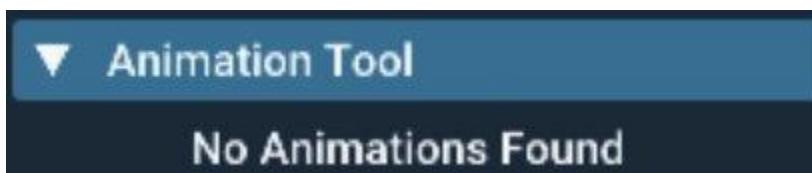
The final set of textures are the Roughness, Metalness and Occlusion textures. This model only comes with two of these. See in the next image how the metalness and roughness textures add realism to the model and make it look like a real metal object.



There are various other settings that you can try out. For more details on these you can read up on them in the [Object Materials section](#).

STEP 6 - Animation

This model doesn't have any animation so we'll skip over the feature. We'll look at it with another example soon.



STEP 7 - Importing the object

Now that the model is fully set up as you would like it to appear within your GameGuru MAX library, you can simply click on the *Import Object* button. By default, all models are saved in the \user path, but you can select a different folder if you prefer.



If you've decided not to import the object you can click on Cancel and the import will be aborted.

If you have a large number of objects to import that share the same customization settings, you can utilise the Import Batch feature by selecting the folder that contains all of the models for batch importing.

STEP 8 - Setting up the object's thumbnail and metadata

Finally, a new screen will appear that lets you choose how the object will be presented in your object library:



Backdrop

Static Image	This is the backdrop image that best shows off the 3D model. Just click the drop down list to choose the one you prefer.
Keywords	You can also type some keywords that can help you find the object. For this object we could type: Structure, tall, metal, industry

Posing the object

Rotate	Hold down the left mouse button to change the rotation of the object.
Move	Hold down the right mouse button to move the object up, down, left and right.
Zoom in and out	Use the mouse wheel to zoom the object in and out.

Here's the same object with the above changes made;

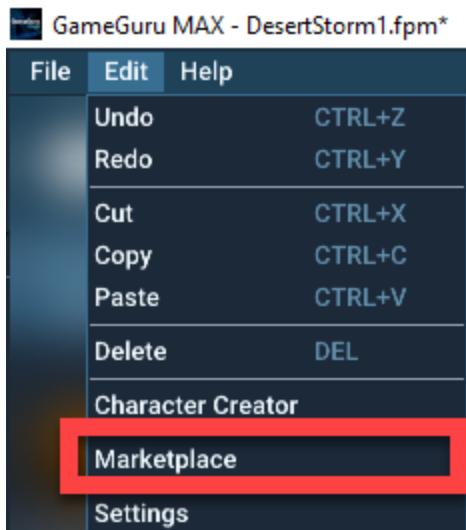


And when you're happy with all of that you can click *Add to Object Library* to complete the importation of the model.

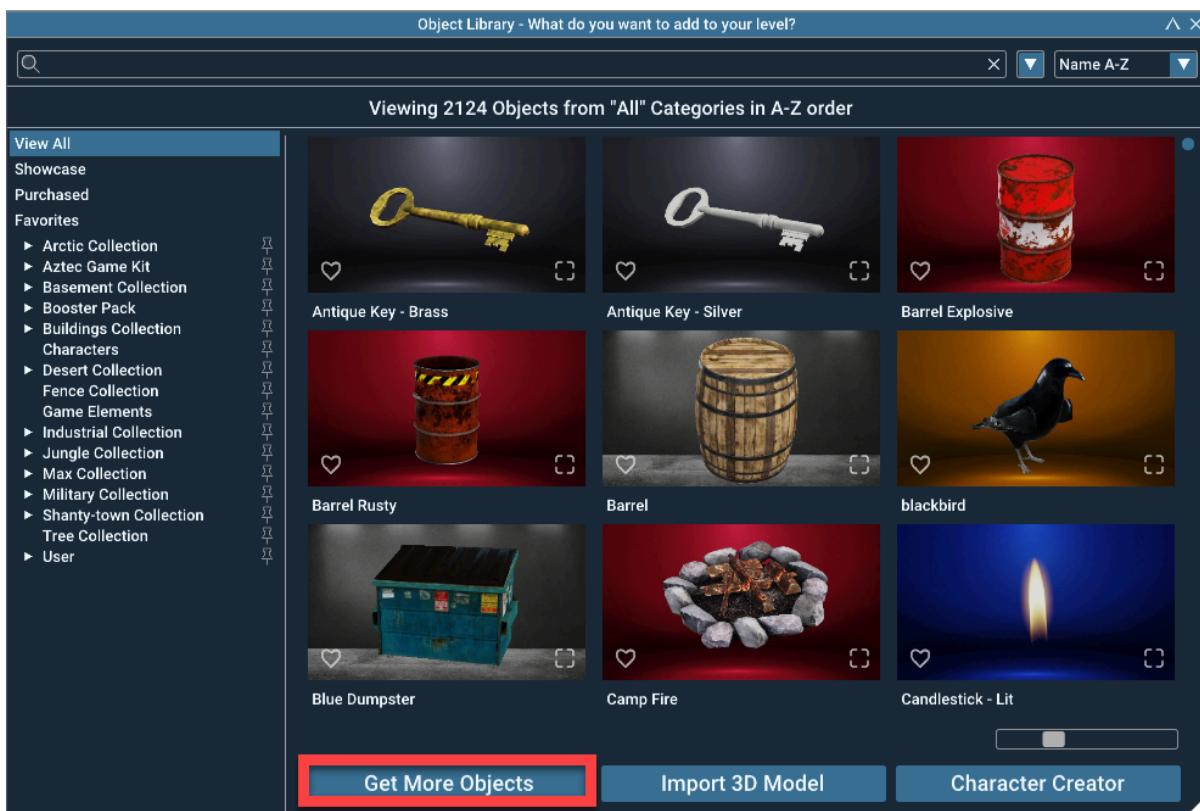
Asset Stores

There are a number of ways to call up the Marketplace screen:

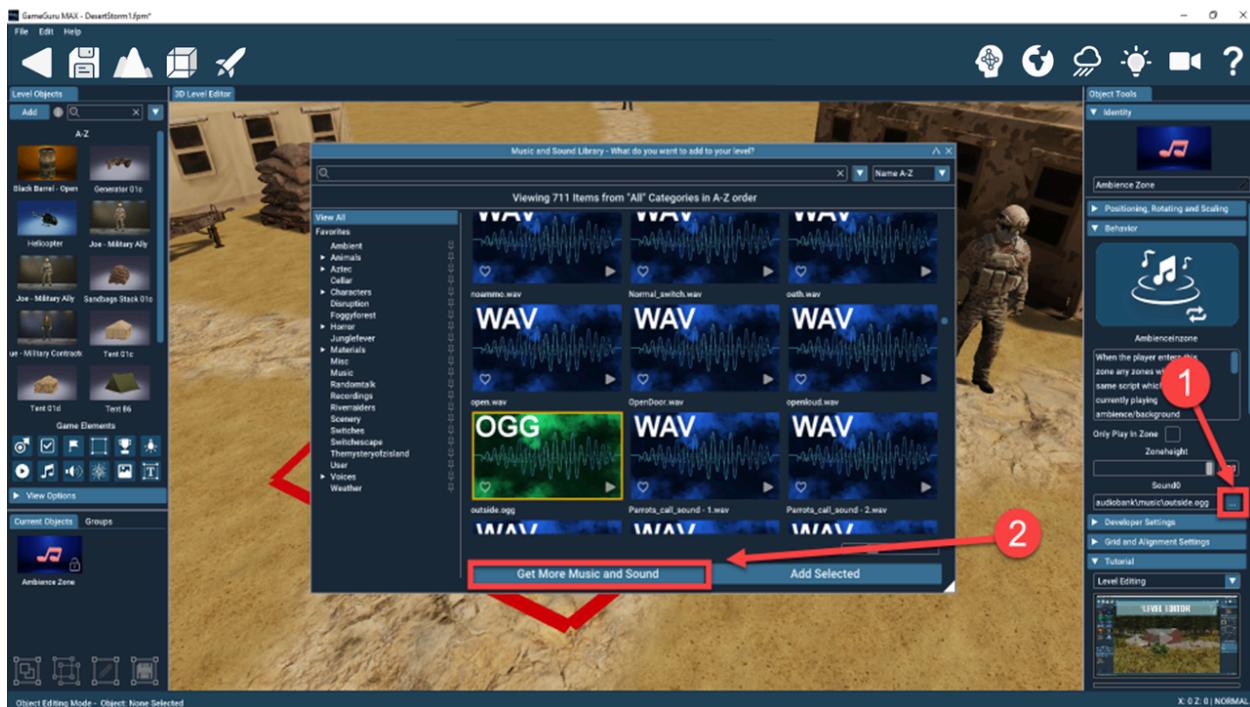
- From the Level Editor drop down Edit menu



