

Terrain Add-on 21

Release version AC21.02

User Guide

United Kingdom & Ireland

Printable PDF version

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Terrain Add-on 21 User Guide

Graphisoft UK would like to thank all participants for their valuable contributions to this add-on release. Special thanks go to Ralph Schwaiger (Service Manager for Germany and Austria).

Rob Kalocay

Product and Technical Manager for UK and Ireland

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Contents

Introduction	2
Add-on Installation and Content.....	2
Installation	2
Features	3
Toolbar	3
Initial design	3
Create Levelled Area	4
Refresh Terrain in 2D/3D	4
Levelled Area Settings	5
Levelled Area Edge Settings	6
Priority	6
Terrain Settings	7
General Settings.....	8
Cut and Fill Calculations	9
Release All Terrain Elements.....	9
Quick Help.....	9

Introduction

To assist our customers Graphisoft have developed a new ARCHICAD add-on that simplifies and streamlines existing ARCHICAD Terrain Tool as well as it introduces new functionality in following areas:

- Simplified creation of excavation works
- Parametric control of earthwork edge sloping ratios
- Parametric control of multiple levelled areas
- Easy design and calculation of earthwork volumes in Cut and Fill scenarios including a definition of Topsoil layer
- Automatic creation of terrain contours and their parametric control
- Graphic visualisation of excavation work components in 2D and 3D.

Add-on Installation and Content

Installation

- Unzip the downloaded file.
- Close all ARCHICAD instanced
- Copy the add-on in the ARCHICAD Add-ons folder (*applications > ARCHICAD ... > Add-Ons*)
- Start ARCHICAD
- You will find the new toolbar with additional command in *Design > Design Extras > Show Terrain Tool*

Features

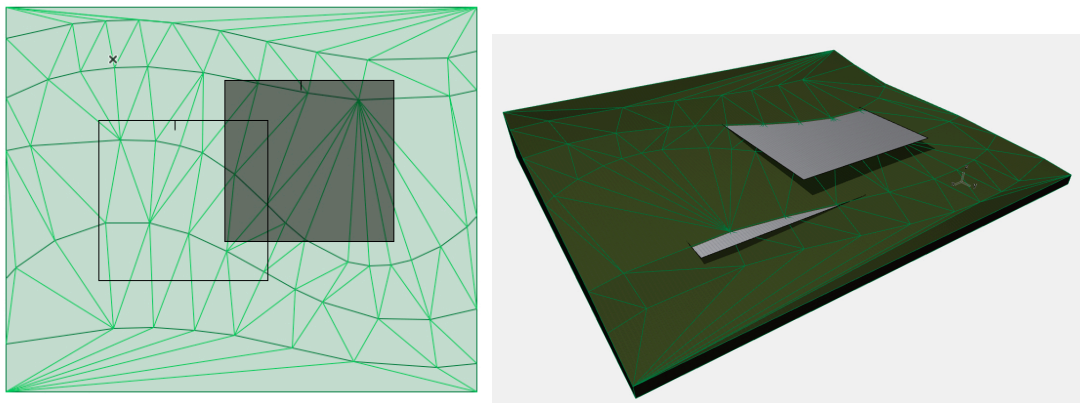
Toolbar



The Terrain add-on toolbar contains 8 tools and Quick Help (left to right):

1. Create Levelled Area
2. Refresh Terrain in 2D/3D
3. Levelled Area Settings
4. Levelled Area Edge Settings
5. Terrain Settings
6. General settings
7. Cut and Fill Calculations
8. Release All Terrain elements (in Teamwork)
9. Quick Help

