FirstRate5® Guidance Note

GN02 Wall Builder – Examples

(version 1.0, 9 May 2014, FR5 v5.1.11b)

Prior Reading

Before proceeding with this Guidance Note it is <u>essential</u> that you read the following:

GN01 Wall Builder & Project File Upgrade Process

Contents

This Guidance Note will demonstrate the following:

Using This Guidance Note

Numbers **in red** on images refer to the steps described below each image.

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Example 1 – Using a System Wall

We want to create a wall with the following build-up:

> *Outside*
> | 12mm | Timber (softwood) |
> | 90mm | Air Gap (ventilated with no foils) to fill remainder of void after bulk insulation |
> | void | added (see below) |
> | | Glass fibre batt R1.5 |
> | 10mm | Plasterboard |
>
> *Inside*

This build-up is identical to the Weatherboard System wall, with the exception of the added insulation. We can use System wall *FR5-WB* and add the appropriate bulk insulation and air gap details.
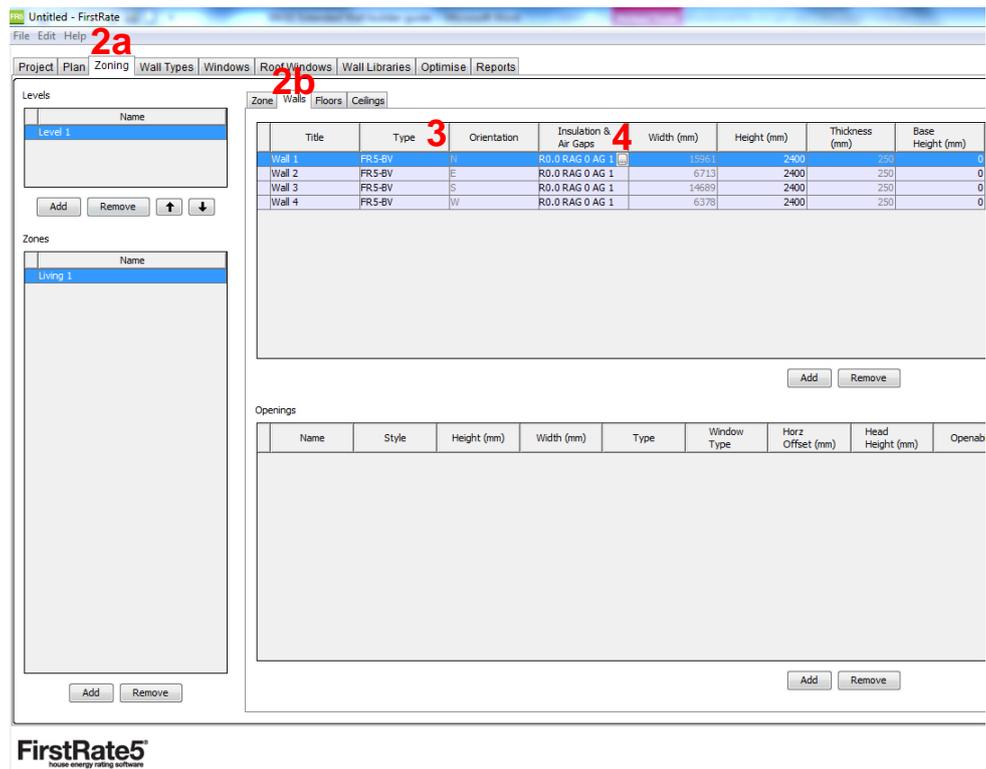
1. Draw the building's walls. In this case we'll draw a simple four wall room.

2. Click on the Zoning tab and then on the Wall tab. You'll notice that all four walls have been drawn in the default System wall type, *FR5-BV* (brick veneer).

