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New Open Mind Technologies

COSTOS

Quick Guide

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Introduction

1 Introduction

This Quick Guide aims at helping a novice CostOS user become familiar with the software's interface, main functionalities and features over a short period of time, thus enabling him to accurately and quickly create new estimates.

1.1 About the Quick Guide

This document constitutes a narrowed down version of the CostOS Manual. As mentioned in the Introduction, its scope is to orientate a novice user on how to use CostOS project out of the box.

In order to keep its limited extent, not all functionalities of the software are mentioned in this Guide; please refer to the Manual for further functionalities' instructions.

1.2 Essential Terminology

For the needs of this Quick Guide, the essential terminology can be summarized to the following keywords:

i. **Resources**
ii. **Bill of Quantities (BOQs)**
iii. **Assemblies**

A brief explanation of the terms:

The **Resources** that can be stored, accessed and edited in a **CostOS Database** are of the following types:

a. *Labor*
b. *Materials*
c. *Subcontractors*
d. *Equipment* (or *Plant*)
e. *Consumables* (or *Other Costs*)

The essential information that all of the above Resources share is:

✓ Name

- ✓ ID
- ✓ Unit of Measure
- ✓ Rate

There is also another type of **Resources**, called **Line Items**. Line Items are composite resources consisting of several "plain" resources mentioned above, stored in the and can be used in a project or more in order to save time.

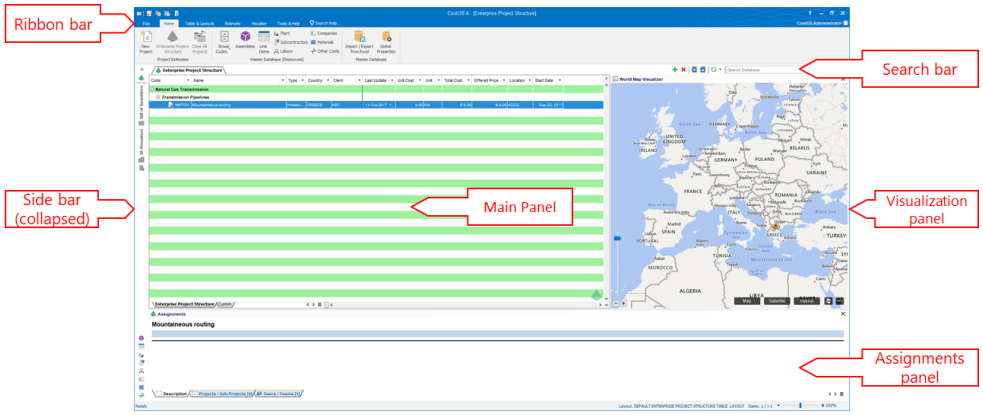
Bill of Quantities (or **Estimate**) is the detailed statement of work, the cost of which is to be estimated.

Assemblies are Parametric Cost Models that allow the user to estimate the cost of a project, or parts of it, only by defining some key characteristics, i.e. the cost of a block of buildings based on the surface area, number of floors and construction quality.

Graphical User Interface Overview

2 Graphical User Interface Overview

The Graphical User Interface (GUI) of CostOS Estimating consists of *five* distinctive parts, as tagged below:



The Graphical User Interface, as shown when CostOS initiates.

- On the *Ribbon Bar* you can perform all actions. The Ribbon Bar dynamically changes and takes you to the most common commands of each tab.
- On the *Search bar* you can perform searches on the Table you are currently viewing. You can also add or remove items, as well as expand or collapse the table you are currently viewing.
- The *Sidebar* allows you to navigate quickly to the tables you want to see.
- The *Main Panel* is your basic panel and that is where you will find the table you are currently working on. The Main Panel will be always open and cannot be hidden.
- The *Visualization Panel* gives you additional information regarding the Items or the Table you have currently open. The Map, or the 3Model are displayed there. You can hide it to get more space on your Main Panel if you wish.
- The *Assignments Panel* plays a major role while working with your BOQ Table. You can see all your resource assignments there, as well as drag and drop resources from your database to assign them to the selected Items.

2.1 The Ribbon bar

By the term *Ribbon Bar* we mean the tabbed toolbars available at the upper part of the main window, allowing you to perform all tasks.

The Ribbon bar, expanded.

The Ribbon bar consists of 5 tabs:

- *Home*,
- *Tables and Layouts*,
- *Estimate*,
- *Visualize* and
- *Tools*

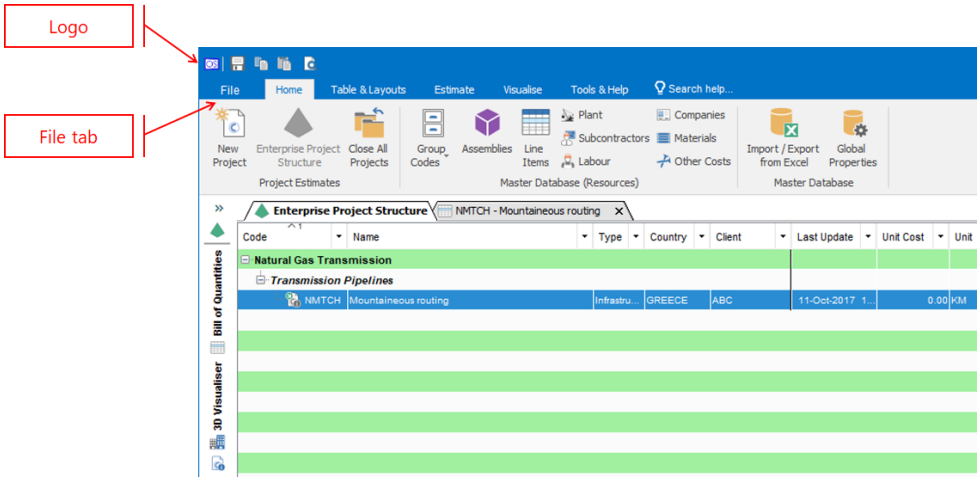
Behind each tab, there is a different set of toolbars available, explained briefly in the topics of this chapter.

If you want to hide the Ribbon Bar while working so as to have more available interface space, then double-click on any tab header:

The Ribbon bar, collapsed.

2.1.1 File tab and Application Menu

All basic actions, such as *New Project, Open, Save* etc. are included in the **Application Menu** which can be accessed either by clicking on the CostOS logo, on the upper left corner of the window, or by the clicking on the **File** tab .



On this menu you can perform the following actions:

- **New:** Create a New Project
- **Recent Projects:** Open recently created/edited CostOSprojects.
- **Save:** Save the current project you are working on (activated only when having at least one project open).
- **Save All:** Saves all currently open projects (activated only when having at least one project open).
- **Reports:**This launches two options:
  - The **Print** option, which prints the project according to the current layout and
  - The **Print Preview** option that launches the Report Preview Dialog.
- **Import:**Allows the user to import already existing projects either:
  - From CEP files (**Import from CEP files**), or
  - Directly from Microsoft Project (**Import from MS Project**)
- **Export:** This action is active only when you are at the BOQ Table view. It allows you to export the current project you are working on to Microsoft Excel, Primavera P6 or Microsoft Project.
- **Settings:** This is an important command as it allows you to define some important settings that will affect the way calculations or basic actions are performed within CostOS.

- **Close:** It closes the project that is currently open (activated only when having at least one project open).

- **Close All:** It closes all currently open projects (activated only when having at least one project open).

- **About:** Gives you information about the current version of CostOS you are operating on.

2.1.2 Home tab

The ***Home*** tab consists of 5 groups of buttons.

Group 1: ***Project Estimates***

New Project
Creates a New Project.

Enterprise Project Structure
Opens the Enterprise Project Structure (EPS) Panel (Activated only when having at least one project open).

Close All Projects
Closes all Open Projects (Activated only when having at least one project open).

Group 2: ***Master Database (Resources)***

Group Codes
Expands to a list of all Group Codes (1 to 9), allowing the user to select which Group Code wants to browse.

Assemblies
Opens the Assemblies Table of the Resource Database.

Line Items
Opens the Line Items Table of the Resource Database.

Equipment (or **Plant**)

Opens the Equipment Table of the Resource Database.

Subcontractors
Opens the Subcontractors Table of the Resource Database.

Labor
Opens the Labor Table of the Resource Database.

Companies
Opens the Resource Database table where all suppliers' information is stored.

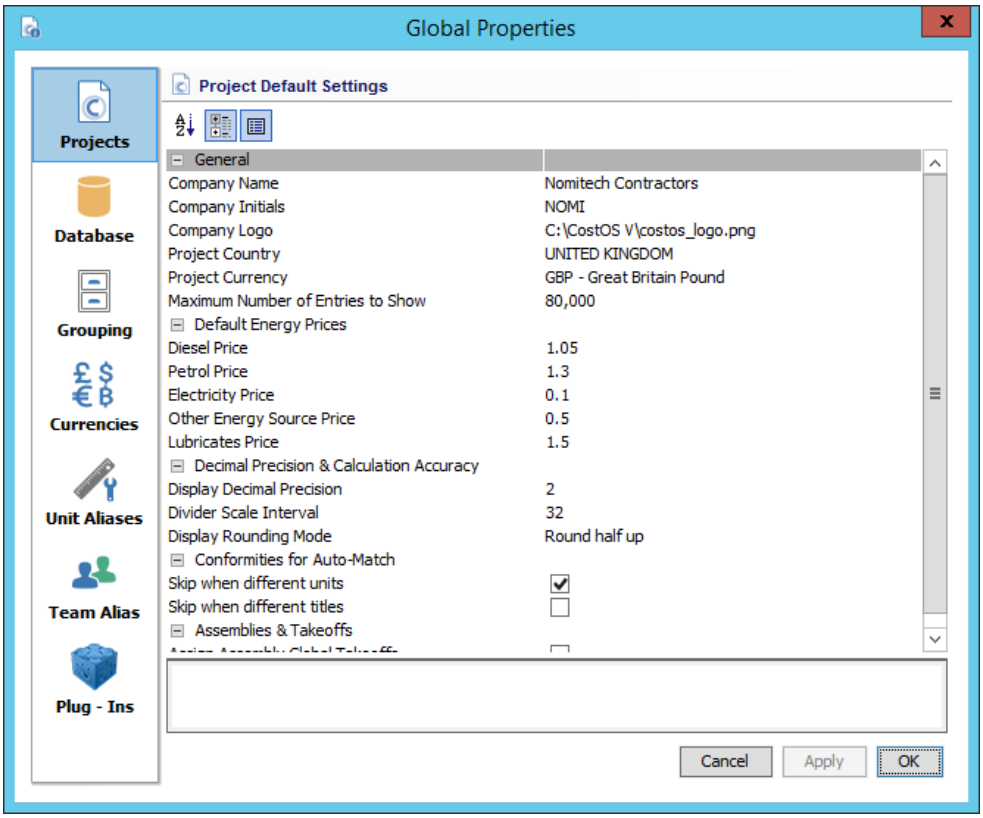
Materials
Opens the Materials Table of the Resource Database.

Consumables (or **Other Costs**)
Opens the Consumables, Other Costs Table on the Resource Database.

- **Group 3:** ***Master Database***

Import/ Export from Excel
Opens the Append from / Update from / Export to Excel dialog. You can Import or Append your database from Excel files, as well as export parts or the whole database to Excel.

Global Properties
It opens the Global Properties Dialog.



The Global Properties window, as it pops up.

In this Dialog box you can configure the below properties:

Projects: Displays all properties of the project, as defined in the "New Project" wizard.

Database: Shows properties of the Database in the background, such as DB Name, authors, decimal precision etc. "*Database triggers*" to be thoroughly explained in Manual.

Grouping: This button allows the user to have an overview of the settings for each of the 9 Group Code Tables available. Those settings are system, not user or project-specific and can be set up individually for each Group Code Table.

Currencies: It opens the dialog where you can add or remove the currencies used by the system, on both projects and Database.

