UNDERWATER CAMERA FX

user guide

Last updated: 15 January 2025

Foreword

Underwater Camera FX is a Unity Asset Store package that contains water shaders and effects that you can use in your own games.

If you encounter any problems in the package, or have anything you would like to clarify, please contact us at terresquall.com/contact.

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1. Version Changelogs

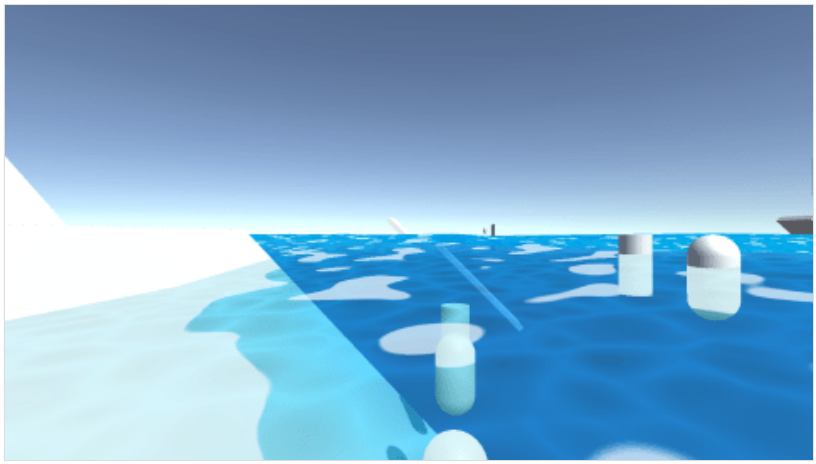
Version 1.0.0 (15 January 2025)

- Initial release

2. How to use

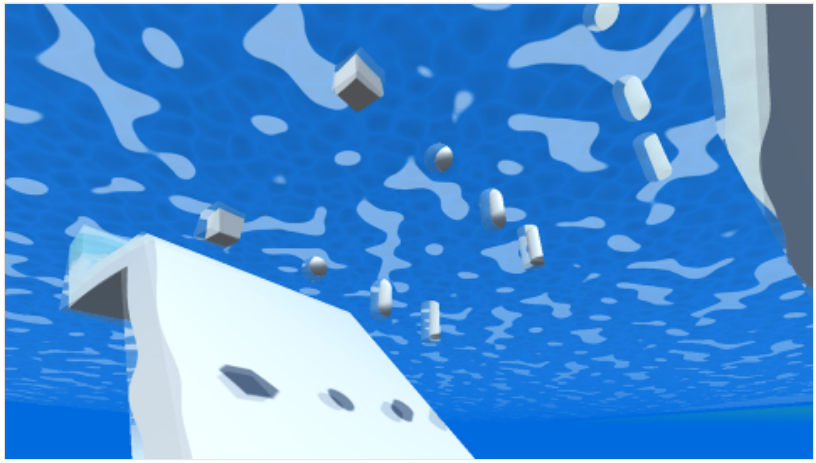
The Underwater Camera FX Pack is a free asset pack that provides an easy way to get an underwater effect inside your video game. It consists of 2 parts:

1. A basic water surface shader that provides colour to the water and add waves, as well as working in tandem with the Image Effect filter to apply the underwater fog when underwater.



Above view of the default Water prefab.

2. An Image Effect filter that, when applied to cameras and set up, will apply underwater fog to the camera.

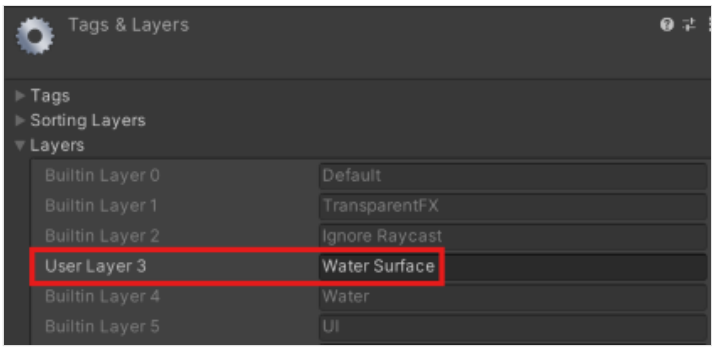


Underwater view of the default Water prefab.