- After clicking "Add" in the Level Objects window you'll see a button at the base of the screen titled "Get More Objects"



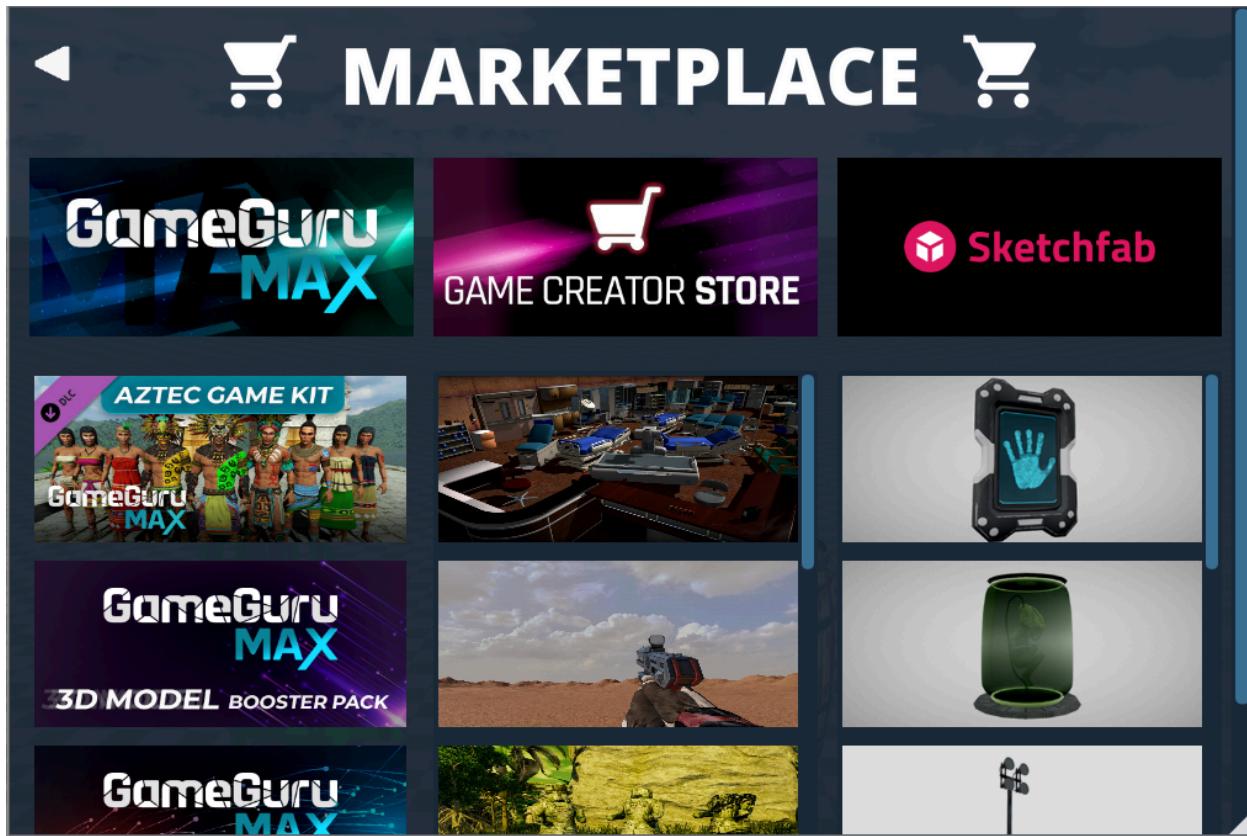
- When you are editing a sound source, say for example an audio zone, when the sound library appears you see a button titled "Get More Music and Sound"



The Marketplace will appear on screen and show the relevant options for the type of assets you are working with.

3D Models

If you are looking for 3D models then it will appear looking like this:

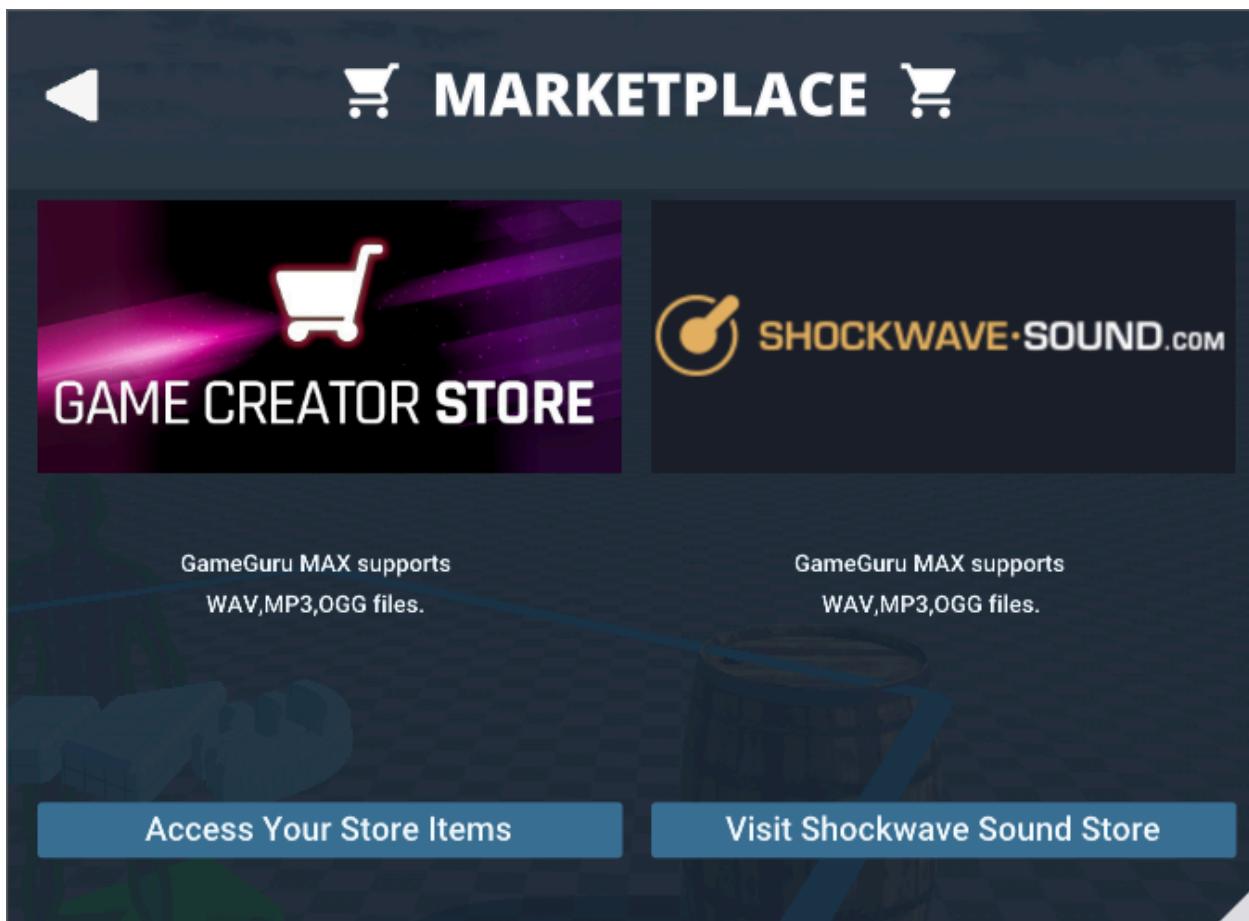


- **GameGuru MAX** - this column shows the latest Game Kits made and published by TheGameCreators - currently there's the new Aztec Game Kit and the Booster Pack
- **Game Creator Store** - here you'll find a selection of example models that are available for free or for purchase from The Game Creator Store. Among these models is the AIKO character, which has been updated to today's graphical standards and is available for free. Adding AIKO to your GameGuru MAX games is easy, so it's recommended that you [sign up](#) for an account on the store if you don't already have one. Once you have downloaded or purchased content from the store, it will appear in a new "Purchased" category in the Object Library, located just below the Showcase category.
- **Sketchfab** - this popular web site offers thousands of high quality assets from different artists. Some of TheGameCreator's items on this store are featured in the Marketplace and we encourage you to check out their website

for ideas for your projects. Many items can be downloaded and then imported for use within GameGuru MAX

Audio Files

When you are choosing sounds or music for things like the ambient sounds or a trigger event, you can call up the Marketplace and it will show sound related options like this:



- **Game Creator Store** - takes you to the independent Game Creator store where you can browse music and sounds.
- **Shockwave Sound Store** - This website offers thousands of music tracks that you can buy and use in your games. TheGameCreators have used them for their own video presentations and can highly recommend them.