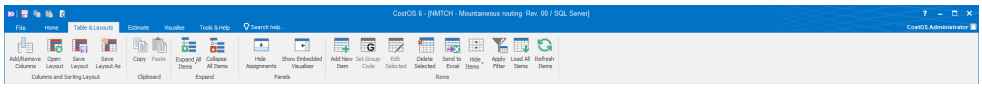
 **Unit Aliases:** Allows use of Custom Units of Measurement and/or renaming of existing UoM's, in case the CostOS default ones do not fully cover the needs of the project.

 **Team Alias:** Allows renaming of Cost Teams assigned to a specific

 **Plug-ins:** Clicking on this icon user can view what plug-ins have been set up for this installation, i.e. CostOS 2D, and define their properties.

2.1.3 Table & Layouts tab

The *Table & Layouts* tab consists of 5 groups of buttons as well. This part of the Ribbon bar is used for customizing the Working View of the software as well as the layouts of the Tables where you are currently working.



The Table & Layouts tab.

Group 1: ***Columns and Sorting Layout***

 **Add Remove Columns:** It opens the Add/Remove columns dialogue from which you can bring in your current table new fields or select which to hide from those currently displayed.

 **Open Layout:** It opens the list of the saved Layouts from which you can select which one to load.

 **Save Layout:** It saves the current Table View as a Layout.

 **Save Layout As:** It saves the current Table View (Layout) with another name.

Group 2: ***Clipboard***

 **Copy:** It Copies the selected Items of the Table

 **Paste:** It pastes the copied Items of the Table

Group 3: ***Expand / Collapse***

 **Expand All Items:** It Expands All Items currently displayed on the Table

 **Collapse All Items:** It Collapses All Items currently displayed on the Table

Group 4: ***Panels***

 **Show/Hide Assignments:** It opens or hides the Assignments Panel on the bottom of the screen.

 **Show/Hide Embedded Visualizer:** It opens or hides the Visualizer.

Group 5: ***Rows***

 **Add New Item:** It Adds a new entry to the table currently diplayed

 **Assign Group Code:** It opens a dialogue to assign Group Codes to the selected items of the table

 **Edit Selected:** It opens a window to edit all fields of the selected Items.

 **Remove Selected:** It deletes the selected Items

 **Send to Excel:** It sends the currently displayed table to Excel

Hide Items: It hides the selected Items

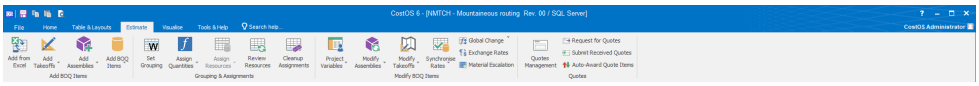
Apply Filter: It opens the Filtering Dialogue to Run or Create a new Filter

Load All Items: It Loads All Items, in case there are hidden Items

Refresh Items: It refreshes the view of the Database Table

2.1.4 Estimate tab

The *Estimate* tab is enabled only while having at least one project open and it includes all fundamental functionalities required to work on an estimate. Below, a brief presentation of all buttons of the tab:



The Estimate tab.

Group 1: ***Add BOQ Items***

Add from Excel: This functionality generates BOQ items coming from XLS files, once the user has mapped the incoming columns. The user can easily define and save templates according to which all future XLS files of the same layout are imported, thus avoiding the mapping procedure and swiftly creating estimates.

Add Takeoffs:

2D Takeoffs: Creates BOQ items in the Estimate that have their *Quantity* field defined with the help of the 2D takeoff plugin and *Title* same as defined during the measurement.

 **BIM Takeoffs:** Opens the BIM panel, on which you can open a BIM (.ifc) file, and associate its 3D elements with quantities with the historical or the online database and build up your BOQ Table.

 **GIS Takeoffs:** Linear or surface measurements made on a map (i.e. Google Maps or Bing Maps) are added as BOQ items; their *Title* is the one defined during measurement.

 **Add Assemblies:** Opens the Assemblies Window, from which you can drag and drop Smart Assemblies marked as Cost Models. If you click on the lower part of the button, a drop down window opens where you can directly see and run cost model assemblies.

 **Add Local Database Assemblies:** Allows you to run locally stored parametric cost models.

 **Add Local Database Assemblies from an Excel file:** Bring in an Excel file (pre-generated from CostOS) that keeps the values for all fields of a specific assembly. This file will automatically fill in the interview, so you only have to click on the Add Assembly button.

 **Add Online Database Assemblies:** Select *Add Online Database Assemblies* if you are subscribed to online databases such as the Richardson's or the RSMeans Databases that also provide assemblies.

 **Add BOQ Items:** Launches the Add BOQ Items dialogue from which you can add Items from the Assembly / Resource Database, from the Online Database, from BIM elements associated with historical database items, from Onscreen Takeoff or GIS Map conditions associated with historical items, from Excel or adding new blank items. If you click on the lower part of the button it gives you the ability to directly import Items with the following methods

- **From Local Resources Database:** Opens the Line Items Table of the resource database from which you can drag and drop line items to your estimate

 **From Online Resources Database:** Opens the Line Items Table of the Online Databases on which you can search and drag and drop line items to your estimate

 **From Building Cost Information Service:** Upon subscription to the RICS BCIS database, you can select and add Line Items of the database as Bill Of Quantities Items in your Estimate.

 **Add a Forecasted Item:** Opens the Predictions window on which you can predict rates based on your historical data

Group 2: ***Grouping & Assignments***

 **Set Grouping:** Assigns a Group Code to the selected Items. The Group Code that you can assign is the same with the active tab (bottom of the Main Panel)

 **Assign Quantities:** Launches the Quantity Takeoff window to associate takeoffs with the selected items. By clicking on the lower part of the screen a drop-down opens where you can select the items

 **Type Quantities:** Manual definition of a BOQ item's quantity, without using any takeoff method.

 **Use Functions:** Functions enable you assigning a quantity to one or more of your BOQ items, based on functions. These functions ask for specific input, such as dimensions of a slab, and return a result which, in turn, is used as the BOQ item's *Quantity*.

 **2D Quantities:** Opens the 2D panel, on which you can open a digitized drawing file (either in DWG or PDF/image format) and associate its 2D elements and quantities with your BOQ items.

 **BIM Quantities:** Allows you to load an .IFC file and take off quantities from it. These quantities will be assigned to the previously selected BOQ item, from the Estimate.

 **GIS Quantities:** Opens the World Map Panel, from which you can transfer Takeoff Quantities, such as length or area to your estimate.

 **Assign Resources:**

 **Assign Local Resources:** Launches the *Assign Resources* window that allows you to assign resources from your local database to the selected BOQ items.

 **Assign Online Resources:** Only available upon subscription to Online databases such as RSMeans or Richardson's, this functionality allows you to add resources from these databases to your estimate, mainly Line Items.

 **Assign BCIS Resources:** This assignment type requires subscription to the RICS BCIS database. Once subscribed, you will be able to assign resources such as Line Items, directly to your project.

 **Assign Forecasted item:** Assign the predicted rates of a resource as calculated based on your historical data

 **Review Resources:** Launches a windows that shows in form of a tree diagram all currently assigned resources to their corresponding BOQ's.

 **Cleanup Assignments:** Gives you the ability to wipe clean all resource or quantity assignment you have made so far, for one or more selected BOQ items.

Group 3: ***Modify BOQ items***

 **Project Variables:** Define Indirect Costs and import existing totals, topsheets or indirect costs from excel, define Rates Build-Ups and add MarkUp Distributions

 **Project Variables Editor:** As an Editor, you will be able to change the queries of the Indirect or other Costs pages, change Build-up rates etc.

 **Project Variables Viewer:** As a Viewer, you will only be able to read, not change, the defined Project Variables pages.

 **Modify Assemblies:**

 **Modify Assemblies:** It allows you to modify the parameters of the assemblies already used in your estimate

 **Modify Assemblies from Excel Worksheet:** Modifies the input values of an assembly, using an Excel file, same as the one used in *Add Local Database Assembly from an Excel File*.

 **Modify Takeoffs:**

 **Modify 2D Takoffs:** Re-opens the 2D dialog, allowing you to modify already taken off quantities.

 **Modify BIM Takeoffs/IFC:** Compare a revised BIM model with the one already loaded to the Estimate Project, auto-identify the changes and let them be reflected auto-editing in the
Estimate based on the changed on the revised BIM model.

 **Modify GIS Takeoffs:** Re-opens the World Map dialog, allowing you to modify already taken off quantities.

 **Synchronize Rates:** It synchronizes your estimate with the resource database or other values, such as Exchange rates.

 **Synchronize with Central Database Rates:** Updates all the rates of assigned resources to your BOQ items, so as to reflect changes

made in the master database and, thus, update costs.

 **Synchronize with Current Exchange Rates:** Updates all the rates of assigned resources to your BOQ items, so as to reflect fluctuations in the Exchange rates, in case resources are stored in another currency than the BOQ item.

 **Synchronize with Location Factors:** Updates all sorts of resource rates assigned to BOQ items, so as to calibrate the difference of a specific resource's rate in its country of origin and the project's implementation country.

 **Apply Escalation:** Re-calculates the rates of materials used in the project, based on raw materials' rates fluctuation and the assigned materials' reliance to those.

Global Change:

 **Change all Resource Factors:** Allows you to universally (across the whole project) apply factors that will multiply/divide or replace all rates of the selected BOQ items.

 **Change Line Items Resource Factors:** Same as above, applied only to the **Line Item** rates assigned to the selected BOQ item(s).

 **Change Plant Resource Factors:** Same as above, applied only to the **Plant** (or **Equipment**) rates assigned to the selected BOQ item(s).

 **Change Subcontractor Resource Factors:** Same as above, applied only to the **Subcontractor** rates assigned to the selected BOQ item(s).

 **Change Labour Resource Factors:** Same as above, applied only to the **Labour** rates assigned to the selected BOQ item(s).

 **Change Material Resource Factors:** Same as above, applied only to the **Material** rates assigned to the selected BOQ item(s).

 **Change Other Costs Resource Factors:** Same as above, applied only to the **Other Costs** (or **Consumables**) rates assigned to the selected BOQ item(s).

 **Change Quantity Resource Factors:** Same as above, applied only to the **Quantities** assigned to the selected BOQ item(s).

 **Exchange Rates:** A table where you can define the predicted, for the project's payment duration, Exchange rates among all currencies used in CostOS Estimating. You can easily download the current one by clicking on the *RSS update* button.

 **Material Escalation:** A table where you can define the predicted, for the project's payment duration, rates of all raw materials (Copper, Stainless steel, Nickel and others).

Group 4: ***Quotes***

 **Quotes Management:** It opens the Quote Management Tool, which gives you full access to all Quotation-related functionalities.

 **Request Quotes:** It creates an RFQ, either Material or Subcontractor, for the selected Items.

 **Submit Quotes:** It imports a received Quote from a Supplier or Subcontractor

 **Auto-Award Quoted Items:** It allows you to automatically convert quoted items to assigned resources based on criteria such as Best Price, Middle Price etc.

2.2 The Search bar

The *Search bar* allows you to track elements on the currently displayed table.

Previous Searches: CostOS Estimating keeps record of all previous searches. To browse them, simply click on the magnifying glass button on the right hand side of the search field.

Advanced Search: It opens the Advanced Search window bellow the search bar where you can search within the specific table fields that are currently displayed as shown below:

Click the Upwards facing arrows to close the above dialogue.

