SMART ESTIMATOR

SMART SCAFFOLDER

BIM TOOLBOX

USER GUIDE

Version: 2024.0

CADS GLOBAL CONSTRUCTION SOFTWARE AND SERVICES

AUTODESK Authorized Developer

Microsoft Partner

Contents

Introduction 1
Create a new project 2
Trace around a site plan 2
Bring in the site plan 2
1. Bring in the site plan as traceable lines (recommended) 3
2. Bring in the site plan as an image 3
3. Bring in a traceable 3D building (recommended) 3
4. Bring in a site satellite photo (requires internet) 4
5. Bring in a building and road map (requires internet) 4
Bring in the site plan as a file 4
How do I check if my PDF is vector or raster? 4
Can I convert my raster PDF into a vector PDF? 5
Bringing in the site plan from a file 6
IFC Only: choose IFC types 8
Wait for the import to complete 9
Nothing was imported. What went wrong? 10
Bring in the site plan from the internet 11
Set the scale 13
Move the site plan 15
Move a 2D site plan 15
Move a (3D) IFC site plan 16
IFC only: set the building colour 17
IFC only: show or hide the building 18
2D only: filter the site plan 19
Remove selected colours from the plan 19
Remove selected layers from the plan 19
Trace around the site plan 21
Trace around the building 22
Close the building 22
Trace around another building 23
Clear the Site Plan 23
Send a 3D model 24
Send a 3D model to other BIM software 24
Send a 3D model to your customer 25

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Add images to the building elevations 26
Edit the site plan or elevation image 28
Using the other SMART Estimator products 31
Model IT 31
Schedule IT 31
Report IT 31
Price IT 31
Quote IT 31
Feedback 32

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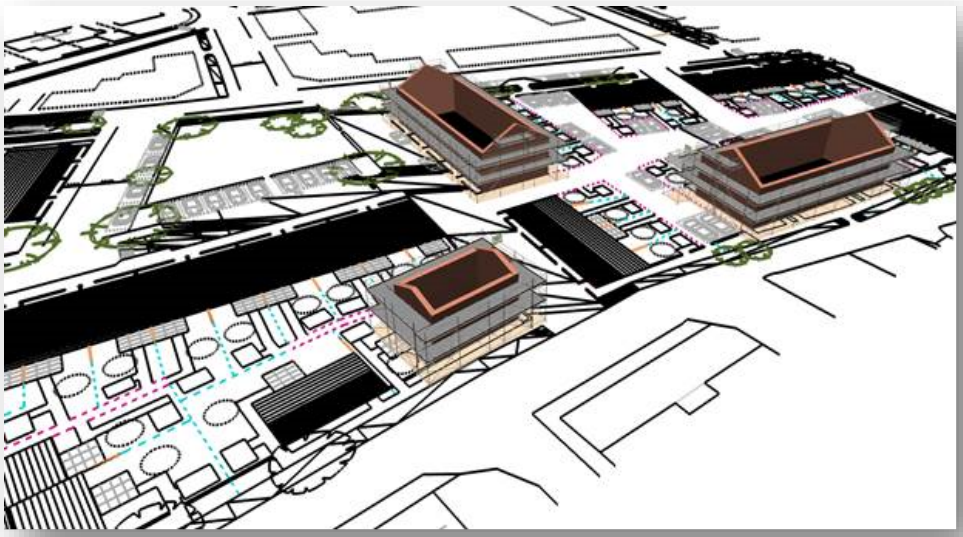
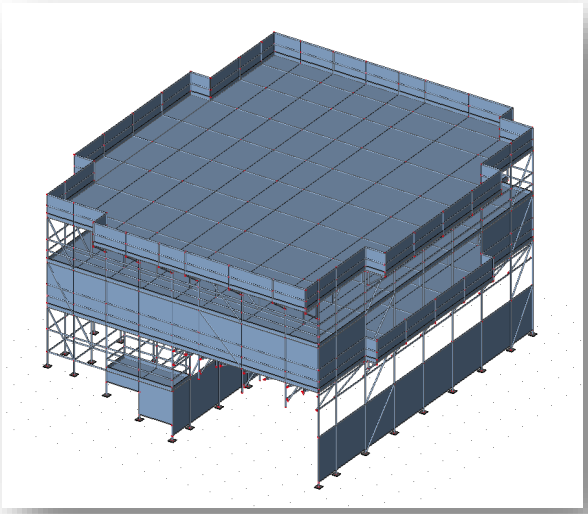
Introduction

SMART Estimator **BIM Toolbox** is a set of tools for using existing 2D and 3D data from your client and sending information back to them in the same form.

You can use an existing 2D site plan to help visualise and estimate scaffolding more easily.



3D models can be sent to other BIM software, such as Revit, SCIA Engineer, AutoCAD Architecture and many more, using the universal IFC file type.



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Create a new project

Please see the **Getting Started Guide** for instructions on how to create a new project.

Trace around a site plan

This section will demonstrate how to make use of an existing site plan for visualisation and estimating.

Bring in the site plan

To trace around a site plan, you must first import the plan. Usually this is received from your client as an Adobe PDF, AutoCAD file or IFC file. If you don't have these, or if you prefer a site photo, SMART Estimator can import a satellite photo of the site from Google Maps©.

The import methods available are:

- 1. Bring in the site plan as traceable lines (recommended)
- 2. Bring in the site plan as an image
- 3. Bring in a traceable 3D building model (recommended)
- 4. Bring in a site satellite photo
- 5. Bring in a building and roads map

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1. Bring in the site plan as traceable lines (recommended)

Site plans can be added to SMART Estimator from an existing file. The following types of file can be used:

- Adobe (vector) PDF
- AutoCAD DXF
- AutoCAD DWG

Please note that only **vector** PDF files, such as those created through design software (for example, Revit) are supported. Regular **raster** PDF files will not import.

Any PDF created by scanning an image or document using a standard scanner will be a **raster** PDF.

See the **Bring in the site plan as a file** section below to bring in the site plan as traceable lines.

2. Bring in the site plan as an image

Where possible, we recommend bringing in a site plan as traceable lines. This is usually more useful, as specifying the scaffolds is easier. Where this is not possible, you can bring the site plan in as an image instead. The following types of file can be used:

- Adobe PDF

One site plan can be added for every item in the project. If you have a single project across multiple sites, or if the site is divided up into sections, one site plan can be added for each.

See the **Bring in the site plan as a file** section below to bring in the site plan as an image.

Only the **first page** of a PDF can be imported as an image. To retrieve an image from other pages, please split the PDF using your preferred PDF editor.

3. Bring in a traceable 3D building (recommended)

3D building models can be added to SMART Estimator from an existing file. The following types of file can be used:

- IFC 2x3

IFC stands for **Industry Foundation Classes**. IFC is the international standard for BIM files.

2x3 is the version of IFC file SMART Estimator supports. This is sometimes referred to as “version 3”.

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4. Bring in a site satellite photo (requires internet)

It is possible to import a site satellite photo from Google Maps©. This requires an internet connection.

See the **Bring in the site plan from the internet** section below to bring in a satellite photo.

5. Bring in a building and road map (requires internet)

It is possible to import a building and road map from Google Maps©. This requires an internet connection.

See the **Bring in the site plan from the internet** section below to bring in a building and road map.

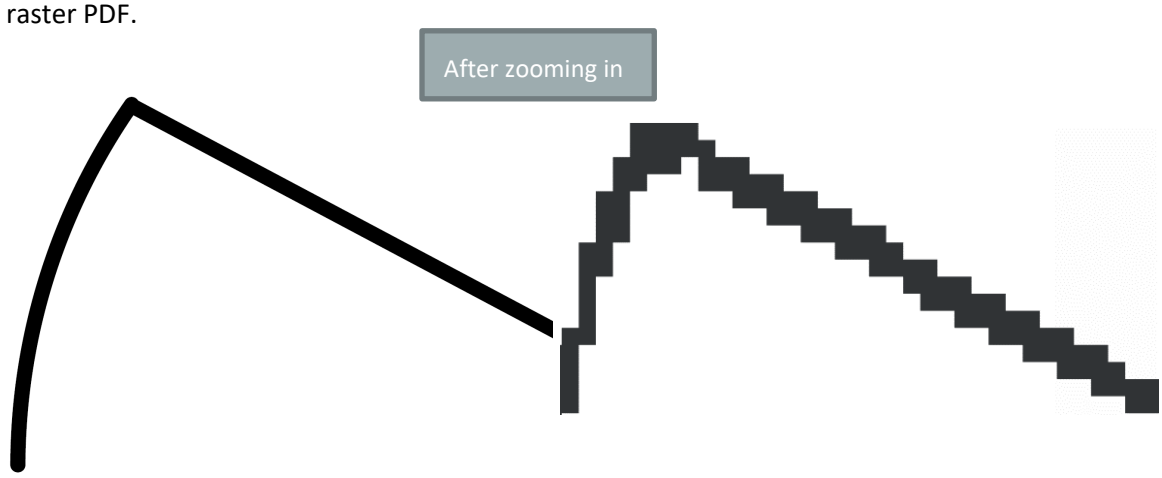
Bring in the site plan as a file

How do I check if my PDF is vector or raster?

There are two simple ways to check if a PDF is **raster** (not importable into SMART Estimator) or **vector** (compatible with **BIM Toolbox**):

1. Zoom in

   Using your preferred PDF viewer, zoom in on the PDF by the maximum amount. If graphics still appear perfectly smooth, it is a vector PDF. If they become distorted ('pixelated'), it is a raster PDF.



Vector PDF graphic
BIM Toolbox will import this graphic.

Raster PDF graphic
This PDF will not import correctly.

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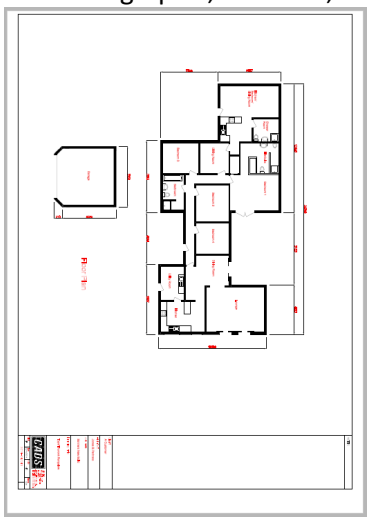
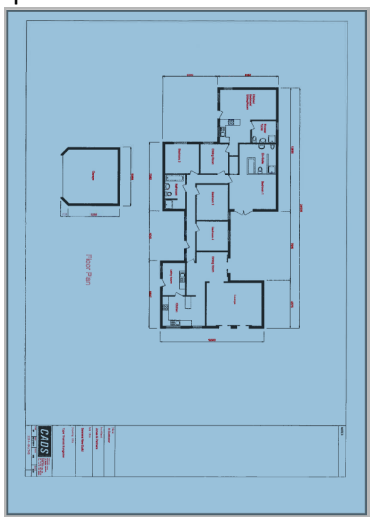
2. Select the graphic

   If your preferred PDF viewer does not have vector editing tools (e.g. Adobe PDF Viewer), clicking on a vector graphic will not cause anything to be highlighted.
   Clicking on a raster graphic, however, selects the entire graphic:



Vector PDF graphic
BIM Toolbox will import this graphic.



Raster PDF graphic
This PDF will not import correctly.

Can I convert my raster PDF into a vector PDF?

There are a large number of tools available for converting raster PDFs to vector PDFs, such as those offered by *Print2CAD*. CADS do not offer or endorse any such tools, but your business may find that an existing tool suits your needs.