3. In the *Type* column click the first wall and change it to *FR5-WB* from the drop down menu.

4. In the *Insulation & Air Gaps* column click on the edit button to open the *Insulation & Air Gaps* editor.

    (Note: Alternatively we could have reached this point by selecting the wall in the Plan tab and editing the *Type* and *Insulation & Air Gaps* fields in the Properties Pane).
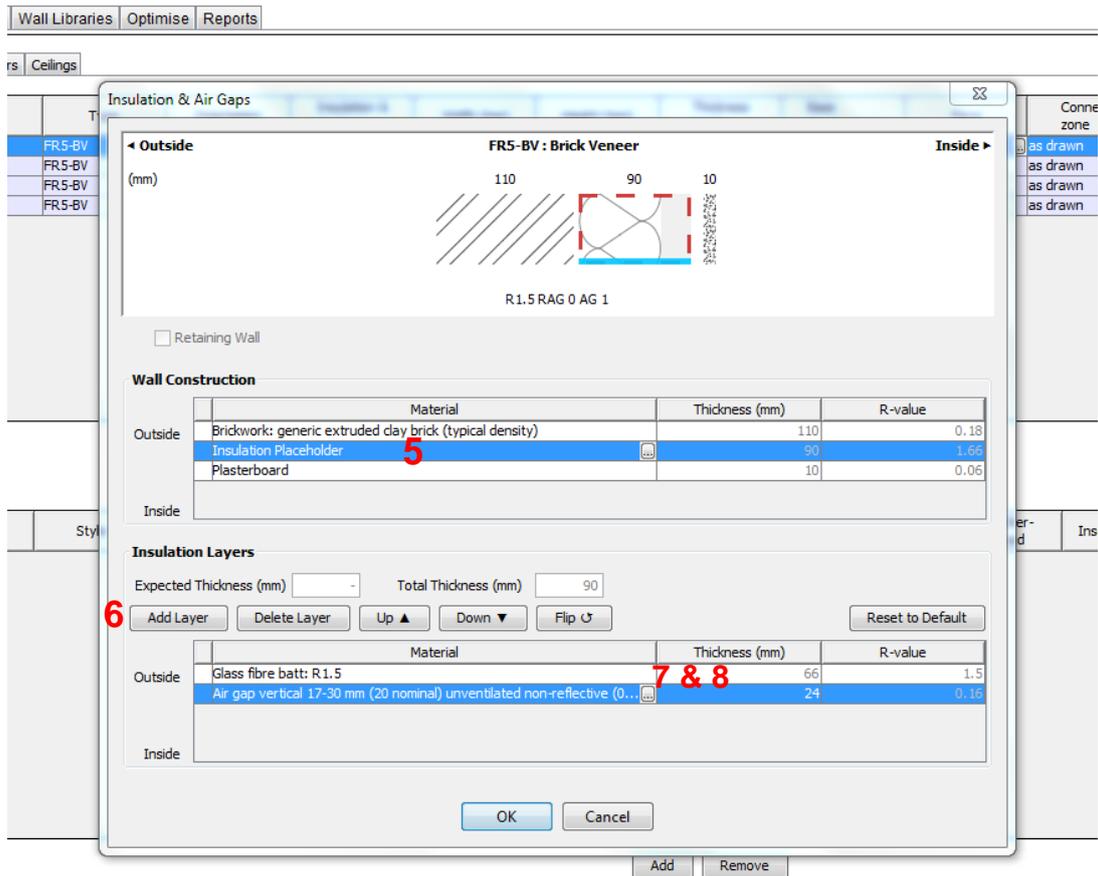
5. Click on the insulation placeholder. By default you will see an insulation placeholder containing a non-reflective air gap.

6. In addition to the non-reflective air gap we want to add a layer of bulk insulation. So click *Add Layer* to add a second layer to the placeholder.

7. Click on the edit button on the innermost insulation layer (the bottom layer in the table).
   Specify the type and R-value of the insulation from the *Specified resistance* list (*Glass fibre batt R1.5*) and click *OK*. Note that the thickness displayed is 66mm. This means the remaining air gap in the void will be 24mm (90mm-66mm = 24mm).

8. Now click on the edit button on the outermost insulation layer (the top layer in the table).
   Select the *Air gaps (ventilated 17-30mm; 20 nominal) > Vertical > Air gap vertical 17-30mm (20 nominal) ventilated non-reflective (0.9/0.9; E = 0.82)* and click *OK*. General building materials are considered to have an emissivity of 0.9, reflective foils have a lower emissivity value. Note that the thickness displayed will be the nominal thickness (ie 20mm). Manually change this to 24mm. The graphic changes at the top of the dialogue box to 90mm total for the insulation placeholder. If necessary use the *Up*, *Down*, or *Flip* buttons to arrange the order of the insulation layers. When you're satisfied, click *OK*.

9. We have changed the wall type and insulation specification of just one wall. We want the remaining three to match. Highlight all four walls. In the *Type* column, change any of the *FR5-BV* entries to *FR5-WB*. All selected walls change to *FR5-WB*. Finally, with all four walls still selected, click on the edit button of the completed wall (the top wall in the table) in the *Insulation & Air Gaps* column to open the editor and then click *OK*. You will notice all walls have now inherited the insulation properties of the completed wall.

10. You have just specified the insulation properties of a standard weatherboard wall using a System wall. These insulation properties will be saved to this project only.