Other buttons you can find on this bar are:

Add: Adds a new BOQ Item or a new Database Entry

Remove: Removes the selected BOQ Items or the Selected Database Items

Expand All Items: Expands the whole list of BoQ items

Collapse All Items: It Collapses all Expanded Items

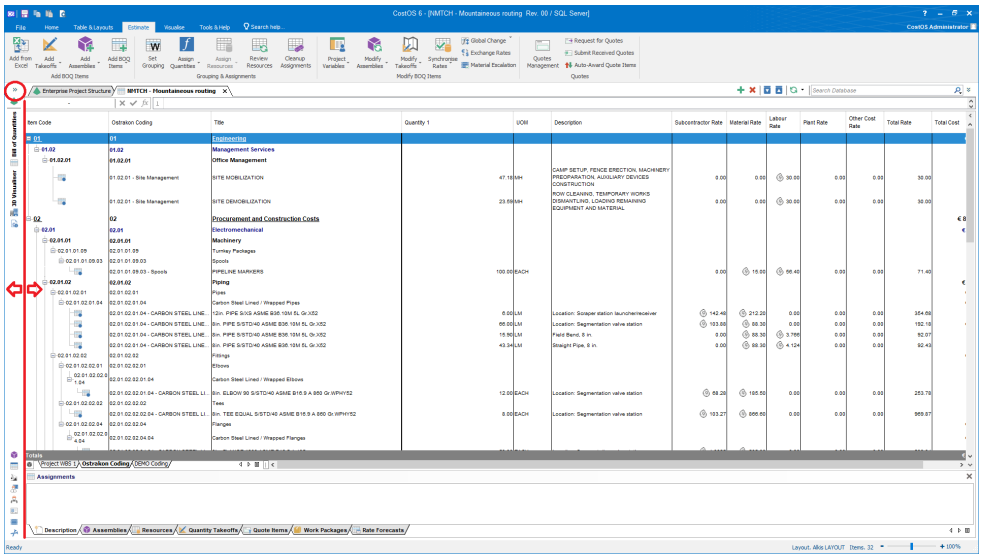
Refresh Items

Show log: In order to track all changes made over a specific timeframe, click on the downwards facing arrow (▼) next to the Refresh button. The "*Show log*" option will appear; click on it and the "*Log history*" window will pop up.

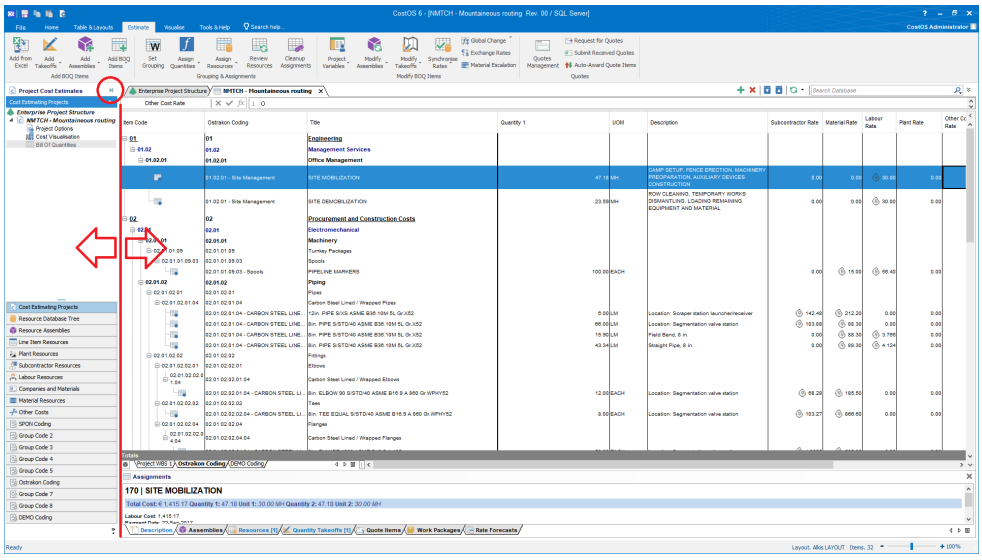
2.3 The Sidebar

The Sidebar allows you to quickly access the different parts of the Projects and the Resource Database tables. The toolbar can be expanded simply by dragging it to the right, in the same way as it can be collapsed if you drag it to the left.

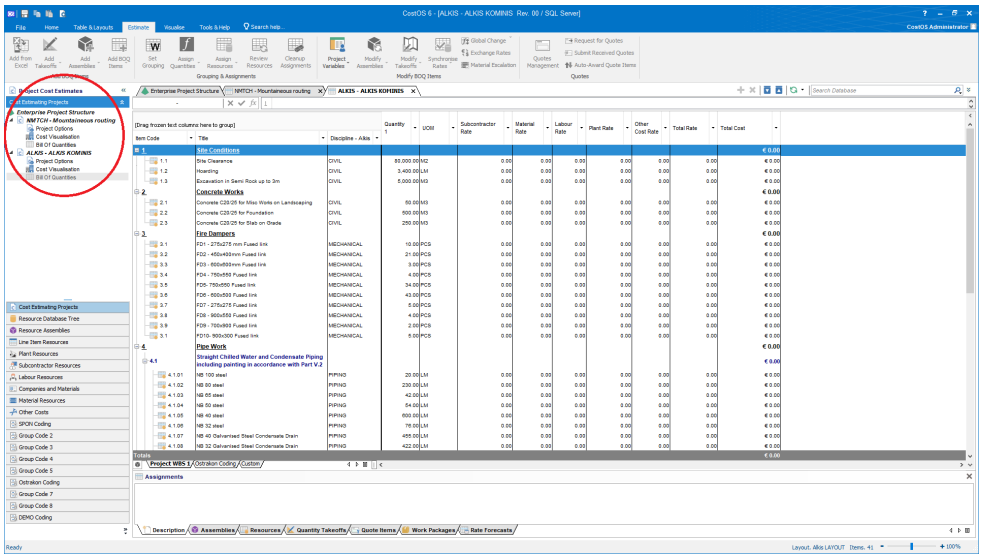
Alternatively you can click the » button on the upper right corner of the sidebar.



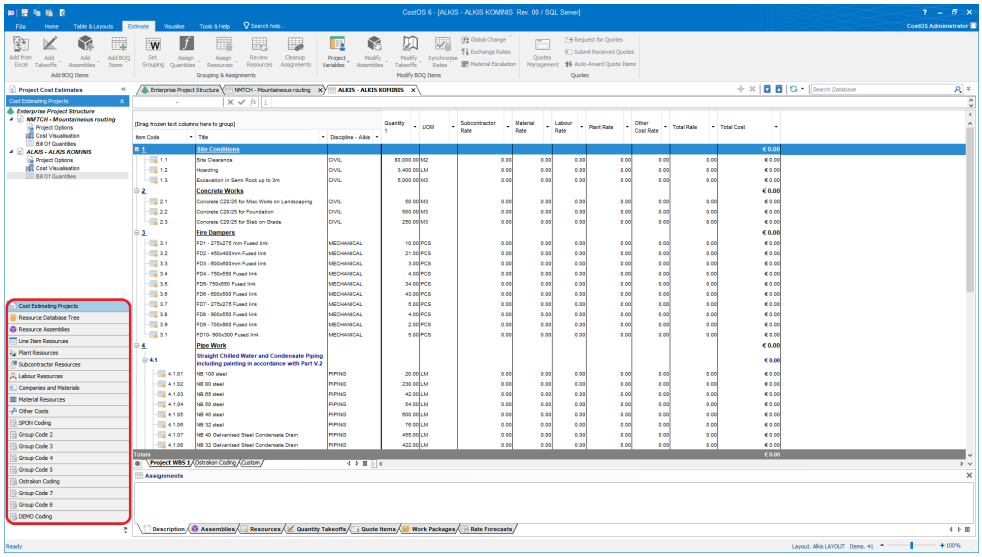
When dragging the side bar to the right the same buttons are revealed together with an explanation of the panels that they open when clicked.



Moreover if more than one projects are open, they will be displayed on the Project View (also named Project tree map) and you will be able to switch from one to the other really quickly.



The lower part of the opened side bar provides all necessary buttons to access the Database Tables. This part is also called Database View.



2.3.1 The Sidebar buttons

The buttons on the sidebar launch different Tables. The upper buttons refer to the open and selected project whereas the lower buttons refer to the database tables. More specifically:

EPS

Opens the Enterprise Project Structure on the main panel, where you can see all of your projects, open or close them and perform various actions (see next topic).

Bill of Quantities

It opens the Bill of Quantities table of the selected project.

3D Visualizer

It loads and opens the 3D models that you used for your estimate. If you have not used any models then it will not open.

Project Options

It opens the Properties of the Project. These are normally set while running the New Project Wizard but they can be amended on the Table that opens when clicking on this button.

Assemblies

Opens the assemblies table of the Database. If the table appears blank then click on the View All button, or run a filter.

Line Items

Opens the Line Items table of the Database. You can use the search box to find the items you want to edit, or click the view all button to display all items.

Equipment

Opens the Equipment Resource Table of the Database

Subcontracted Items

Opens the Subcontracted Items Resource Table of the Database

Labor

Opens the Labor Resource Table of the Database

Supplier

Opens the Supplier Catalog Table. The suppliers are associated with materials which can be displayed at the assignments panel (if opened).

Materials
Opens the Material Resource Table

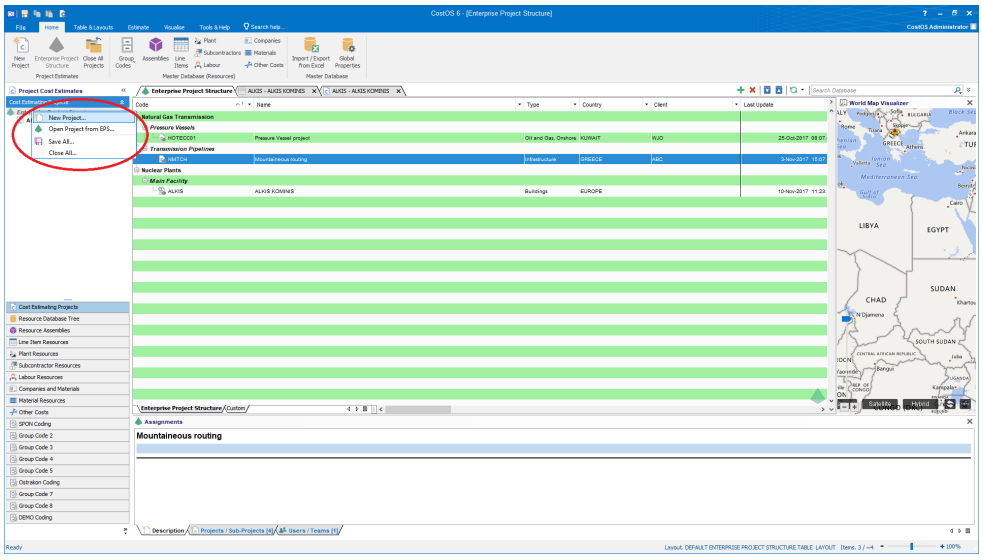
Consumables / Other Costs
Opens the Consumable or Other Cost Resource Table

2.3.2 The Project View interface

As mentioned in the previous topic, the Project View can be displayed if you drag the right side of the Sidebar to the right or by clicking on the double arrow button, ».

Its functionality is based on trees and nodes. On the upper part of the sidebar, you can find the *Enterprise Project Structure* icon, . You can hide or show all projects **currently open** by double-clicking on the EPS icon.

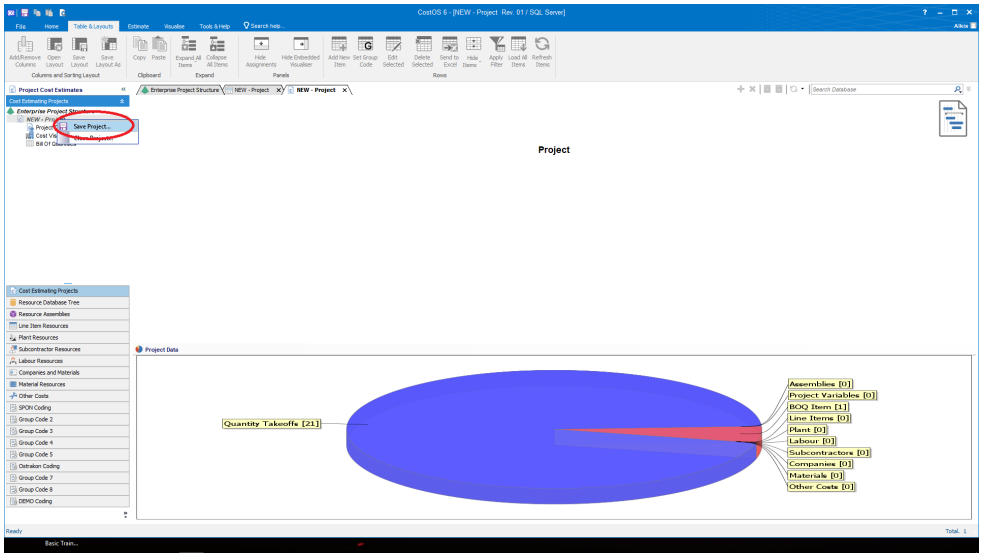
By right-clicking on the project list, the projects' Menu appears; you can now create a new project, open an existing one, save all projects or close all projects.