There are many other free and paid resources available on the web, as well as tutorials and videos that can help you create your own unique assets.

Importing Audio

The sound and music library already has lots of audio files in it. Even so, at some point you may want to use your own sound and music files. As with importing objects, GameGuru MAX has an easy to use importing system to get sound and music into your games.

Supported Sound and Music Formats

.WAV	Preferred use for sound effects and must be at 44100hz 32bit PCM format
.OGG	Can be used for either sound effects or music and benefits from being compressed in size
.MP3	Should be used only for music in your levels

Note: Any 3D sounds should be in MONO format and not stereo.

There are a number of ways to import your own sound file:



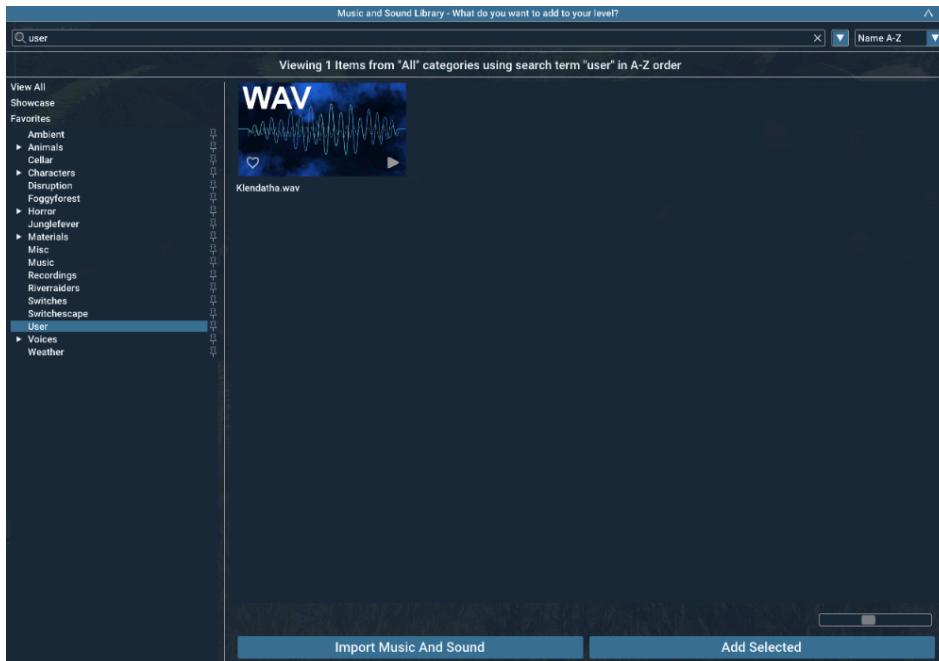
In GameGuru MAX, you can add various audio elements to your level, such as an "Ambient Music Track", a "Music Zone", or an "Audio Zone". These options allow you to import your own music or sounds into your level. For instance, if you want to include your own "Ambient Music Track", you can click on the blue button with three dots located next to "Ambient Music Track":



That will bring up the "Music and Sound Library":



To import your own music or sound, simply click the "Import Music And Sound" button located at the bottom-left. This will open a standard Windows dialog, allowing you to navigate to where you keep your sound and music files. After selecting the file you'd like to use, it will show up in the "Music and Sound Library" under User:



Just double-click it and your sound file is ready to be used in your level.

To import your own sound or music files for an "Audio Zone" or a "Music Zone", you would follow the same procedure as for setting up an "Ambient Music Track". Once you have added the zone to your level, go to the corresponding Behaviour and click the blue button with the three dots next to where the sound is. This will bring up the "Music and Sound Library" again, allowing you to import your own sounds and music for that specific zone.



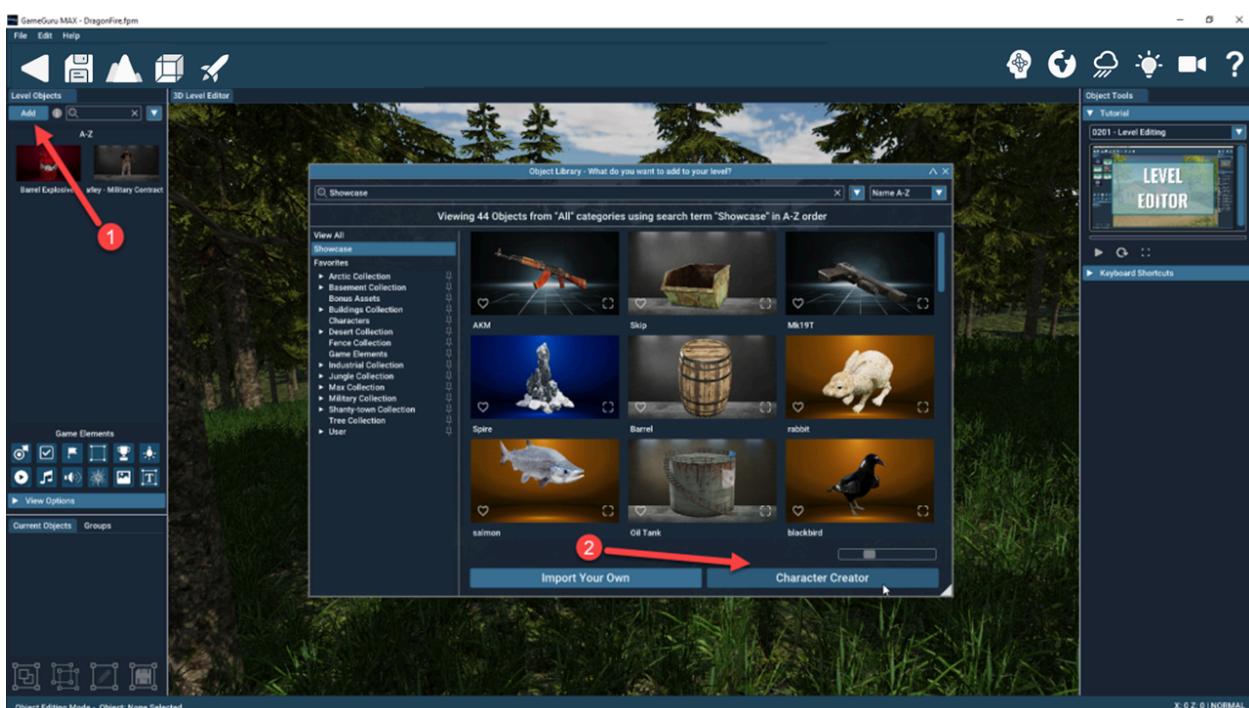
Character Creator

There are two ways to call up the built in Character Creator;