This pack comes with 6 water surface prefabs already configured, and a camera prefab that has the underwater effect script attached. Before you start using them however, you'll need to set up the layers as shown in the next step.

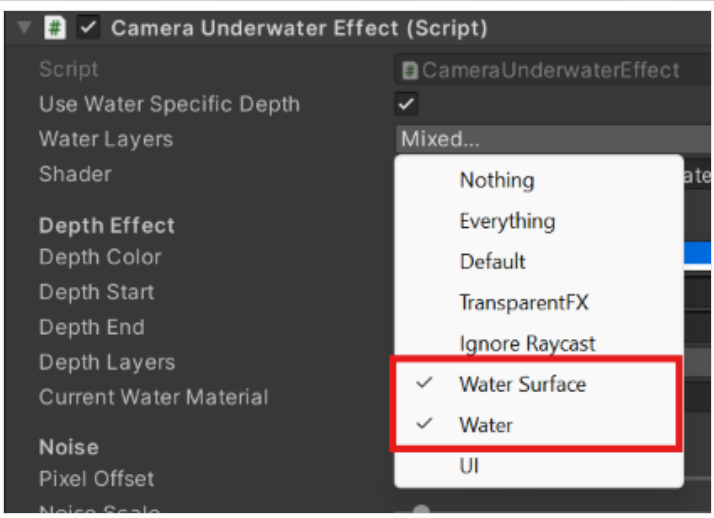
Setting Up the Layers and Prefabs

As soon as you've imported the package, you'll need to create a new layer called "Water Surface". Currently, Unity does not support exporting layers with packages, so we'll need to create the layer manually for now.



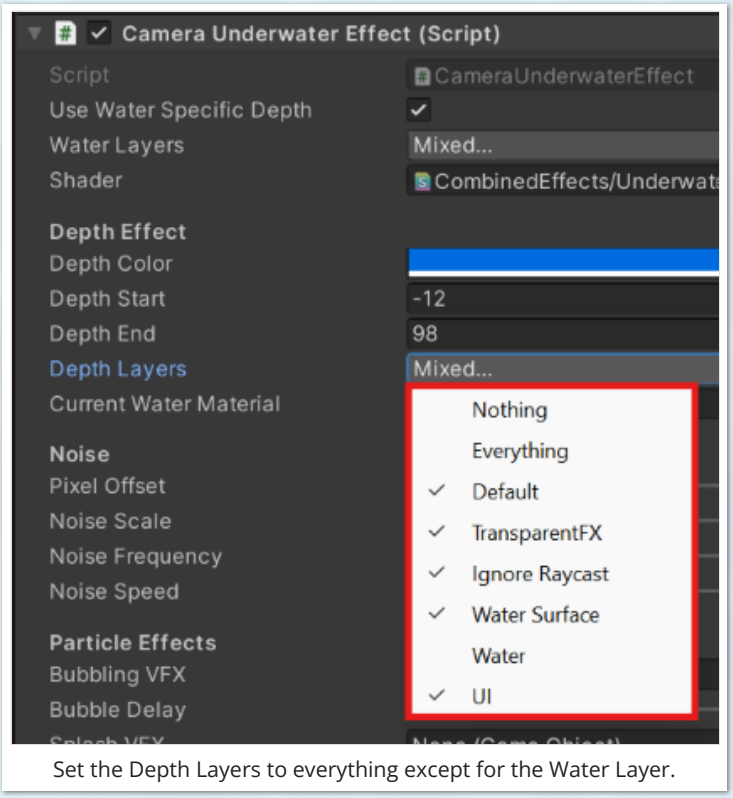
You'll need to create a new "Water Surface" layer.

