

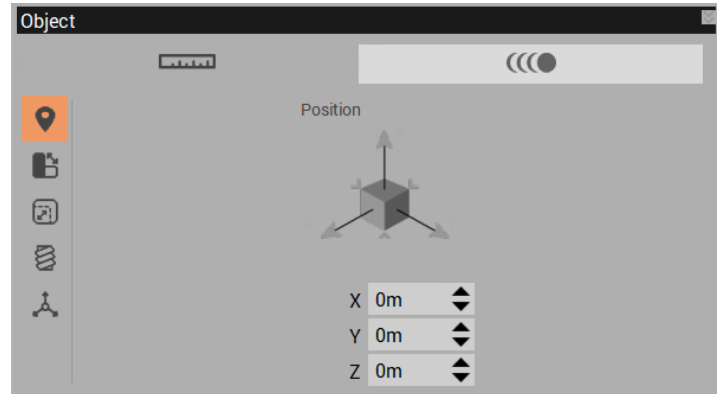
Using Depth of Field in Vue

Vue has the ability to render objects showing the appropriate depth of field. Other objects in the foreground or the background of the focused object can be blurred to a controllable extent to make render as out of focus.

Position Marlene:

To demonstrate this, we will place a character in the center of our scene. To be sure of the center point of the scene and appropriate scale, we will make use of the orientation and scale in the upper; **Object** panel

Position
Orientation
Size
Twist
Pivot Position



We will begin by loading the Marlenestand

.VOB object from character group of default .VOB objects. This is a figure of a female, standing. Where ever she winds up in the scene, we will place her in the dead center.

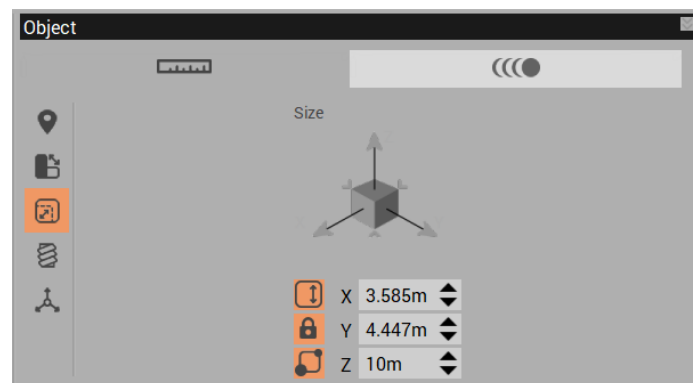
- With **Marlenestand** highlighted, through the scene or **World Browser** also click the **Position** icon in the **Object** panel, above.
- Set the X, Y and Z position to be zero.
- With **Marlenestand** still selected, right-click the name in **World Browser** and select: **Frame Selection – All Views** from the displayed list.

We can see that she is partially buried into the ground and of a very large size as initially loaded. We will begin by getting the relative size to the right value, then raise her up to stand on the ground.

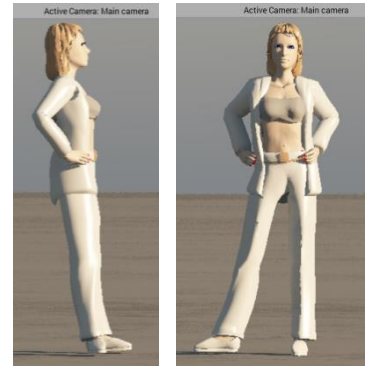
- With **Marlenestand** highlighted, Click on the **Size** icon in the **Object** panel.

Notice that there is a lock icon at the Y size value. It is on by default meaning that changing one size will correspondingly change the other sizes.

- Change the 10m Z value to 2 meters, about right for a tall-ish female like C. J.