Initial design

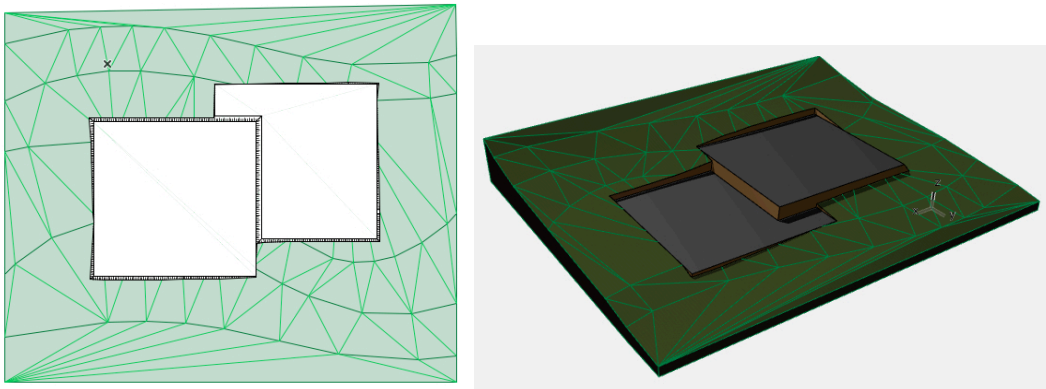


Define or create a mesh using ARCHICAD Mesh Tool.

Create a levelled area of any shape using ARCHICAD Roof Tool with zero thickness on the same storey as your mesh. The roof shape must not contain any holes.

Position created roof elements in place on plan and at desired level along the Z axis.

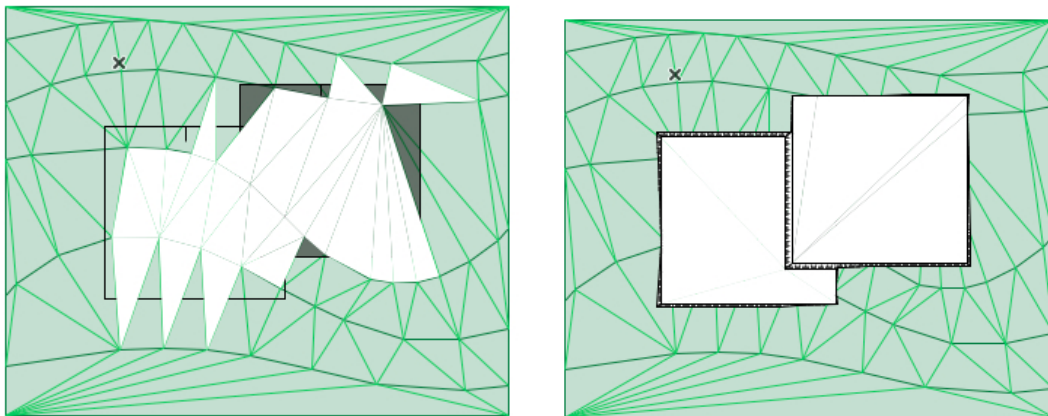
Create Levelled Area



Select the mesh together with the roofs and click on the command *Create Levelled Area*

The dialog prompt will ask you whether you would like to keep the roof elements. It is possible to create the levelled area without roof elements however in some cases it might be useful to keep roof elements for further required changes.

