



SECTR TERRAIN STREAMING QUICKSTART

Please note: This is the quickstart guide that gives a fast introduction on how to stream large open world terrains with SECTR. Please refer to the full manual in the Documentation folder as well.

Version 2019.0.3

Contents

Contents	0
Step 1: Back up your project	2
Step 2: Split and Sectorize your terrain	3
Step 3 (Optional) Adding GameObjects:.....	4
Step 5: Build, Play, Stream	6
Appendix A: Using Gaia / GeNa / CTS on your terrain	7
Gaia.....	7
CTS	8
GeNa 2.....	8
Appendix B: Adding other 3 rd party assets.	8

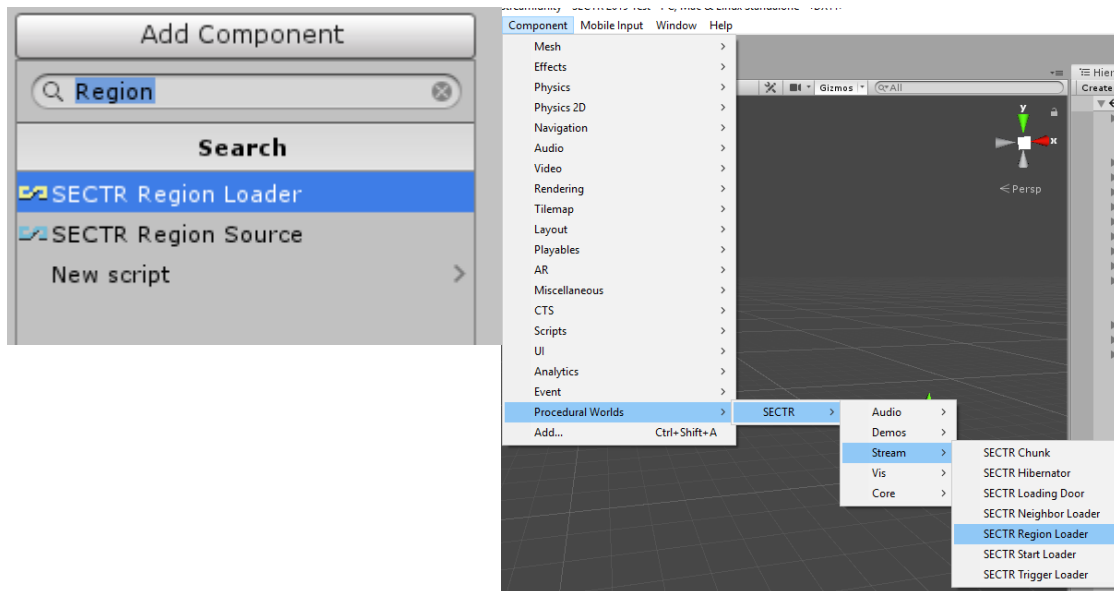
Step 1: Back up your project

If you have put a considerable amount of time into the terrain you are about to set up for streaming, please BACK UP YOUR PROJECT before beginning to look into terrain streaming. Terrain streaming will make massive changes to your scene, some of which are not reversible that easily. It will always be better to have a backup ready so that you can reverse your project back to an earlier state in case anything goes wrong.

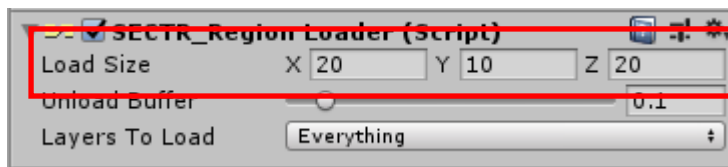
Step 2: Setting up a loader

The first actual step in preparing a terrain for streaming is to choose a loader that determines how your terrain will be streamed in. In 99% percent of the cases you will want to use a "Region Loader". The region loader will load in sectors around the player or the camera in a defined radius. This is perfect in a terrain scenario, the player can explore the world and the terrain will be loaded in around them.

To add a Region Loader to your player or camera, select the GameObject in your hierarchy and Add a Region Loader Component to it. You can do so by searching for the component in the "Add Component" Menu, or by selecting "Component -> Procedural Worlds -> SECTR -> Stream -> Region Loader".



Note that the Region Loader component lets you define the region size that it will be loading terrains in for. This will become interesting for you later when you want to fine-tune streaming.