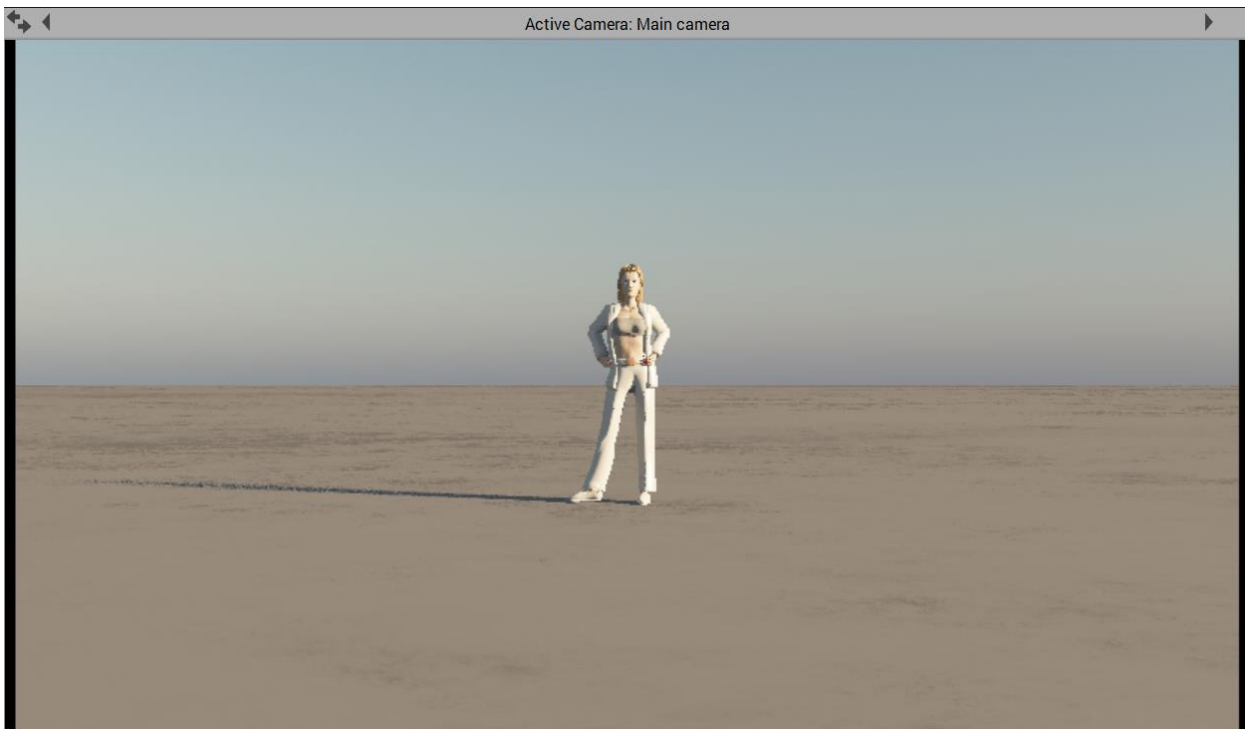
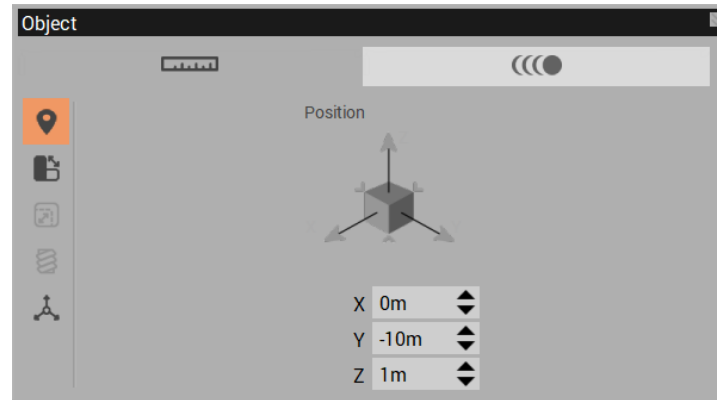
- Use one of the view gizmos to raise her up and then drop her to the ground level.
- You will find that Marlenestand is leaning a bit backwards. Use the rotation gizmos in any view to stand her straight up again.
- Then rotate her so she is facing directly forward in the **Main Camera** view.



Position Camera:

There are many options for control of the camera. Most can be seen in **Object – Aspect** panel when the **Main Camera** is selected in the **World Browser**.

- Select the **Main Camera** in the **World Browser** now. The **Object** panel now shows the parameters for the camera position.
- Set the **X** to be aligned to Marlene at a value of 0 (default)
- Set the **Y** to -10m (default)
- Set the camera height; **Z** to 1m above the ground



Camera view under default camera position and orientation with a proper – sized **Marlene** character placed at ground level.

Camera Controls

Above Active Camera display:



Toggle between Main Camera view and Perspective view



There is always a **Main Camera** and a **Top Camera**. Many can be added. These two Buttons switches to previous or next cameras; Main & top and any more added.



Below the Active Camera display:



Pan the camera by click and drag. Movement in all directions; -Y and Z planes.



Move the camera in the X plane forward to object or backward from object.



Rotate the camera, can be in all directions, a full 360° if desired.



Rotate or Orbit the camera around the selected object.



Focal Length. Click & drag to change; up to zoom in, down to zoom out



Left-click: Frame selected objects to fill the view.

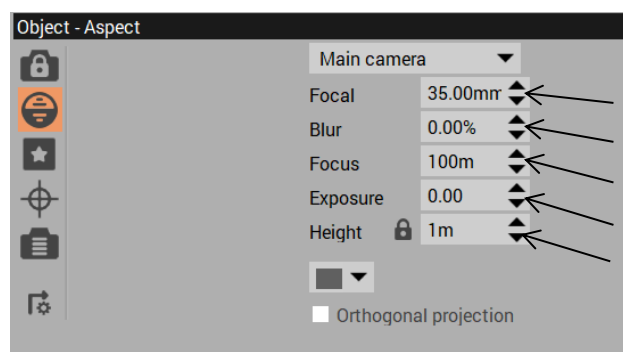
Right-click: Frame all objects to fill the view