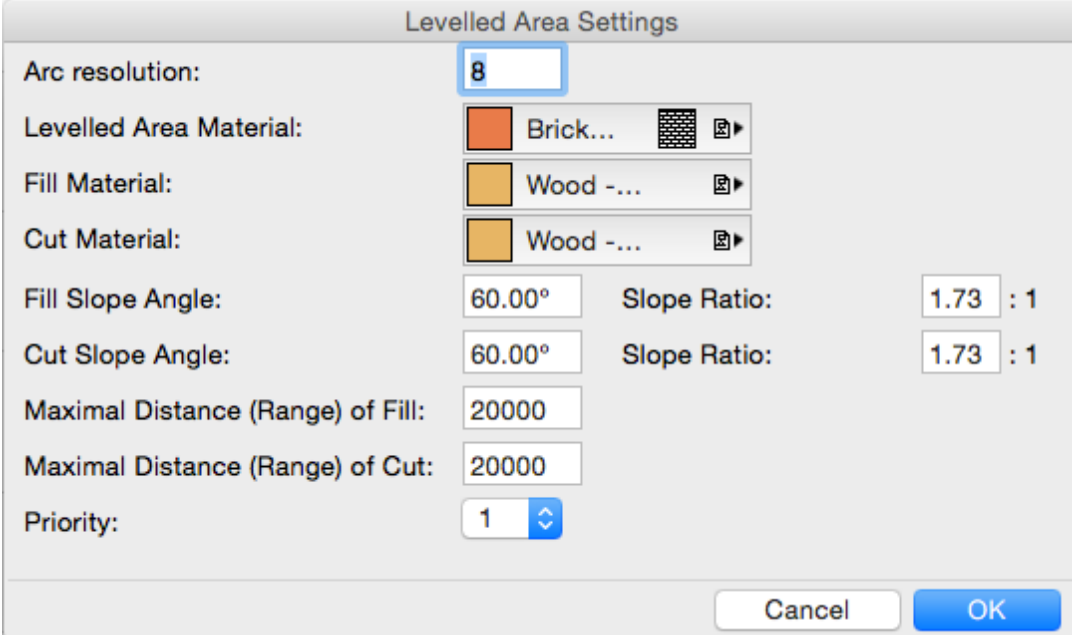
Refresh Terrain in 2D/3D



If the symbolic plan representation seems to be incorrect use the *Refresh Terrain* command.



Levelled Area Settings



The screenshot shows a dialog box titled "Levelled Area Settings". It contains several configuration options:

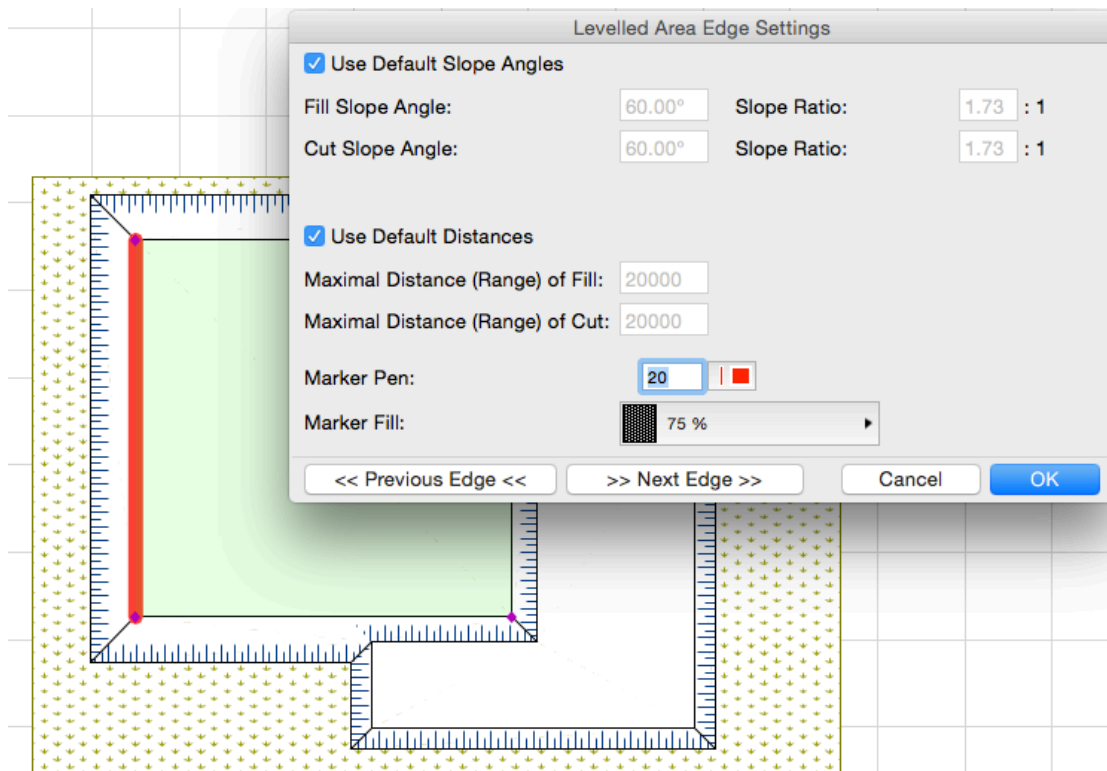
- Arc resolution:** A text input field containing the value "8".
- Levelled Area Material:** A color swatch (orange) followed by the text "Brick..." and a small icon of a brick pattern.
- Fill Material:** A color swatch (yellow) followed by the text "Wood -..." and a small icon of a wood grain.
- Cut Material:** A color swatch (yellow) followed by the text "Wood -..." and a small icon of a wood grain.
- Fill Slope Angle:** A text input field containing "60.00°".
- Slope Ratio:** A text input field containing "1.73 : 1".
- Cut Slope Angle:** A text input field containing "60.00°".
- Slope Ratio:** A text input field containing "1.73 : 1".
- Maximal Distance (Range) of Fill:** A text input field containing "20000".
- Maximal Distance (Range) of Cut:** A text input field containing "20000".
- Priority:** A dropdown menu showing the value "1".