**Example 2 – Creating a Weatherboard wall from the Wall Library tab**

In the following example a Custom wall will be created from a System wall and saved as a Favourite wall in a new library. The wall will be built with the following build up:

Outside

|	
20mm	Timber (softwood)
50mm	Air gap (unventilated with single sided foil (e = 0.2 from manufacturer's literature)
50mm	Rockwool batt R1.5
10mm	Plasterboard

Inside

This wall construction is very similar but not identical to the System wall *FR5-WB*. For that reason we will use the System wall as a starting point for the construction of our Custom wall.
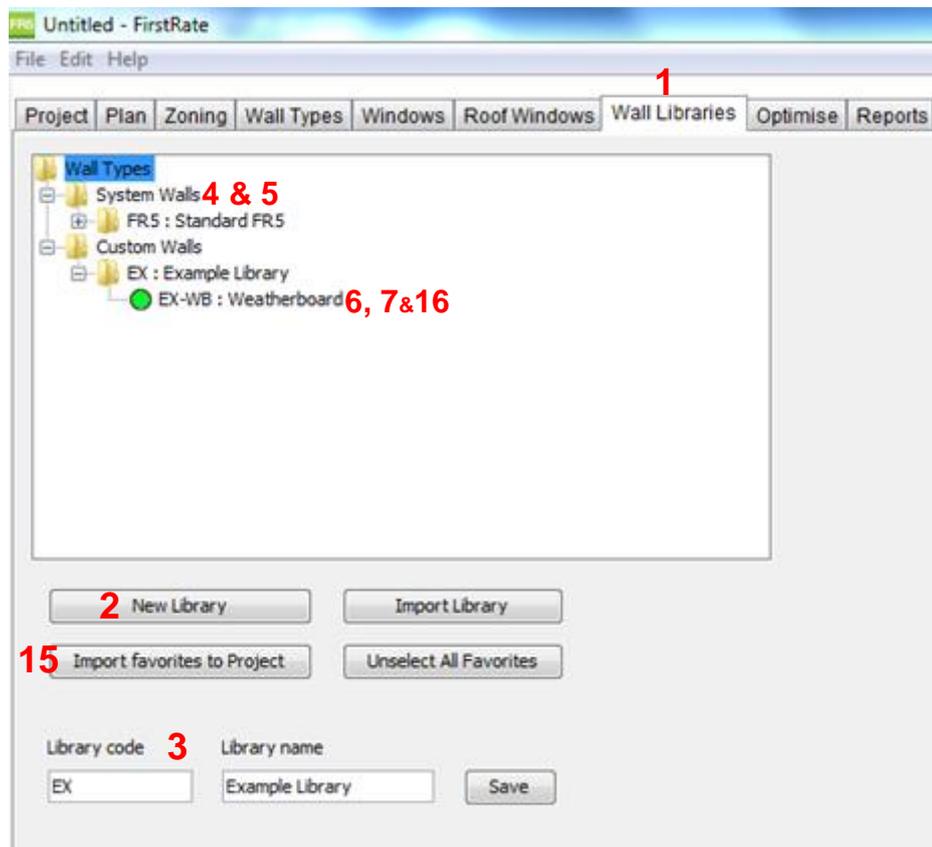
1. Click on the Wall Library tab.
2. If you have not already done so, create a custom library by clicking on the *New Library* button.
3. Type Library Code and Library Name followed by the *Save* button. A new folder with these details will be created in the Custom Walls library.
4. Click on *System Walls > FR5: Standard FR5* and select the System wall to be modified, in this case *FR5-WB*.
5. Right click on the wall to be modified and click *Copy*. Ensure the correct folder in your Custom Library is displayed below and click *Save*.
6. Navigate to the copied wall in your Custom Library.
7. Right click on the copied wall and click *Edit*.

