# Tiler

## Contents

# 1.0 Updates

### *Version 1.1*

The recent 1.1 update has made Tiler undergo a slight change in how it appears as it now uses GUI Windows instead of Editor Windows so that it works the same on all platforms. Pictures in this readme are from the original 1.0 version but are still relevant as functionally Tiler works exactly the same.

# 2.0 Layout

## 2.1 Start

Once downloaded and placed inside the unity project, Tiler can be started under Window toolbar.

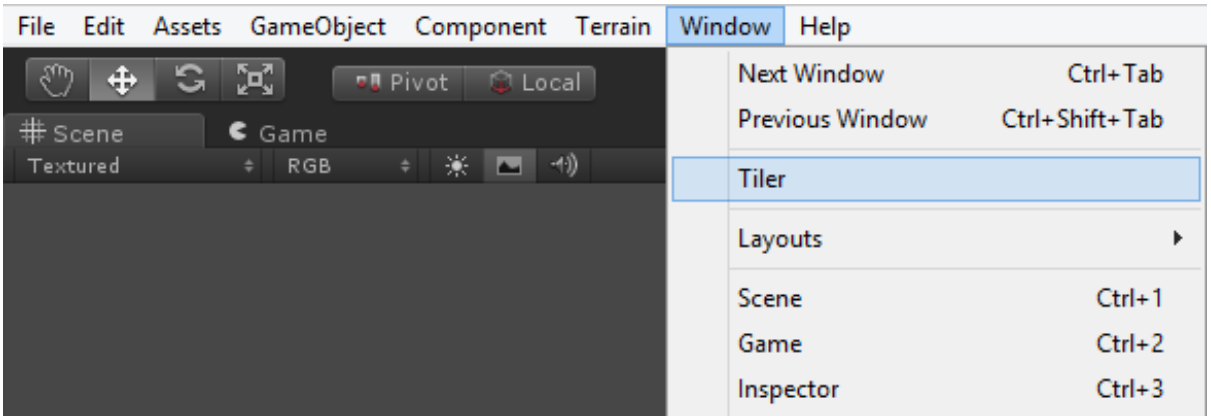


Figure 1: Start Tiler

## 2.2 Toolbar

The toolbar provides 3 menus for all Tiler windows.

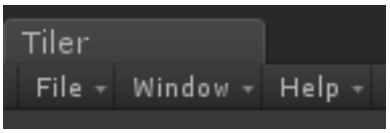


Figure 2: Toolbar

- File – lets you create new files and save what you're currently working on
- Window – change between tiler windows
- Help – Links to forum thread, support and contacting the author

## 2.3 Draw Window

The draw window is the heart of tiler where you create your in game maps.