At the bottom right of the dialog box are two buttons: "Cancel" and "OK".

You can change levelled area(s) settings by selecting particular levelled area in Plan Window (hover your mouse pointer over a levelled area edge) and clicking on *Levelled Area Settings*.

Please note that any changes in this dialog will affect all surfaces and edges. If you would like to change the setting of an individual levelled area edge use *Levelled Area Edge Settings* command.

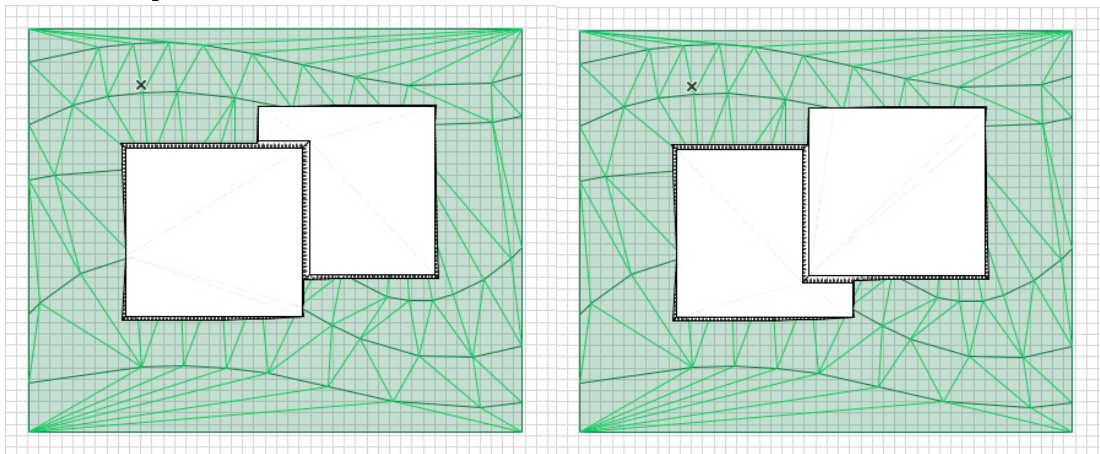
Levelled Area Edge Settings



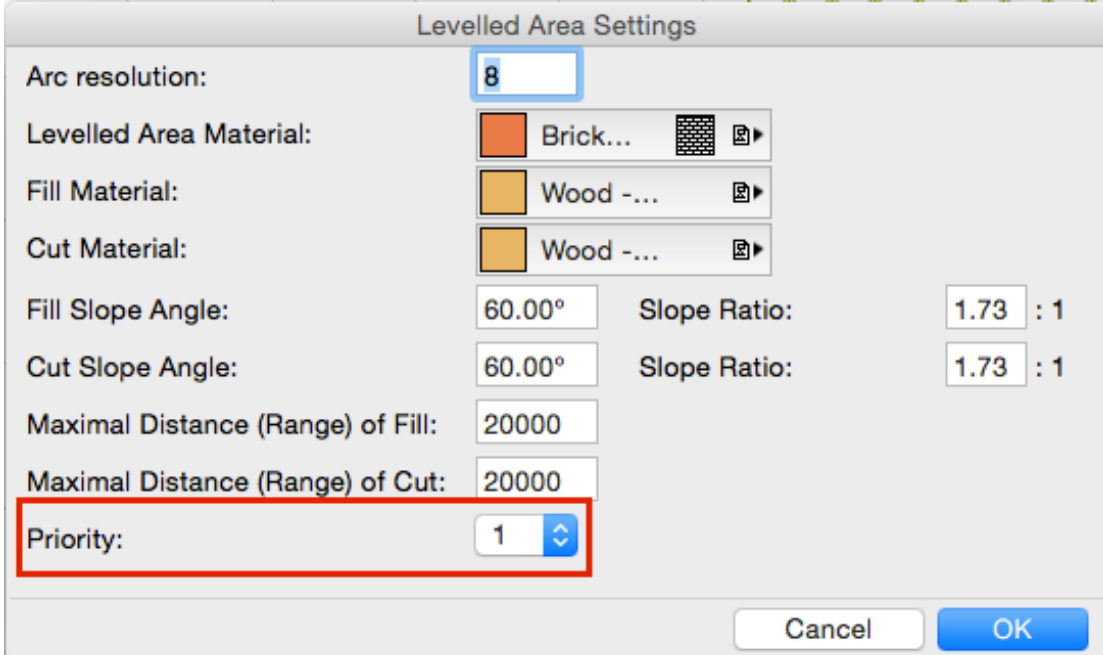
In order to change an individual levelled area edge select the levelled area and use *Levelled Area Edge Settings* command. The active edge will be highlighted red on plan.