By clicking on *New Project*, the *Create New Project* Wizard opens. After filling in all the required information, click on the Finish button to complete the creation of the new project (see topic Create a New Project 45).

Each Project is depicted as a tree node. Below the Project node you can find the *Project Options*, the *Cost Visualization*, which visualizes the cost per BIM element when such a format is used for takeoffs and the *Bill of Quantities*.

By right-clicking on the project name, the same Menu dialog opens; you can now use it for saving the project and close.



Populating the CostOS DB with Resources

3 Populating the CostOS DB with Resources

In this chapter, we will examine several ways of populating the local database, such as:

1. Manually
2. by copying from an Excel worksheet
3. by linking to an External datasource

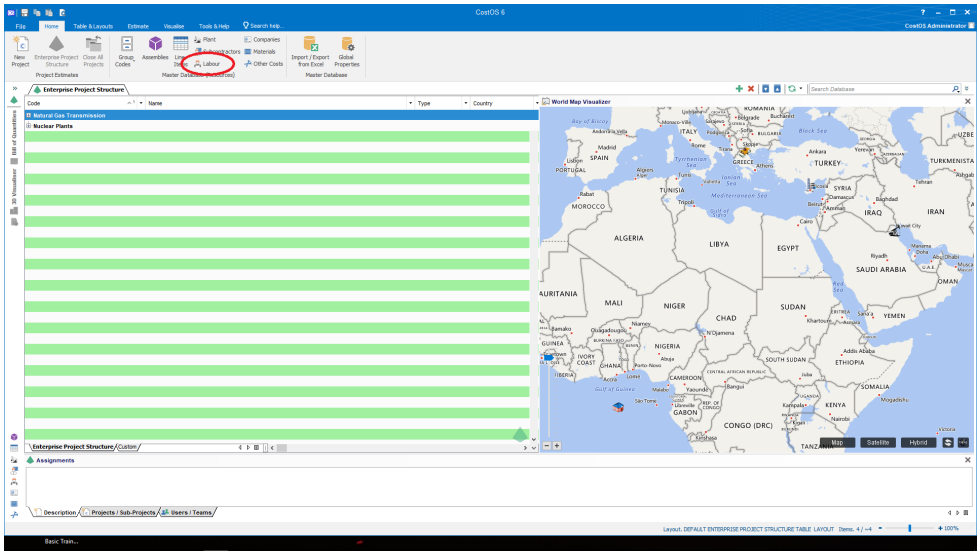
CostOS Estimating uses a high performance embedded relational database. Its database allows the user to store huge amounts of data with interrelations between the entries. The latest technologies of database development were incorporated by Nomitech in order to achieve high performance and efficiency while working with CostOS.

3.1 Entering, modifying and removing resource entries manually

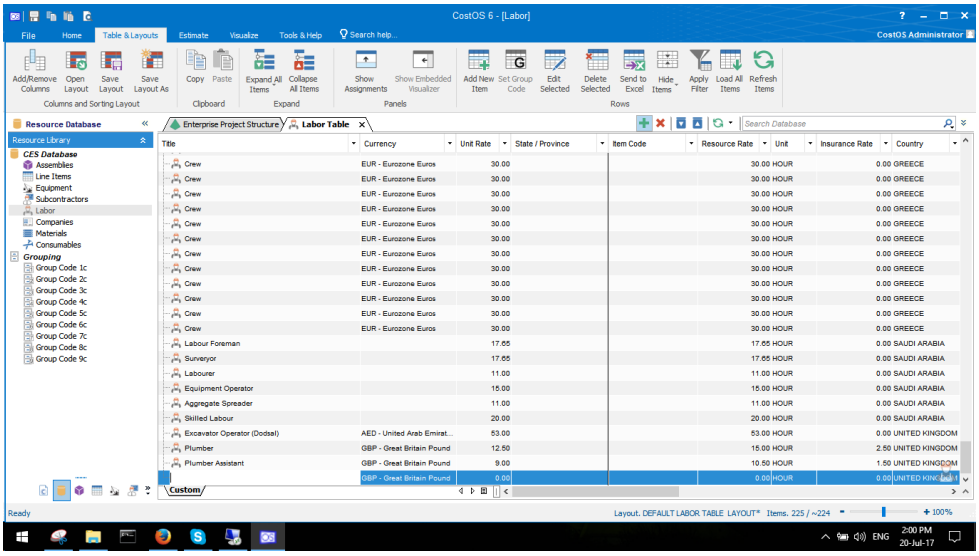
CostOS Estimating has a consistent graphical user interface and functionality for all database entries. Once the user gets to know how to work with labor resources for example, he becomes automatically familiar with the rest of the tables (Material, Equipment, Subcontractor, and Consumable resources).

Selecting the resource type

By clicking on the resource type you want to work with (e.g. Labor) the corresponding resource table opens on the Main Panel:

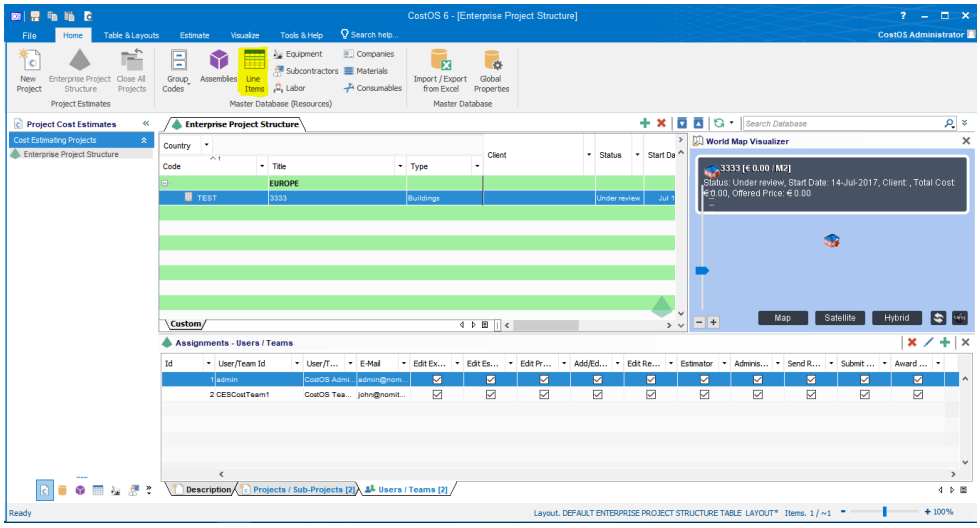


You can now see the *Labor Resources* table open, with all the labor resources entries currently listed in your Database. To manually add your own entry, click on the green plus button, ✚ , and enter the information in the boxes of the new line that has been created. You can also edit attributes of a previously entered line by double-clicking on the relevant cell in the table.

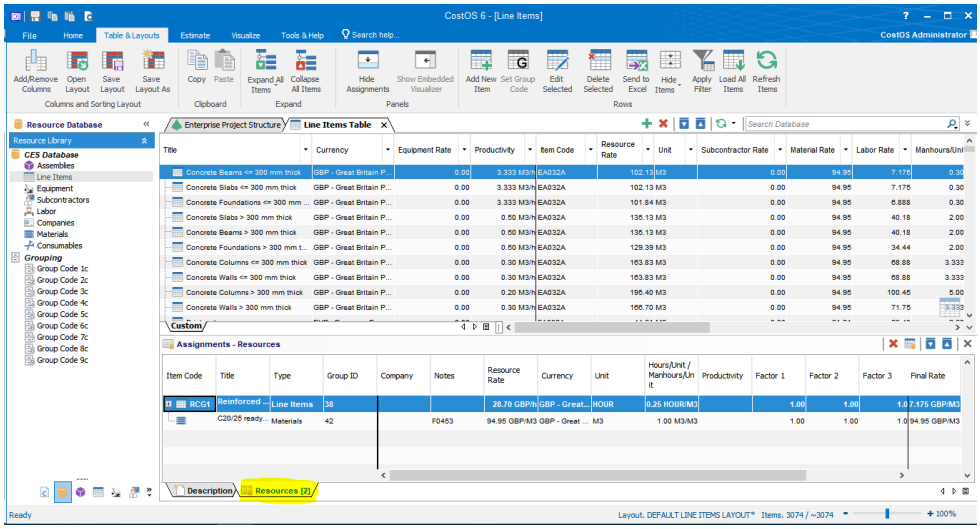


To delete one or multiple entries, after selecting them, you can click on the ✖ button, just above the table.

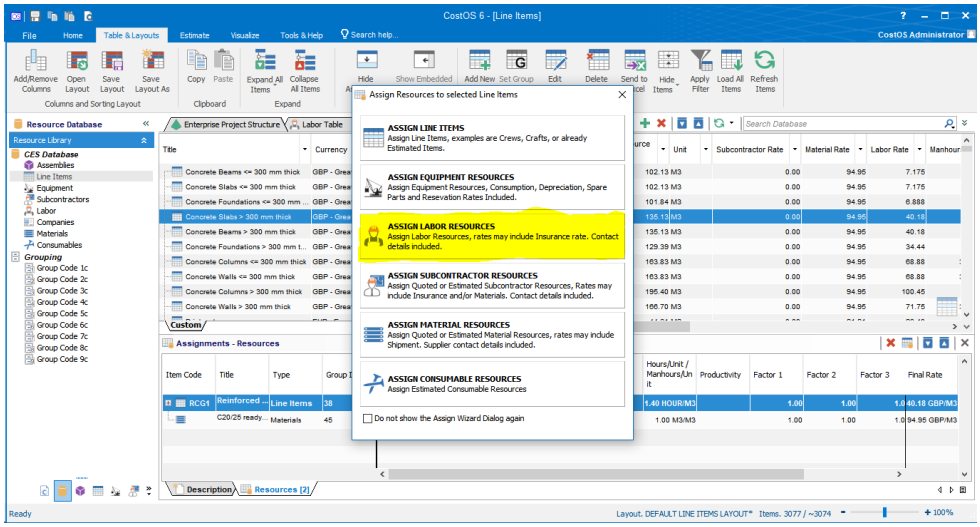
Going back to the Home tab, you can open the Line Items table.



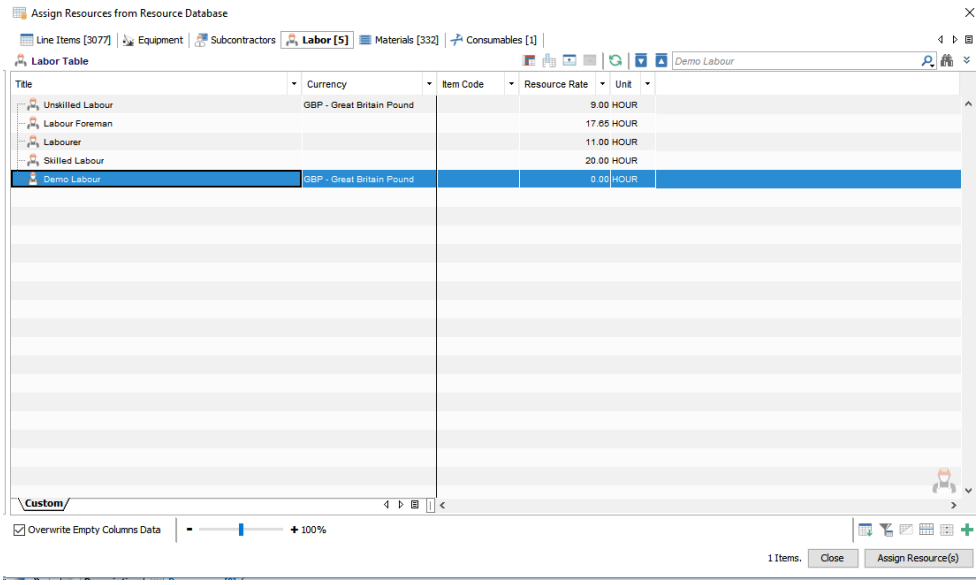
Here, just as with the Labor table, you can add, edit and delete items with the methods described above. The difference here is that below the table you can find the Assigned Resources tab, where the Assigned Resources to each Line Item are listed. In the Assigned Resources tab you can remove any of the existing assignments and/or add new ones.