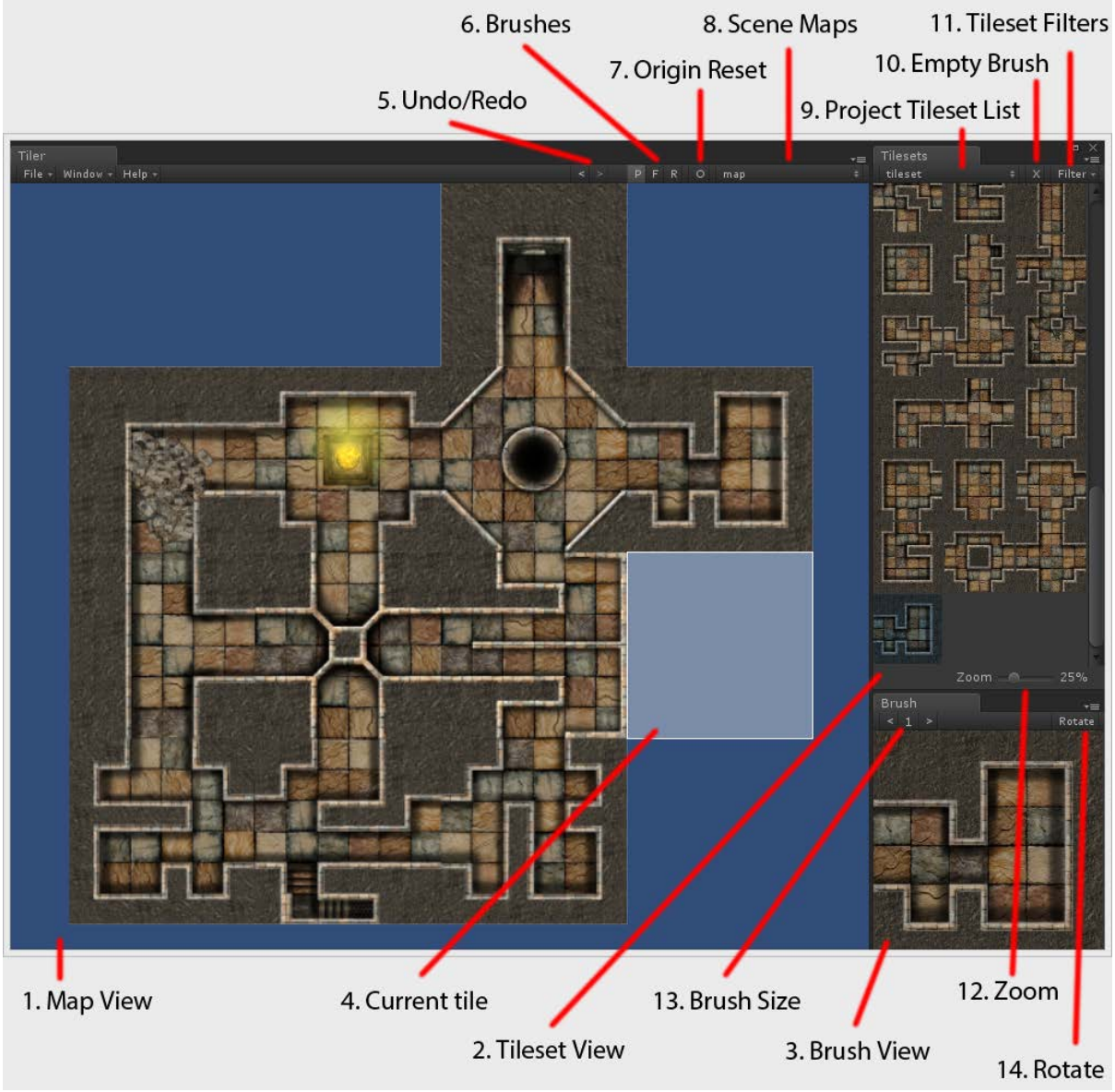


Figure 3: Draw Window

1. Map View – A custom scene view that lets you paint on the current map
2. Tileset View – Contains various selectable tiles within a tileset.
3. Brush View – The current brush you will paint with
4. Current tile – Current tile/s your brush will apply changes to
5. Undo/Redo – Undo or redo texture changes
6. Brushes –
    - P – Paint brush. Paint individual towers
    - F – Fill brush. Replace all tiles within in area
    - R – Replace brush. Replace all tiles of the same type
7. Origin Reset – Resets the camera to the (0,0) coordinates
8. Scene Maps – List of all maps in the scene. Let's you select the one to work on.

9. Project Tileset List – List of tilesets in the project. Let's you select the one to work with.
10. Empty Brush – Sets the current brush to empty, allowing you to delete tiles on the map.
11. Tileset Filters – Allows you to apply a filter to the current tileset to easily find certain textures
12. Zoom – Zoom in and out of tileset textures.
13. Brush Size – The brush size controls let you increase or decrease the size of the current brush. Only available for the normal paint brush.
14. Rotate – Rotate the current brush

## Hotkeys

| | |
|---|---|
| a | Decrease brush size |
| s | Increase brush size |
| d | Rotate brush |
| 1 | Paint tool |
| 2 | Fill tool |
| 3 | Replace tool |
| 4 | Empty brush |

## 2.4 Tileset Window

The tileset window lets you build the tilesets used in the draw window.