Secure the Active Camera. Change settings in Perspective view then store into the main camera

Object – Aspect controls for Main Camera (when Main Camera is highlighted)

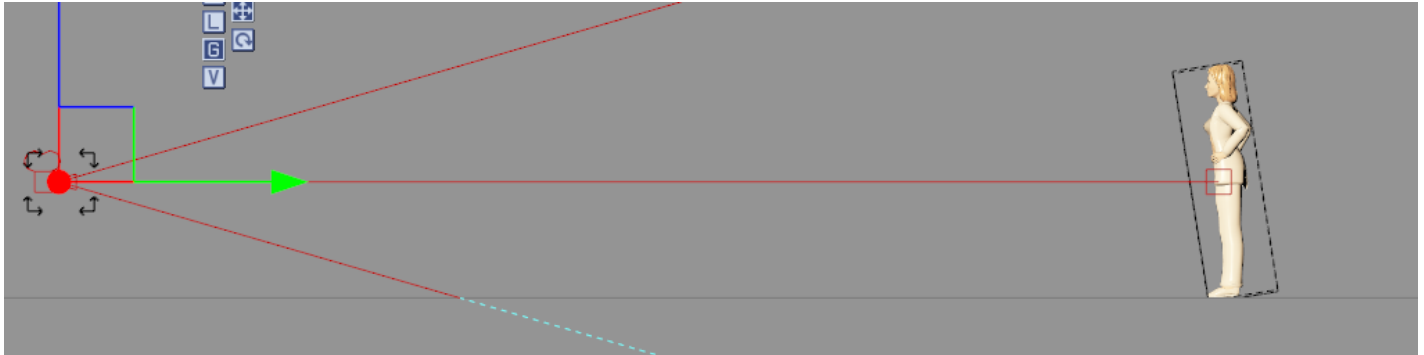
- Lock Camera Attributes
- Always Keep Level
- Select and load a Back
- Select Focus Target
- Manage Cameras



- Set Focal length
- Set Blur amount
- Set focus point
- Set Exposure level
- Set camera height

- We almost always want to keep the camera level so this is active by default..
- If we are looking to show depth of field, we also need to specify what will be in focus.

- We do this by clicking on the **Select Focus Target**, then from the Focus On drop-down list to the right, select the **Marlenestand** object.
- Doing this will de-select the **Main Camera** in the **World Browser** again so click it to highlight it.



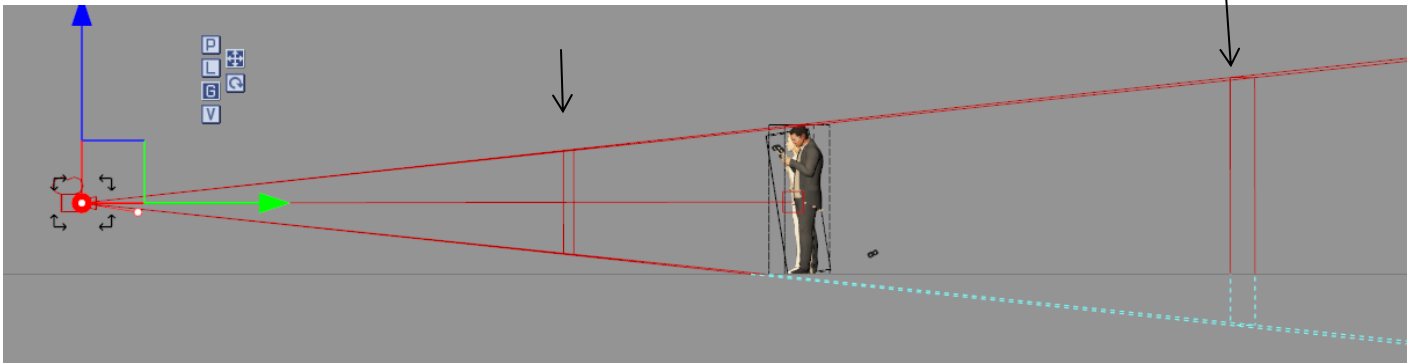
In the Side View the camera's focus square is placed on the "target" which is Marlene. To change scene to have Marlene fill the frame we won't use the **Frame Selected Object** icon, instead we will use the **Focal Length** icon.

- Click and drag the **Camera Focal** forward to increase the camera's focal length until Marlene is almost filling the **Active Camera**. It should be about 95 mm.



The blur effect that we get from the Depth of Field is determined by the **Focus** distance of the camera is to the object that is targeted, the **Blur** value in the Object Aspect panel and the **Focal** length of the camera. We'll test a few settings.