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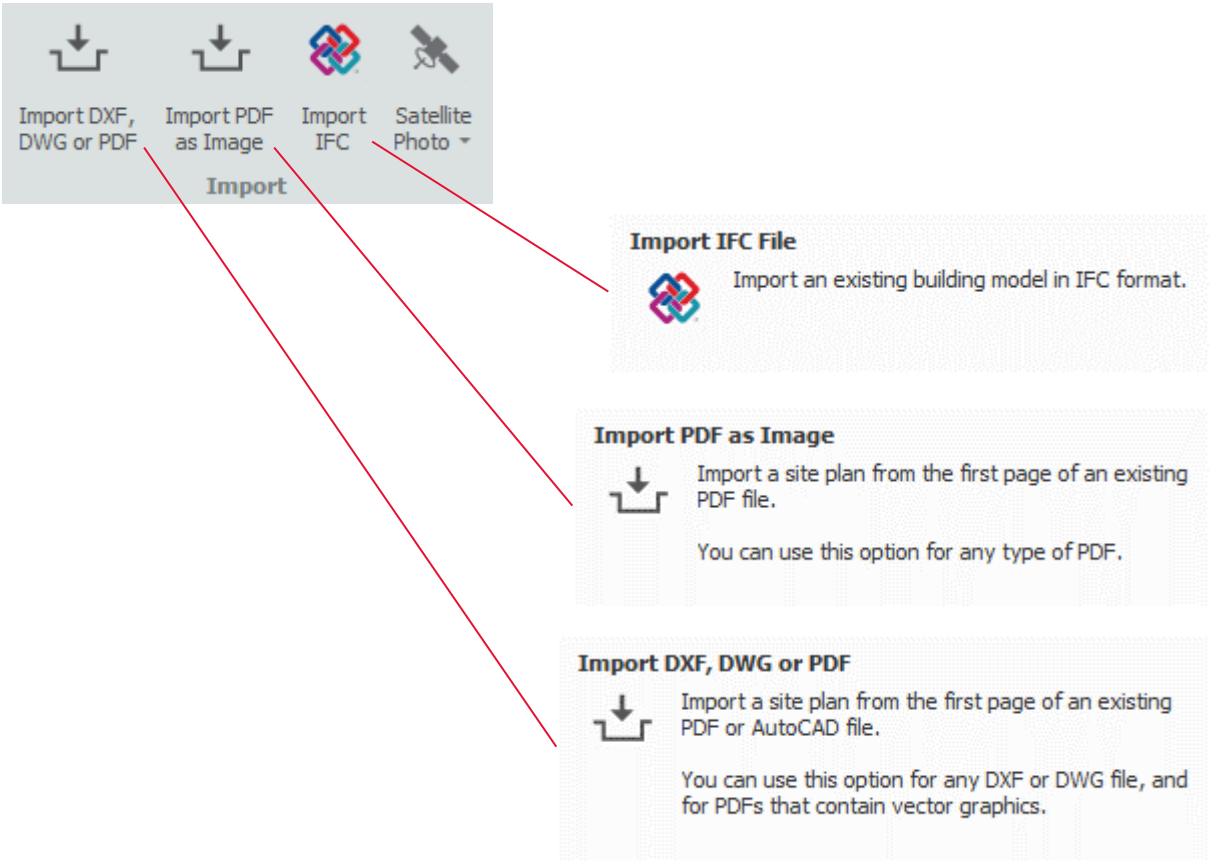
Bringing in the site plan from a file

To add a site plan, select one of the file import buttons:

- Import DXF, DWG or PDF (**recommended**)
- Import PDF as Image
- Import IFC (**recommended**)



Import PDF as Image is NOT recommended.
It is harder to trace files brought into SMART Estimator with this option.

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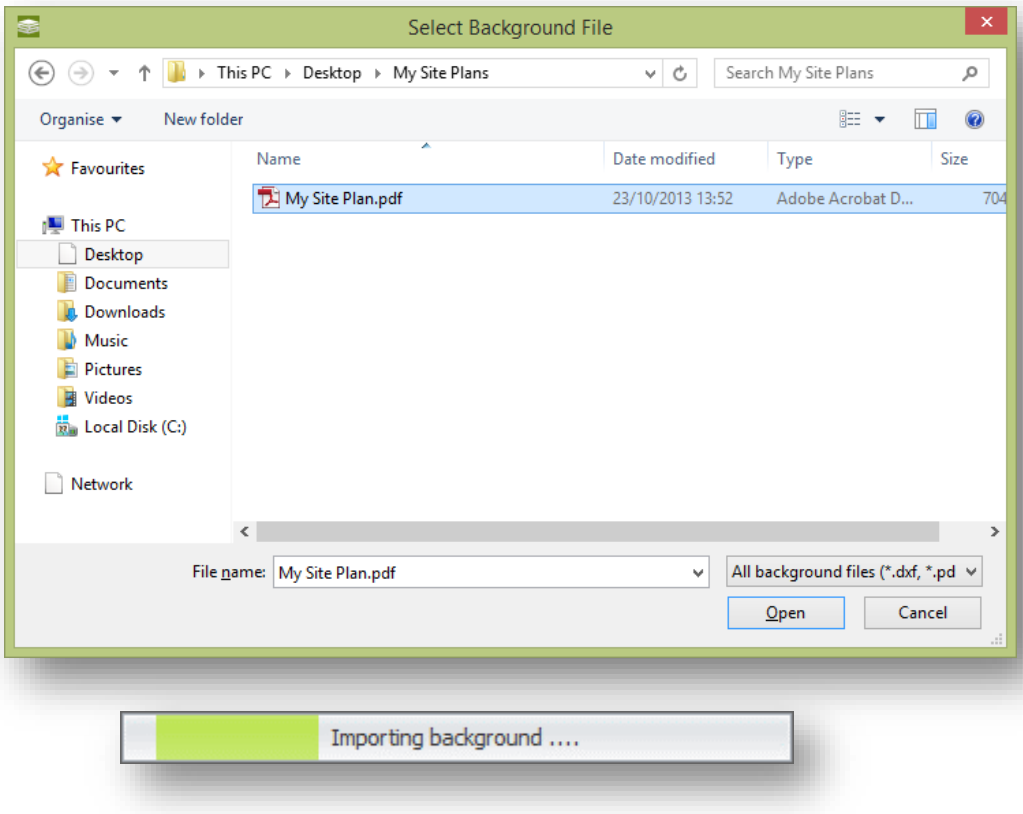
Select a site plan file.



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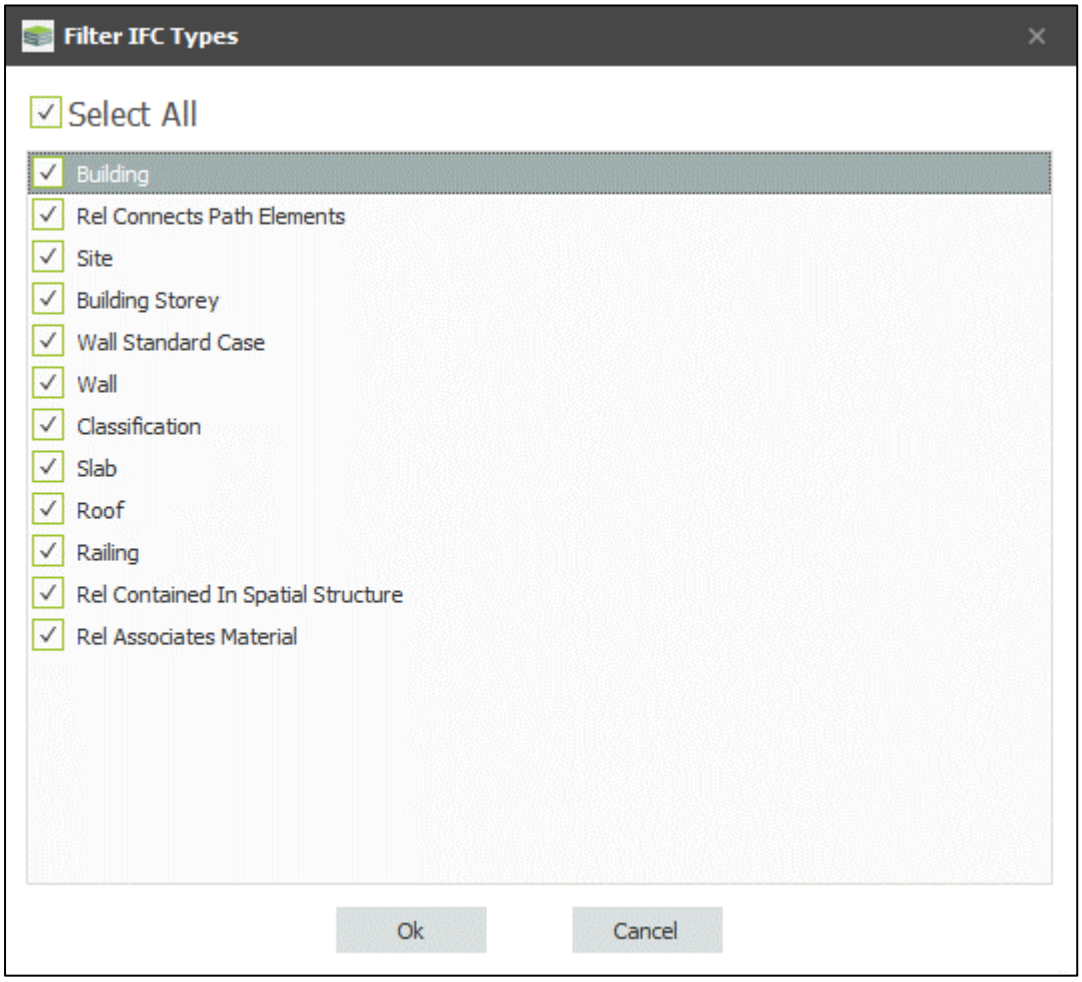
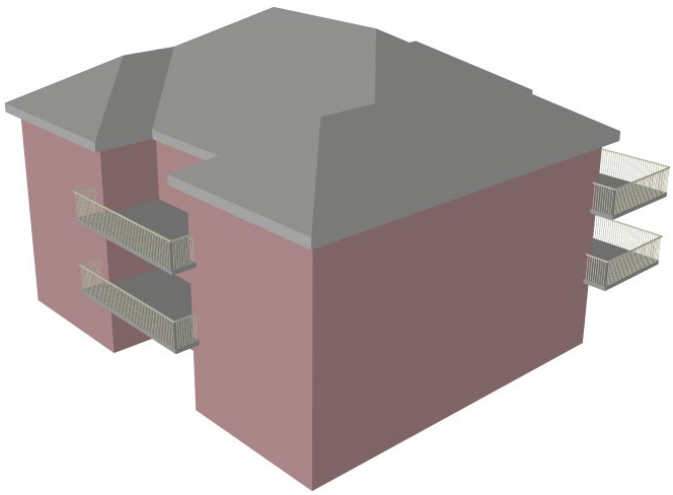
IFC Only: choose IFC types

If you choose to import an IFC file, the file may be very large, or contain information that you do not need. To help with this (and to bring the site plan in faster), please choose only the IFC types that you need, then press **Ok**.





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Wait for the import to complete

A site plan should now be visible:

A 2D site plan brought in from a **PDF**, **DXF** or **DWG** file.

A 3D site plan brought in from an **IFC** file.

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Nothing was imported. What went wrong?

If an error message was displayed, please read the message and act accordingly. The import file may be corrupt or an incompatible version for example.