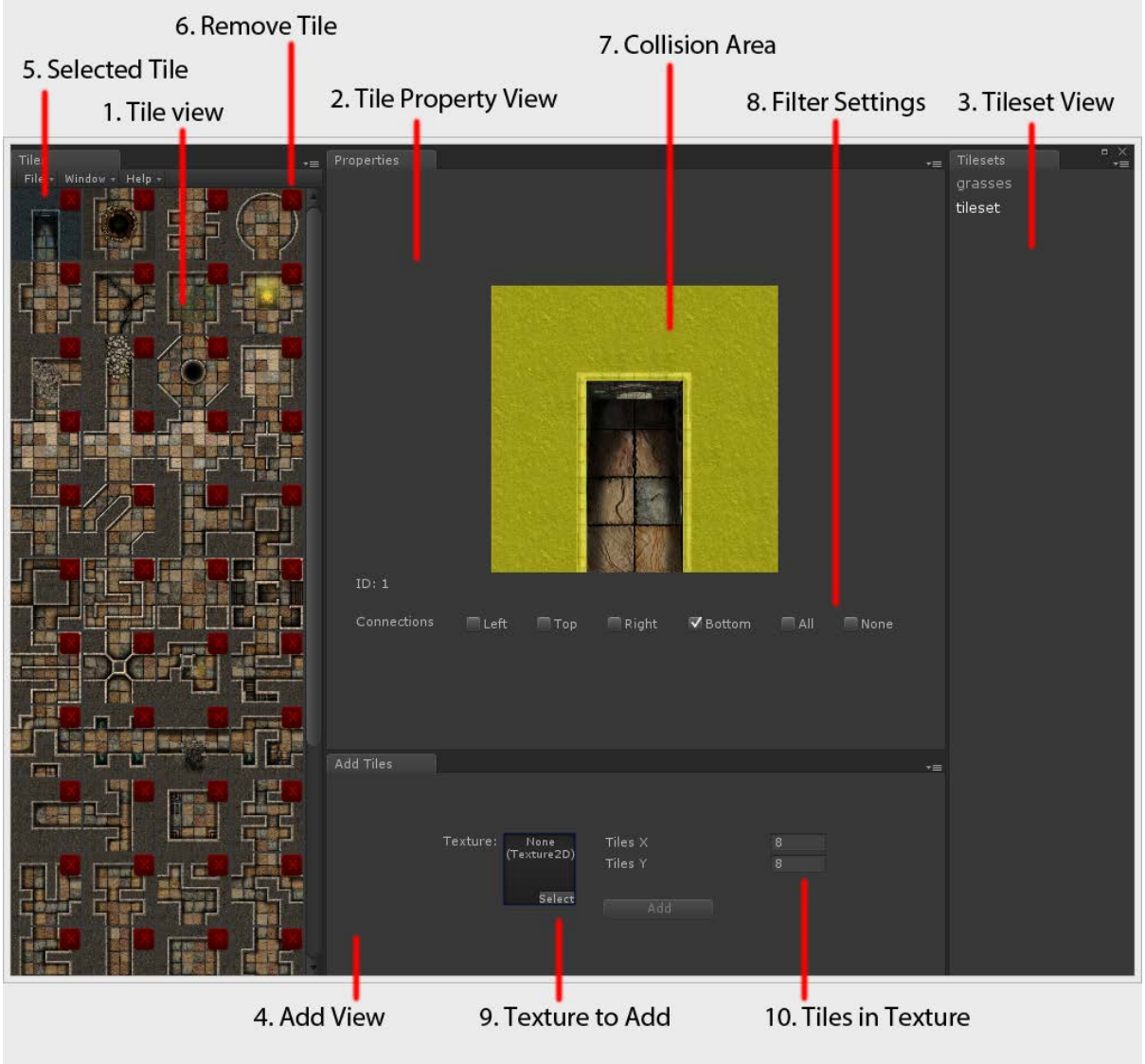


Figure 4: Tileset Window

1. Tile View – List of tiles in the current tileset
2. Tile Property View – Properties of current selected tile
3. Tileset View – List of tilesets in the project
4. Add View – Add new textures to the tileset
5. Selected Tile – Current selected tile in the tileset
6. Remove Tile – Delete a tile from the tileset
7. Collision Area – Area that can't be traversed. Used for collider and navmesh generation
8. Filter Settings – Optional filter settings for easy finding of tiles in the draw window
9. Texture to Add – Texture to add to the tileset
10. Tiles in Texture – Let you split a texture that you're adding into sections. Used to import multiple tiles from a single texture.