We begin with a new character, Boris, at equal distance from the camera. Focal=95mm, Focus= 10m, Blur=40%

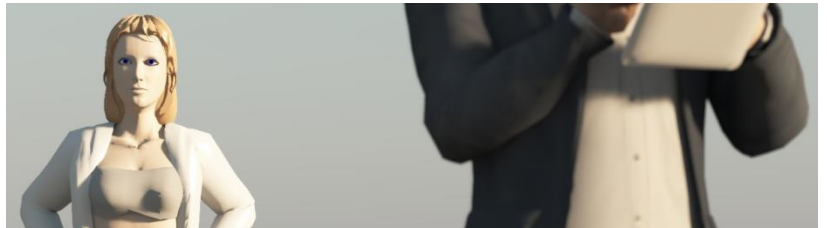


Note that in the Side View, there are two square markers in the camera's view field, one before the couple and one after. These denote the "in focus" depth of field at focal length of 95 and focus of 10m and blur of 40%.

The near boundary is at -3.2m and the far boundary is at 6.3m.

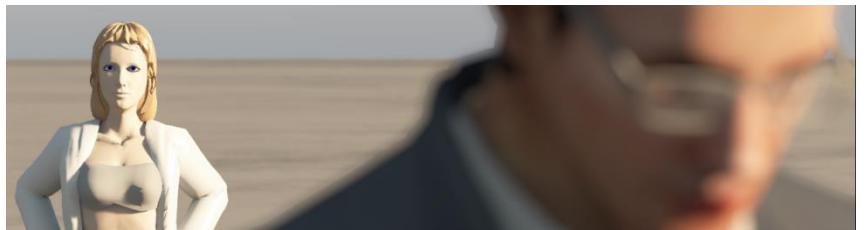
- Place Boris at -5m and render:

Some level of blurriness showing ...



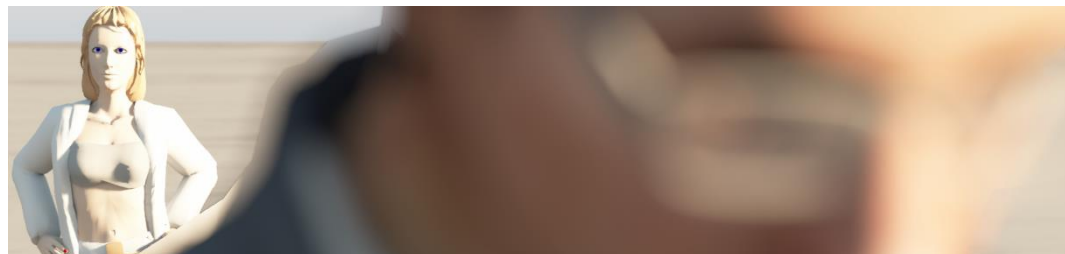
- Place Boris at -8m rise camera to face level.

Considerably more blurry

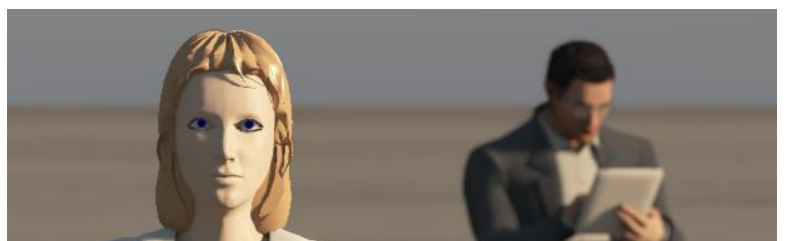


- Finally try -9m

Very Blurry and edge incorrect.



- Now out to +10m



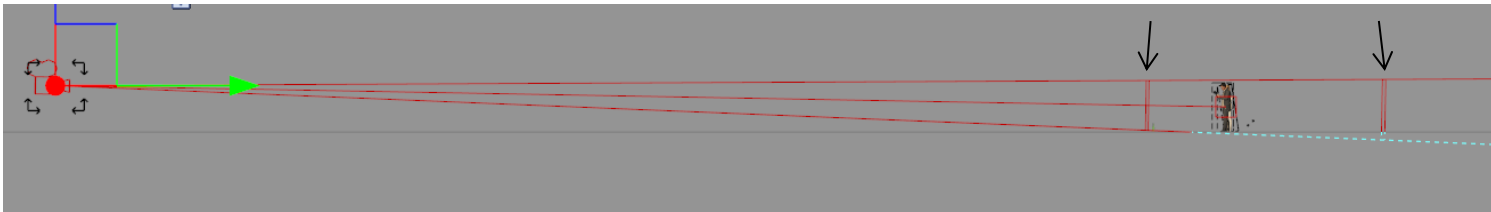
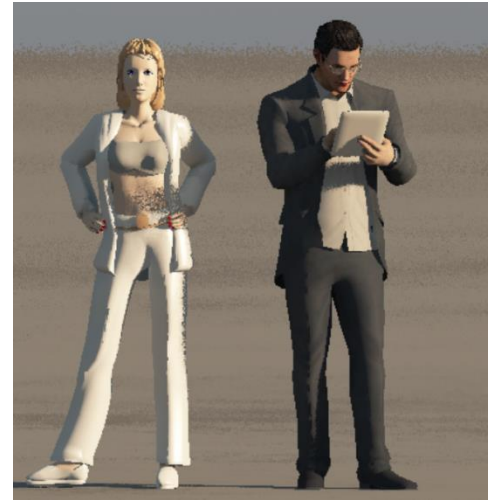