As soon as this layer is set up, you'll first want open up the Camera with the Underwater Effect's prefab (Under `Prefabs > Camera Underwater Effect`) in the Prefab Editor. Head over to its `Camera Underwater Effect` component and set its `Water Layers` to **both Water and Water Surface**.



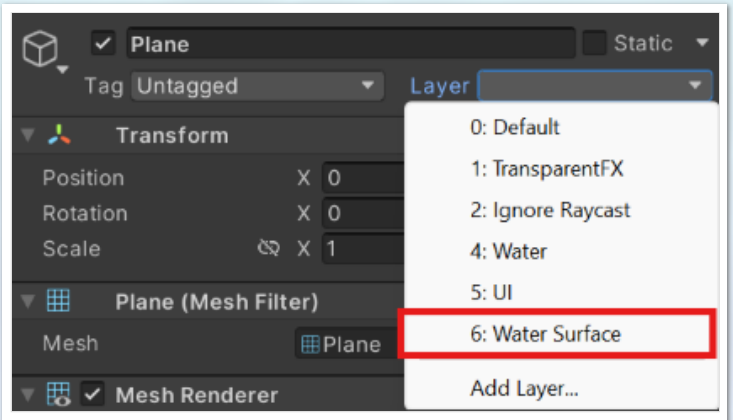
Set the Water Layers to both Water and Water Surface.

After that, set its `Depth Layers` to **everything except for the Water Layer**.



Set the Depth Layers to everything except for the Water Layer.

Once you're done setting up the Camera Underwater Effect prefab, you'll need to configure the Water Surface prefabs (Under `Prefabs > Water Surfaces`). For each prefab, you'll need to open it up in the prefab editor. After that, **head over to the child GameObject (named Plane) and set its layer to Water Surface**.

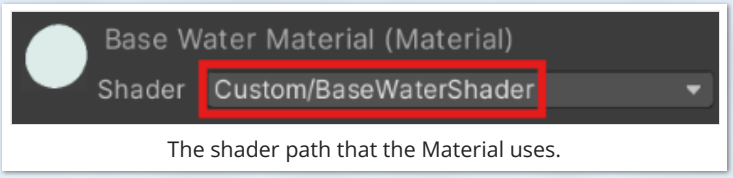


Set the plane's layer to Water Surface for each Water Surface prefab.

Once the camera and prefabs have had their layers configured, you can drag and drop them into your scenes and they will be ready to use!

Creating a Water Surface Material

To create a Water Surface Material, you'll need to create a material and set its shader to `Custom > BaseWaterShader`.



The shader path that the Material uses.

After that, you'll need to fill in the necessary properties. An overview of them can be found under the Features and Properties section.