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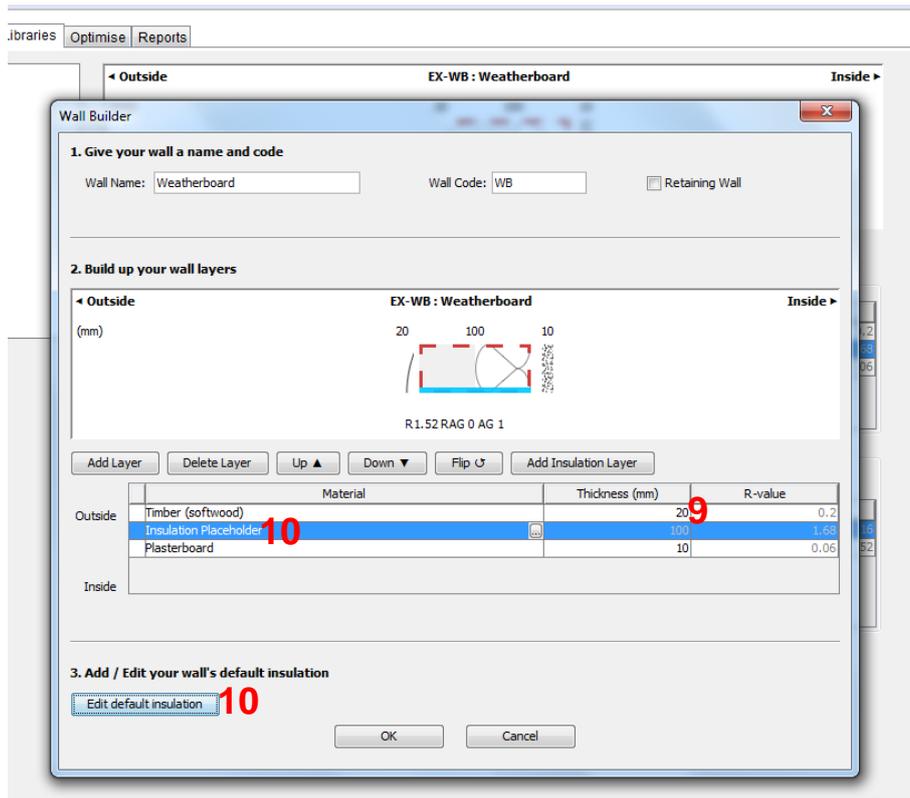
8. The *Wall Builder* dialogue box opens and allows you to edit wall construction and insulation layers.

9. Manually change the *Timber (softwood)* thickness to 20mm.

10. Click on the insulation placeholder followed by the *Edit Default Insulation* button. The *Wall Builder –*

    Insulation Editor dialogue box opens.

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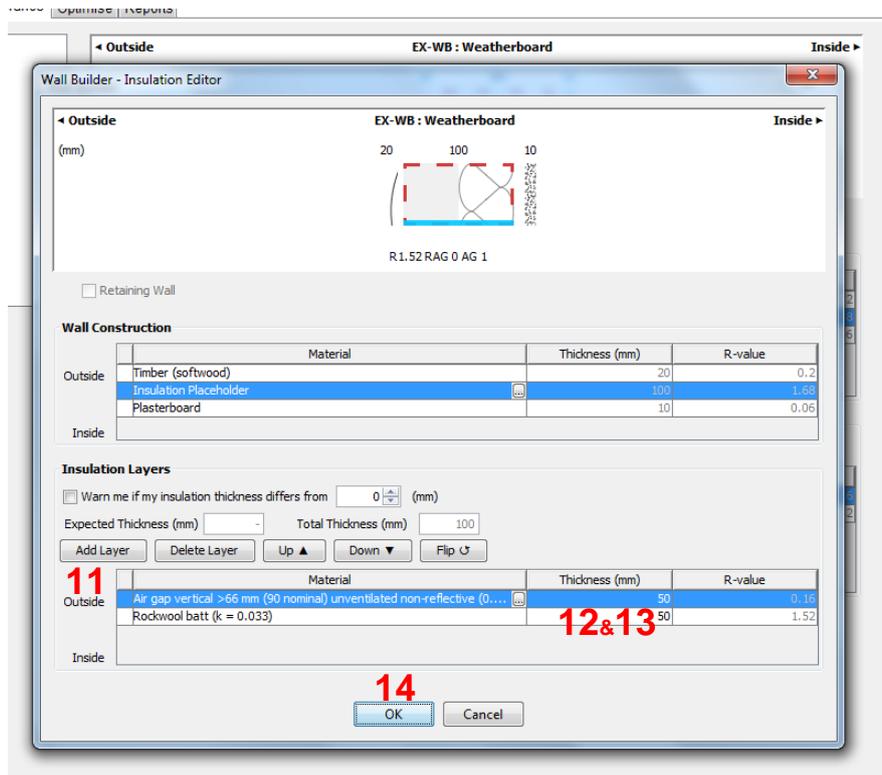
11. *Add Layer*.

12. Click the *Edit* button on the outermost layer (top layer in the table) and select the *Air gaps (ventilated 31-65mm; 40 nominal) > Vertical > Air gap vertical 31-65mm (40 nominal) unventilated reflective (0.2/0.9; E = 0.20)* and click *OK*. Manually change the nominal thickness of 40mm to 50mm.

13. Edit the innermost layer (bottom layer in the table) and select *Insulation (bulk) > Specific resistance > Rockwool batt: R 1.5* and click *OK*.

14. Click *OK* to save your wall.

15. Make sure your new Custom wall is highlighted in green and click on the *Import Favourites to Project* button. If you only want to import this one wall then click *Unselect All Favourites* before carrying out this step.

16. It will now appear in the Wall Types tab and be available for use in the project and also be stored in your library for future projects.