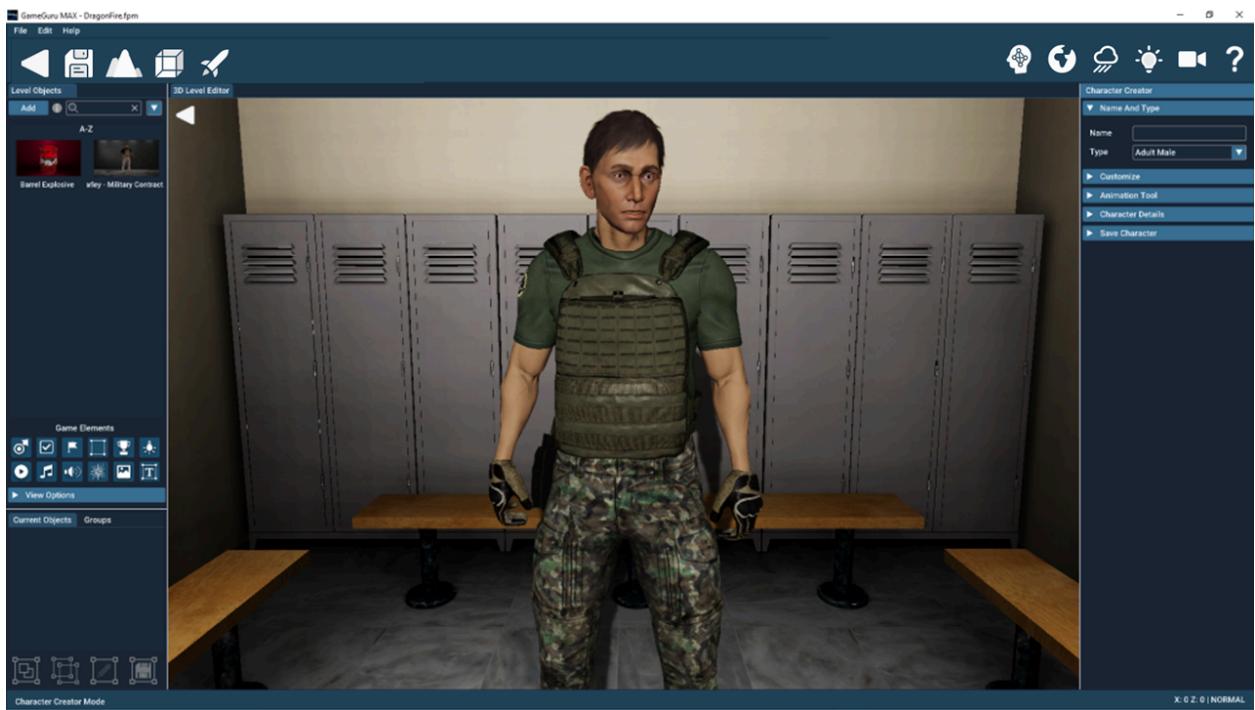
1. The Drop-Down Edit Menu has a menu shortcut to it as shown here;



2. There's a button in the Object Library that calls it up;

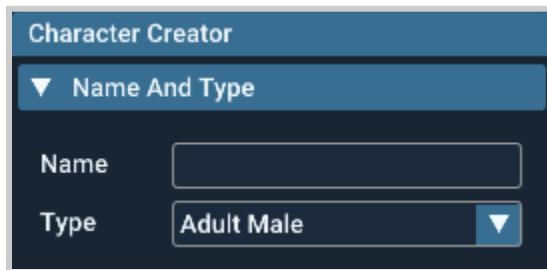


When it loads up you will be shown this screen:



Name and Type

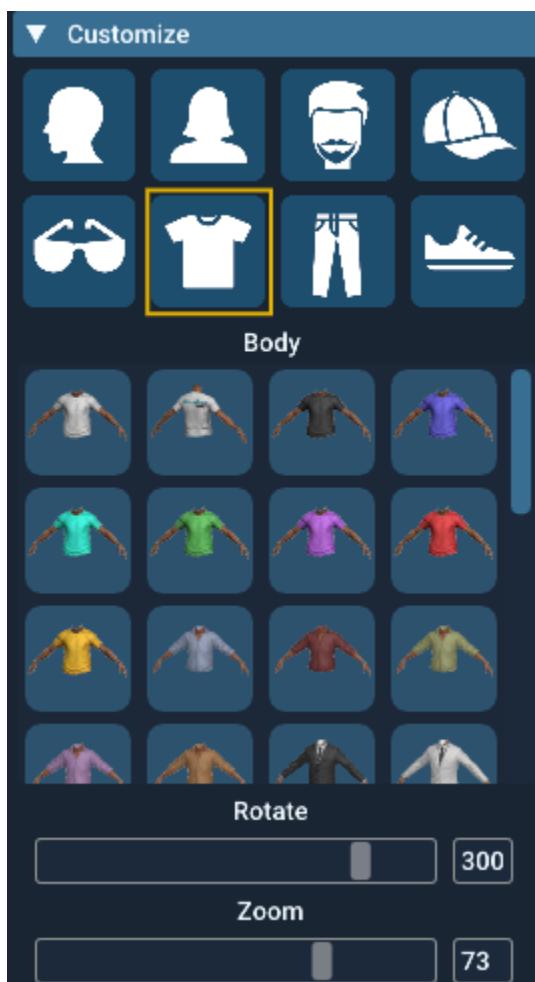
In the character creator, the initial section focuses on the character's name and type.



You must give the character a name before it can be saved. There are four types of characters - Male, Female, Zombie Male and Zombie Female. Pick the type you want to create and then you can move to customising the character.

Customise

In this section is a row of icons that serve as categories that you can customise. Select a category icon and the selection of available options will change. Choosing an option within that category will change the appearance of the character.



Icons	These represent the different parts of the character's body that you can change (head, hair, facial hair, head gear, eye glasses, torso clothing, leg clothing and shoe wear).
Selections	These icons will update depending on which icon is selected in the icon list above. Just choose the one you like and the 3D model will update to reflect this choice.

Rotate Slider	The Rotate slider lets you rotate the character around so you can see the results of any changes you make. You can also click and drag on the character to rotate it too.
Zoom Slider	This slider lets you move closer or further away from the character.

The character base models that come with GameGuruMAX have a set list of animations. The animation section lets you view these animations, create new animation slots and load in new animations to add to your character.

Here are the options you will see when the Animation Tool is opened:

▼ Animation Tool

Animate Preview

Show Bones

[View Advanced Settings](#)

Animation Frame

310

Animation Speed

50

Animations

Name	Start	Finish	Left	Right	Any
All	0	6120	0	0	0
All	0	3059	0	0	X
Mouthshap	0	13	0	0	X
Idle	14	137	0	0	X
Idle_LookA	138	358	0	0	X
Walk_Start	359	402	399	378	X
Walk_Loop	403	433	415	430	X
Walk_Stop	434	460	443	455	X
Run_Start	461	488	487	0	X
Run_Loop	489	511	497	506	X
Run_Stop	512	573	520	531	X
Fall_Start	574	584	0	0	X
Fall_Loop	585	615	0	0	X
Fall_Stop	616	657	618	0	X
Throw_Gren	658	716	0	0	X

[Create Animation Slot](#)

[Load Animation File](#)

[Clear All Animation](#)

Animation Preview	Tick this box to show the selected character animation. Un-tick and the character will freeze on the current frame being played.
Show Bones	<p>Tick this box and the animation bones of the character will be shown. These are normally hidden and are useful to see when viewing animations in this tool.</p> 
View Advanced Settings	This checkbox allows you to see all the animations, frames, and speed.

Animation Frame	The current frame of animation that's being shown will be displayed here. You can also drag the slider and preview all the animation frames.																																					
Animation Speed	Set the speed of the animations with this value.																																					
Animations	A list of all the animations of the character are shown here. It looks like this:  <table border="1"> <thead> <tr> <th colspan="4">Animations</th> </tr> <tr> <th></th> <th>Name</th> <th>Start</th> <th>Finish</th> </tr> </thead> <tbody> <tr> <td><input type="radio"/></td> <td>All</td> <td>0</td> <td>1321</td> </tr> <tr> <td><input type="radio"/></td> <td>\$NoName\$</td> <td>1322</td> <td>2642</td> <td>X</td> </tr> <tr> <td><input checked="" type="radio"/></td> <td>idle</td> <td>15</td> <td>55</td> <td>X</td> </tr> <tr> <td><input type="radio"/></td> <td>turn right</td> <td>65</td> <td>85</td> <td>X</td> </tr> <tr> <td><input type="radio"/></td> <td>turn left</td> <td>90</td> <td>110</td> <td>X</td> </tr> <tr> <td><input type="radio"/></td> <td>point right</td> <td>250</td> <td>291</td> <td>X</td> </tr> </tbody> </table> <p>On the left side of the screen, there is a radio button that sets the currently selected animation, which will be played back. The next column displays the name of the animation, such as "idle" or "turn right". The Start and Finish frames of the animation are shown in the following columns. Finally, to remove an animation from the list, you can click on the "X" icon associated with the animation.</p>	Animations					Name	Start	Finish	<input type="radio"/>	All	0	1321	<input type="radio"/>	\$NoName\$	1322	2642	X	<input checked="" type="radio"/>	idle	15	55	X	<input type="radio"/>	turn right	65	85	X	<input type="radio"/>	turn left	90	110	X	<input type="radio"/>	point right	250	291	X
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<input type="radio"/>	turn left	90	110	X																																		
<input type="radio"/>	point right	250	291	X																																		
Create Animation Slot	Press this button to create a new slot into which you can set a new animation.																																					
Load Animation File	You can import your own animation file using this button. Only .DBO and .FBX animation file formats are accepted..																																					
Clear All Animations	Clears all the animations from the character.																																					