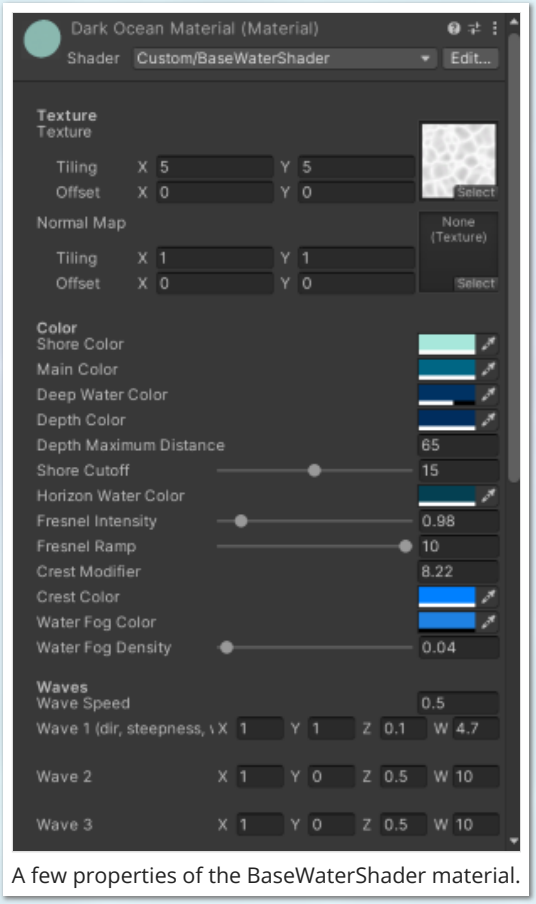
Creating a Water Surface Plane

To create your own water surface plane, you can simply drag an existing Water Surface prefab into your scene and unpack it. You can change its size by setting its scale, and you can assign your own Water Surface Material to its `MeshRenderer` component's material.

3. Features and Properties

BaseWaterShader Material

The BaseWaterShader Material has a variety of attributes you can adjust to get the water surface look that you want.



A few properties of the BaseWaterShader material.

Below are a list of the material's properties, and what they do:

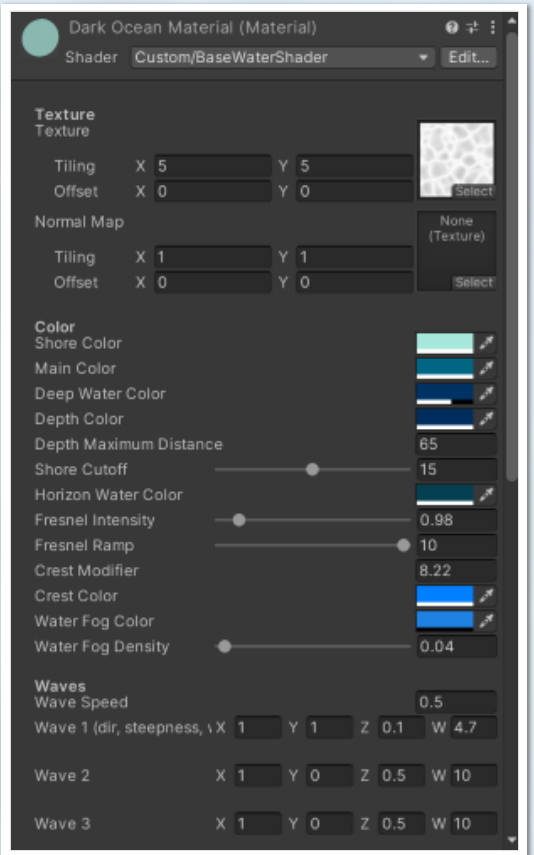
Property	Description
Texture	This is the main texture used by the shader. The wave effect is based on this texture. You can use a flat color texture if you want a simple, uniform color for the water.
Normal Map	This is a texture that modifies the normals of the object, making it look like there are small details on the surface without needing extra geometry. In this case, the normal map can make the water surface appear to have small waves or ripples.
Main Color	This is the main color of the water in shallow areas. It is applied to the texture. Changing this value will tint the water.
Shore Color	This is the color of the water when it is very shallow, such as long along the shoreline of a water body. The water will transition from this color to the main color based on depth.

Property	Description
Deep Water Color	This is the color of the water when it is deep. The water will transition from this color to the main color based on depth.
Depth Color	If the 'Use Water Specific Depth' property is checked on the Camera's Underwater Effect component, this will override the colour that the water is tinted while the player is under the certain surface.
Depth Maximum Distance	This controls how deep the water must be before it will be coloured as Deep Water Color. Increasing this value will require water to have a greater depth before it is coloured as Deep Water.
Shore Cutoff	This controls the depth at which the Shore Color transitions into the Main Color.
Horizon Water Color	This is the color the water surface will be when the player views it horizontally from the surface.
Fresnel Intensity and Fresnel Ramp	These values control how the color of the water surface changes depending on the angle the player is looking at it.
Crest Modifier and Crest Color	These values control how the wave crests (top of the wave) of the water surface will look like.
Water Fog Color and Water Fog Density	These values control the color of the water fog (Fog that appears a distance away from the player underwater), and how far the player can see through it.
Wave Speed	This controls the speed of all waves. A higher value will cause Waves to move faster across the water surface.
Wave 1, Wave 2, Wave 3	This is a Vector with four components whose values represent the Waves. The X and Y values of the Waves determine the direction the waves travel. The Z value determines the Waves' amplitude. The W value represents the wavelength of the Wave.
Number of Waves to Use	This is a keyword that controls how many waves will be affecting the Water Surface's mesh. A value of One will only use Wave 1, while a value of Two and Three will add the Waves 2 and 3, respectively. You can use this to control how complex you would like the waves to be.
Surface Noise	This represents the noise texture used in calculating the foam. You can also use the Tiling values of Surface Noise to change the tiling of the Foam.
Foam Texture	This represents the foam texture.