### Hotkeys

| | |
|---|---|
| a | Previous tile in tileset |
| d | Next tile in tileset |
| delete | Delete currently selected tile in tileset |
| 1 | Set or unset Left filter |
| 2 | Set or unset Top filter |
| 3 | Set or unset Right filter |
| 4 | Set or unset Bottom filter |
| 5 | Set all filters |
| 6 | Set no filter |

# 3.0 Using Tiler

## 3.1 Creating a Tileset

### 3.1.1 New Tileset

To create a new tileset, go to the tileset window then hit the new button under the file menu on the toolbar. A file dialog box will popup asking you to set a directory and filename for the tileset. By default tilesets are saved in the Assets/Tiler/Data/Tileset folder. For organization and file safety it's recommended that you use this folder, but you are free able to use any other folder within the projects Asset directory.

Once a file location has been set, the tileset wizard will popup.

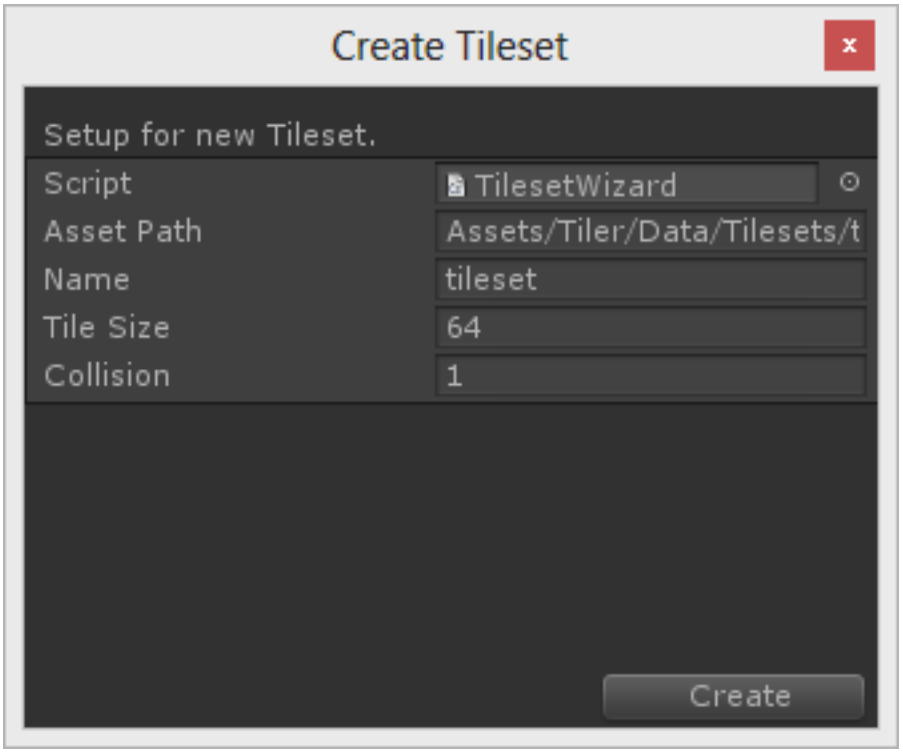


Figure 5: Tileset Wizard

The tileset wizard has 2 editable settings.

- Tile size – Tile size is the pixel resolution of each tile in the tileset.
- Collision – The number of collision points in a tile. This value is per axis. So if the value is 3, there will be 3x3 collision points for a total of 9 points.

Once the tileset has been created it'll now appear on the right in the tileset view (see figure 5). All tilesets within the project will appear in the tileset view.

### 3.1.2 Add Tiles

You can now add tiles to your tileset in the add view ( see figure 5). To do this either drag a texture onto the texture field, or click the select button to browse to your texture. Once you've selected the texture you want to add you have 2 options before adding it.

You can either set the whole texture as a tile, or break the texture up into multiple tiles. The second option is preferable as it takes significantly less time to drag 1 texture in than a large range of textures.