To insert a new assignment you can double-click inside the Assignment panel, select the type of resource you want to assign. Try to assign your previously created labor resource.



Select it from the table- you may use the search bar on the top right to find it by using the name you gave.



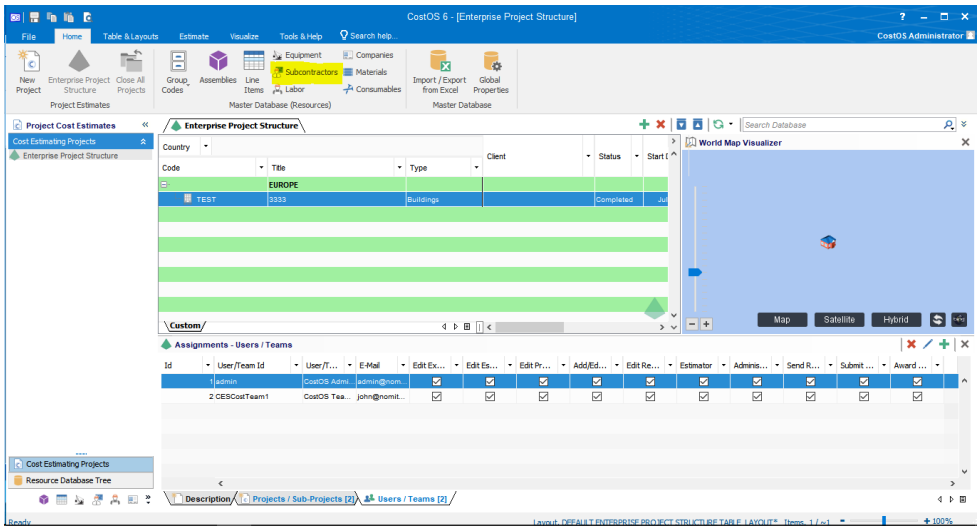
Click on *Assign Resource(s)* and then *Confirm*; the resource has now been assigned to the Line Item.

3.2 Copy/Paste from Spreadsheet

In this topic we will see how to add new entries in a Resource table of the CostOS Estimating database, by copying data from a Spreadsheet and pasting it into the relevant Resource table.

You can map any data column from the ones you copied into the corresponding CostOS Estimating one, or a Custom one of your choice if you cannot find what you need in the default ones. This is very useful to help you update your CostOS database with all your work done in any spreadsheet environment.

To start with, lets open the table we want to revise in CostOS. For this example, we can use the Subcontractors table. To open it, navigate to *Home* tab and click on the *Subcontractors* button of the ribbon bar.



Now, with the table open, we can try to copy some data to paste to. If you have data available from your company, feel free to use those; the process to follow is exactly the same, for any amount of data and any discipline.

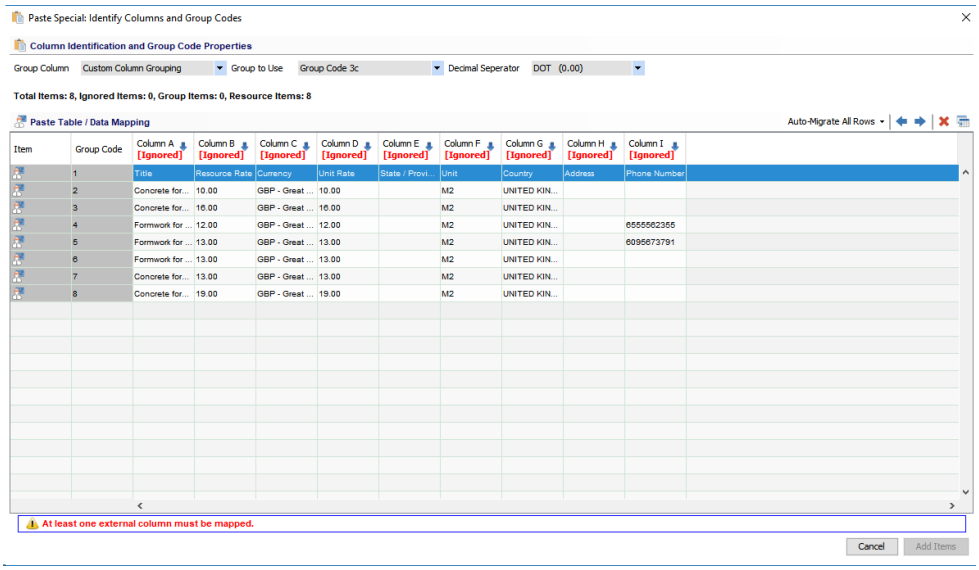
In this example, we are going to insert some subcontractor items with the following information:

- *TITLE*
- *RATE*
- *CURRENCY*
- *UNIT*
- *COUNTRY*

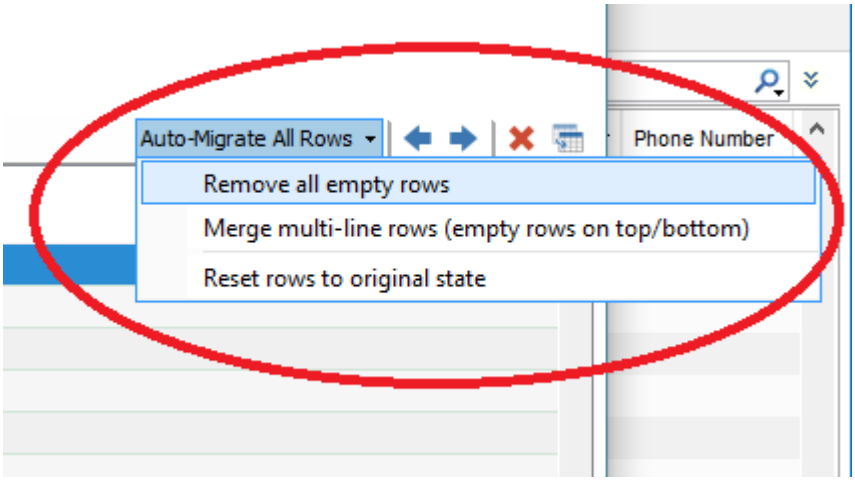
When we open our spreadsheet file, it should look like the table below:

	A	B	C	D	E	G	L	M	N
1	Title	Resource Rate	Currency	Unit Rate	State / Province	Unit	Country	Address	Phone Number
2	Concrete formwork for foundations <= 500 high	10.00	GBP - Great Britain Pound	10.00		M2	UNITED KINGDOM		
3	Concrete formwork for foundations > 500 high	16.00	GBP - Great Britain Pound	16.00		M2	UNITED KINGDOM		
4	Formwork for concrete slabs <= 300 thick	12.00	GBP - Great Britain Pound	12.00		M2	UNITED KINGDOM		6555562355
5	Formwork for concrete slabs > 300 and <= 450 thick	13.00	GBP - Great Britain Pound	13.00		M2	UNITED KINGDOM		6095673791
6	Formwork for concrete slabs > 450 thick	13.00	GBP - Great Britain Pound	13.00		M2	UNITED KINGDOM		
7	Concrete formwork for attached beams	13.00	GBP - Great Britain Pound	13.00		M2	UNITED KINGDOM		
8	Concrete formwork for attached columns	19.00	GBP - Great Britain Pound	19.00		M2	UNITED KINGDOM		

So, we copy the content we want to transfer, go back to the Subcontractors table in CostOS, and paste it. The following window should appear right after:



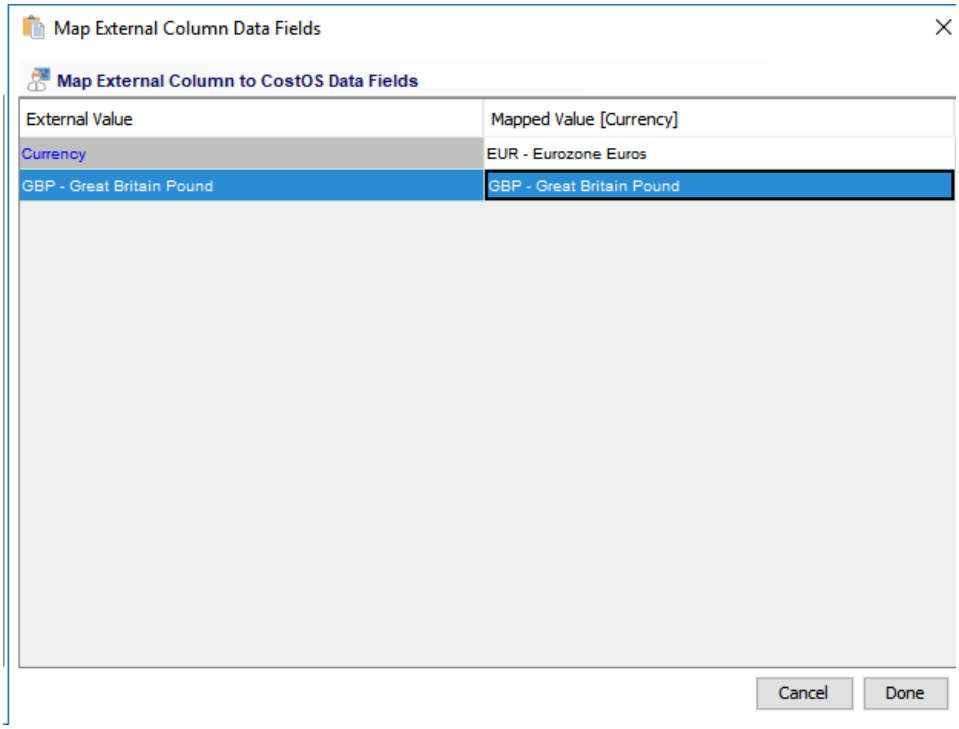
This is the *Mapping* window. It allows you to characterize what sort of information each column keeps. If you have pasted rows that you do not need to keep, you can select and remove them from the list by clicking the red ✖ button on the top right. You can also remove all empty rows, in case there are any, by clicking on the *Auto-Migrate All Rows* button on the upper right corner, then *Remove all empty rows*:



Main scope of this window, among others, is to allow the user map the columns of the data pasted with those of CostOS. Yet, no imported column has been mapped; to start the process, click on the header of each column and select a suitable CostOS column to map it to (at least one column has to be mapped).

In this case, let us map the table column *Title* with CostOS's equivalent, which is again named *Title*. We may ignore *Resource rate* (as it is

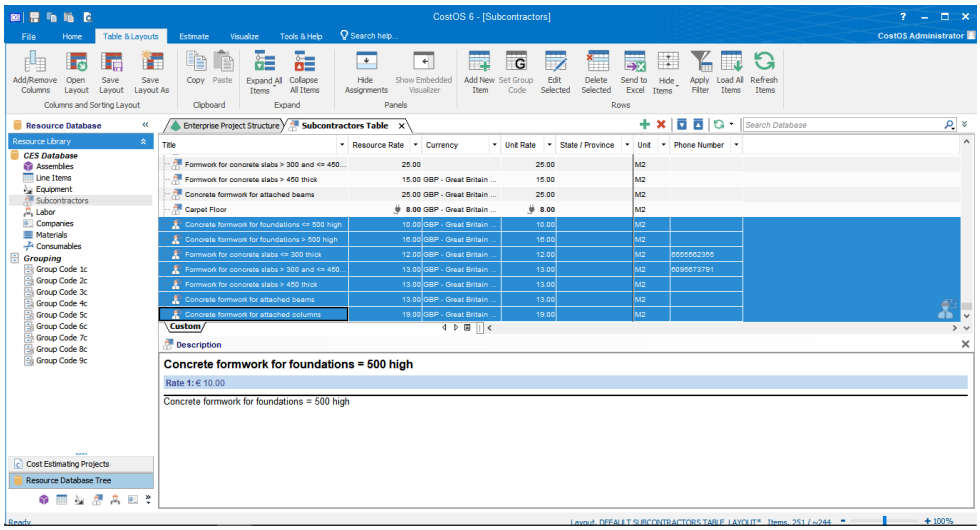
automatically calculated based on unit rate) and proceed with *Currency*. Your will see a similar window to the following pop up:



You may ignore the top row, as it is a result of the top row of our mapping table that we have used to help us with the mapping.