Property	Description
Foam Direction	This vector field represents the direction that the foam travels in. Only the X and Y values are used to determine the direction of the foam; The Z and W values do not affect the Foam Direction.
Foam Max Distance and Foam Min Distance	These values are used to control the size of the foam based on the view space normal of vertexes where foam is to be displayed. Changing these values will affect the size of foam around an object.
Foam Colour	This controls the color of the foam around objects.
Transparency	This controls the transparency of the water.
Specular	This controls the shininess of the water, affecting how the light reflects off the surface.
Reflection Strength	This controls the intensity of the reflected environment on the water surface.
Refraction Strength	This controls the amount of light distortion that occurs when light passes through the water.

CameraUnderwaterEffect.cs script

The `CameraUnderwaterEffect.cs` includes a lot of variables you can configure to adjust the underwater effect.



The CameraUnderwaterEffect component.

Below are a list of the script's variables, and what they do:

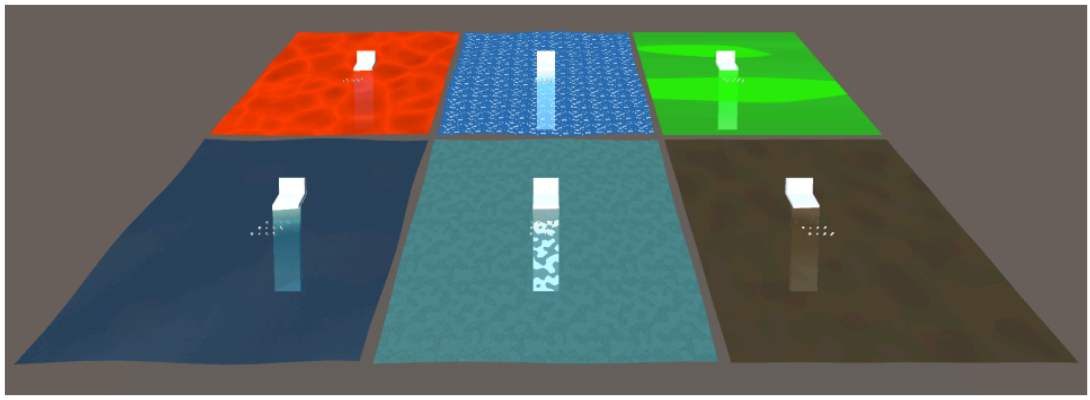
Variable	Description
useWaterSpecificDepth	This is a bool that determines whether all underwater surfaces use the camera's Depth Color, or override it with the water surface's Depth Color (e.g. Lava having a red depth color instead).
waterLayers	This is a LayerMask that determines what is considered water by the script. It is used when the script checks whether the camera is underwater.
shader	This is the shader that's used to create the camera's underwater effect.
depthColor	This Color value is used to tint the camera's view when it's underwater.
depthStart and depthEnd	These values are used to determine the range of depth in which the underwater effect is applied.
depthLayers	This is a LayerMask that's used to determine what objects should have the underwater depth effect applied to them.