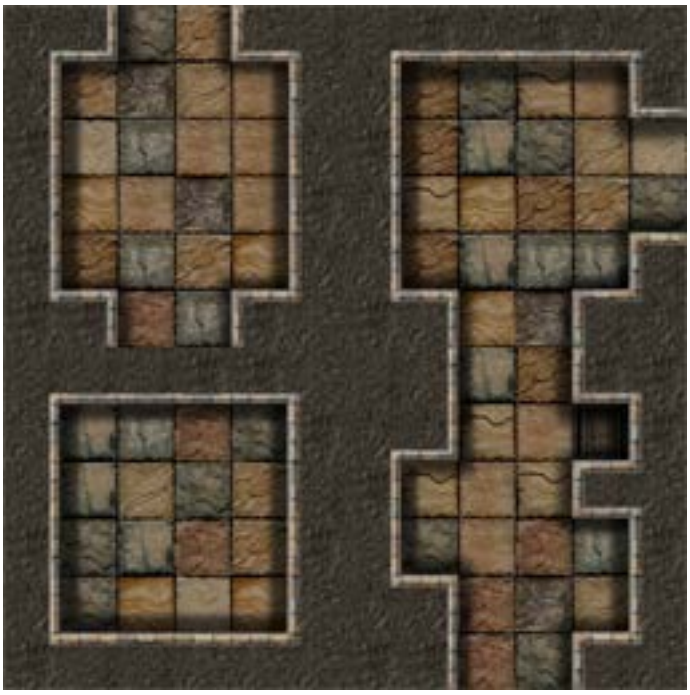

Figure 6: Example of a 2x2 texture ready to be split

As seen in figure 7, that texture can be broken up into 4 separate textures. To do this, set the number of textures in the x and why directions in fields provided. Once done, click the add button to add the texture to your tileset. This may take a moment if you are splitting a lot of textures as Tiler needs to create a new texture for each tile then set specific import options for unity.

### 3.1.3 Remove a Tile from Tileset

To remove a tile from the tileset, hit the red x in the top right corner of the tile seen in the tile view area (see Section 1.4). A confirmation box will appear to warn you.

Please note that this will delete the texture from the hard drive. Don't worry though; Tiler makes a copy of all textures when importing so it'll only delete the copy not the original. Just be aware of this deleting process though if you make changes to the copy after it's been created.

### 3.1.4 Change Tile Properties

There are a couple properties you can specify for each tile.

- Collision Area – Collision area in which is blocked from travel. This is used to generated colliders and navmesh. The number of collision points you can have per tile is set in the tileset wizard (see Section 2.1.1).

**Figure 7: Collision area. Image on the left has no collision set. Middle image uses a collision value of 1 so it can only be on or off. Image on the right uses 6 points of collision value letting you specify within the tile accurate collision points**

- Filter settings – this is an optional setting and is only used for convenience within the draw window. It lets you set how each tile connects to other tiles so you can easily filter within a large tileset to find the type of tile you're looking for. i.e. is there an opening to the left or is it blocked by a wall.

## 3.2 Creating Your Map

### 3.2.1 New Map

To create a new map, go to the draw window then hit the new button under the file menu on the toolbar. A file dialog box will popup asking you to set a directory and filename for the map. By default maps are saved in the Assets/Tiler/Data/Maps folder. For organization and file safety it's recommended that you use this folder, but you are free able to use any other folder within the projects Asset directory.

Once a file location has been set, the map wizard will popup.