GameGuru MAX gives you the ability to save your custom created characters so you can use them in other games you may create in the future.



Click the blue button with the three dots to navigate to the folder where you'd like to save your character and then click the "Save Character" button to save.

Building Creator

To access the building creator, click the Edit menu and select Building Editor. The Building Editor application will launch.



This feature allows you to create small structures using the included 3D objects (such as windows and doors) and save them as their own 3D objects which can then be used in your levels. The editor starts with a small room which may be edited or deleted at will.

Building Modes



The buttons at the top left corner of the building editor activate the various modes available in the editor. From left to write in the picture above they are as follows;

Create Mode, Edit Mode, Toggle Wall Mode, and Paint Mode. Depending on which mode is activated, different options may appear in the panel on the right of the editor.

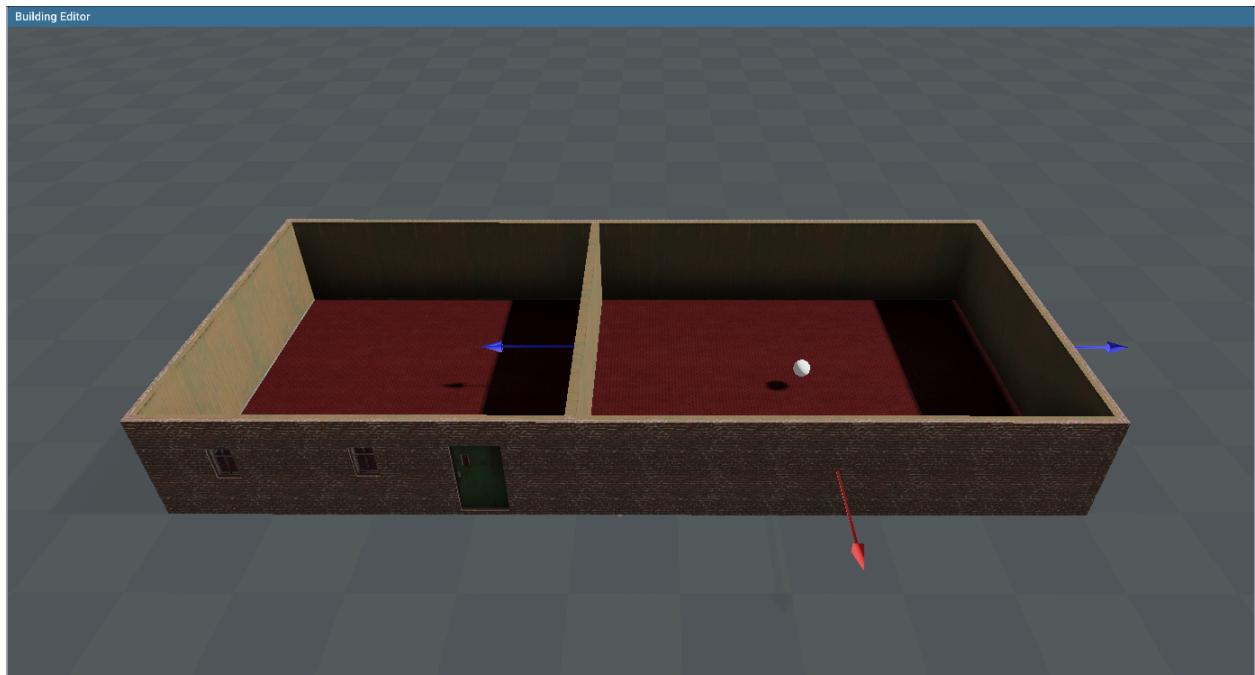
Create Mode

This mode is used for creating new structures or adding to an existing structure. Attached to your cursor in this mode is a white pillar which represents the beginnings of a wall. Click into the scene where you want your walls to start and then drag the cursor to the point at which you want the walls to end. Releasing the mouse button will draw the walls where you indicated.



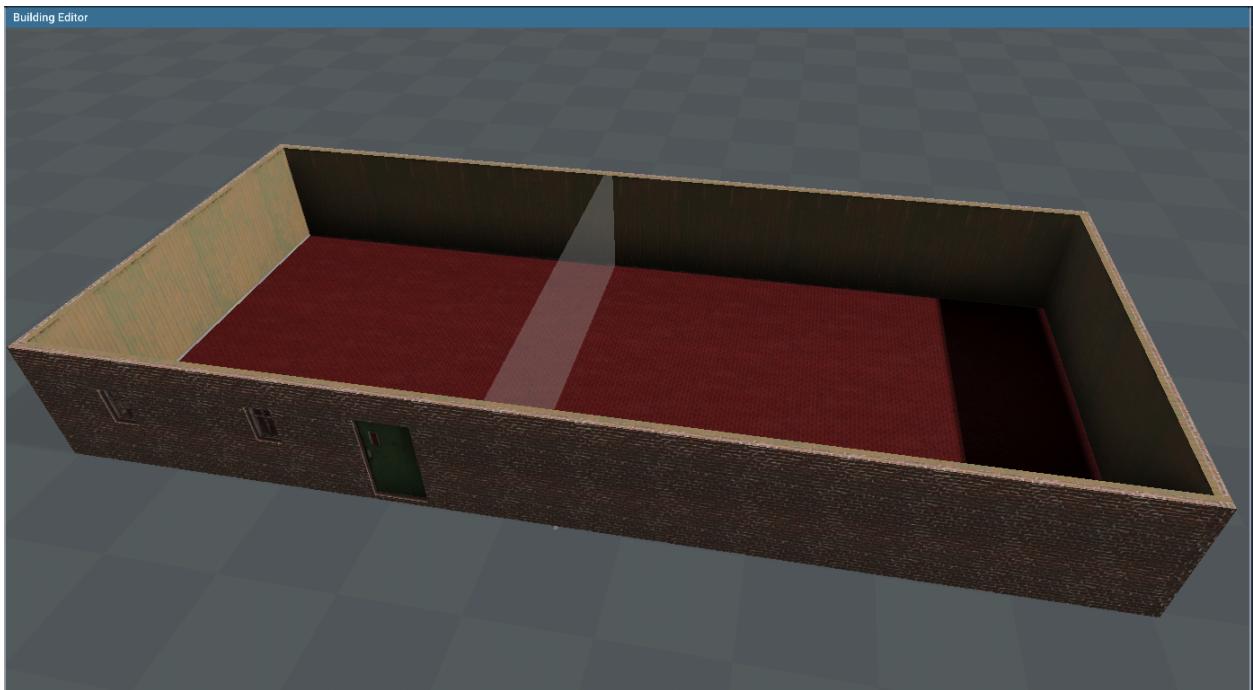
Edit Mode

Edit mode allows you to edit the structure of the layer you're on by resizing the rooms of the building. Clicking on any part of the structure will display X and Y handles which allow you to drag and resize the room selected. For example, the room created in the image above could be resized even after it's been created by dragging the blue handle.