If no error message was shown, but there is no site plan shown, the following issues may be the cause:

PDF, DXF or DWG

- The site plan may be off-centre;

  If you received an AutoCAD file where all objects are away from the origin by a large amount, they may be imported outside SMART Estimator's active area.

  Any objects close to 750m from the origin may not be visible in SMART Estimator.

  Try moving objects closer to the origin and then importing.

- The scale is incorrect;

  SMART Estimator's scale is in metres. If the source file scale is unclear or incorrect, some (or all) objects may appear outside SMART Estimator's active area.

  Try setting the scale in the source file and check the size of objects before importing.

- There are too many objects in the site plan;

  BIM Toolbox imports objects from the site plan in the order they are read from the file until it reaches a (very large) maximum. This includes non-line objects.

  If there are a great many layers or objects, some objects will not be imported. It is possible that no line objects are imported at all.

  Try removing layers from the source file or reducing the number of objects before importing.

- The site plan is not on the first page of a source PDF;

  BIM Toolbox only imports the first page of a PDF. Any objects on subsequent pages are ignored.

  Try moving the site plan to the first page of a PDF before importing.

IFC

- The IFC may be the wrong version;

  Please check the IFC is a 2x3 version file.

- You de-selected all IFC types;

  If no IFC types are selected, nothing will be imported. Try selecting more types.

Once the site plan has been added, it is a good idea to check that the scale is correct.

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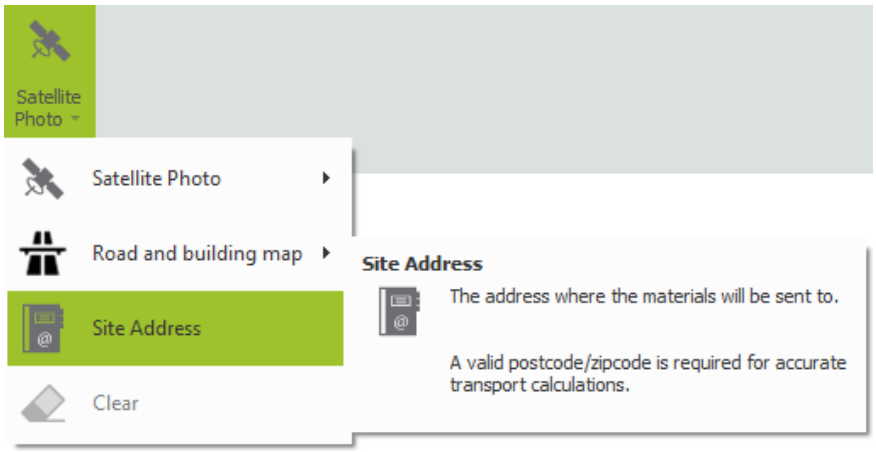
Bring in the site plan from the internet

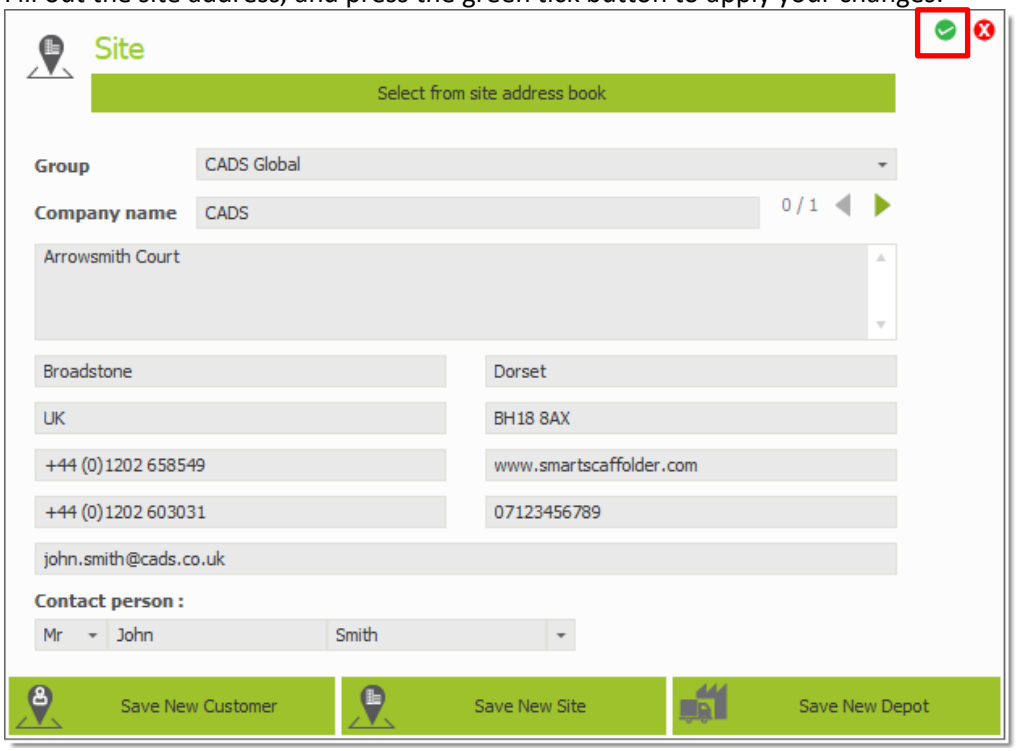
It is possible to import a site satellite photo or building and road map from Google Maps©. This requires an internet connection.

To do this, first select the **Satellite Photo** menu:

Ensure the **Site Address** is filled out with a valid postcode. You can set this by selecting the **Site Address** button:



Fill out the site address, and press the green tick button to apply your changes:



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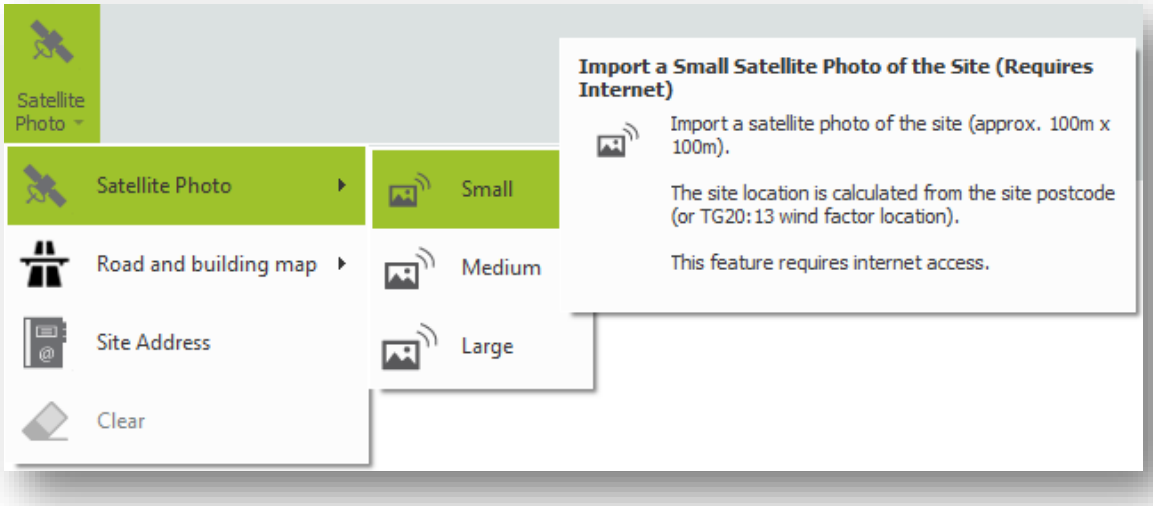
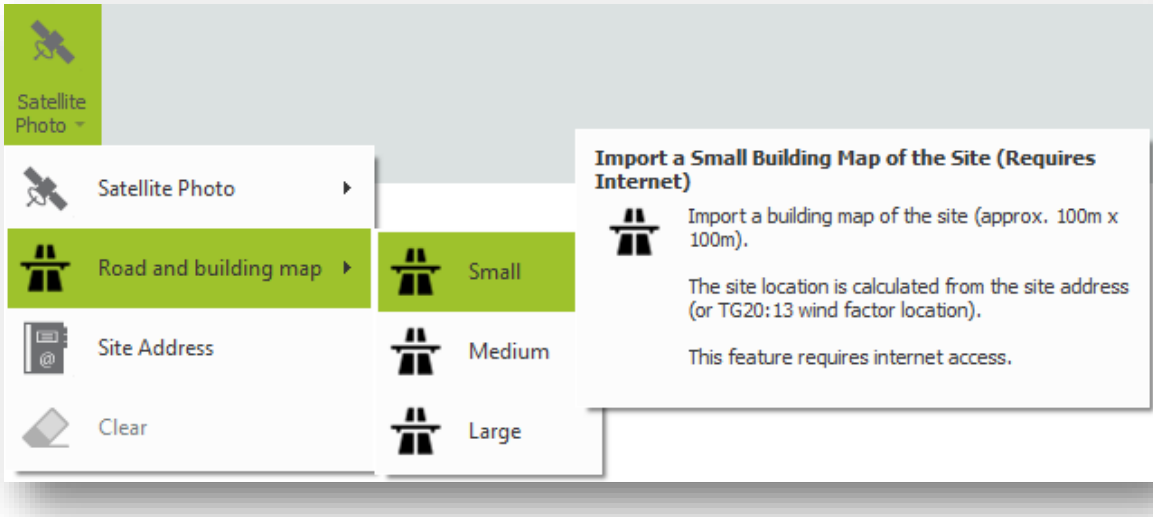
Finally, select the **Import Site Satellite Photo** button of your choice to import a satellite photo of the site.





Choosing a smaller size will give a higher quality image. Try the smallest size first.

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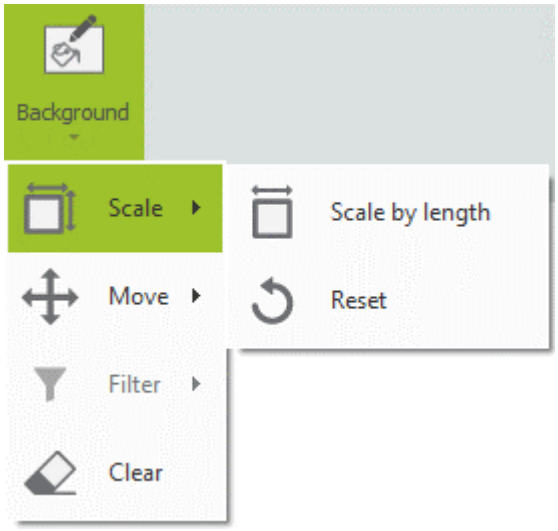
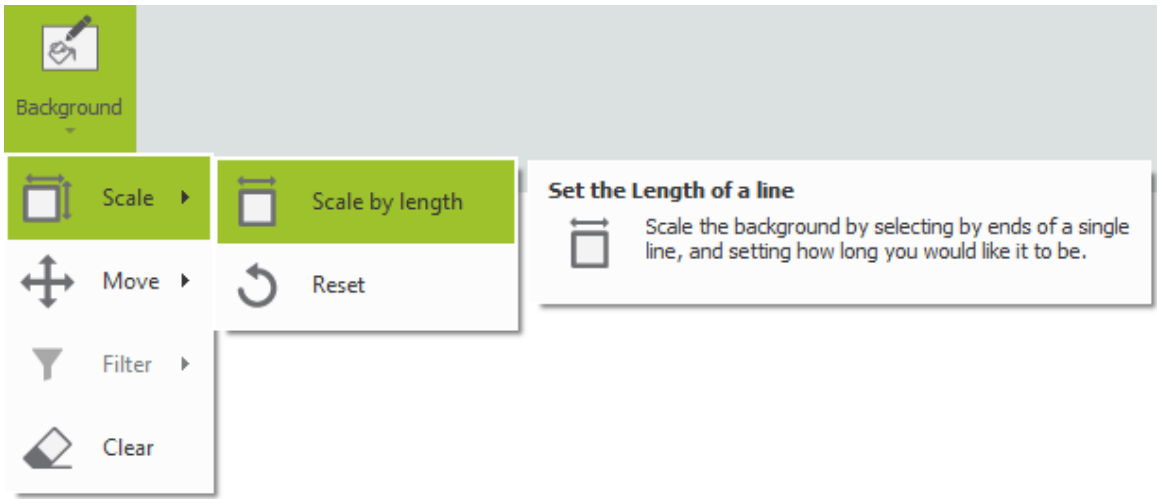
Set the scale

For satellite photos, building and road maps, you don't normally need to set the scale.