Here you may see a list of all the currencies used in your pasted data. Those that are recognized by CostOS are automatically mapped with their CostOS equivalent, the rest are assigned with the default value. You may reconfigure any of these by double clicking on any of the right column cells and pick one of the available from the list that appears. This process will be repeated for any of the columns that have restrictions in the values they can get (e.g UNIT).

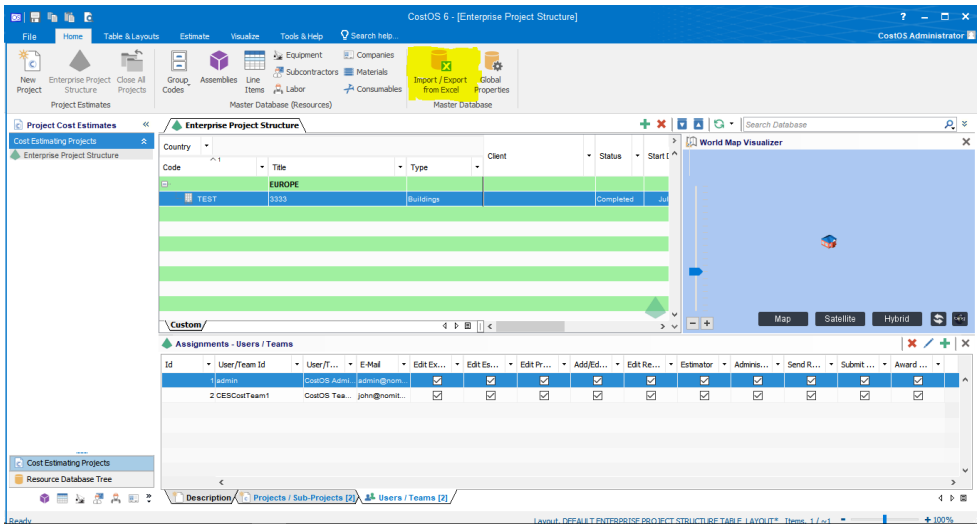
When mapping is complete, you can proceed by clicking on *Add Items*. Your newly added Resources will appear highlighted in the open Resources table.



All information has been inserted successfully. *Resource Rate* is equal to the summation of *Unit Rate* and *Insurance Rate* (not showing here) which, by default, is equal to 0.

3.3 Uses of 'Import/Export from Excel'

In this chapter we can see how we can Import/Export to and from our Local Resource Database, as well as Update it and Append elements to it, all by using a spreadsheet file, editable externally (e.g. from Excel). All these functions are accessible from inside CostOS. To access them, navigate to *Home tab* and click on the *Import/Export from Excel* button.



This will open up a window where you can choose one of the following:

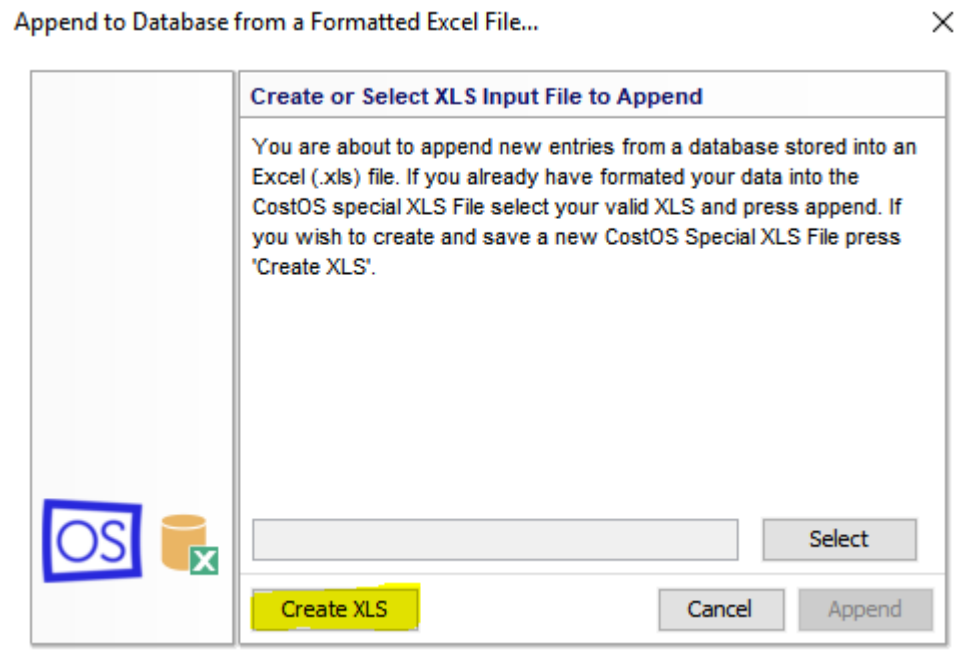
- ***Append:*** Choose this if you want to insert new entries into the database by manually editing the cells in Excel.

- ***Update:*** This option can be used for either adding new entries or editing existing ones, while having a view of all the database entries in an Excel file.

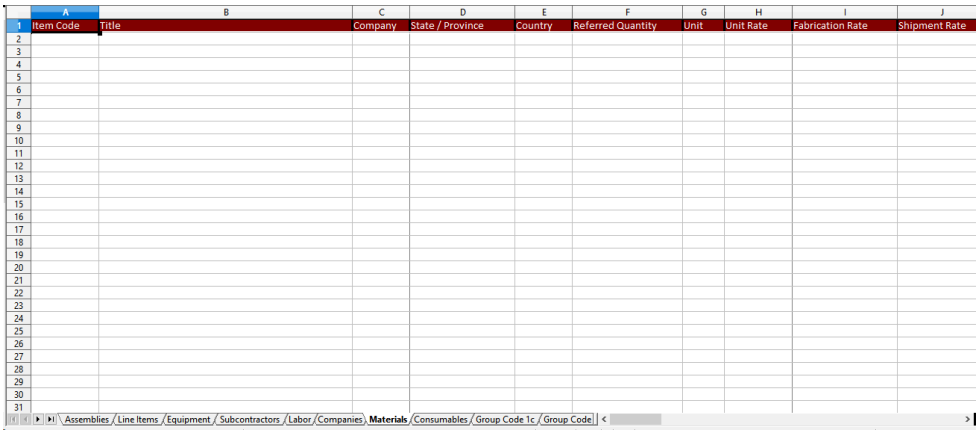
- ***Export:*** *Export* option allows you to keep a record of your database entries in a separate file outside CostOS. You may later use this file for the above functions as well.

For the purposes of this Guide, we are going to demonstrate the *Append* functionality. The other two follow the same logic to serve their purpose. Note that all three functions will create and/or use a .XLS file with the proper metadata (tabs, columns) of the corresponding database tables of your Resource Database.

To Append new entries, on the new window that appears, click Create XLS to create the file mentioned in the paragraph above:



You then will be asked to name and save it. As soon as you have done that, the file will open for you to edit, and a table similar to the one below will appear:

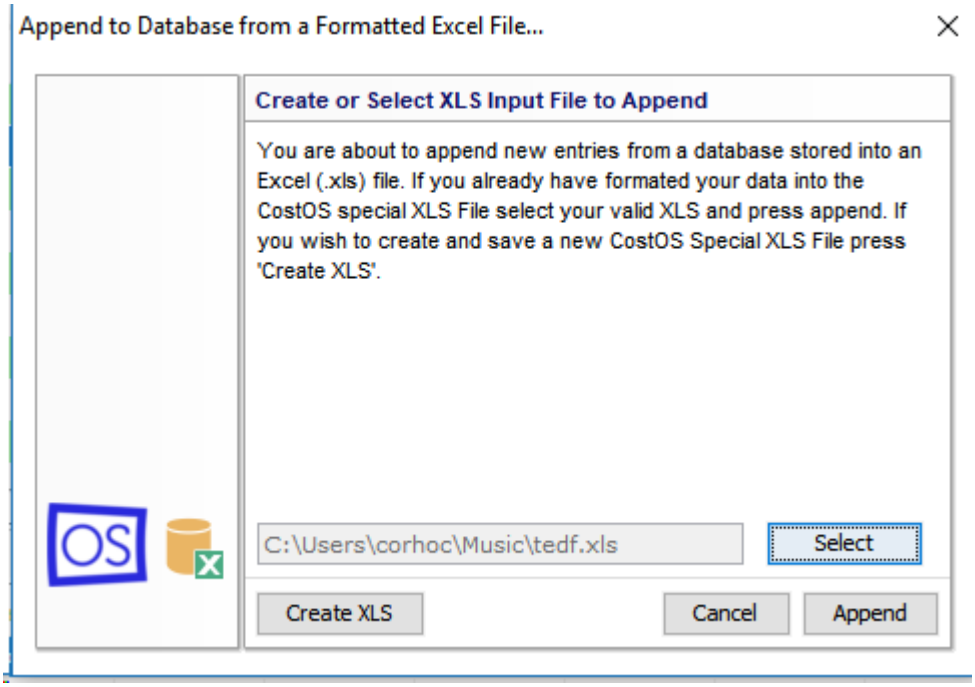


TIP: As mentioned above, you already have all the metadata in place, so you just need to insert the entries. What you should be careful about is the input to the following fields: *Currency*, *Country* and *Unit*, as those columns accept only specific values as input. Not following this will result in getting the default global value in this field(s). Please advise CostOS Tutorial or contact Nomitech for further information.

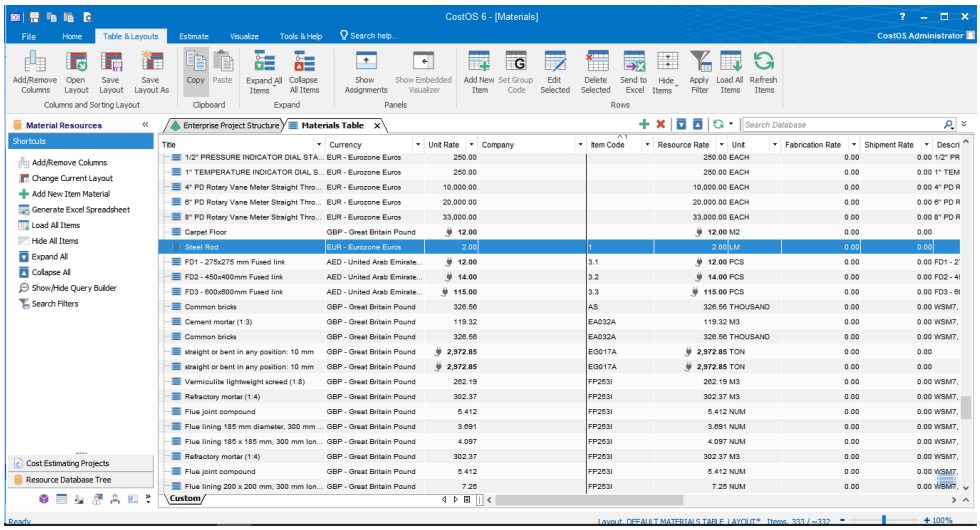
Let's try with an entry on the Materials tab. Assing *1* as Item Code, *Steel Rod* as Title of the resource, *LM* for Unit and *2* for Unit Rate.

Item Code	Title	Company	State / Province	Country	Referred Quantity	Unit	Unit Rate
1	Steel Rod					LM	2

To proceed, save the document and go back to CostOS Estimating. The document you have created is loaded automatically into the *Select* textbox, so you only have to click *Append*.



The entry (or entries) that you previously added to the Excel file is added and highlighted.