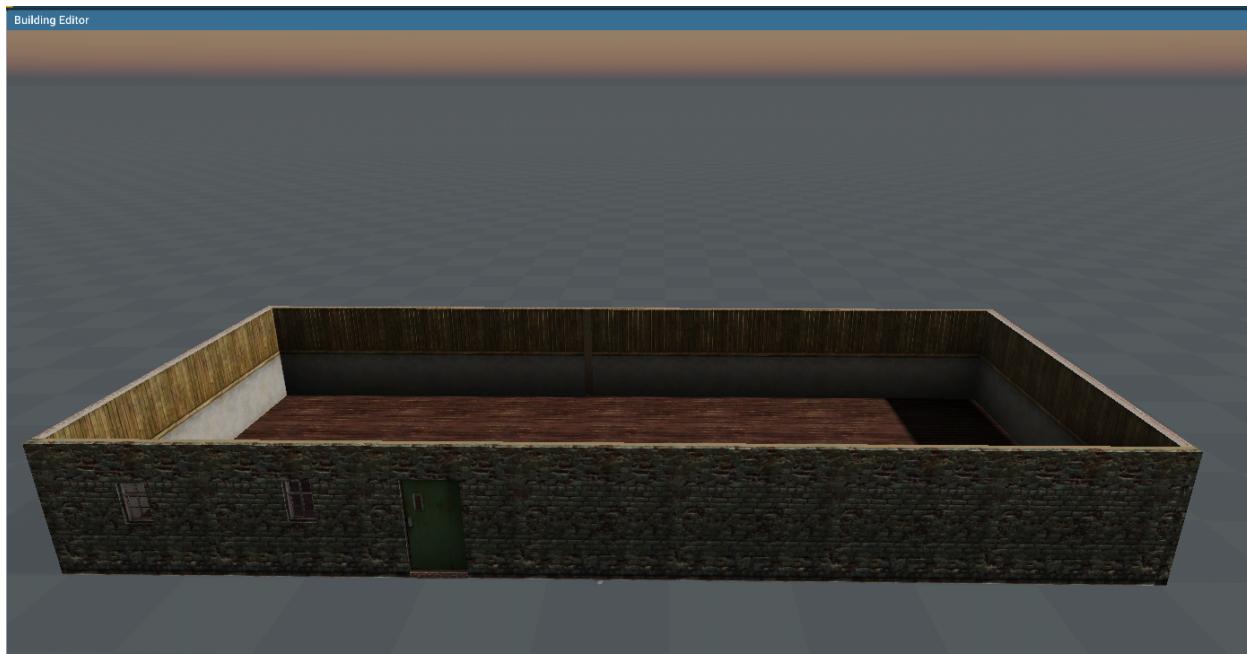
Toggle Wall Mode

Now that a room has been added to this structure there is a wall separating the two rooms and no access point between them. The Toggle Wall Mode can solve this by removing the wall in between the two rooms. Simply activate the mode and then click on the wall you wish to toggle (on/off). The shadow of the wall will remain visible in case you want to toggle it back on.



Paint Mode

This mode allows you to paint the interior and exterior walls and floor of the structure you've made using a variety of textures already included with GameGuru max. You can also use your own textures by clicking the Change Texture Folder button and pointing to the folder where your textures are stored (more on that later). Here's the same structure with a new paint job:



Properties

On the right side of the Building Editor screen is a properties panel with multiple sections. These sections may vary depending on the mode selected. These variations will be detailed below where applicable.

Settings

The settings section provides multiple functions for customising the layer or floor of the building being edited. The settings section does not vary per mode and includes



the following features:

Layer Height	This slider allows you to adjust the height of the layer or floor currently being edited. This will raise or lower the height of the ceiling for the entire floor.
Reset Layer Height	This button automatically resets the layer height of the floor selected to the default height.
Match Layer Height to Stairs	Tick this box if you want the height of the layer to automatically adjust to fit a set of stairs that has been added to the floor.
Change Layer	These two up/down arrow buttons allow you to change the layer of the structure being edited.
Grid Mode	With grid mode enabled, objects added to the building will align to a grid to ensure all objects align perfectly.
Grid Size	This slider allows you to adjust the grid size being used if enabled. A smaller number would reduce the grid size.

Disable Auto Add Lights	By default, a light source will be added to each room of the building unless this box is ticked.
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Room Details

This section is only available in the panel when Edit Mode is activated. Click on any room within the building and an option will appear in this section called Auto Add Light. This refers to the light source that is automatically added to all rooms as they are created by default. You can disable the auto creation of this light source in the settings section above, or disable it per room as you desire.

Textures

This section varies depending on what mode is active. Therefore this section will be broken down by the two modes for which it applies:

Create Mode - In this mode the textures section applies to what textures will be used when the room is created. In other words you can preselect from a variety of textures included with GameGuru Max the texture to be used for the floor, ceiling, interior and exterior walls, and roof when the room is generated. You can also use your own textures by changing the texture folder to the folder where your textures are stored.

Paint Mode - When this mode is active, the texture section is used to paint the walls and the floors of the existing building. Like in Create Mode, you may use the included textures or change the texture folder to the one where your own textures are stored.

Particles

To add a particle, click the Add Particle Icon and move your mouse cursor into the 3D scene.



Left click again to place the particle marker where you would like the particle effect to take place in your scene:



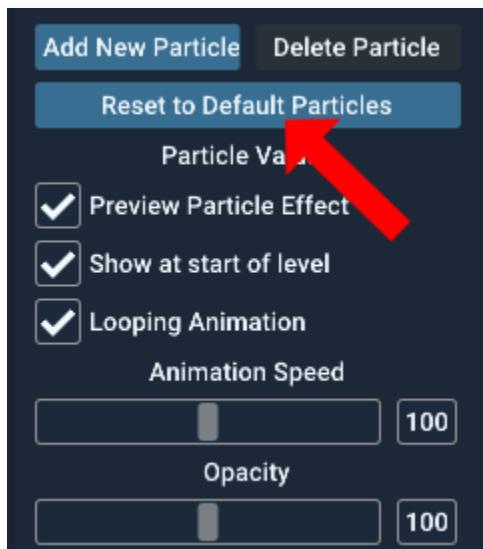
Immediately, particles are generated for you to see the effect. But the default particles may not be the ones you want. Don't worry, GameGuru Max has quite a few particles included to choose from. To access them, make sure the particle marker is selected by clicking on it and go to the tab called, "Particles" on the right side:



Selecting any of the other available particles will instantly change the particle object in the viewport.:



The Particles panel not only allows you to select various particles included with GameGuru Max to use in your games, but you can even add your own particles, created with AppGameKit Particle Toolkit DLC, which can be purchased directly from The Game Creators(TGC). Using the Particles panel, you can easily "Add New Particles", "Delete Particles" that you've created, or Reset to the default particles at the click of one button:



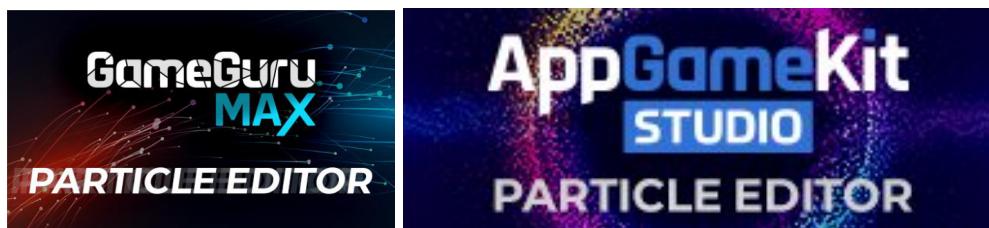
Preview Particle Effect	The "Preview Particle" checkbox allows you to turn on/off the particle display in the 3D scene. This can be important if the scene gets too busy and it's difficult to see what's going on or if you need to speed up your scene while editing.
Show at start of level	With "Show At Start of Level" checked, your particle will be active as soon as your game level begins, else the particle won't show unless it is somehow triggered by game logic.
Looping Animation	The "Looping Animation" checkbox indicates that the animation plays over and over forever. Unchecked and the particle will play through once and then stop.
Animation Speed	You can control how quickly the animation of your particle plays using this slider.

Opacity

The transparency of your particle can be changed with this slider.

The Particle Editor

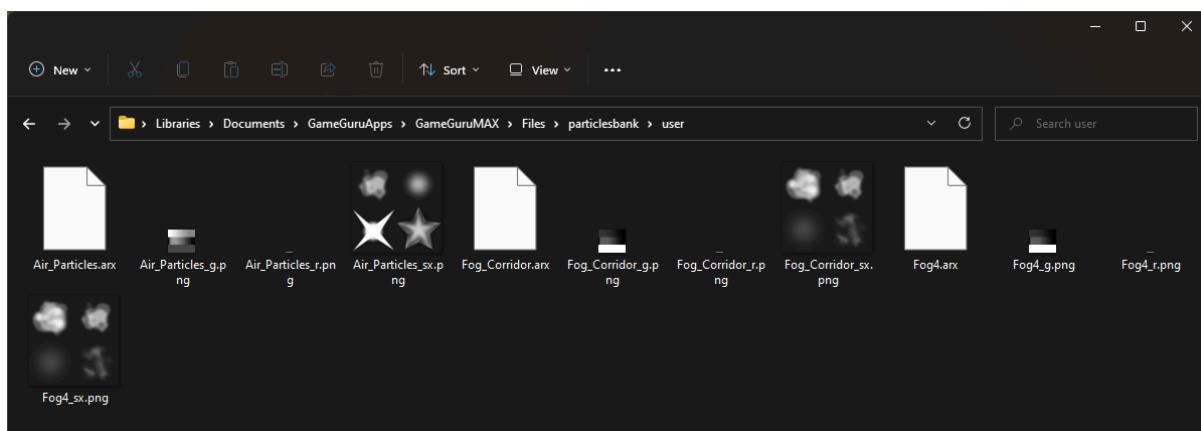
GameGuru MAX comes with an assortment of particles ready for use in your game levels. Even so, you may also want to create your own particle effects at some point. Particles for GameGuru MAX can also be created with the inbuilt GameGuru MAX Particle Editor or [AppGameKit Studio's Particle Editor](#).