To set the scale for the site plan, you will need to know one of the dimensions for something in the site plan. Knowing the length of one elevation or object, select the **Scale** menu. This is available from the **Background** drop-down menu.



Select the **Scale by Length** option.



If you imported the site plan as an image, you can only scale the image border.
To scale by lines in the site plan, you must import as a set of traceable lines.

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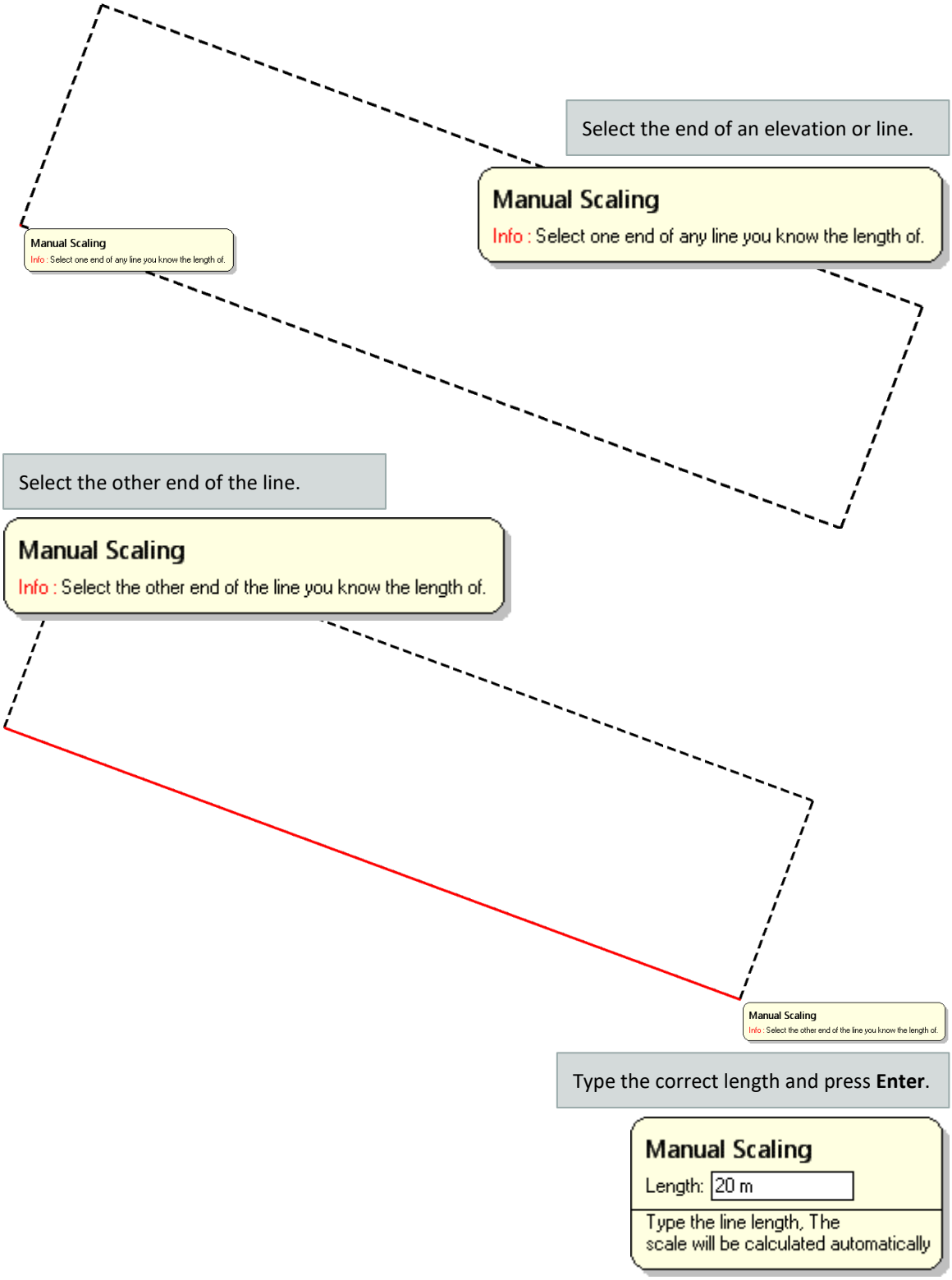
Then use the tool to select both ends of a line and set its length:



The whole site plan will be set to use the new scale.

For IFC, you don't normally need to set the scale. You *can* if desired, using the method above, by selecting points on the 3D building model.

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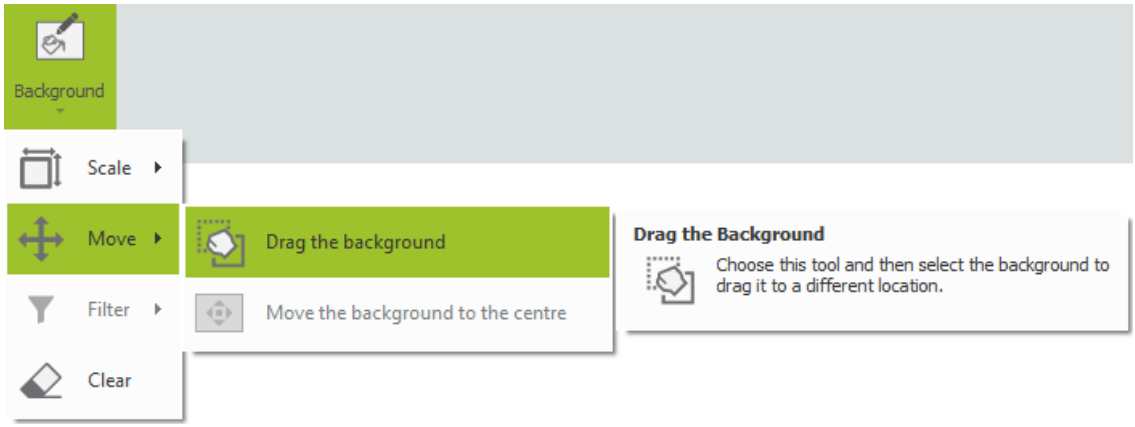
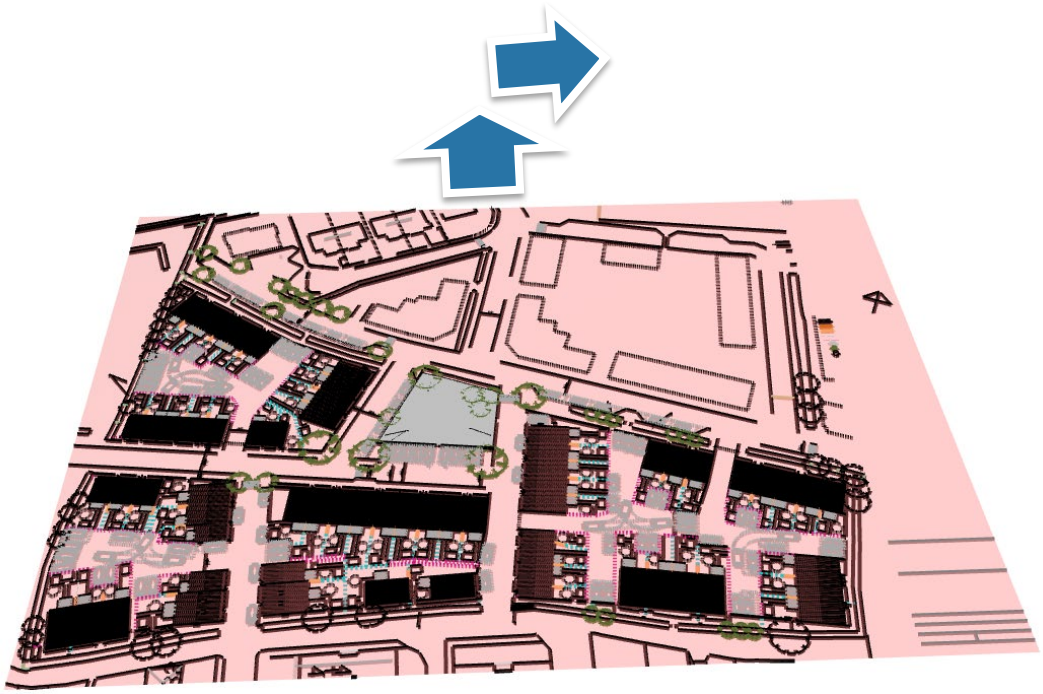
Move the site plan

Move a 2D site plan

If you don't like the positioning of the site plan, you can move it using the **Drag the background** option from the **Move** menu on the **Background** drop-down menu.



Note that you can only drag either horizontally or vertically. To drag diagonally, you must drag in two separate actions.



To move the plan back to its original position, select **Move the background to the centre**, from the same menu.

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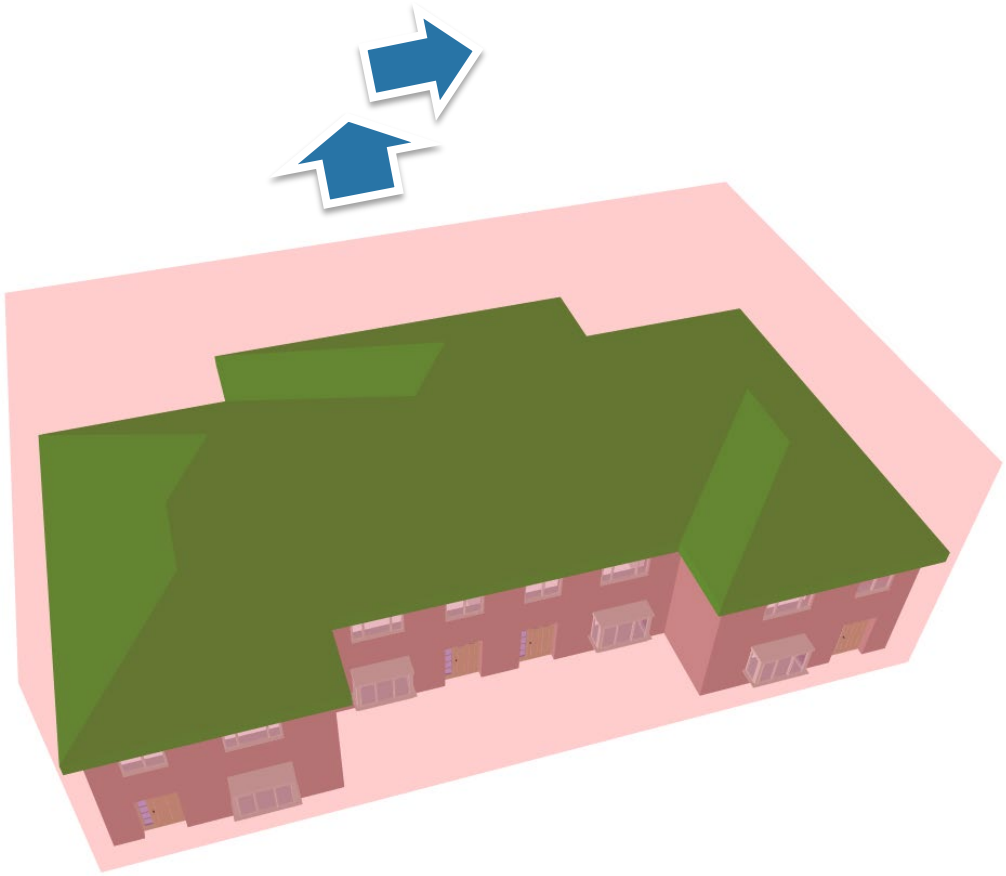
Move a (3D) IFC site plan

You can move an IFC building using the **Move** tool in the **IFC Model** section.