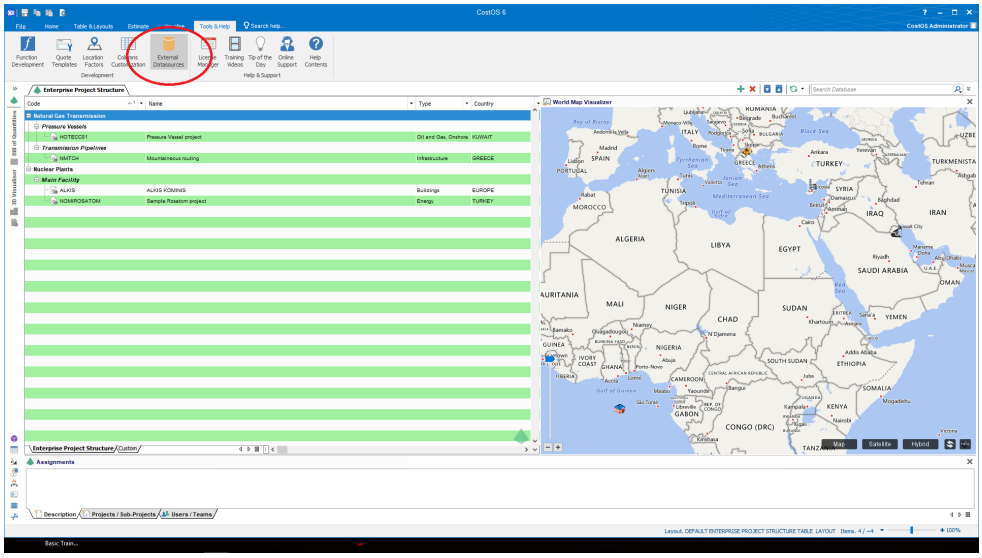
You may notice that some values like currency are filled with attributes depending on your settings.

The logic behind the *Update* and *Export* functionalities is more or less the same. The main difference is that, in *Export*, instead of generating an empty .xls file, the database tables are exported into a single (separate tabs for each Resource type) or separate .xls files (each per Resource type).

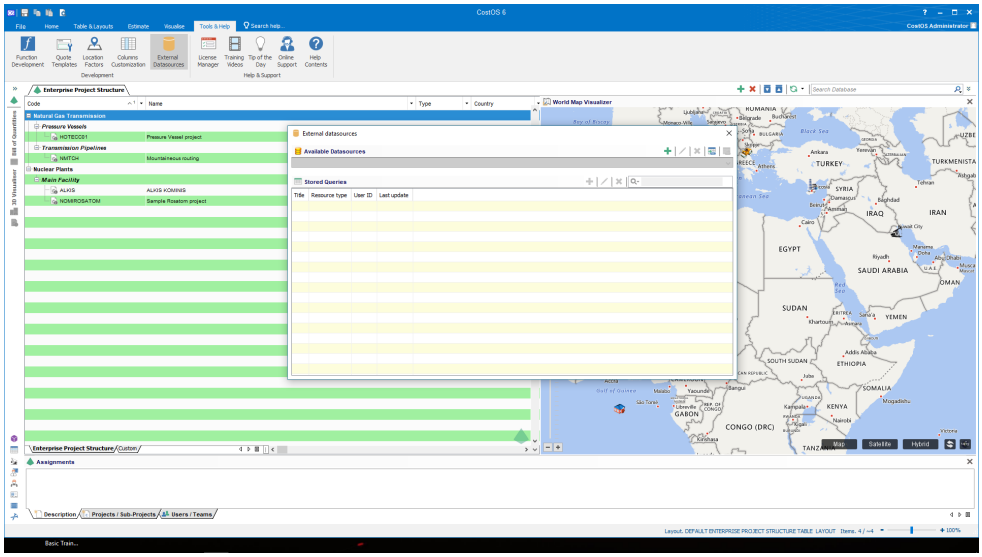
3.4 Importing data from External Datasources

CostOS Estimating can easily link with other, external databases and thus facilitate data transfer from/towards them.

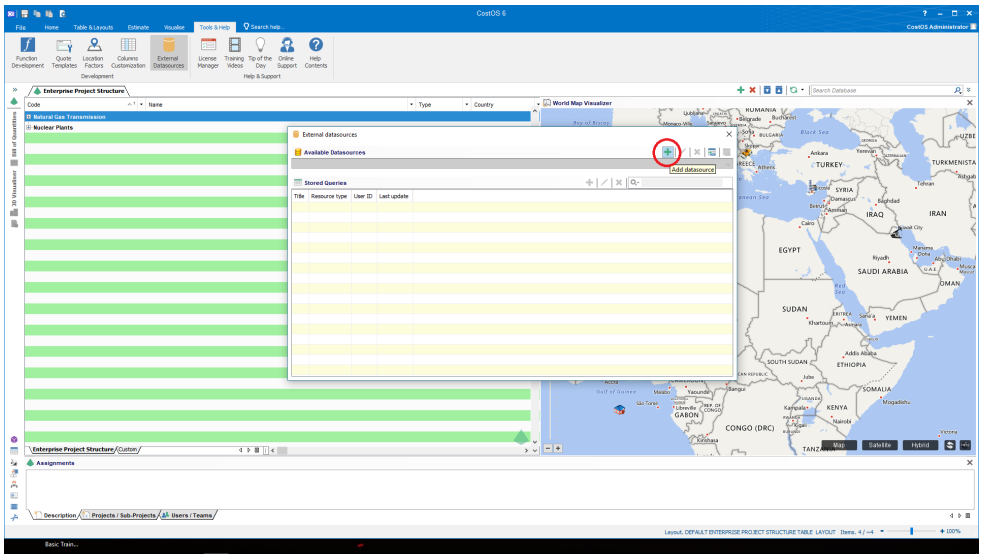
Under the *Tools&Help* tab of the software, the user can find the *External Datasources* button.



By clicking on this button, a new window pops up, allowing you to configure the connection with this, external database.



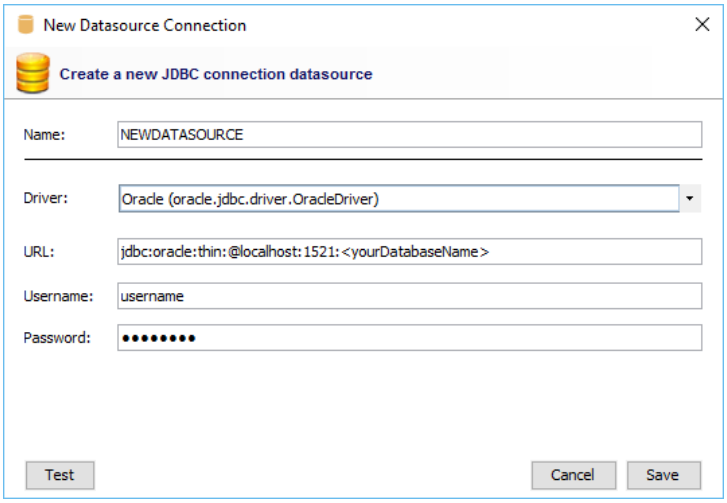
To initialize the configuration of a new connection, click on the ✚ button.



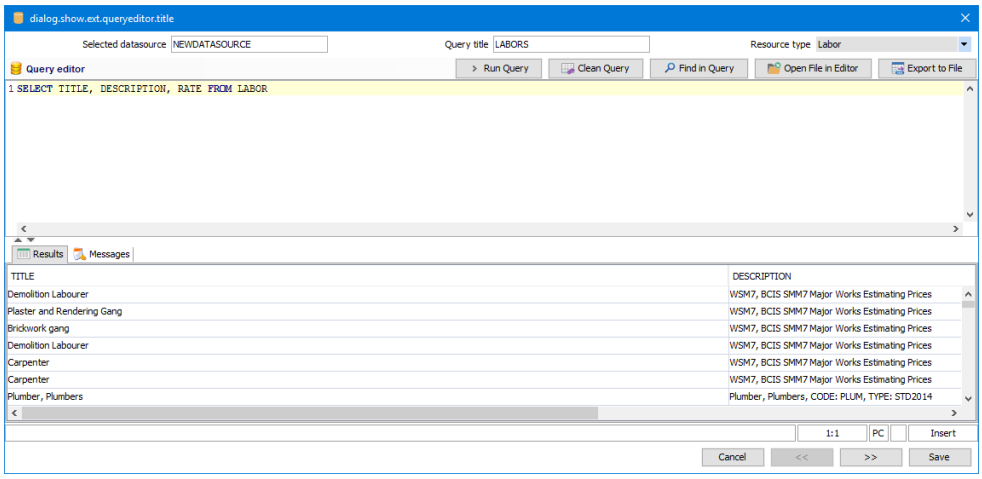
Supported external datasources are of type:

i. MariaDB
ii. PostgreSQL
iii. Oracle
iv. MS SQL

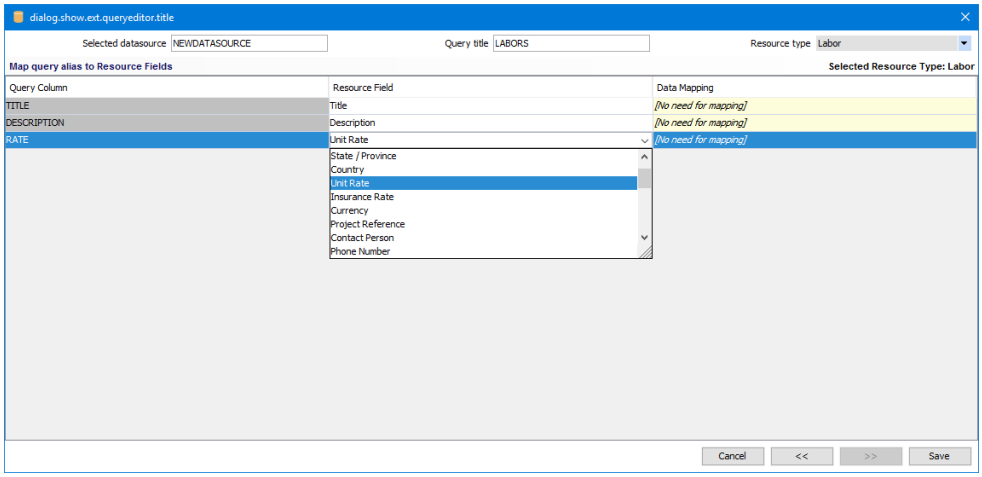
After having selected the driver, which is the main configuration selection since it specifies the format of the database we are trying to access, other details, such as *Name* and credentials (*Username* and *Password*) remain to be defined.