To simplify the edge selection navigation use *Previous Edge* or *Next Edge* buttons that will cycle edge selections along the levelled area perimeter.

Priority



It is possible to define multiple overlapping levelled areas with different elevations. In some complex cases Terrain add-on can misinterpret their order so it is necessary to define their priority and establish their correct relationship manually.

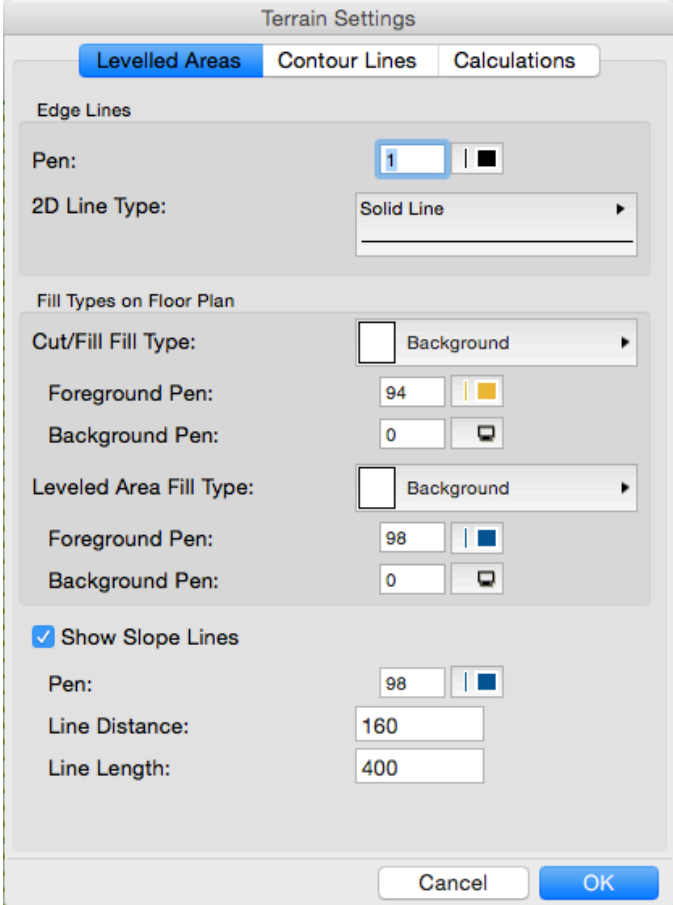


The 'Levelled Area Settings' dialog box contains the following controls:

- Arc resolution:** A text input field containing the value '8'.
- Levelled Area Material:** A color swatch (orange) followed by the text 'Brick...' and a small texture icon.
- Fill Material:** A color swatch (yellow) followed by the text 'Wood -...' and a small texture icon.
- Cut Material:** A color swatch (yellow) followed by the text 'Wood -...' and a small texture icon.
- Fill Slope Angle:** A text input field containing '60.00°'.
- Slope Ratio:** A text input field containing '1.73 : 1'.
- Cut Slope Angle:** A text input field containing '60.00°'.
- Slope Ratio:** A text input field containing '1.73 : 1'.
- Maximal Distance (Range) of Fill:** A text input field containing '20000'.
- Maximal Distance (Range) of Cut:** A text input field containing '20000'.
- Priority:** A dropdown menu with '1' selected, highlighted by a red rectangle.
- Buttons:** 'Cancel' and 'OK' buttons at the bottom right.