Note that you can only drag either horizontally or vertically. To drag diagonally, you must drag in two separate actions.



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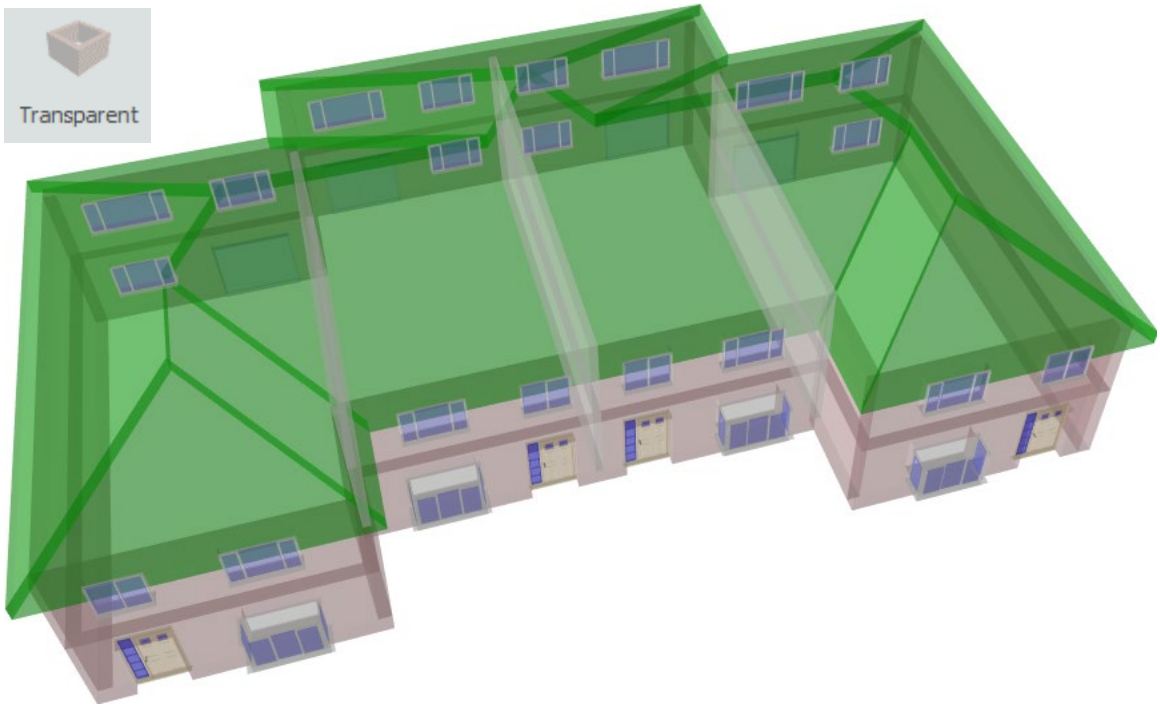
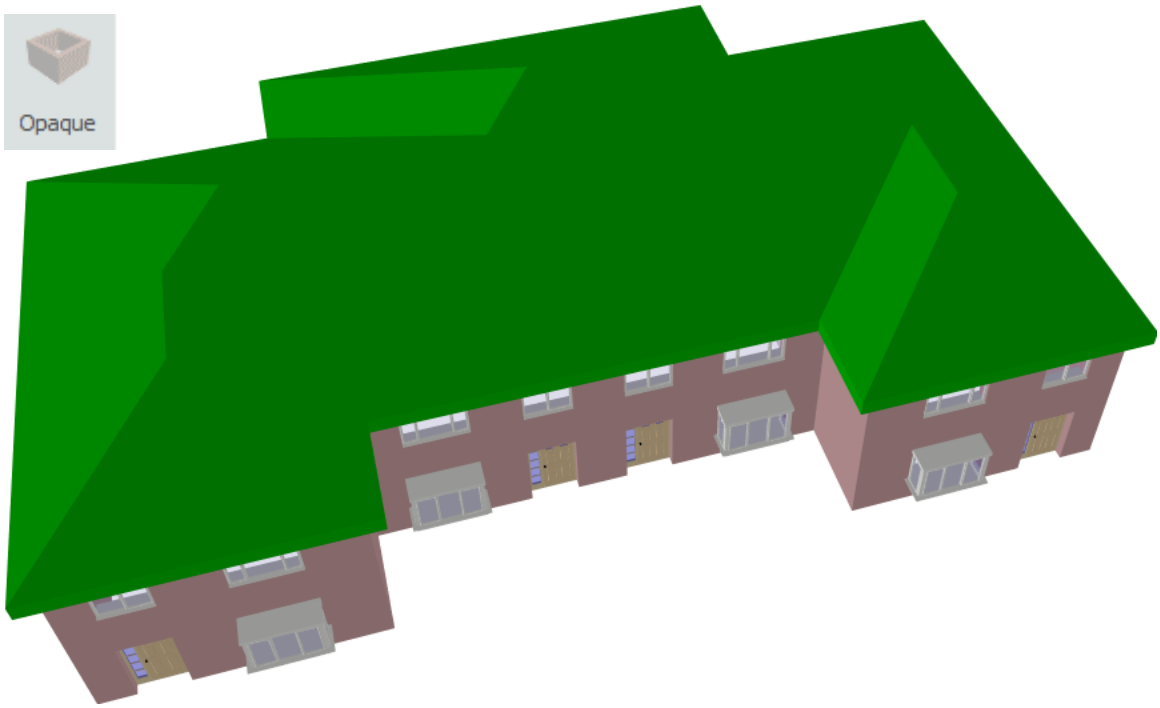
IFC only: set the building colour

For IFC site plans, the objects in the plan can be set as **Opaque** or **Transparent** using the tools in the **IFC Model** section.





Transparent buildings can make it easier to see and edit the scaffolding.
Opaque buildings look better in the quotation.

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IFC only: show or hide the building

For IFC site plans, the plan can be set as **Shown** or **Hidden** using the tools in the **IFC Model** section.

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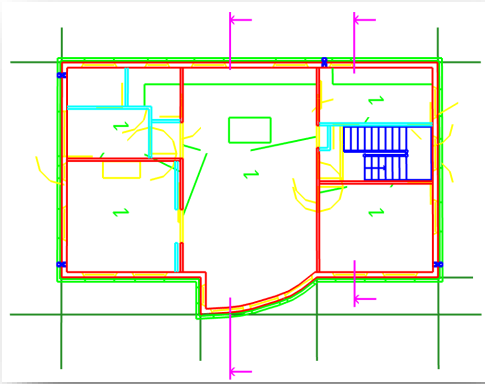
2D only: filter the site plan

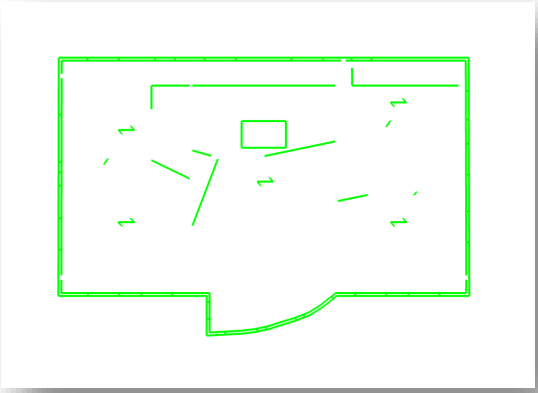
Some site plans contain information that you don't need. Removing such useless information from the plan may make it easier to use and understand. There are two ways to filter this information out of the plan:

- Remove selected colours from the plan;
- Remove selected layers from the plan.

Remove selected colours from the plan

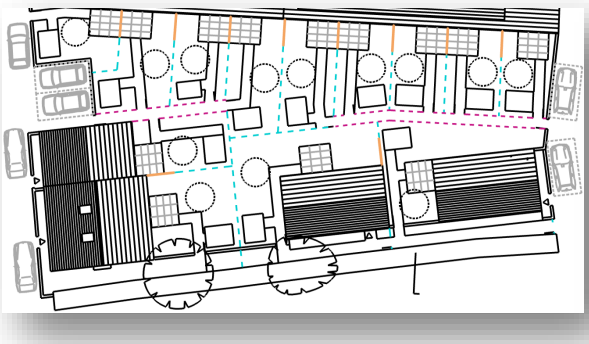
You can remove a selected colour from the plan. For instance, your plan may include engineering mark-up that is not required for estimating a scaffold around the outside of the building:

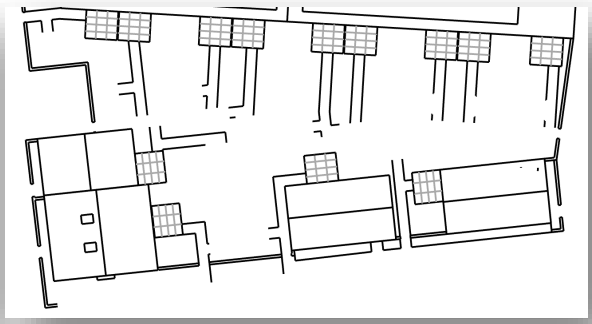




Remove selected layers from the plan

If the file you used as a site plan includes the objects grouped into layers, you can remove unnecessary layers from the plan:





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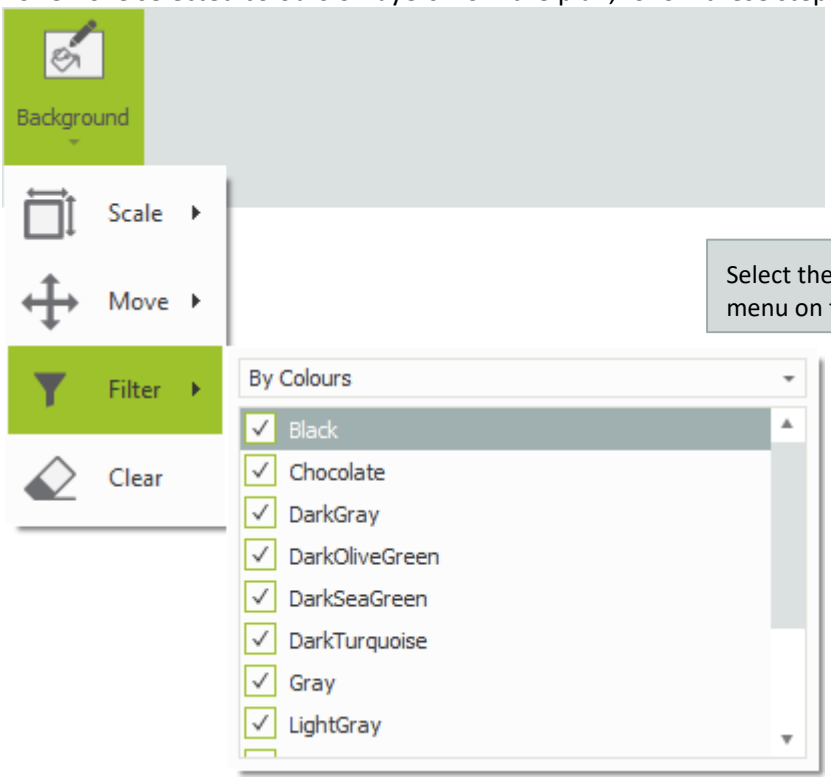
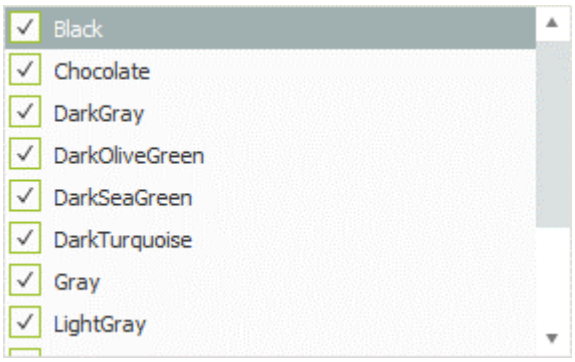
To remove selected colours or layers from the plan, follow these steps:



Select the **Filter** menu from the **Background** menu on the **BIM Toolbox** tab.