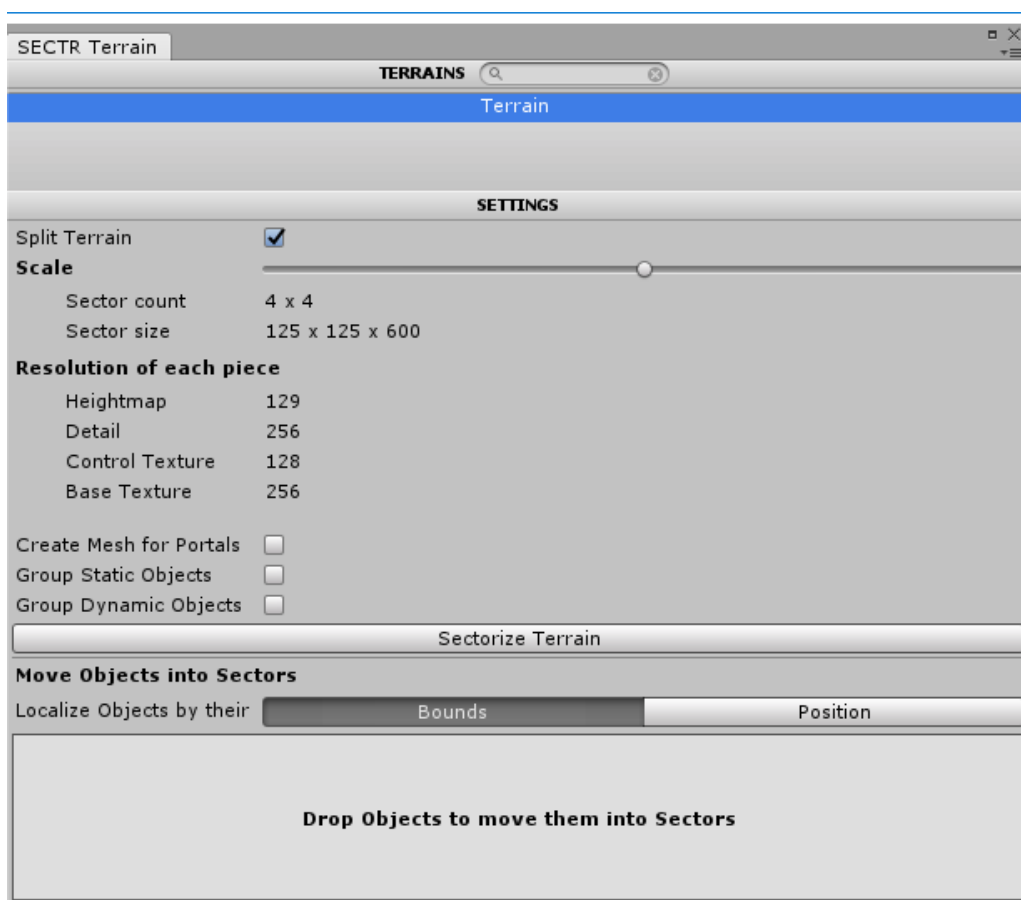


Step 2: Split and Sectorize your terrain

Terrain streaming works by splitting your main terrain into smaller terrains (called "splits" or "chunks") which are then loaded in around the player. In this way the huge terrain can be replaced by a couple of smaller terrains that are loaded in and out around the player dynamically, saving you performance by not having the entire game world loaded and visible at the same time.

Splitting up and Sectorizing a terrain would normally be complicated and time consuming, but SECTR comes with a special terrain window that will take care of the heavy lifting for you. You can access the Terrain Window via

Window -> Procedural Worlds -> Sectr -> Terrain Window

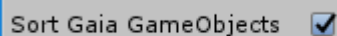


Select the terrain you want to prepare for streaming in the top part of the window, and make sure „Split Terrain“ is checked in the settings. Choose the desired scale for

your terrain splits with the scale slider. The smaller the scale, the more sectors will the terrain be divided in. It is difficult to give the “correct” value for the scale, as this usually a trade off: Smaller terrain chunks should load faster, but the smaller the chunks are, the more often a new terrain will be loaded in which can result in terrains loading in and out constantly if the player can move rather fast in the game. We would recommend to choose a sectors size of 512x512 as a starting point and then experiment further.