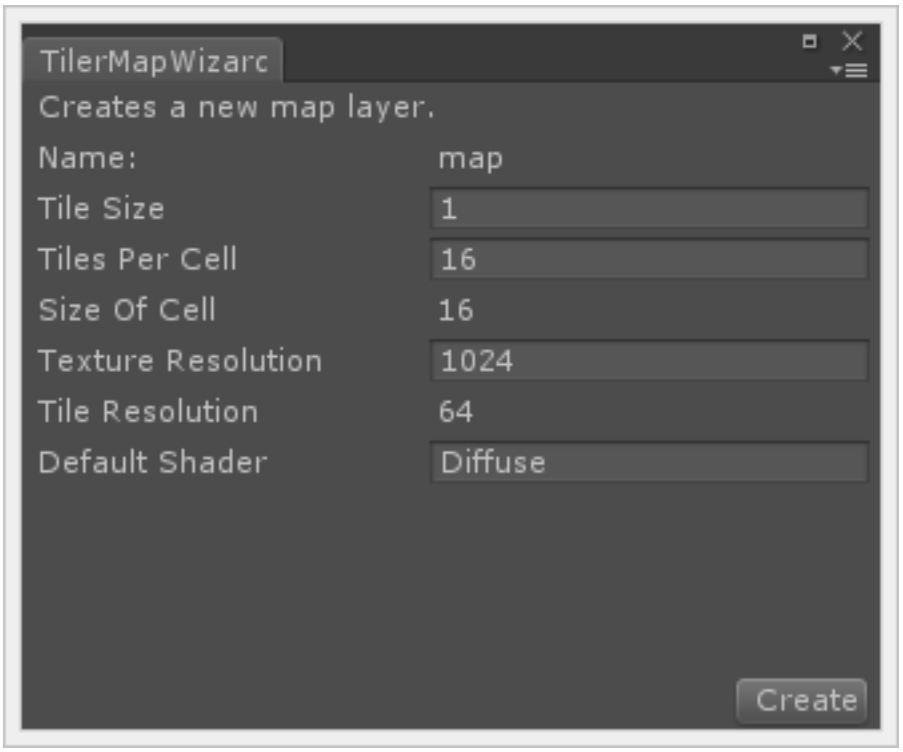


Figure 8: Map wizard

The first thing you need to know about maps is that they work by breaking the world up into cells with their own texture. Each cell is then made up of a number of tiles. Cells are generated on a need basis.

The map wizard has a few editable settings. These are important and greatly define how your map works. At this stage most can't be edited after creation so make sure you plan out your map.

- Tile Size – This iis the size of each tile in the world. A value of 1 means the an object would have to move 1 unity unit to travel from 1 cell to its neighbour.
- Tiles Per Cell – The number of tiles in a cell. This value represents a single dimension and since cells are square, a value of 16 means there are 16x16 total tiles per cell.
- Texture Resolution – The pixel resolution of each cell texture. Must be a power of 2 and less than or equal to 4096.
- Default Shader – The shader that the material each cell uses. This is the only value that can be changed at a later time.

There are a couple of other un-editable fields whom value is based off the other settings.

- Size of Cell – The size of the cell is equal to the Tile Size multiplied by the Tiles per Cell. This is how large each cell is.
- Tile Resolution – This is the resolution that each tile will end up being. It's equal to the Texture Resolution divided by the Tiles per Cell. Ideally it should match the Tile Size you use in your tilesets but Tiler will scale tiles accordingly.

### 3.2.2 Drawing on the Map

To draw on the map, you first need to select the brush tool you want to use.

#### *Paint*

Once selected, just pick the tile you want to use from the tileset view and left click and drag over the squares you want to paint. There are a few ways to modify the brush. You can increase the size of the brush to paint multiple tiles at once and/or you can rotate the tile so that it faces a different direction.

#### *Fill*

This tool replaces all tiles of the same type within an enclosed area.

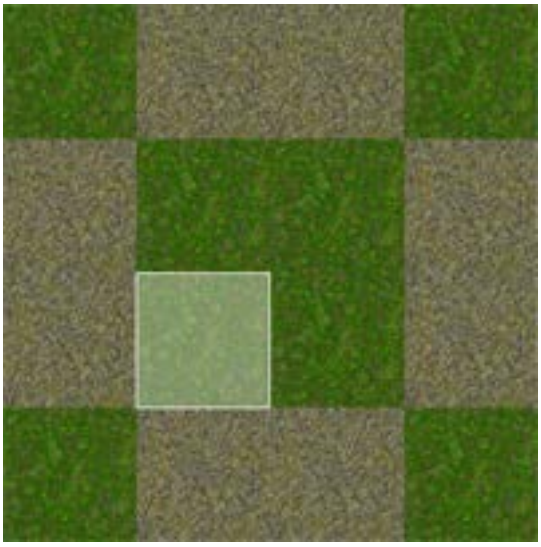

Figure 9: Fill tool

It uses a 4point check so diagonals are not consider adjoining, therefore in the above picture only the 4 inner tiles would be replaced. The fill tool also takes into considering rotation, two tiles using the same texture but rotated different direction will be considered different tiles.

#### *Replace*

This tool is similar to the fill tool; it replaces all tiles of the same type but doesn't require the tiles to be adjacent. Be careful when using this, on a very large map it might take some time to calculate or may replace tiles in a far off area you have forgotten about.

### *Copy*

The copy tool is a bit different to rest;  unlike the other tools it can't just be selected. To copy a section of the map, just click and drag with the right mouse button[1] in the desired area. A new brush will be created with selected tiles. This new brush can also be rotated and placed in the world at any desired point.