Choose whether you would like to select colours or layers to remove from the plan. Changing this option will reset any existing filter.



Deselect tick boxes to remove that colour or layer from the plan. Select a tick box to add that colour or layer again.

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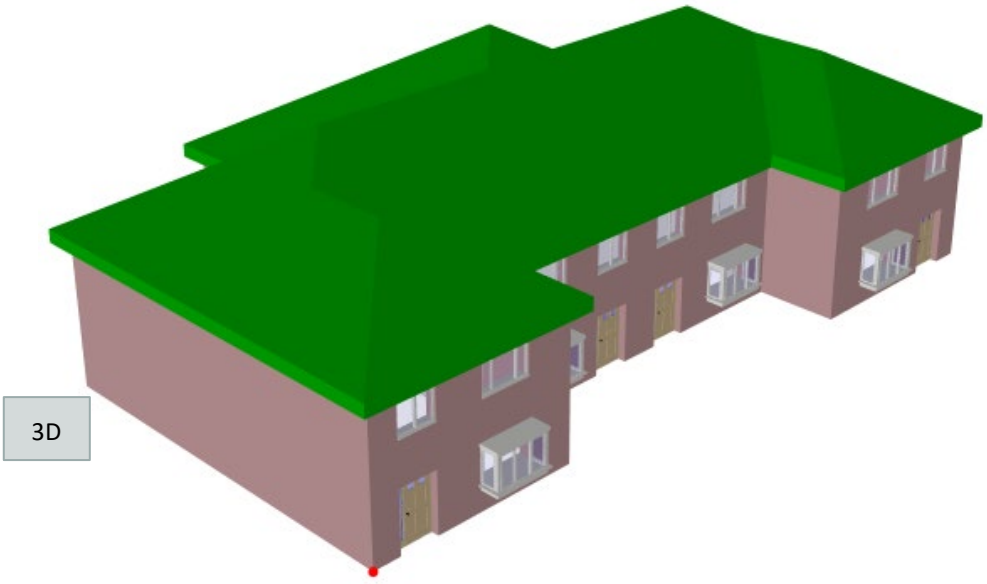
Trace around the site plan

Once the site plan is scaled and filtered to show the correct details at the correct size, it is ready to be used as an estimating tool.

If you imported the site plan as an image or satellite photo, you can only trace using the grid.

To trace lines in the site plan, you must import as a set of traceable lines, or import a building and road map.

To trace around the site plan, click on **Draw Plan.**



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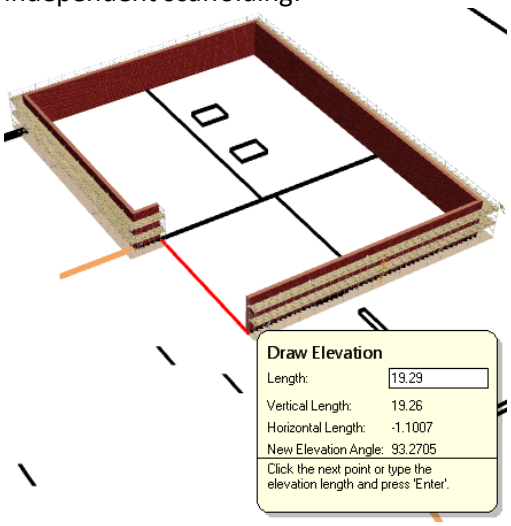
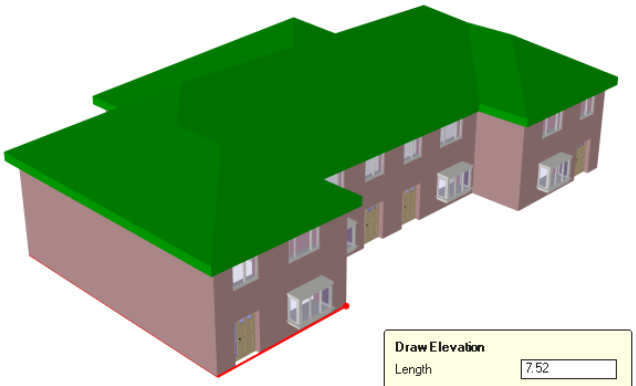
Trace around the building

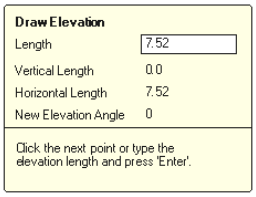
To trace around a building, simply click the points around the edge of the building to create independent scaffolding:



As you move the mouse close to the end of a line/edge, or the intersection between two lines/edges: a small, red, selectable point appears.

Click on these to create your scaffolding.





Selecting a point above the ground on a 3D building will create a scaffold at ground level.

Close the building

To make the scaffolding continuous, the final point on the building must exactly match with the first point you selected. Since this can be difficult to select, please use the **Close the building** option:

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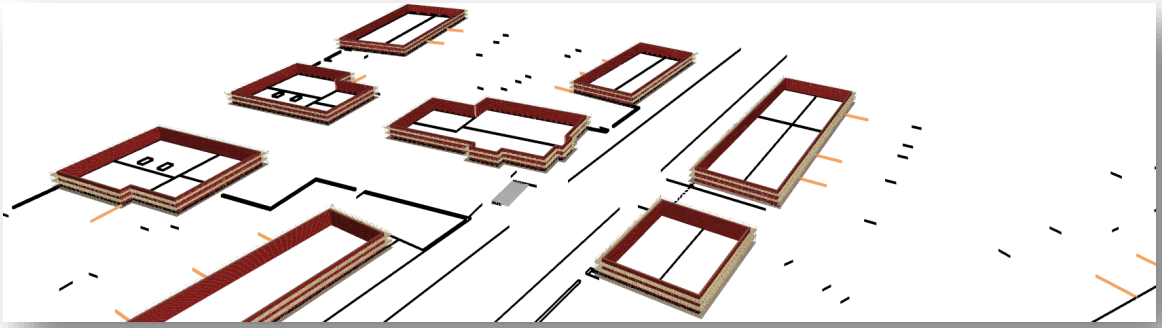
Trace around another building

To create a new independent scaffold, rather than continuing an existing one, select the **Draw New Independent** button.

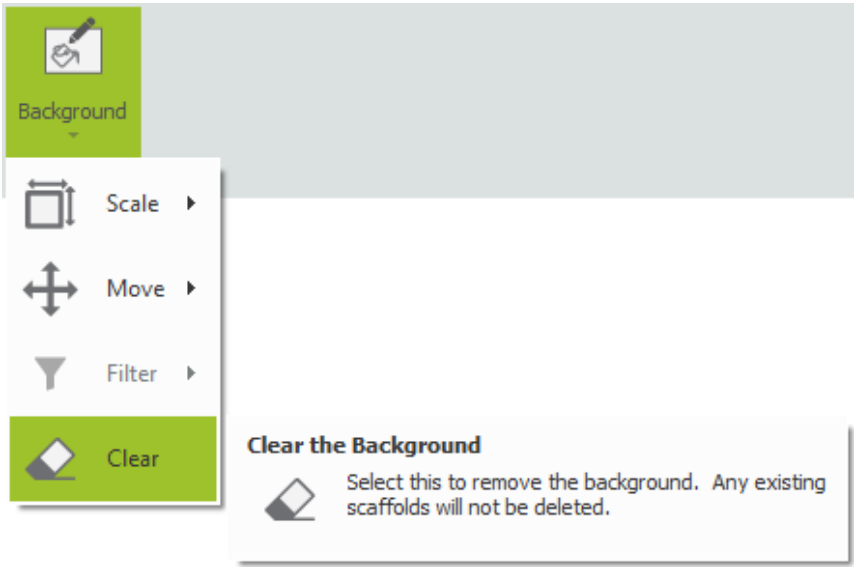
Trace around all of the buildings you wish to estimate in this item:



To find out more about using **Draw Plan** and creating scaffolding in 3D, please see the SMART Estimator **Model IT User Guide.**

Clear the Site Plan

To remove the site plan, choose the **Clear** option. This is available from the **Background** menu on the **BIM Toolbox** tab.



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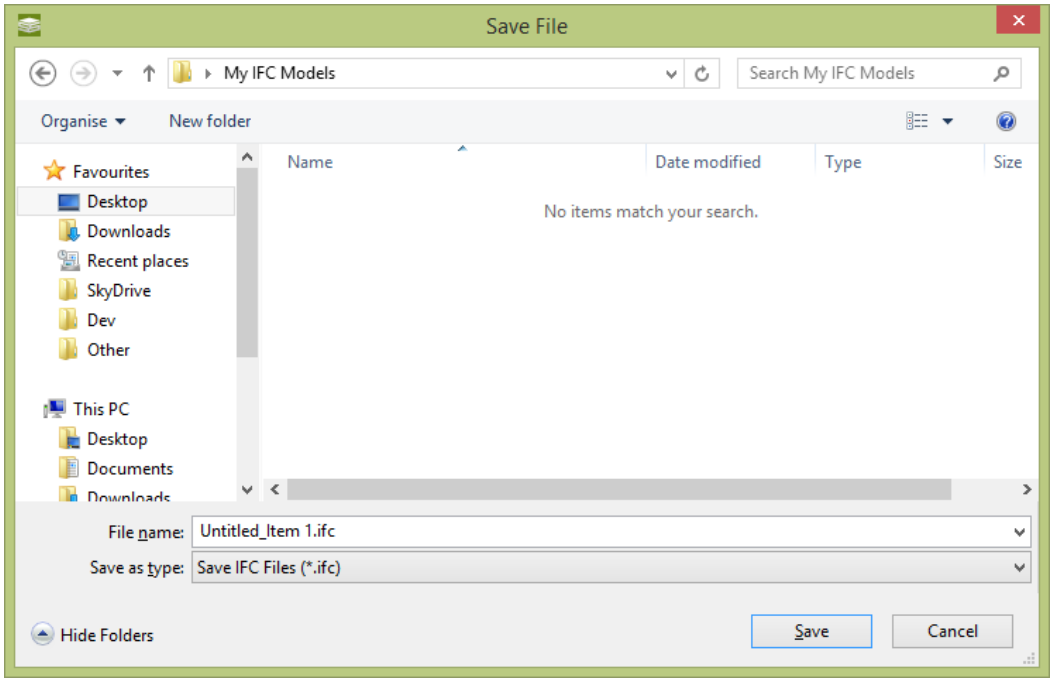
Send a 3D model

Send a 3D model to other BIM software

To create a 3D model which can be used in other BIM software, for visualisation, design or planning, the universal IFC file type has been provided.