Pro Tip: Your original terrain will be destroyed in the splitting process and will be replaced with the smaller terrains. If you want to test different terrain split sizes, you can create a duplicate of the terrain first, and then perform the splitting on the duplicate alone. In this way you can always just create another duplicate of the original terrain for testing.

If you are using Gaia, a special checkbox for sorting the Gaia spawned objects into Sectors will appear. Activating this checkbox will take the GameObjects out of the Gaia Spawners and put them into the correct Sectors during terrain splitting / sectorization.

A screenshot of a user interface element showing a checkbox labeled "Sort Gaia GameObjects". The checkbox is checked, indicated by a blue checkmark icon to the right of the text.

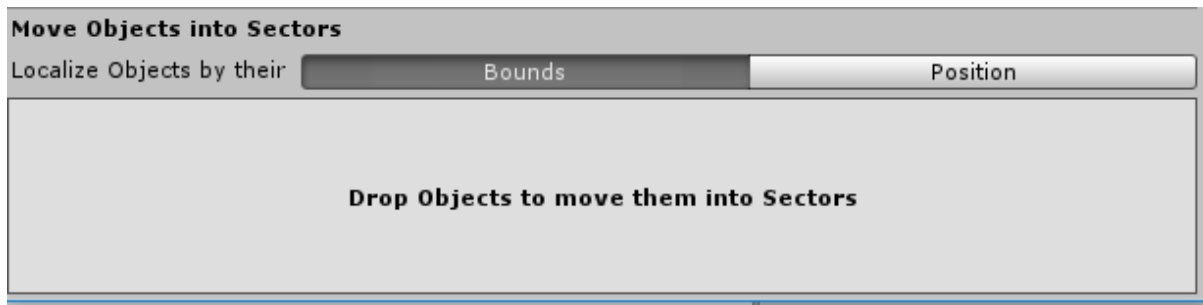
Make sure to have this box checked if you want the GameObjects that you spawned with Gaia to be put into the correct sector during the splitting process automatically. If you don't own Gaia or don't want to do this right now, don't worry, you can still do this (semi-)automatically; this will be covered in the next step.

Pro Tip: Inactive Gaia Spawners will **NOT** be processed by this option, this is intentional to give you an option to opt-out from automated sorting for certain spawners.

For now click on “Sectorize Terrain”. This will split up your terrain into smaller splits and each will be put into a fitting sector that is connected to the neighboring sectors with portals.

Step 3 (Optional) Adding GameObjects:

If you have GameObjects in your scene that you want to be streamed together with the terrain, now would be a good time to get those added to the sectors as well as they are all loaded in at the moment. To do so, simply drag and drop the objects from your scene hierarchy on the “Drop Objects to move them into Sectors” box at the bottom of the Window:



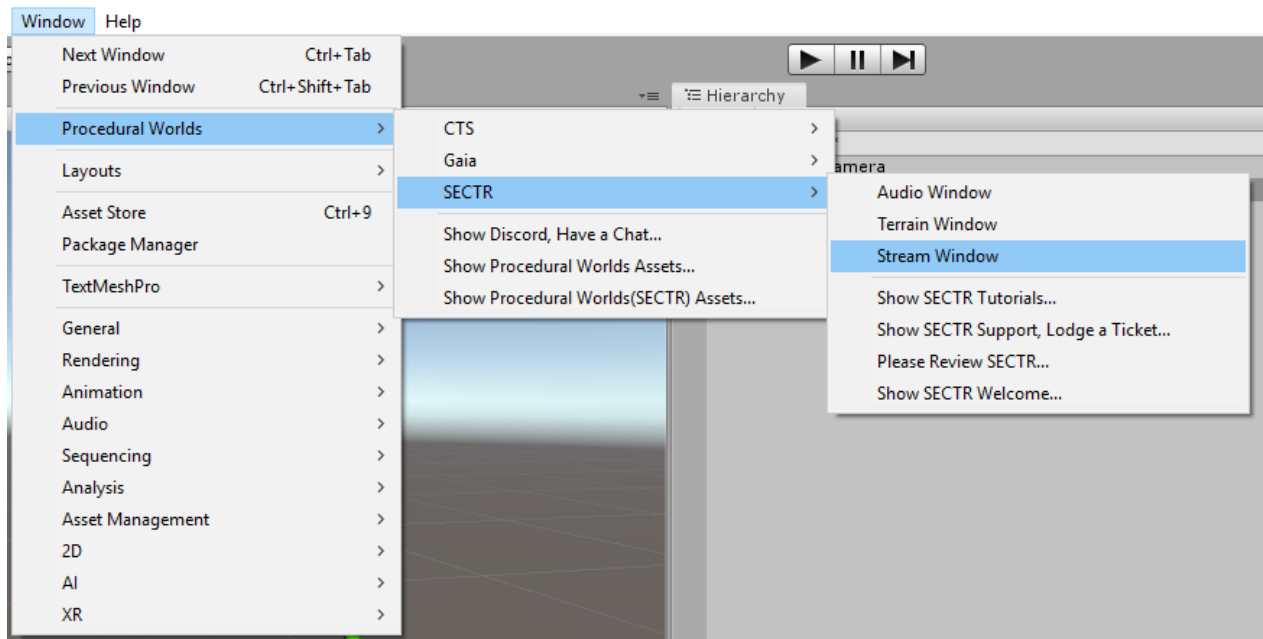
The GameObjects will then be sorted away in the fitting Sector, depending on the objects position or its bounds (switch between the options with the corresponding buttons above the drop area box).