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Example 3 – Creating a Brick Veneer wall from the Wall Types tab

In the following example a Custom wall will be created from scratch in the Wall Types tab and then subsequently saved into the Wall Library. The wall will be built with the following build up:

Outside

|	
110mm	Brickwork: generic extruded clay brick (typical density)
40mm	Air gap (unventilated with single sided foil (e = 0.2 from manufacturer's literature))
90mm	Rigid insulation with the highest possible R value (lowest conductivity)
10mm	Plasterboard

Inside

This construction resembles Brick Veneer, so we could use that as a starting point for this Custom wall. However, for the purposes of this exercise we will start from scratch.
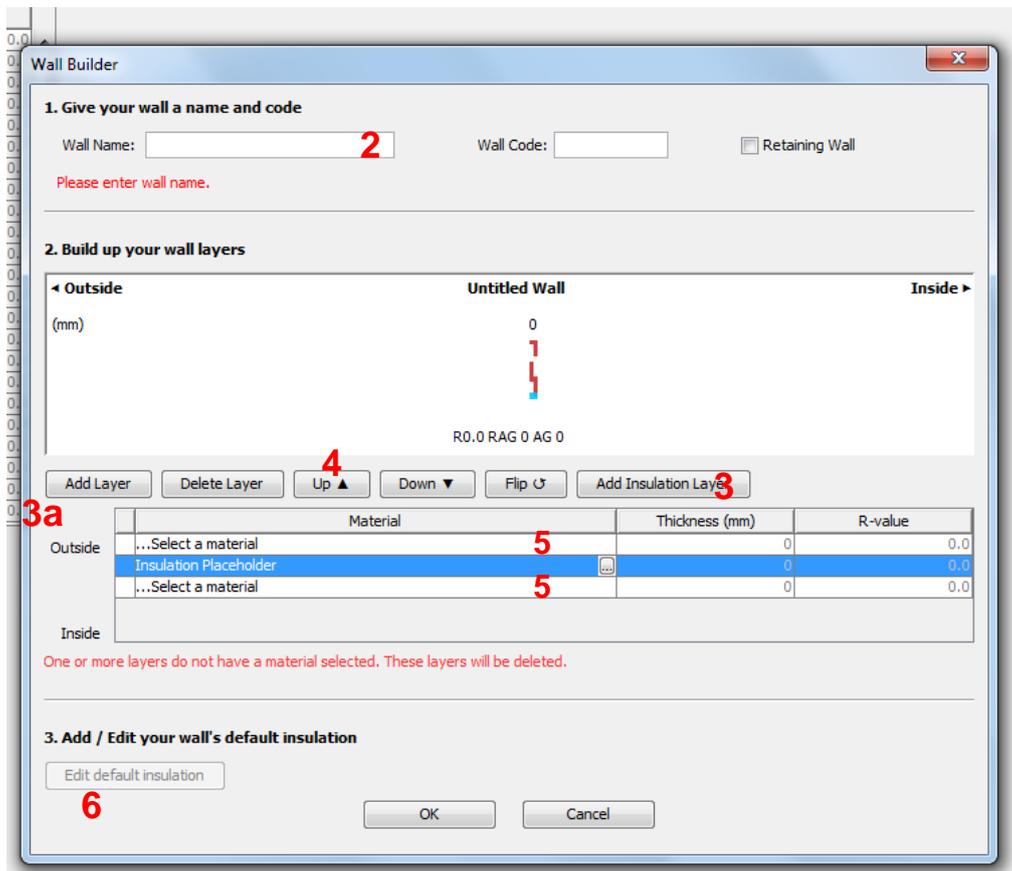
1. Go to the Wall Types tab and click on the *New Wall Type* button.
2. Give your wall a name. Note that the Wall Code field will automatically populate with the initials of the wall name.
3. Add two construction layers (click *Add Layer* twice) and one insulation placeholder (click *Add Insulation Layer* once).
4. Move the insulation placeholder between the two construction layers by using the *Up* button.
5. Select the materials for the construction layers and their thickness: *General > Brickwork, generic extruded clay brick (typical density)* and *General > Plasterboard*.
6. Highlight the insulation placeholder and then click on the *Edit Default Insulation* button.