.....And at +50m

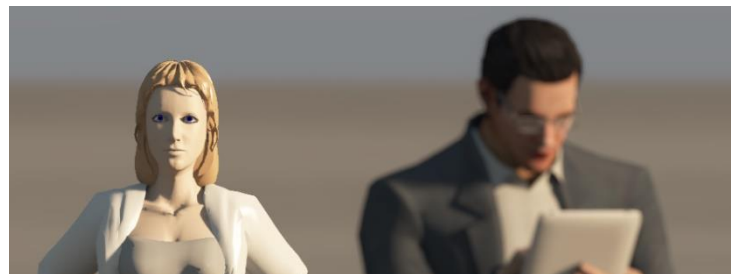
Increasing the Focus length and therefore, Focal length

In the previous graphics targets were placed at the 0 position and the camera was placed at 10m from the camera, focal length of 95m

- Now we will see the effect of placing the camera very much further in front of the targets. We've moved it to 50m away, or a Y value of -50m.
- The **Focus Target** has not changed and should still be on **Marlene** at point 0m.
- Again, adjust the **Focal** control until the targets just properly fill the frame as shown in the graphic to the right: This should be at a focal length of about 450mm.
- Note that at this focal length, the background already looks quite blurry.
- The "In focus" depth of field is about the same as it was earlier.



- Place Boris at -9 or 9 meters closer to the camera, as before.
- Boris looks far less blurry that at the focal length of 95m, earlier

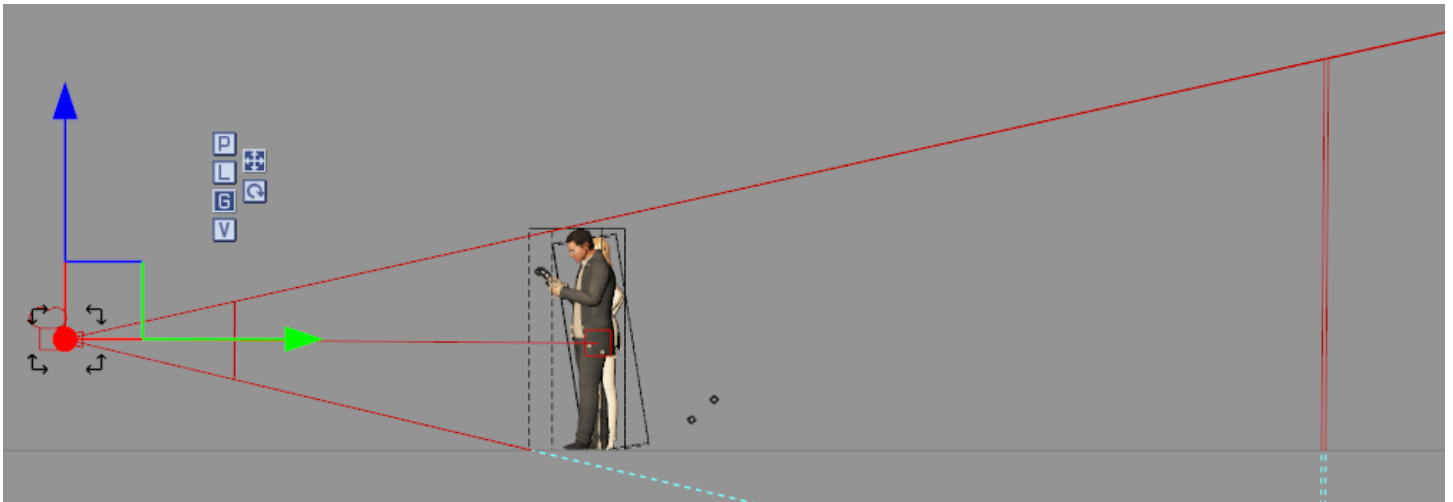


- Now try placing Boris at 50m beyond Marlene.
- Boris looks closer at this focal length but about as blurry as earlier; a 95mm.



Next we'll try to set the camera much closer to the couple. Instead of a distance of 10m or 50m away we'll try the effect of placing the camera only 5 meters from the targets.

- Place the camera distance from the couple (Y distance) to -5m
- Use the Focal icon to zoom the couple to just fill the Active Camera screen gain. (@ 44mm)
- Ensure that the Focus Target is set once more to Marlene. (focus = @ 5.037m)
- Notice again that the "in focus" boundaries are about at the same distances as before and the two figures are about screen sized and in focus, as is the skyline background.