Pro Tip: It is possible to load GameObjects from their own Sectors that are independent from the terrain as well. This can help to split the load from one heavy terrain chunk with a lot of objects on it across multiple Sectors, and also allows you to use a different loading range for smaller GameObjects. The streaming section of the full manual has more information on this.

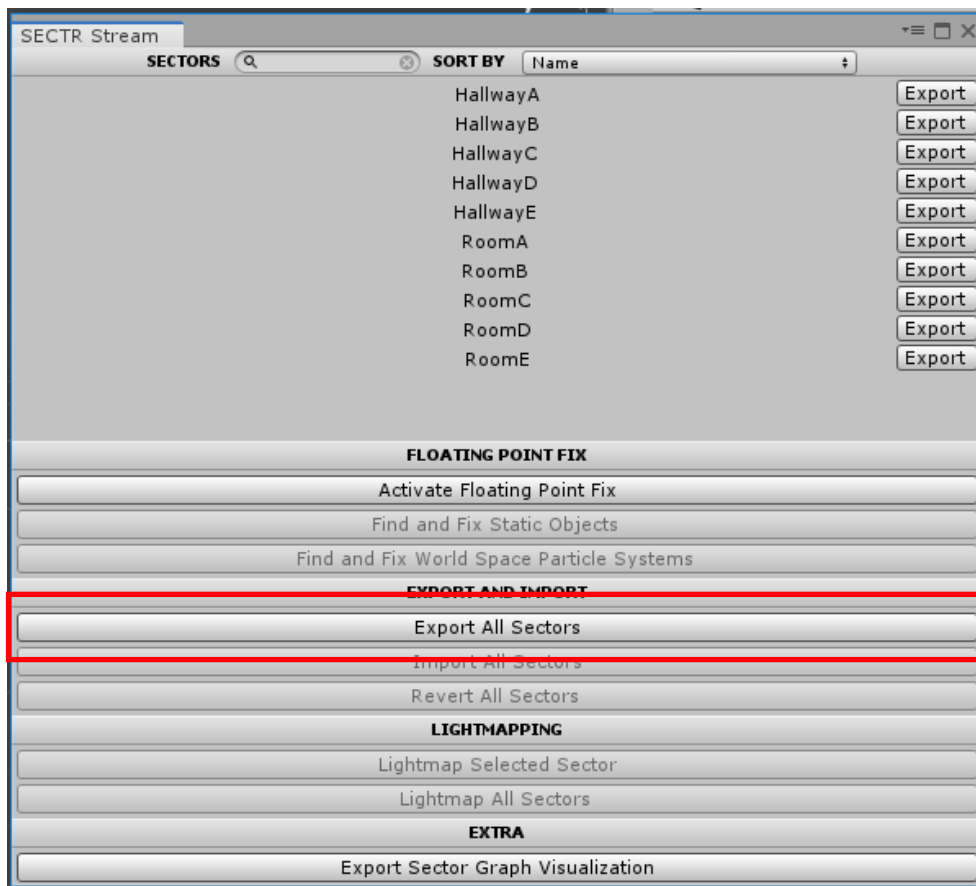
Step 4: Export the Sectors

Once your scene is setup with the terrain splits, Sectors and Portals and you have at least one Loader, it is time to export for streaming. This will take all of the children of each Sector and export them into an external scene file (called a Chunk).