To create an IFC file of your scaffolding, select the **Create IFC** button on the **BIM Toolbox** tab.

You will be asked where you would like to save your IFC file:



Select a location and name for your IFC file and press **Save**.

Many software packages include the ability to add IFC models.

If you, your client or engineers have a 3D model of the structure you will be scaffolding around, you can show the scaffold and the structure in the same model.

You or your client could use this information for planning or visualisation.

The IFC file does not contain all of the information used by SMART Estimator, so you should still save your project by pressing **File** and then choosing the **Save** option.

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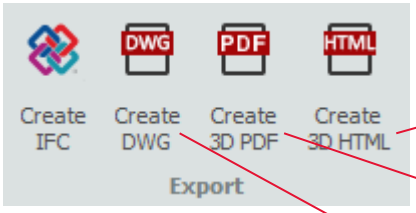
Send a 3D model to your customer

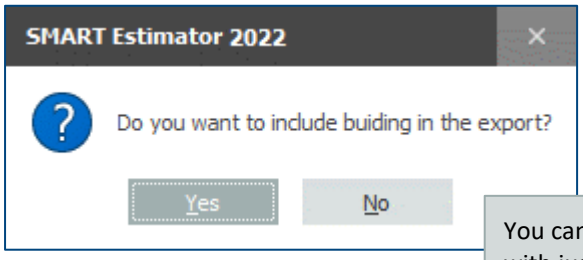
For customers trained to use BIM software, the IFC export will provide the most feature rich experience. For everyone else, a variety of 3D exports is available.



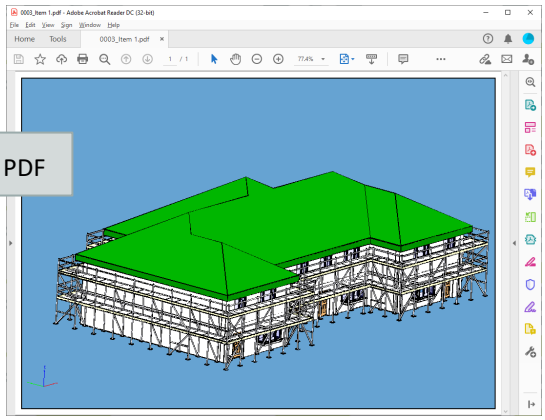
3D HTML can be opened in all major internet browsers.

3D PDFs can be opened in many free PDF viewers, including Adobe PDF Reader.

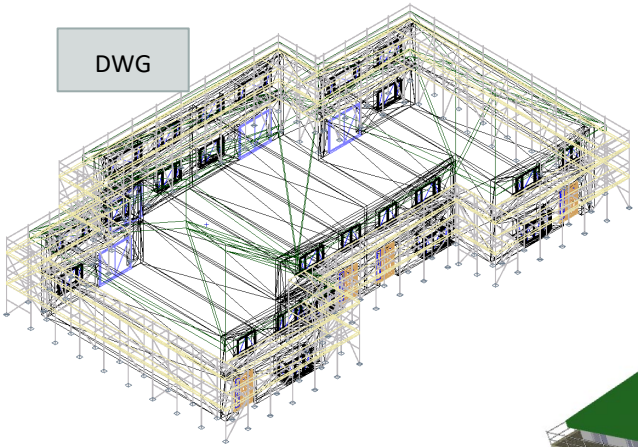
A 3D DWG can be opened in Autodesk AutoCAD.



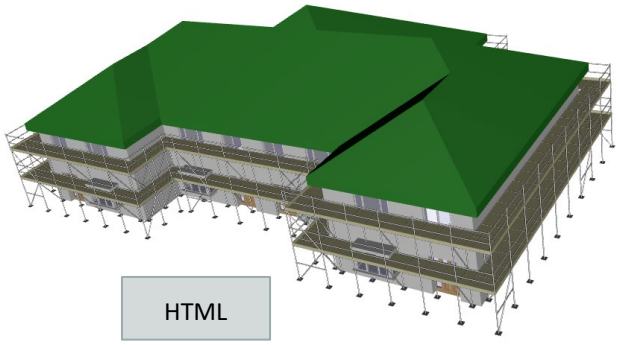
You can choose to include the building, or create a file with just the scaffolding.



3D PDF



DWG



HTML

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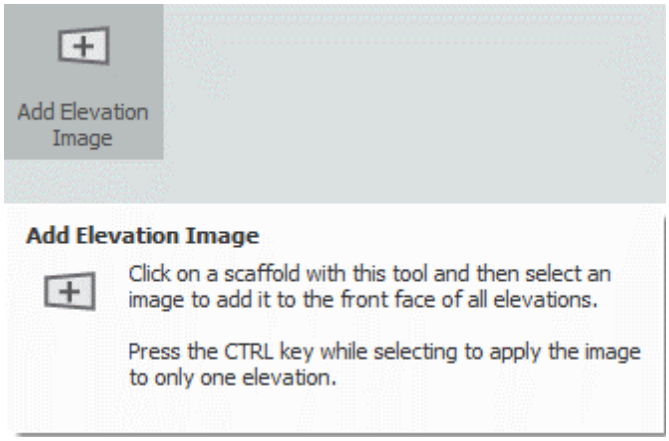
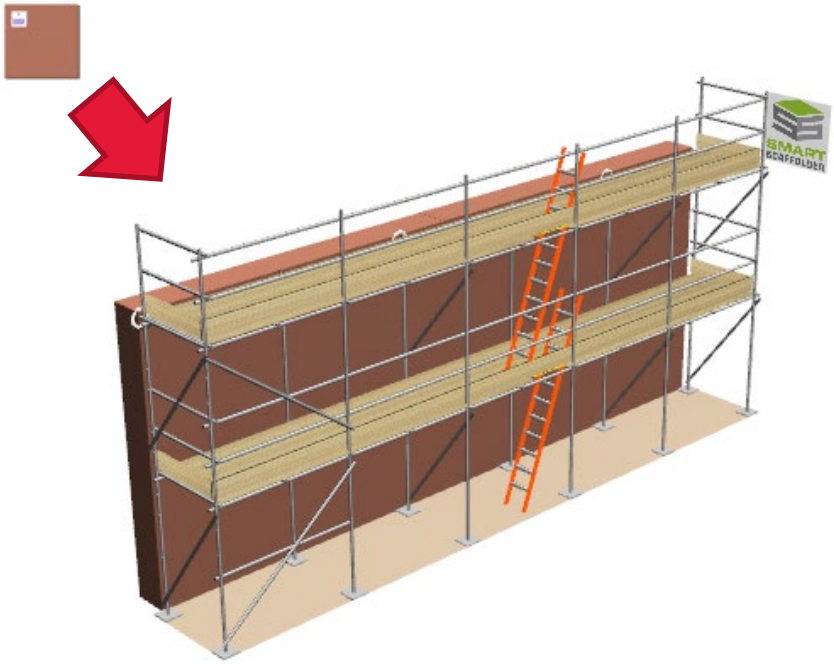
Add images to the building elevations

You can add images to the front face of any modelled building elevations. For example, you could add photos of the building or your company logo.

To do this, select the **Add Elevation Image** button:



Using this tool, click on the elevations that you wish to add an image to:



Hold the **Ctrl** key as you click on an elevation to add this image to only one elevation.
If you don't hold the **Ctrl** key, the image will be added to all elevations of this scaffold.

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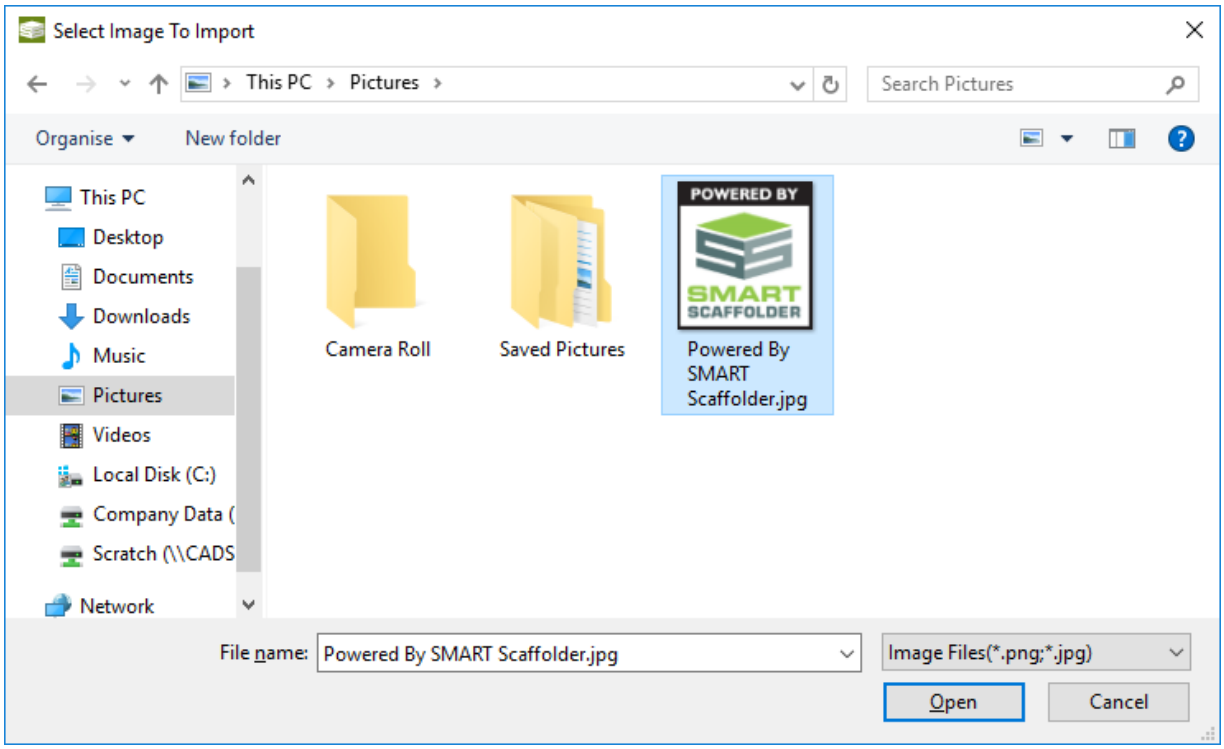
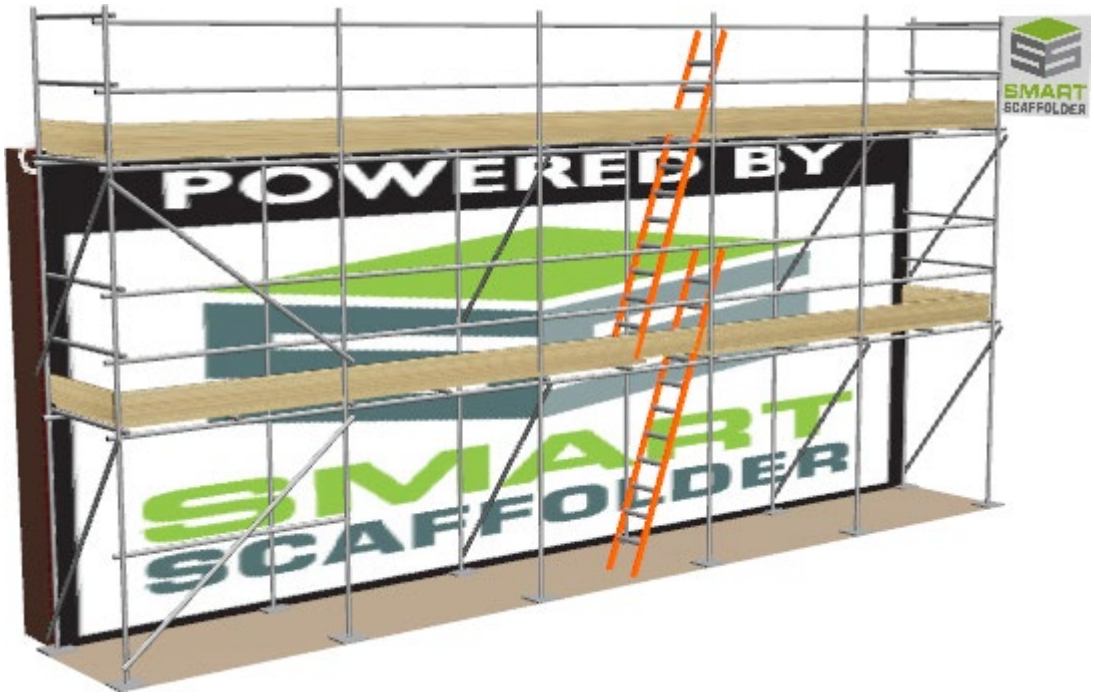
You will be asked to select an image file. Do this and the image will be added to the front of the elevation.