- Notice here, that the focal length of 44mm, the visible spread is much wider than at focal length of 440mm or 95 mm, before.
- Move Boris closer to the camera, just a bit closer than the closest boundary line @ - 3.7m
- Now move him back just beyond the far boundary line. About 7.6m.
- Again we see a bit of blurring of Boris but not nearly as much as at before.



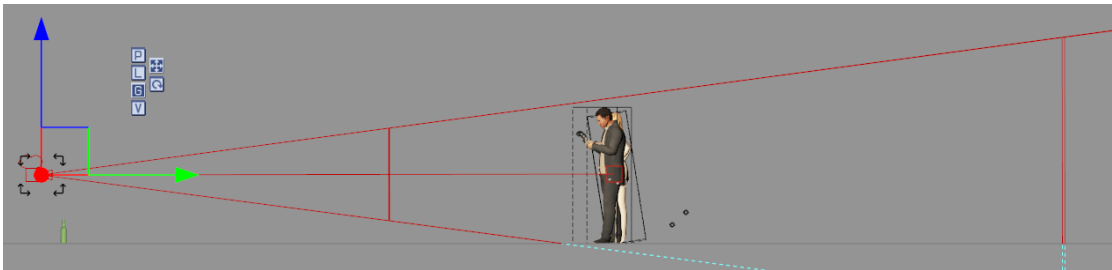
- He certainly is much smaller than at 95mm or 440mm.

- Now move Boris to 50m back from Marlene;
- He is smaller and far more blurry.

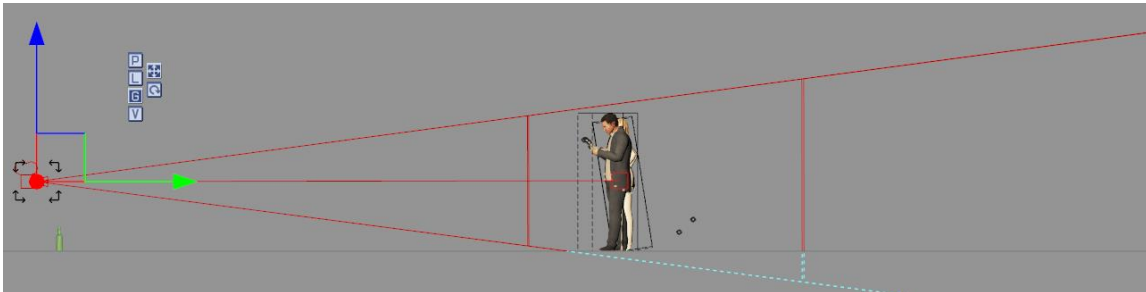


Effect of changing the Blur value

Up until this point we have been using a blur value of 40%. Changing the Blur value effectively changes the “in focus” area in the camera view field. In all of the previous renders the in focus field has been; near boundary is at -3.2m and the far boundary is at 6.3m. See below:



- Now, let's be extreme and set the **Blur** value to 100%.



- The “in focus” boundaries are much closer together. The Blurry factor as Boris is moved forward or backward from the current 0m point will be more pronounced.
- Place Boris, as before, at the -3.7m point:
- He now appears quite a bit more blurry at 100% Blur. And not as magnified...