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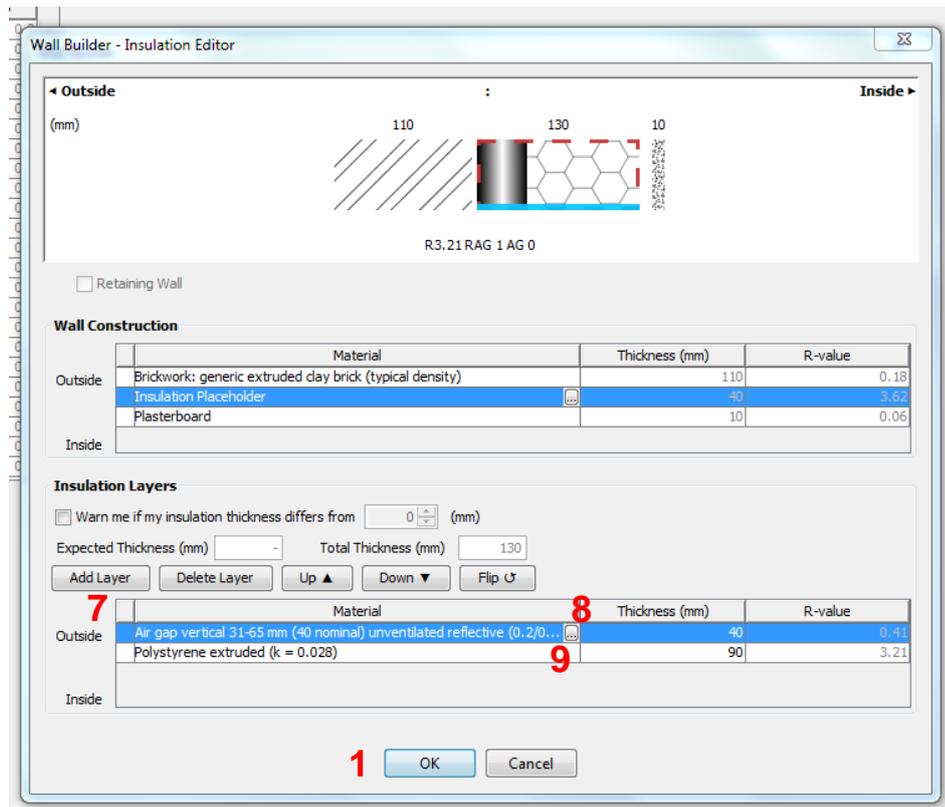
7. Add two insulation layers (click Add Layer twice).

8. Change the outermost layer and select the Air gaps (ventilated 31-65mm; 40 nominal) > Vertical > Air gap vertical 31-65mm (40 nominal) unventilated reflective (0.2/0.9; E = 0. 20) and click OK. Note that the thickness displayed is 40mm (ie the nominal thickness of the selection). As this matches the required width, there is no need for any manual changes.

9. Edit the innermost layer selecting a rigid bulk insulation material from the Specified conductivity list. Select the Extruded Polystyrene which has the lowest k-value (0.028) and click OK. Note that the thickness displayed is 0mm. Manually change this to 90mm.

10. Click OK to save the wall. Note that this has only been created in the Wall Types tab and will be saved project file only.

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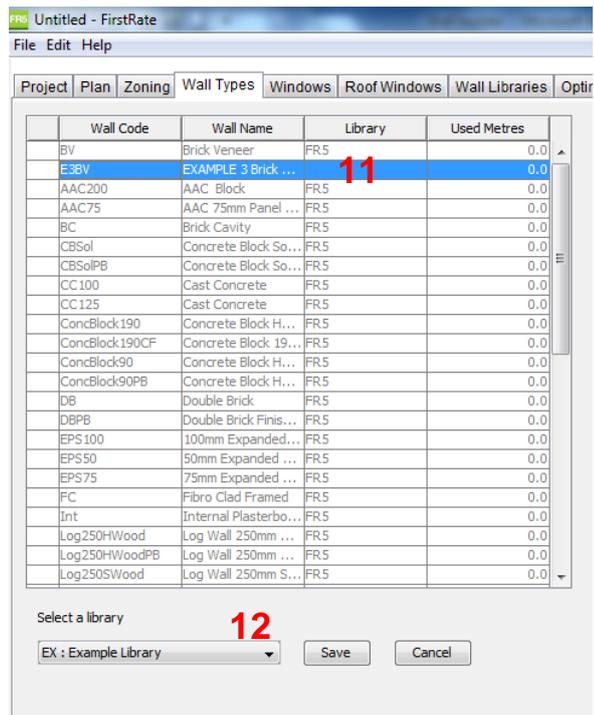
11. In order to save it to the Wall Library locate the wall in the Wall Types table. Right click on the wall and click on Add To Library.