Variable	Description
pixelOffset	This value determines the pixel offset for the noise effect applied when underwater.
noiseScale	This value determines the scale of the noise effect applied when underwater.
noiseFrequency	This value determines the frequency of the noise effect applied when underwater.
noiseSpeed	This value determines the speed of the noise effect applied when underwater.

4. Demo Scene

The demo scene contains the 6 water surface prefabs with some primitives in each surface to show how the water surface affects them at different depths. In play mode, you can look around using your mouse, move the camera using the WASD keys, fly up/down using E/Q, and hold left-shift to move the camera faster.

Below is a snapshot of the demo scene containing all the water surface prefabs in this package:

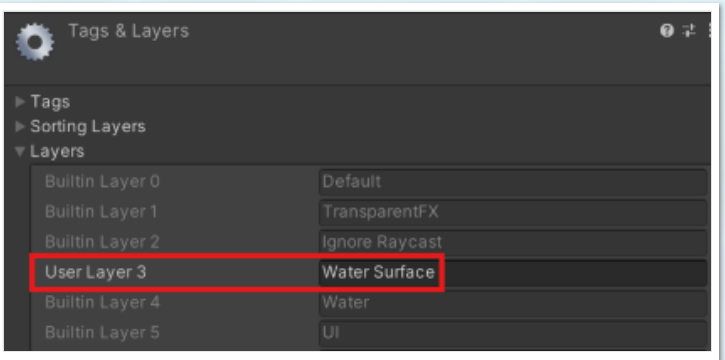


From Top-Left: Lava, Default, Green Acid, Deep Ocean, Pond, Brackish.

5. FAQs

Why are there blank layers in my Water Surface Prefab's child Plane?

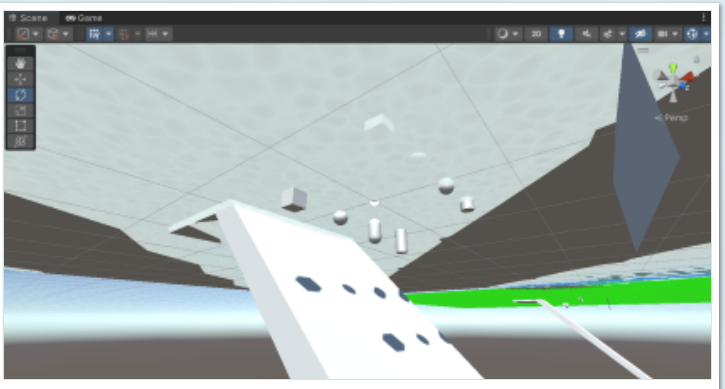
The Water Surface Prefabs Plane GameObjects were originally assigned to a 'Water Surface' layer. However, Unity currently does not export layers along with the package, so you'll have to create your own 'Water Surface' layer and assign it to each of the planes.



You'll need to create a new "Water Surface" layer and assign it.

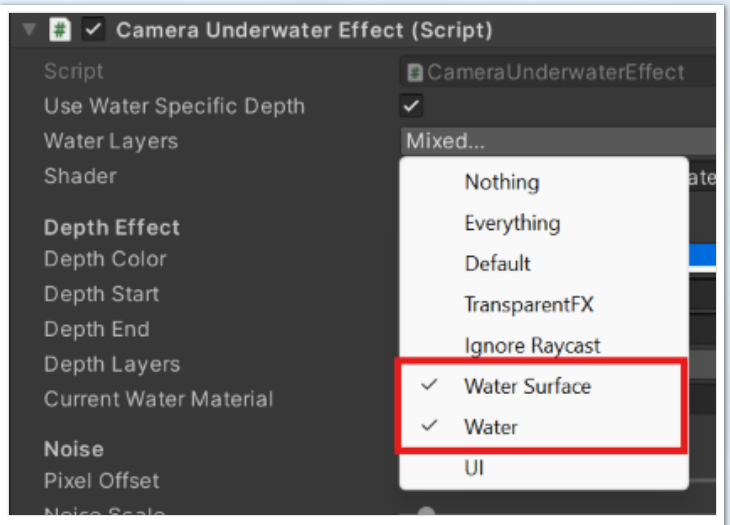
I'm moving my camera under the water surface in Scene View but there isn't anything appearing?