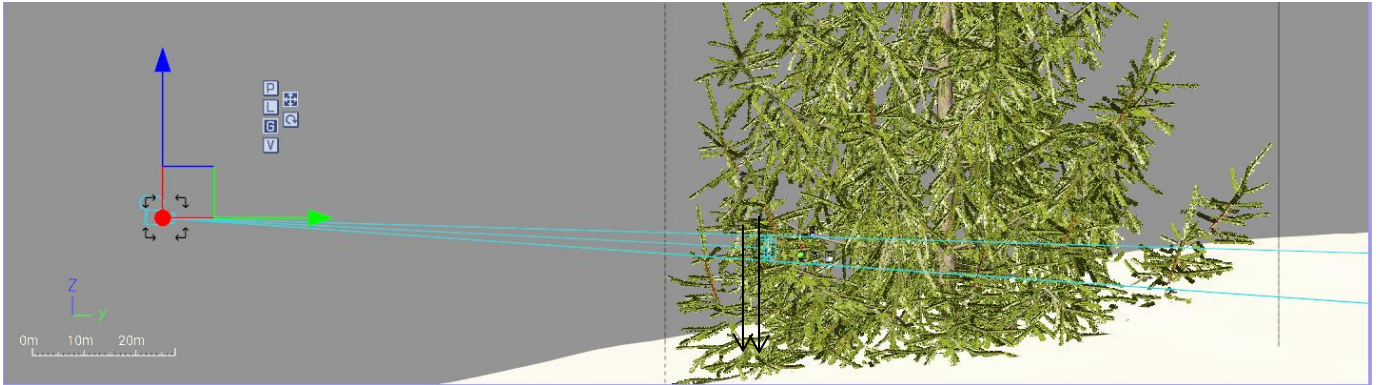


Blur Factor

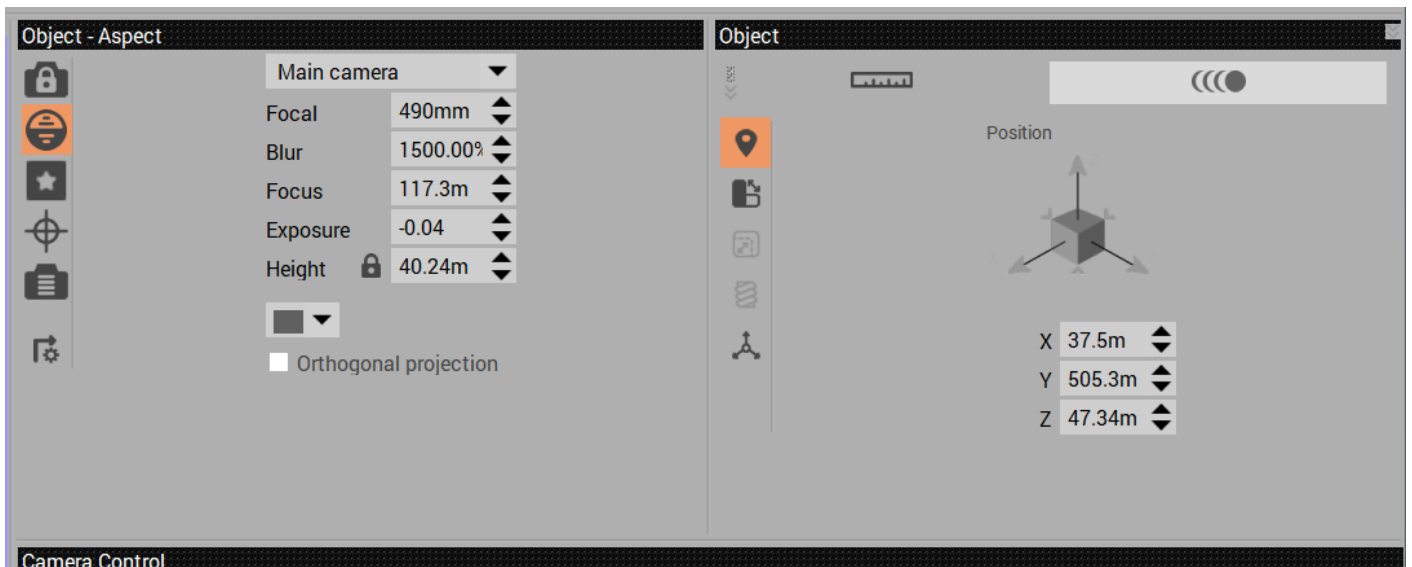
Blur is shown as ranging from 0% to 100%, but as the case for so many Vue parameters, the value can be set way beyond that, even to 10000%. The value of the blur has a major impact on the “in focus” boundaries we will see in a camera side view. So the Blur value has a major effect on the “out of Focus” part of a scene.

Ornament in a Christmas tree.

As a final test I want to have a very tight –narrow “in focus” range and have blurred scene all around it. We’ll have a single ornament in a Christmas tree and focus very tight on the ornament, which will be in focus while most of the tree branches around it will be out of focus.



Here the blur value is extreme, set at 1500%



The resulting active camera view will be pixelated



The calculation of the blur effect will add quite a bit of time to the render. The picture will be shown as unblurry and then the time continues calculating the blur effect.