If using the inbuilt GameGuru MAX Particle Editor you can export directly into Game Guru Max and select it for use.

If using the [AppGameKit Studio's Particle Editor](#), once created and exported from Particle Editor, there is no option to import the exported particles into GameGuru MAX directly using MAX's GUI. Instead, you'll have to do this manually.

The easiest way to do this is to go to wherever you've saved your exported particle files, select the ones you want, and copy them by pressing CTRL+C. Once they are in your Window's Clipboard, it's time to navigate to where GameGuru MAX would expect to find custom particles:

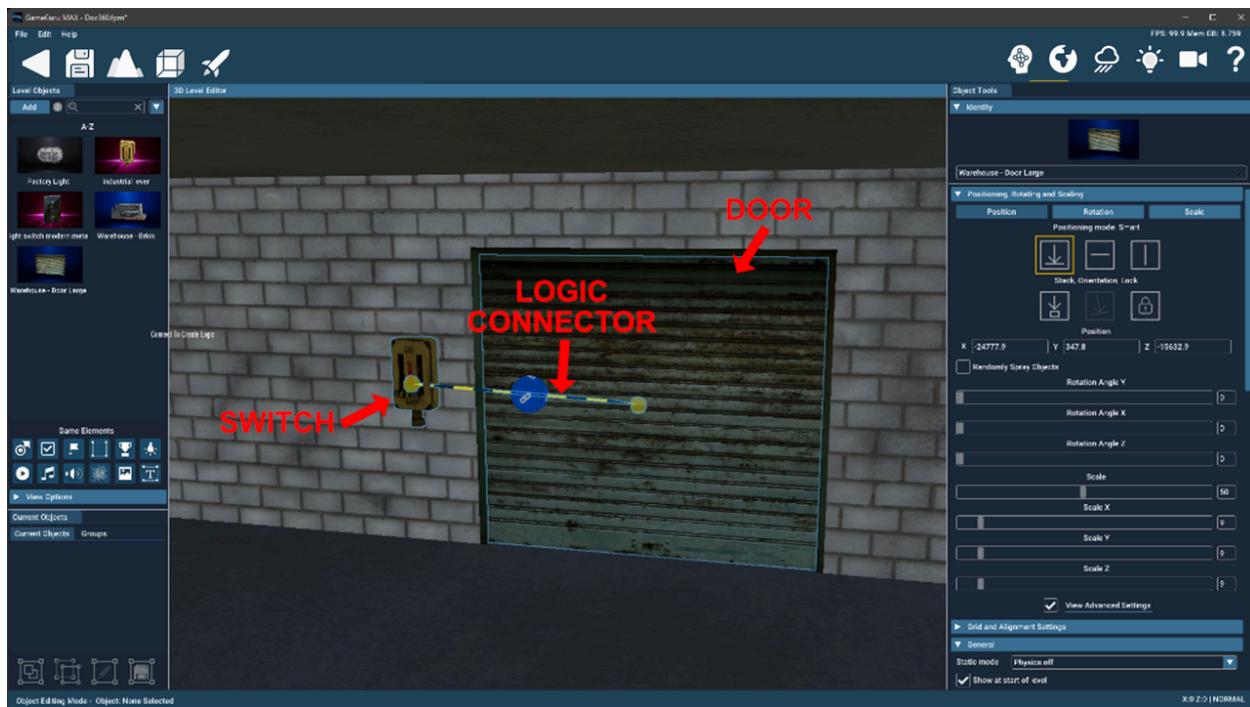


Normally, this would be in your "Documents" folder under "GameGuruApps", then within "GameGuruMAX", "Files", "particlebank", and finally "user".

Once you've navigated there, use CTRL+V to paste in the particle files you'd copied to the Windows Clipboard and you're ready to use your custom particles in GameGuru MAX!

Logic

GameGuru MAX's visual logic system allows you to create game logic without needing to know programming. The logic is created visually by dragging objects and connecting them to each other to create the desired behaviour. Below is an example showing a switch that opens a door:



The example shown above demonstrates a switch that opens a door, where the switch is connected to the door using a "Logic Connector". This connector allows the player to activate the switch and open/close the door. GameGuru MAX's visual logic system can be used to set up various types of logic such as enemy patrol routes, event triggers, light switches, door locks, and much more. The upcoming sections will cover some examples to help you understand how to work with GameGuru MAX's visual logic system and start creating your own logic.

Connecting a switch to a Door

In the image below there is a switch on a wall next to a door. This type of door slides open using the attached behaviour when activated by the switch, which must be connected to the door.



To do that, click the "Visual Logic Connections" icon at the top-right of the top menu bar:



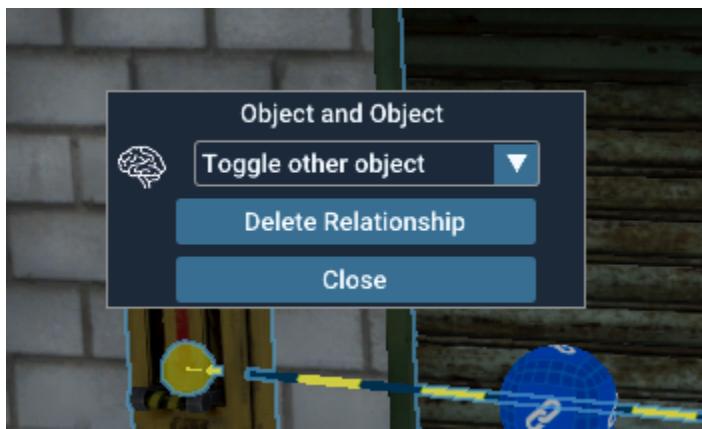
Once you do that, you will see yellow dots appear in the center of the objects that are able to connect together to form logic connections:



To connect the switch to the door, click and drag the yellow ball located in the centre of the switch to the yellow ball at the centre of the door. As you drag, a line will appear, indicating where the connection is being made. Once you release the mouse button, the connection will be established. If the line remains connected between the two objects, you will know that the connection has been successfully made. You will also see a sphere with a link symbol appear in the center of the line:



If you click on that sphere, you should see the following menu:



The menu presents us with a drop down menu and two buttons. The drop down menu items determine how the objects interact with each other.

Toggle other object

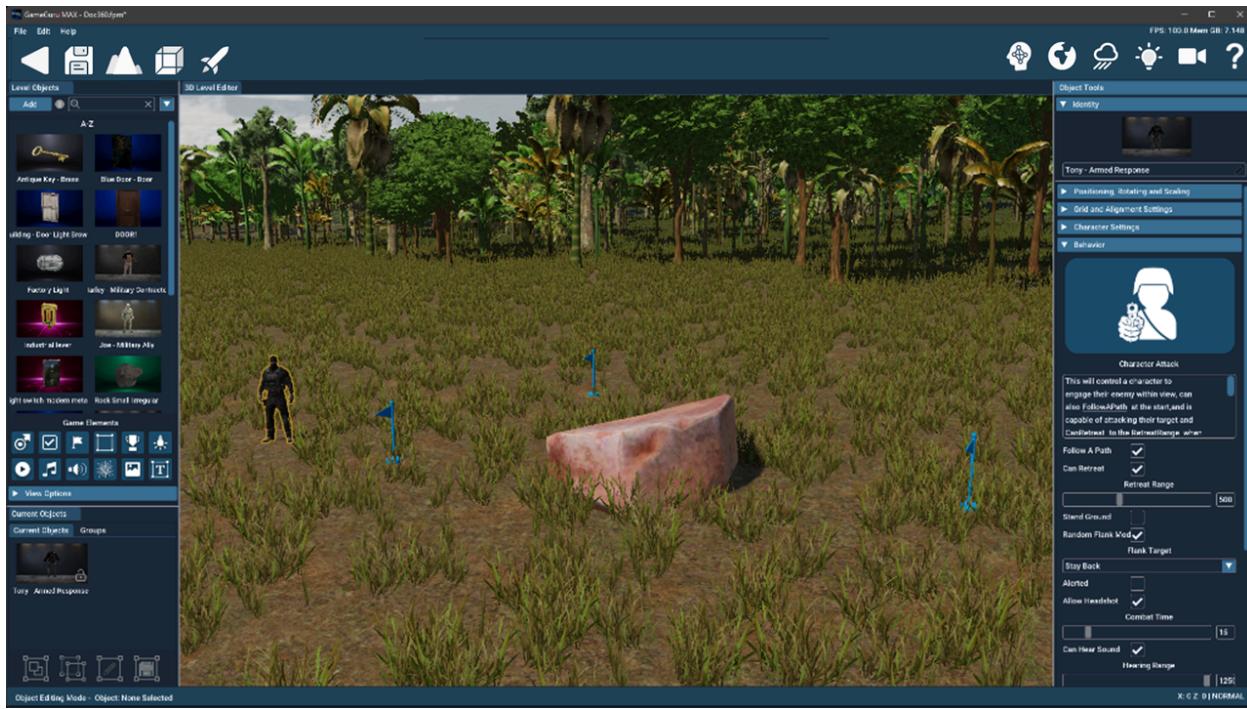
Use this logic method if you need to toggle or switch the state of the other object. For example, if a door is already closed, the connected object will toggle it open. Activating