Figure 10: Example of a brush from copy ing

### 3.2.3 Filters

If you spent the time to setup how each tile connects to each other in the Tile Window, Tiler provides the ability to easily and quickly filter between tiles in a tileset. Just click the filter button in the Tileset View to open the drop down and select your filters.


Figure 11: Filters

- Rotate – the rotate filter option allows tiles that fit the filter pattern when rotated

[1] You can use the alternate hotkey ctrl + left mouse button if you don't have a two button mouse

- Exclusive – Exclusive means that the tile must fit the filter pattern, and only the filter pattern. For example 2 tiles. Tile A connects left, right. Tile B only connects on left. If you set the filter to left, both tiles would show up but if you set it to left exclusive only tile B will show.

## 3.3 Adding colliders

If you've setup collisions for all your tiles, you can automatically generate box colliders for your map which is done through the custom inspector for the map. To generate your colliders, click on the map in your hierarchy window then in the unity inspector window you'll see an option called Generate Colliders, clicking this will cause Tiler to build box colliders for that map.

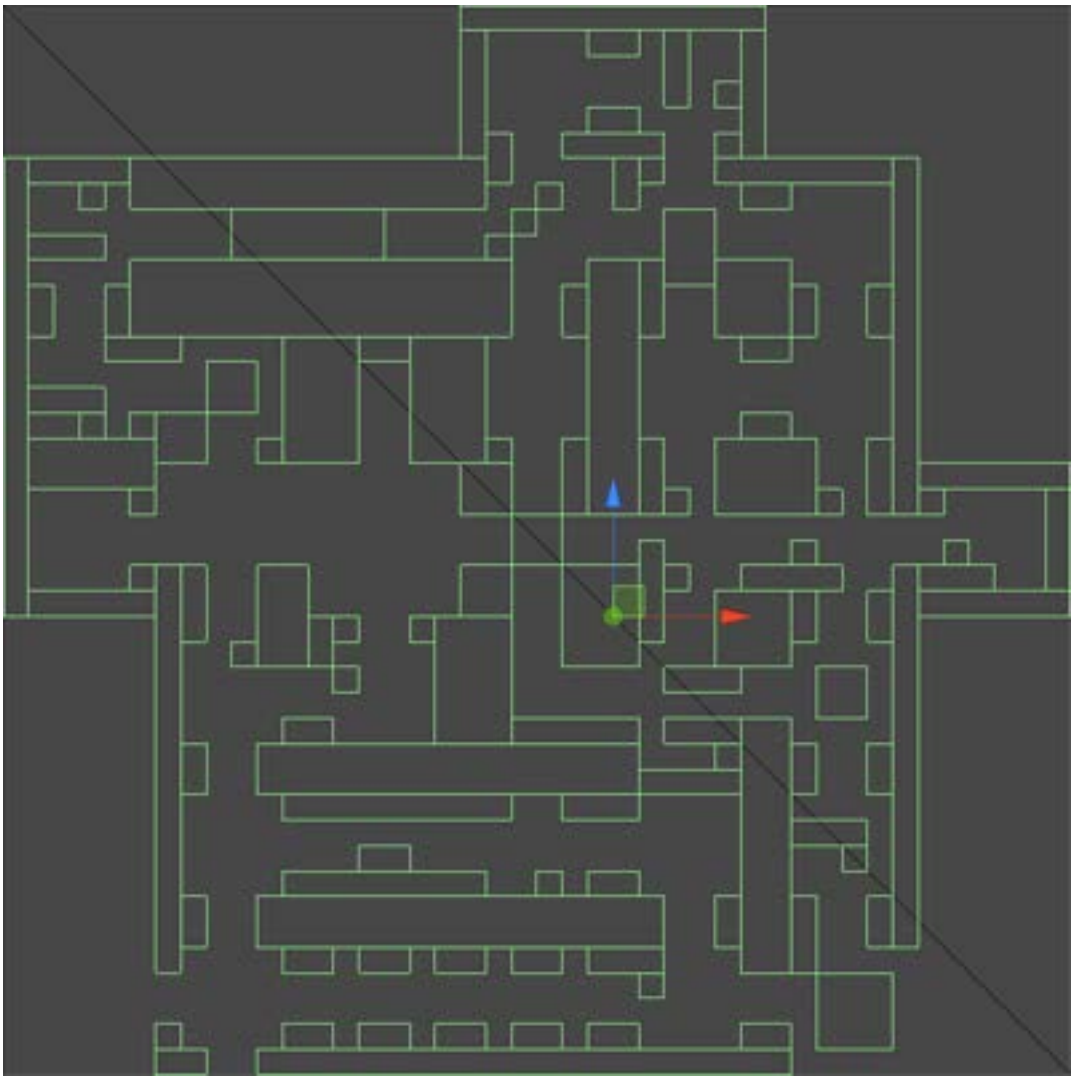

Figure 12: Example colliders produced by Tiler for a dungeon

Tiler automatically merges box colliders so that the only the minimal amount of boxes are used. Figure 11 shows an example of this.