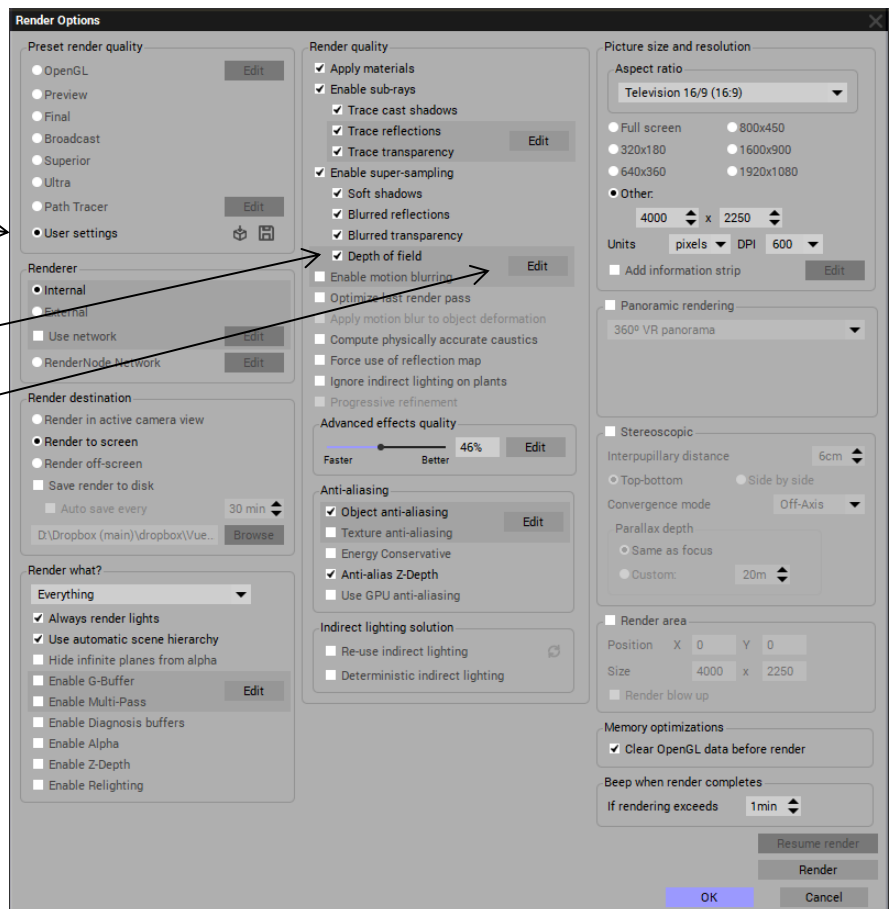


Aliasing effects

From the shot above we can see that there are a number of undesirable aliasing effects (arrows) that we can see in the image.

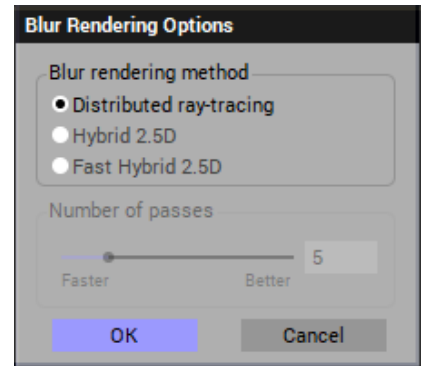
The way to illuminate these is to go into the render settings again and select **User settings**.

- Click the **Depth of Field** checkbox to **ON** if it is off.
- To the right of the Depth of Field line, click on **Edit**.
- This will open the **Blur Rendering Options** window.

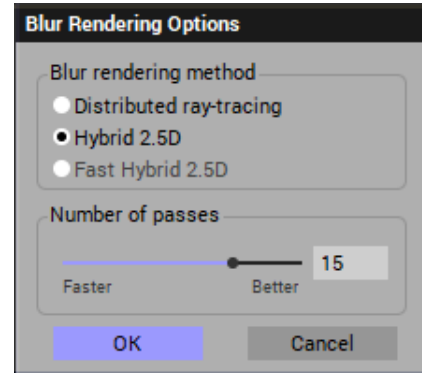


Blur rendering Options

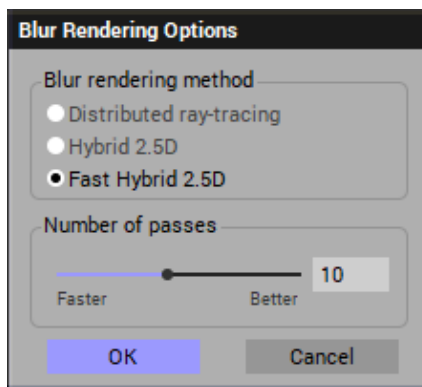
In the **Blur rendering method** there are three options. The **Distributed ray-tracing** method is the most time consuming but yeilds the best results.



The **Hybrid 2.5D** method is faster and can yeild reasonable results. The **Number of Passes** should be set to a reasonably high value, say 10 or higer for best results.



The third, **Fast Hybrid 2.5D** method is the fastest and least thorough of the three methods but, if the number of passes is high enough, cand give reasonable results as well



Original image before Blur is applied



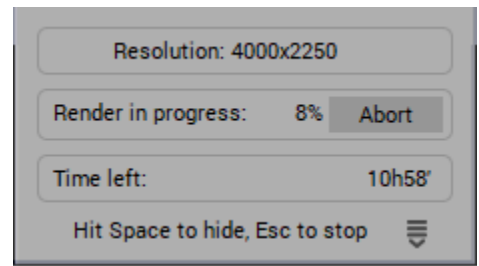
Original Uncorrected Image



Corrected - Distributed Ray-Tracing method (quite Fast) But leaves little definition

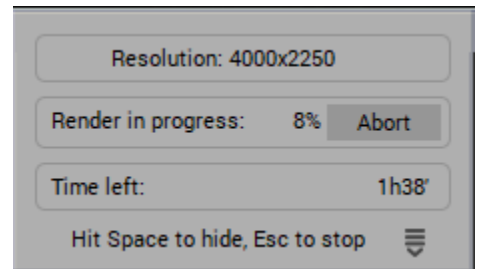


Corrected -Hybrid 2.5D method (very Long)



No image.....way too long.

Corrected - Fast Hybrid 2.5D method (mildly long)



Light reflection in the ornament is apparent but blurred showing better quality and fidelity of original image.