Since the underwater camera effect uses a script attached to a Camera GameObject, the scene view's camera will not show the underwater effect. You'll need to test it out in Play Mode instead.

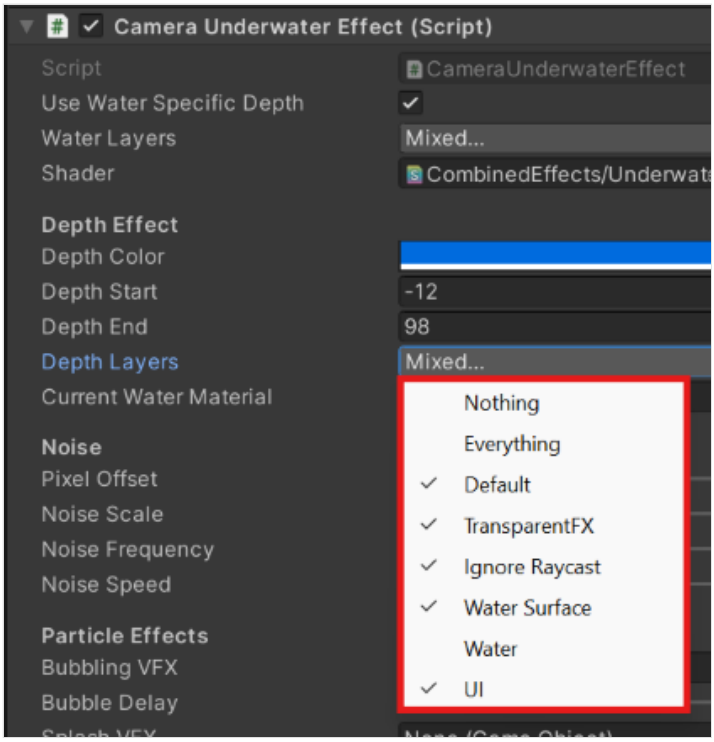

In scene view, the camera underwater effect does not show.

The depth colour still does not show underwater even when I'm in Play Mode.

If you're using the prefabs, make sure that the Camera's `CameraUnderwaterEffect` component's `Water Layers` are **set to Water and Water Surface**, and that the `Depth Layers` are **set to everything except Water Surface**.



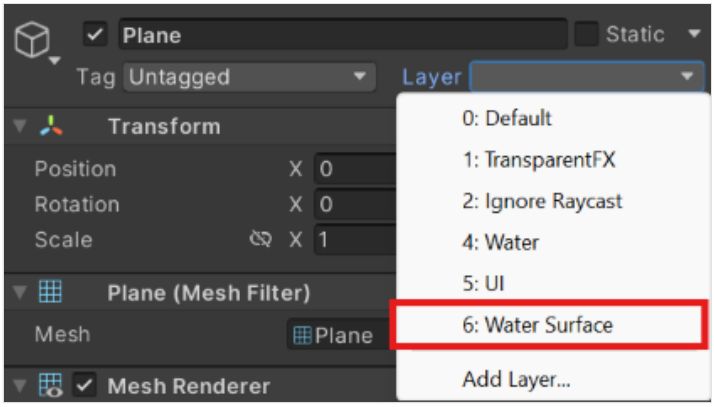
Check that the Water Layers are set to both Water and Water Surface.



Check that the Depth Layers are set to everything except for the Water Layer.

Ensure that the `depth color` is set up and that the `depth start's` value is smaller than the y-value of the Water Surface it is under.

You'll also want to check whether the **child Plane of the Water Surface is set to the Water Surface layer.**



Check that the plane's layer is set to Water Surface for each Water Surface prefab.

Alternatively, you can also visit our dedicated forums for this asset pack and ask us for more help.