Chunks are exported (and imported) through the SECTR STREAM window. To open it, go to Window-> Procedural Worlds -> SECTR->Stream Window.



Just press the Export All Sectors button to make your scene ready for streaming!



Pro Tip

Only Sectors marked as Static can be exported for streaming. Sectors are static by default, so be careful if you change that flag.

Step 5: Build, Play, Stream

Now that your level has been exported, you can play your level and see terrain streaming in action. Your terrain should be loaded in around the player as they move through the game world. Note that streaming works in the Editor, but it performs better in a build.

Pro Tip

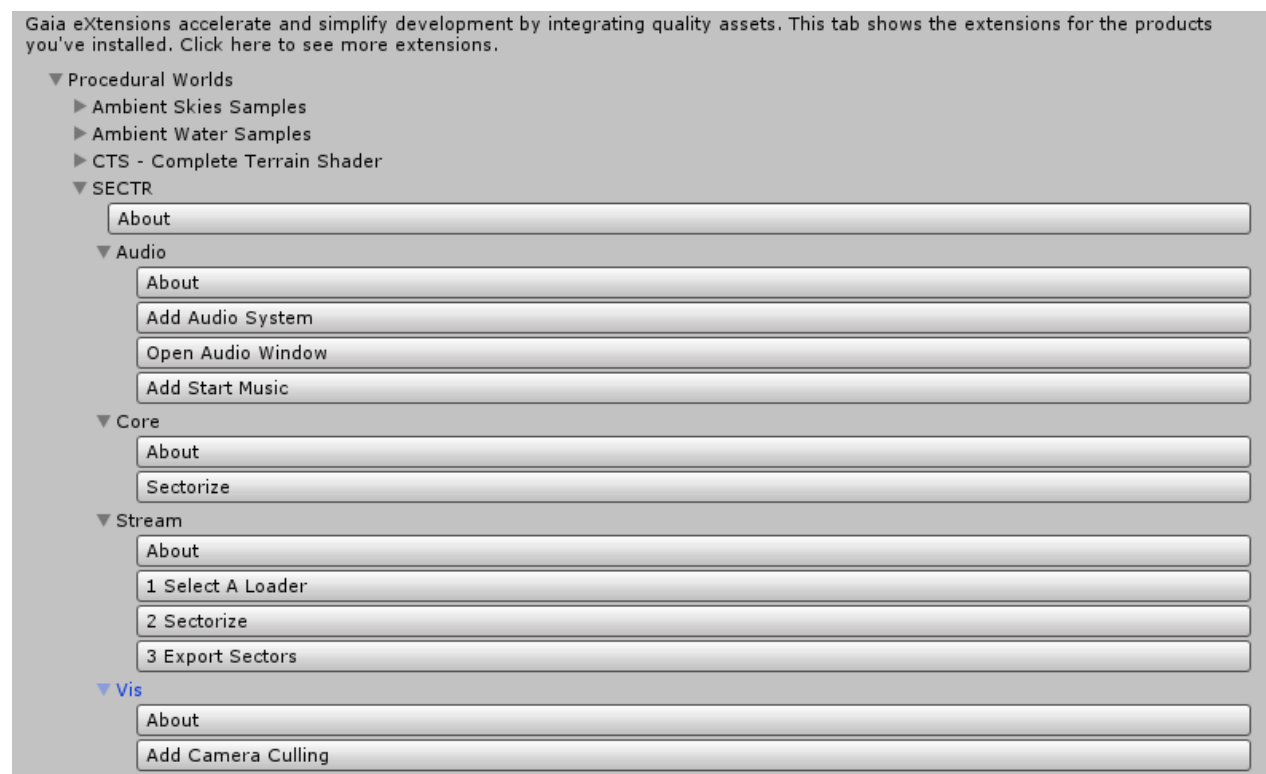
The SECTR STREAM exporter automatically adds your Chunk scenes to the project Build list. Make sure to remove them if you change the way your scene is laid out or otherwise remove Sectors from the scene.

Appendix A: Using Gaia / GeNa / CTS on your terrain

Since SECTR is part of the Procedural Worlds product family, there are several integrations with other PW products available.

Gaia

When using Gaia, you can find additional entries for the integration with SECTR in Gaia's "GX" panel. These integrations will allow you to set up common SECTR elements quickly on your terrain.