12. Select the appropriate Custom Library folder and click Save.

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Example 4 – Creating a Polystyrene clad wall from the Wall Library tab

In the following example a Custom wall will be created with the following build up in the Wall Library and saved into the current project.
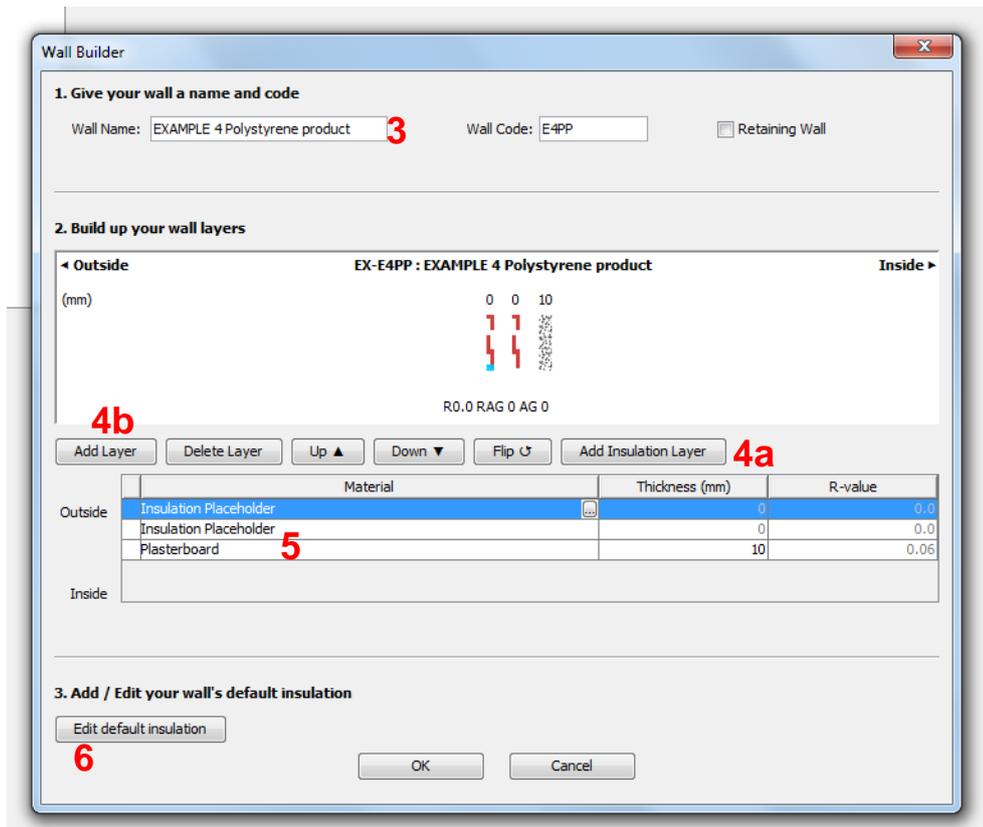
Outside
|	
75mm	Polystyrene extruded (k=0.028)
40mm	Air gap (unventilated and non-reflective)
10mm	Plasterboard

Inside
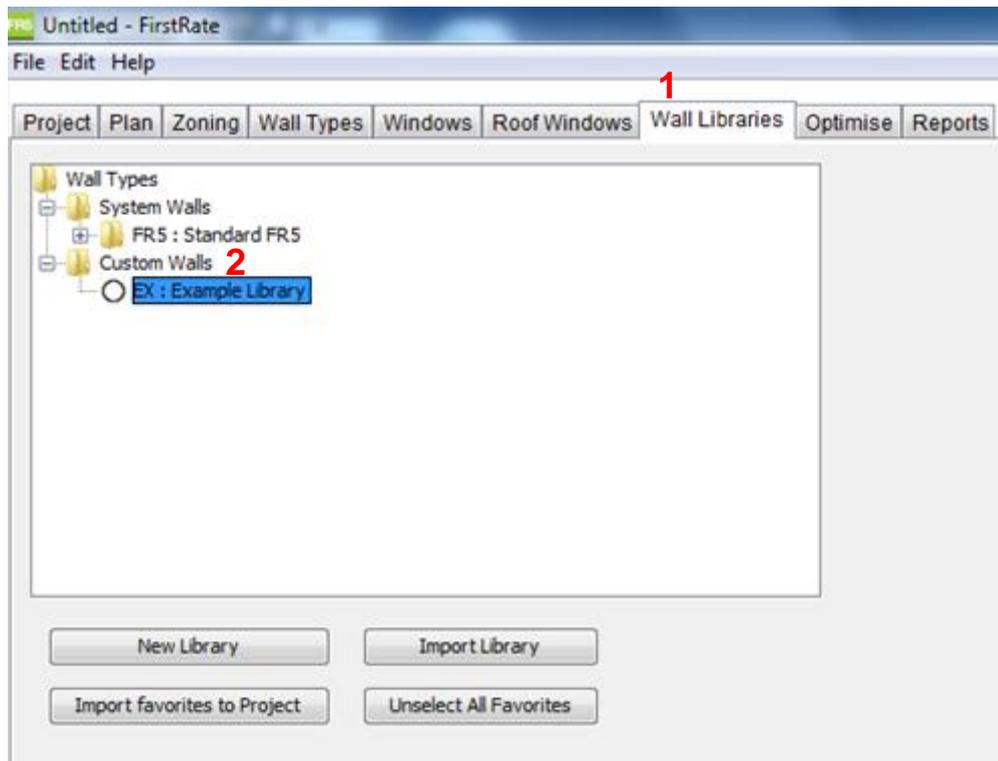
1. Go to the Wall Library tab.