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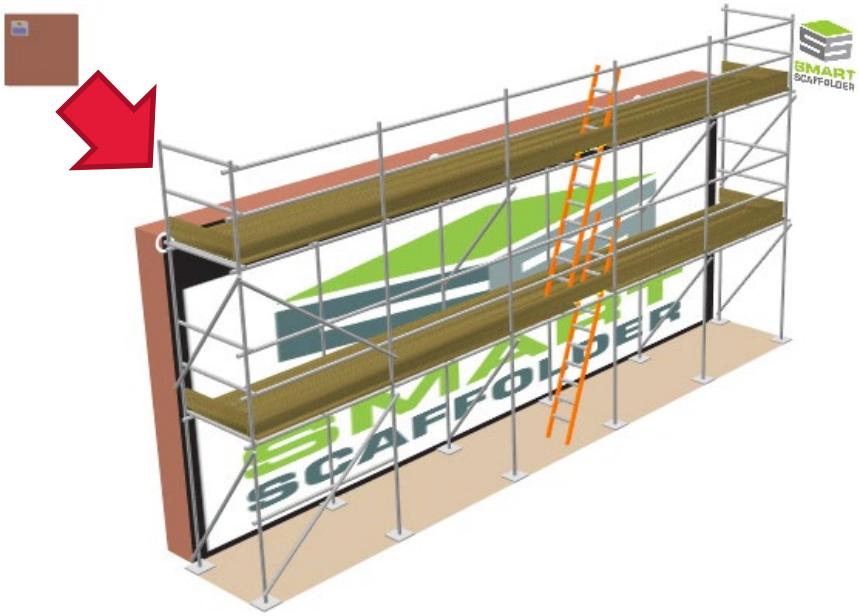
Edit the site plan or elevation image

Once you have imported a site plan as described in the **Trace around a site plan** section, or added an elevation image as described in the **Add images to the building elevations** section, you can edit it to add mark-up or remove unwanted details.

- For elevation images, select the **Edit Elevation Image** button.

Using this tool click on the elevation with the image you want to edit.



- For site plans, select the **Edit Background Image** button.

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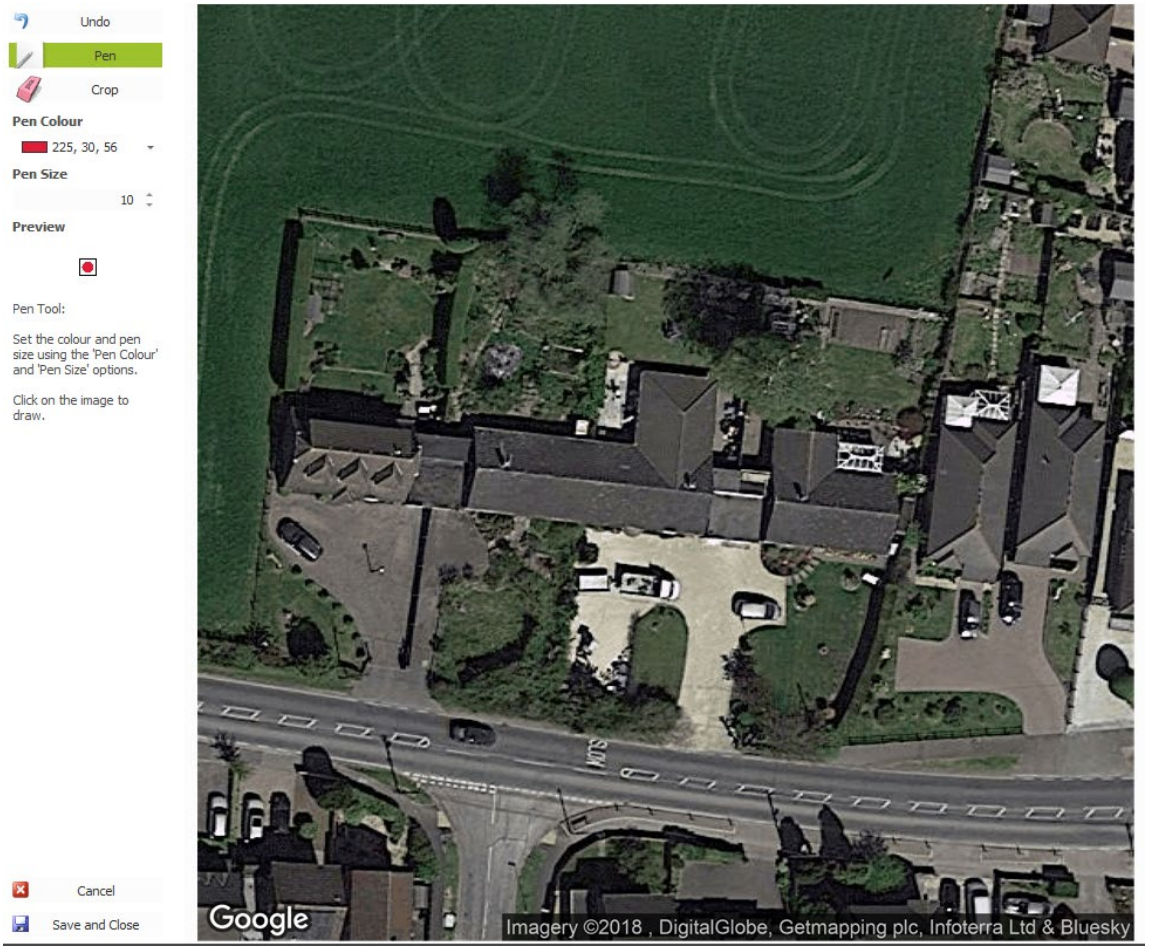
An editor will open so you can make changes to the image.



The following tools are available:

- Undo

  Undo the previous change to the image.

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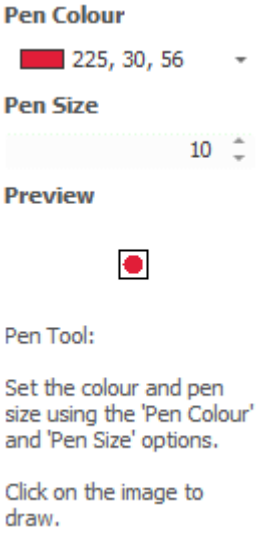
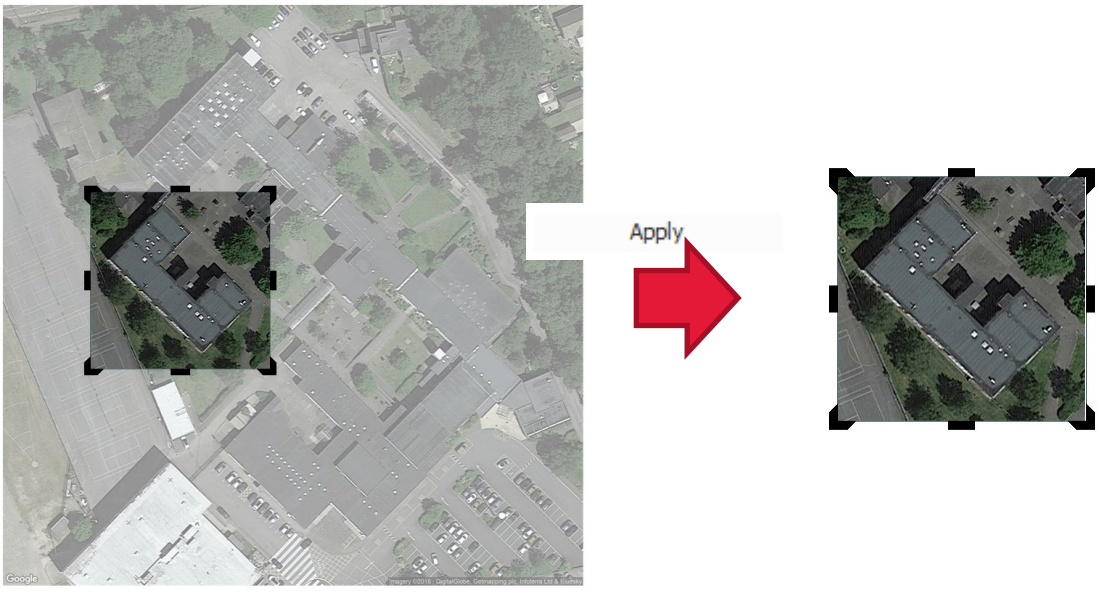
- Pen

Draw on the image with the mouse in your choice of colour and pen size.



- Crop

Remove unwanted portions of the image. To do this, select the tool, then drag the edge and corner grips to remove the parts of the image you don't want, and press **Apply**:



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Using the other SMART Estimator products

The best way to use the SMART Estimator products is to use them together. Every product is designed to enhance the rest of the suite.

SMART Estimator **BIM Toolbox** can be used with the rest of the SMART Estimator products:

Model IT

SMART Estimator **Model IT** is a powerful 3D modelling tool. Use it to create scaffolds to exactly meet your project-specific needs. It is recommended that **Model IT** is used alongside **BIM Toolbox**, since you can use it to trace around a site plan.

Schedule IT

As a fast way of creating large, multi-scaffold projects, **Schedule IT** can be used to rapidly create scaffolding projects. It provides the ability to copy and paste scaffolds, enabling faster scaffold modelling.

Report IT

Produce material lists and technical drawings alongside the 3D IFC model.

Price IT

Produce a fast and highly customisable pricing report for your scaffolding project.

Quote IT

Generate quotations for the project, to send to the customer.

For more information about the other SMART Estimator products, please refer to their user guides, which are available from the Help tab.

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Feedback

Thank you for choosing SMART Estimator.

We are always striving to improve the product so please contact us with your feedback. We are always keen to hear new ideas and if you experience any problems with the software we want to hear about them so that they can be resolved.

You can contact us via:

- Our website support centre at www.smartscaffolder.com/support.html;
- Email on support@smartscaffolder.com;
- Telephone on +44 (0)1202 603733 from Monday to Friday between 09:30 and 17:00.

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