Especially notice the three steps outlined in the „Stream“ integration. If you follow these three steps after creating a terrain with Gaia, you can set up your terrain for streaming mostly automatically.

So the workflow to create a streaming Gaia terrain would be:

1. Create your Gaia terrain as usually with the steps outlined in the Gaia Manager window. (Create Terrain, Stamp Terrain, Run Spawners, Add Player & Post FX)
2. Add a Loader to your player / camera
3. Sectorize your terrain as described in this guide, keep the special option for Gaia GameObjects in mind when doing so.
4. Export the Sectors for Streaming.

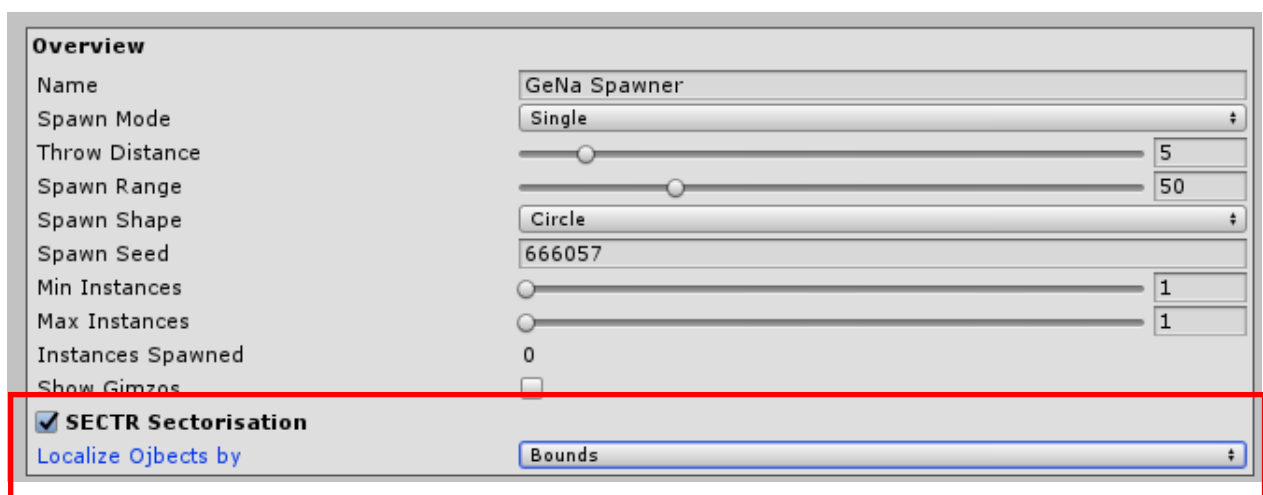
CTS

When you are using CTS on a terrain that you split up for sectorization, the same CTS profile will automatically be applied to all the terrain split chunks that are being created in the process. This means your created chunks will just look the same if used in streaming with SECTR, there are no extra steps needed.

If you are using CTS in a streaming scenario, it is recommended to look into the CTS option to "Disconnect the profile" from the terrain. This will create a persistent material for your terrain which has less overhead when the terrain is being loaded in for streaming, which is beneficial for streaming performance.

GeNa 2

When using GeNa 2 and Sectr together in a project, additional options will appear in the spawner to allow you to place your spawning result directly in the fitting sector which can be a huge timesaver when working on an already sectorized scene:



Appendix B: Adding other 3rd party assets.

In general it should be possible to add other 3rd party assets to your scene with terrain streaming as well. It depends a bit on what this asset does how you would need to incorporate these assets into your scene.

As a rule of thumb you can say that:

- Global assets should remain global: A weather or lighting asset would need to be part of your main scene since it should normally not be depending on the actual terrains or other assets in the scene.
- Local art assets need to be added to the matching sector: Art assets such as models of a house, trashcans, rocks, etc. would need to be added to the correct sector (= the same where the underlying terrain is also in). You can easily achieve this by dragging and dropping those assets on the sorter drop area in the terrain window. (See Step 3 in this guide)

- Terrain-dependent assets need to be applied to all terrain splits / chunks. Any asset that depends on a special component being on the terrain need to have this component on all terrain splits / chunks usually.

If you are in doubt if an asset supports terrain streaming or what would be required to make it work, you can ask the authors of the asset if it would work to have another scene containing a terrain loaded in additively. If that is no issue, terrain streaming should not a problem as well.