	it again will toggle it closed. Continuing to activate it will keep toggling the state of the other object back and forth between its states.
Activate other object	Use this logic method if you need to take the state of a deactivated object and activate it. This would be good for taking something that is in an "off" state and turning it "on".
Deactivate other object	This logic state is the opposite of that one above. If the state of the object is already "on" then use this one to turn it "off".
Delete Relationship	This button severs the connection made between two objects, disabling the logic connection.
Close	This button closes the menu.

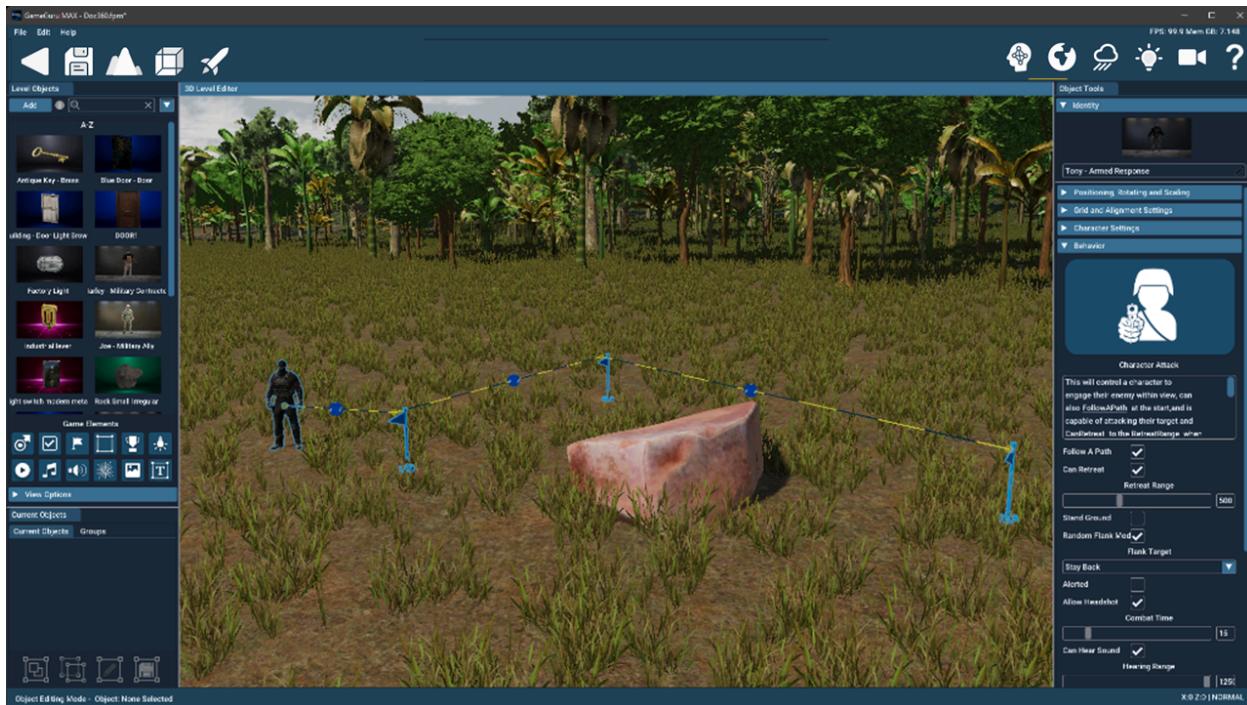
This logic system works much the same way, whether you're connecting a switch to a light or a door to a key. The primary difference is which behaviour will be used to control the object(s). Be sure to explore the behaviours provided with GameGuru Max to see what other features can be added to your game.

Connecting Enemies to Waypoint Flags

While characters are somewhat different from doors, the method for connecting them to objects such as waypoint flags is the same. Once again the primary difference is the behaviour used to control the character. In the depiction below we have a character and three waypoint flags:



Use the “Shooter Games” icon in the bar to activate the logic system and connect the character and the flags in the order you wish the character to move. In the depiction below, the character will move from its origin point to each flag in sequence until it has been routed around the boulder.



Utilising this feature can really bring your game to life and increase the immersion for your player. Once again, experiment with the different behaviours available to create a unique and realistic experience.

Connecting Enemies Together

MAX's visual logic system allows you to create some pretty complex behaviours without having to dig into programming. In this example, we're going to connect a couple of enemy soldiers together. The purpose is so they can communicate with each other, letting the other know if they detect the player and come to the aid of the other soldier, for example.

Here's the basic set up:



There's a soldier on either side of the building. Without the characters being connected, each character will act independently of the other and may not respond in tandem when detecting a threat.

Connect the two soldiers the same way you would any other objects, by activating the visual logic system and dragging the connection between them. Once again, the

behaviour attached to the character is what will drive the interaction between the two characters once they are connected.



With the two soldiers connected, they can now "talk" to each other, letting the other know if they see the player.

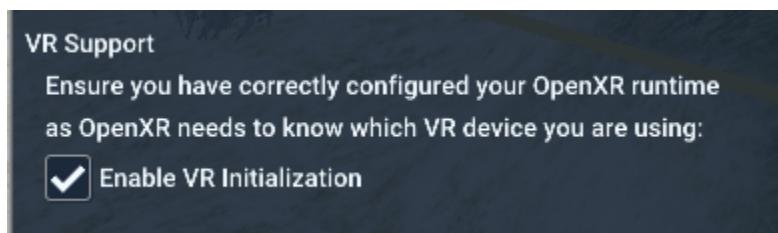
You may recall in the door example, clicking on the connection's sphere provided a menu with a dropdown that offered options like, "Toggle other object", "Activate other object", and "Deactivate other object". If we were to click on the sphere on the connection between the two enemy soldiers, we would get a different set of logic options:

Alert other character	"Alert other character" will alert them to the presence of the player, causing them to come and attack.
Stand-down other character	This function does the opposite, forcing the alerted character to stand-down from attacking

Toggle alert of other character	This logic option functions as a toggle, flipping whatever the character is currently doing. If they are currently standing down, they will be flipped to attack mode. If they are in attack mode, they will be flipped to stand-down mode.
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Virtual Reality (VR)

GameGuru MAX has the ability to run your game in Virtual Reality mode with any compatible OpenXR device and controller. By default this option is disabled to speed up the initialization time of game making sessions, and can be enabled by selecting the VR Support in the Developer Mode section of the Settings Menu:



Once activated, a new button will appear on your main toolbar alongside the Test Level button and can be used to test your level in VR:



You will need to have previously configured your VR headset and controllers outside of GameGuru MAX and set the device to use OpenXR drivers. This process will depend on the type of VR hardware you have, as each manufacturer uses their own proprietary applications to configure the device for OpenXR compatibility.

Running your game in VR once configured is simplicity itself, with basic controls for movement via the thumbstick, side button for running mode if available on your controller, trigger for interaction and controller orientation for laser pointer selection of

both 3D and 2D elements within your game. Your controller will have one or more specialised buttons to bring up additional menus to access HUD screens within the game including the main HUD menu when in standalone mode.

To export a finished standalone game as a VR title, you simply select the “Save with Virtual Reality Mode” tick box to indicate that the game should launch in VR Mode:



Currently many manufacturers support OpenXR drivers, and although this is not an exhaustive list, GameGuru MAX has been tested successfully on the Valve Index, Oculus Quest 2 via pass-through, and some older Windows Mixed Reality devices.