In this case select the levelled area, open *Levelled area settings* and change its *Priority* to a higher number. The mesh and the levelled areas will be rebuilt to the new priority settings.

Terrain Settings



The 'Terrain Settings' dialog box has three tabs: 'Levelled Areas' (selected), 'Contour Lines', and 'Calculations'.

Edge Lines

- Pen:** A text input field containing '1'.
- 2D Line Type:** A dropdown menu with 'Solid Line' selected.

Fill Types on Floor Plan

- Cut/Fill Fill Type:** A dropdown menu with 'Background' selected.
- Foreground Pen:** A text input field containing '94'.
- Background Pen:** A text input field containing '0'.
- Levelled Area Fill Type:** A dropdown menu with 'Background' selected.
- Foreground Pen:** A text input field containing '98'.
- Background Pen:** A text input field containing '0'.

Show Slope Lines (checked)

- Pen:** A text input field containing '98'.
- Line Distance:** A text input field containing '160'.
- Line Length:** A text input field containing '400'.


Buttons: 'Cancel' and 'OK' buttons at the bottom right.

Terrain symbolic plan representation settings can be adjusted on *Levelled Areas* tab

Terrain Settings

Levelled Areas **Contour Lines** Calculations

☐ Show Contour Lines

Pen: 

2D Line Type:

Height Distance:

Start Level:

End Level:

☐ Show Contour Lines on Levelled Areas

☐ Show Contour Lines on Terrain Edge

Contour Lines settings control the definition, appearance and calculation of terrain contour lines.

Terrain Settings

Levelled Areas Contour Lines **Calculations**

Top Soil Volume:

ID	Layer Thickness (m)
Top Soil	300

Calculations tab defines the top soil thickness that will be used for the earthworks calculations.



General Settings

General Settings

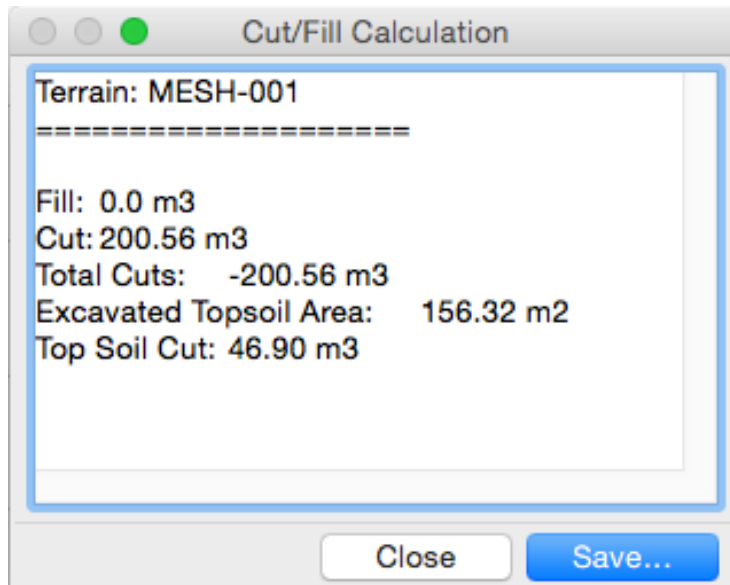
Automatic Refresh of the Terrain Model:

☒ After Changing the Levelled Area

☒ After Changing the Terrain



Cut and Fill Calculations



The calculations will provide data about Cut/Fill volumes as well as Topsoil volume and area based on Topsoil thickness defined in *Terrain Settings/Calculation tab*.



Release All Terrain Elements

Relevant for Teamwork projects only.

Terrain Add-on is using hidden operator elements so in order to release modified terrain to other Teamwork users it is necessary to use this command. Releasing just the terrain itself (using standard Teamwork 'Release' command) will not allow other Teamwork users to reserve it.



Quick Help

A quick explanation of Terrain tool functionality.