2. Right click on the Custom library folder where you want to create the new wall and click on New Wall

   Type.

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3. Give your wall a name.

4. Insert one insulation placeholder (click *Add Insulation Layer* once) and one construction layer (click

   Add Layer once).

5. Click on the construction layer and select *General > Plasterboard*.

6. Highlight the insulation placeholder and then click the *Edit Default Insulation* button.
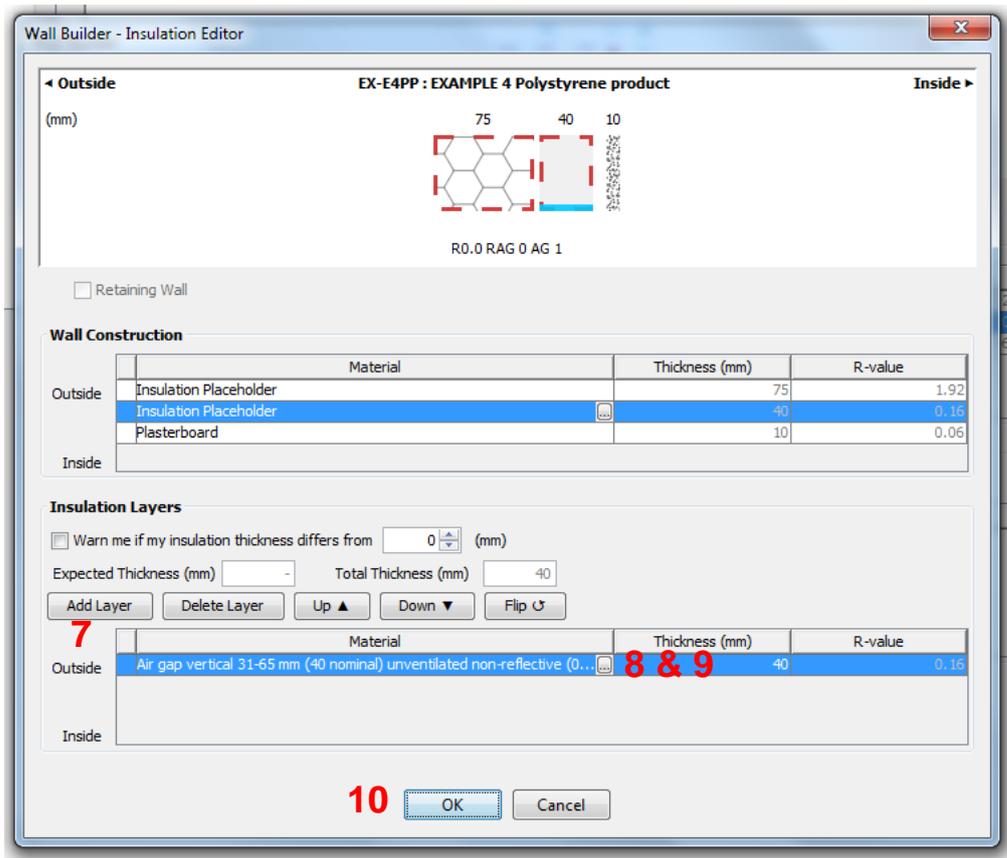
7. Click *Add Layer* twice.

8. Highlight the outermost insulation layer, click the *Edit* button and select *Insulation (bulk) > Specific conductivity > Polystyrene extruded (k = 0.028)* and click *OK*.

9. Highlight the innermost insulation layer, click on the *Edit* button and select *Air gaps (ventilated >66mm; 90 nominal) > Vertical > Air gap vertical >66mm; (90 nominal) unventilated non-reflective (0.9/0.9; E = 0. 82)* and click *OK*.

10. Click *OK* to save the wall to your Custom Library folder.

11. Make sure your new Custom wall is highlighted in green and click on the *Import Favourites to Project* button.

12. It will now be available for use in the project and stored in your library for future projects.

Further Reading

•   Please refer to the FR5 User Manual (v5.1.11b) for further detail. The FR5 User Manual is a PDF document that can be located by going to your *Start > All Programs > FirstRate5-5.1.11 > FirstRate5-5.1.11 Manual*.

•   Please also refer to FAQs on the FirstRate5 website (www.fr5.com.au/faqs)