Please note that any object under the "colliders" gameobject is destroyed on generation of colliders.

## 3.4 Generate a NavMesh

If you've setup collisions for all your tiles, you can automatically generate a navmesh which is done through the custom inspector for the map. To generate your navmesh, click on the map in your hierarchy window in the unity inspector window you'll see an option called Generate Navmesh, clicking this will cause Tiler to build a navmesh for your map.

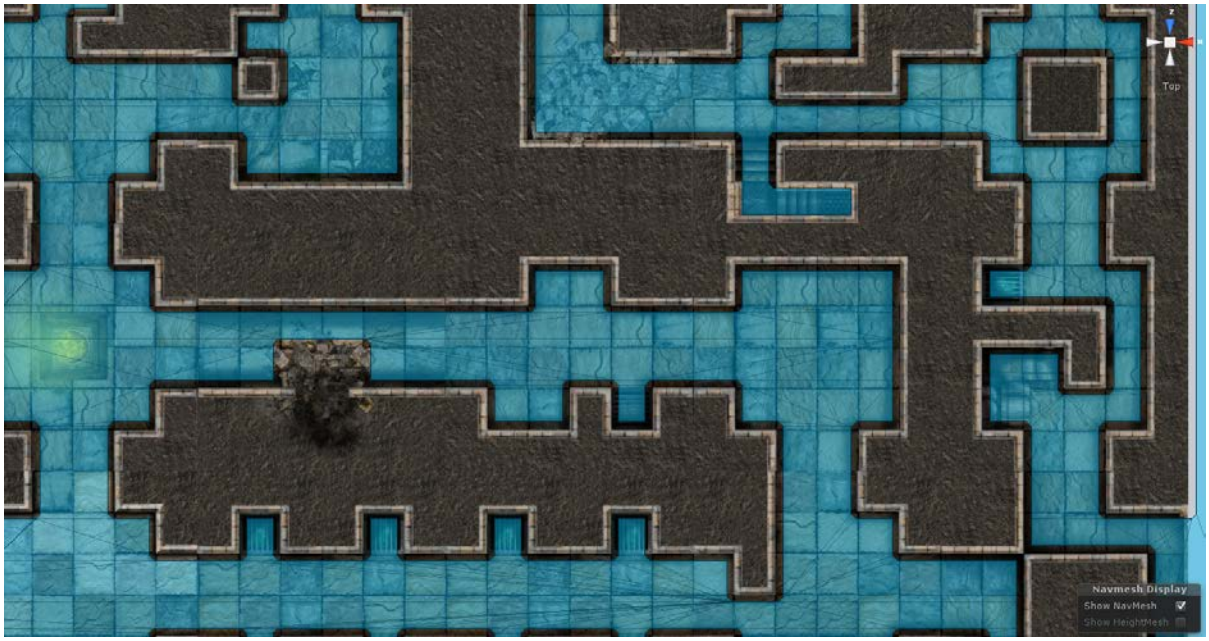


**Figure 13: Example navmesh generated from Tiler for a dungeon**

Tiler uses the unity navigation settings for navmesh. To change these you need to open the navigation window found under the unity windows tool bar, then click on the Bake settings menu to find the various options. Once the correct settings are applied, remember to bake in the map inspector rather than using the bake button inside the navigation window.

Please note, Tiler currently bakes without using the async setting so that baking large maps may lag unity for a brief moment. This is to resolve a small issue.

## 3.5 Changing Shader

Tiler lets you quickly change the shader of all your cells if you need. This is done in the inspector options of the map, just type in the name of the new shader you want to use and hit the set button to update all existing cells.

### *License Information*