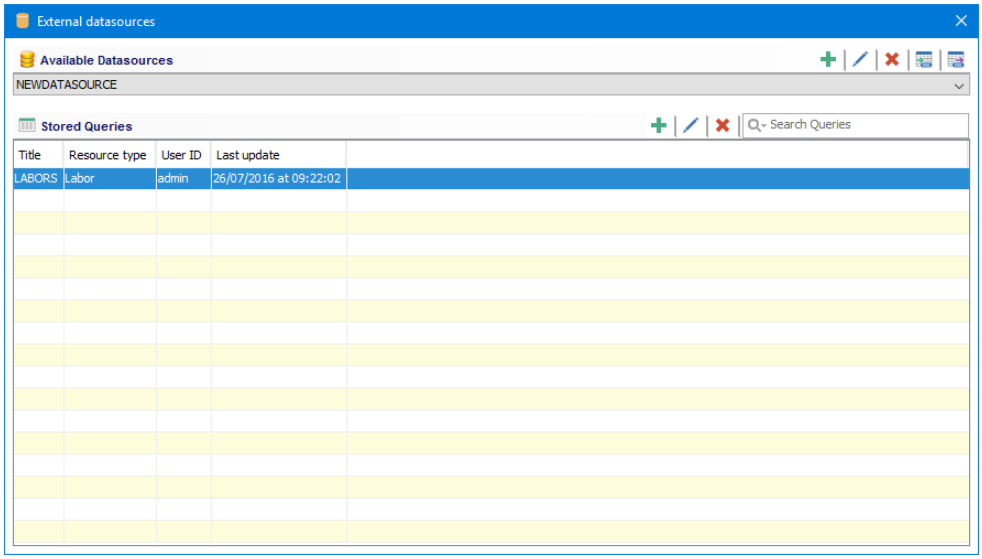
Next step; use of the Query Editor to perform our queries on the database that we are connected to:



We then map the query alias from our query to the selected resource field that we have in CostOS:



Last step of the connection procedure is to save the query:



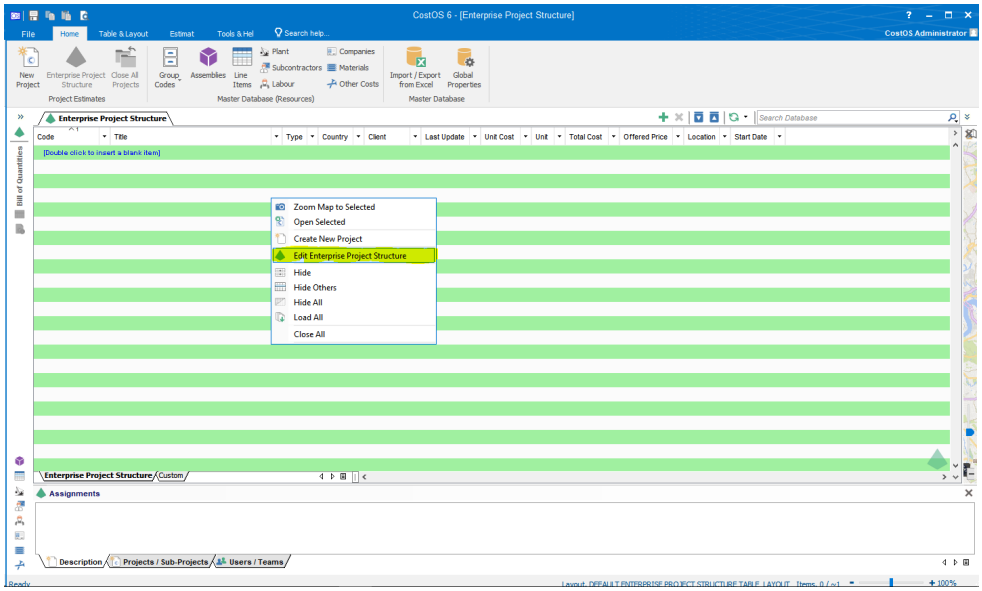
Creating/Populating projects with BOQ items

4 Creating/Populating projects with BOQ items

4.1 Managing Enterprise Project Structure (EPS)

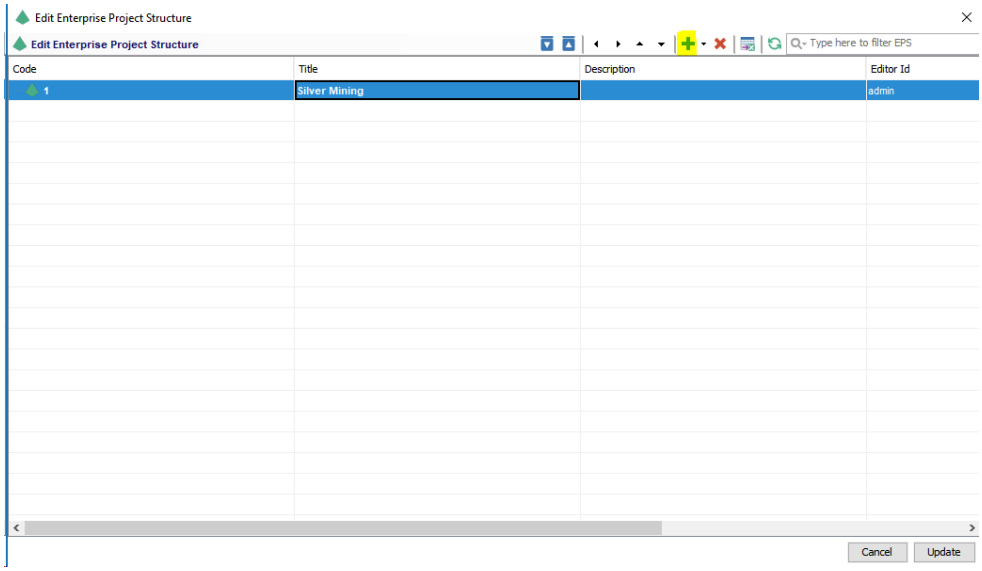
Before getting into creating and managing the projects themselves, it is necessary to create the structure under which the projects will be sorted, the *Enterprise Project Structure* (EPS). This Structure helps the users separate projects into categories based on their type and/or other properties. Let's see how to manage this structure.

To access the *Edit EPS* functionality, at the EPS screen of the Home tab (Starting screen), right click on the empty rows of the table and select *Edit Enterprise Project Structure*.



In the new window that appeared, click on the green plus button, , at the top right corner to insert a new entry. Double-click on the *Code* field and change it to *1*.

Then double-click on the *Title* field and name the category: *Silver Mining*.



You now have a new EPS entry. You may also do other actions using the functionalities of this table, such as:

- **Delete an entry**: You may delete individual entries by selecting them and clicking on the red 'X' button at the top right of the table.

or

- **Add an entry as a child of an existing one**: Select the 'parent' entry, click on the downwards-facing arrow, ▼, on the right of the green *plus* button, ✚, and select *Insert new child below*.

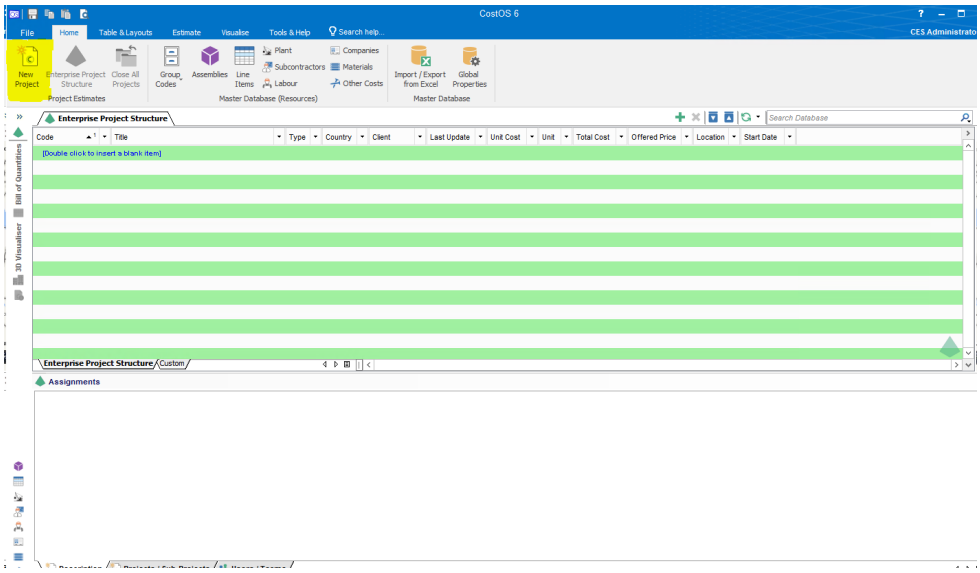
Moreover, you can change the level of an EPS category, in its existing tree, by using the *Shift* arrows (◀ ▶ ▲ ▼), on the left side of the ✚ button . A complete EPS of your own can be imported as well, by using the *Import EPS from Excel File* functionality, you can read more in the CostOS Estimating User Manual and Tutorial.

Your EPS is now ready, you can proceed with creating your project.

4.2 Creating a new Project

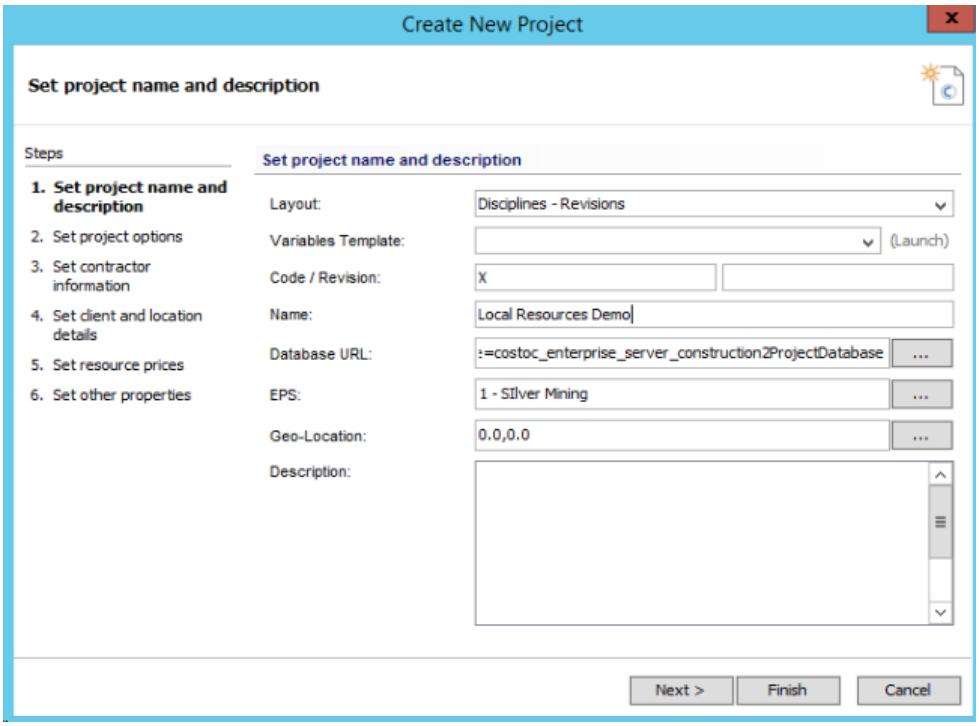
In this chapter we will demonstrate how to create a new CostOS project that we will later populate with items.

At the Home tab, click on the top left of your page on the 'new project' ribbon.

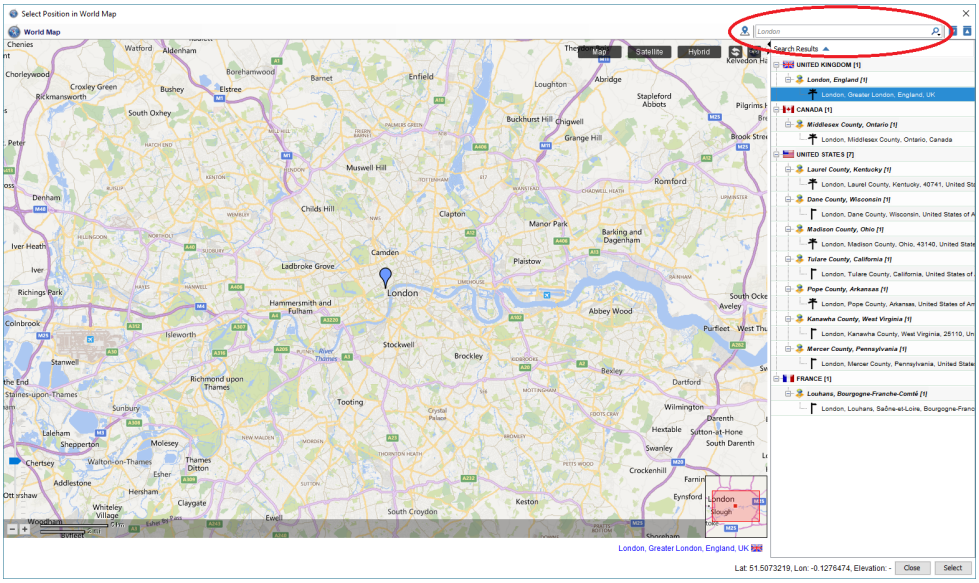


In the following screen, for the purposes of this chapter, we will just fill in the necessary fields to create a project. You can use the following:

- **Code**: X1
- **Project Name**: Local Desources Demo
- To set the EPS category for your project, click on the ... button, next to the *EPS* field. Select the entry you created before in this chapter and click on *Select*. You can now see that the *EPS* field has the code and the name of the selected EPS category, *1 - Silver Mining*.

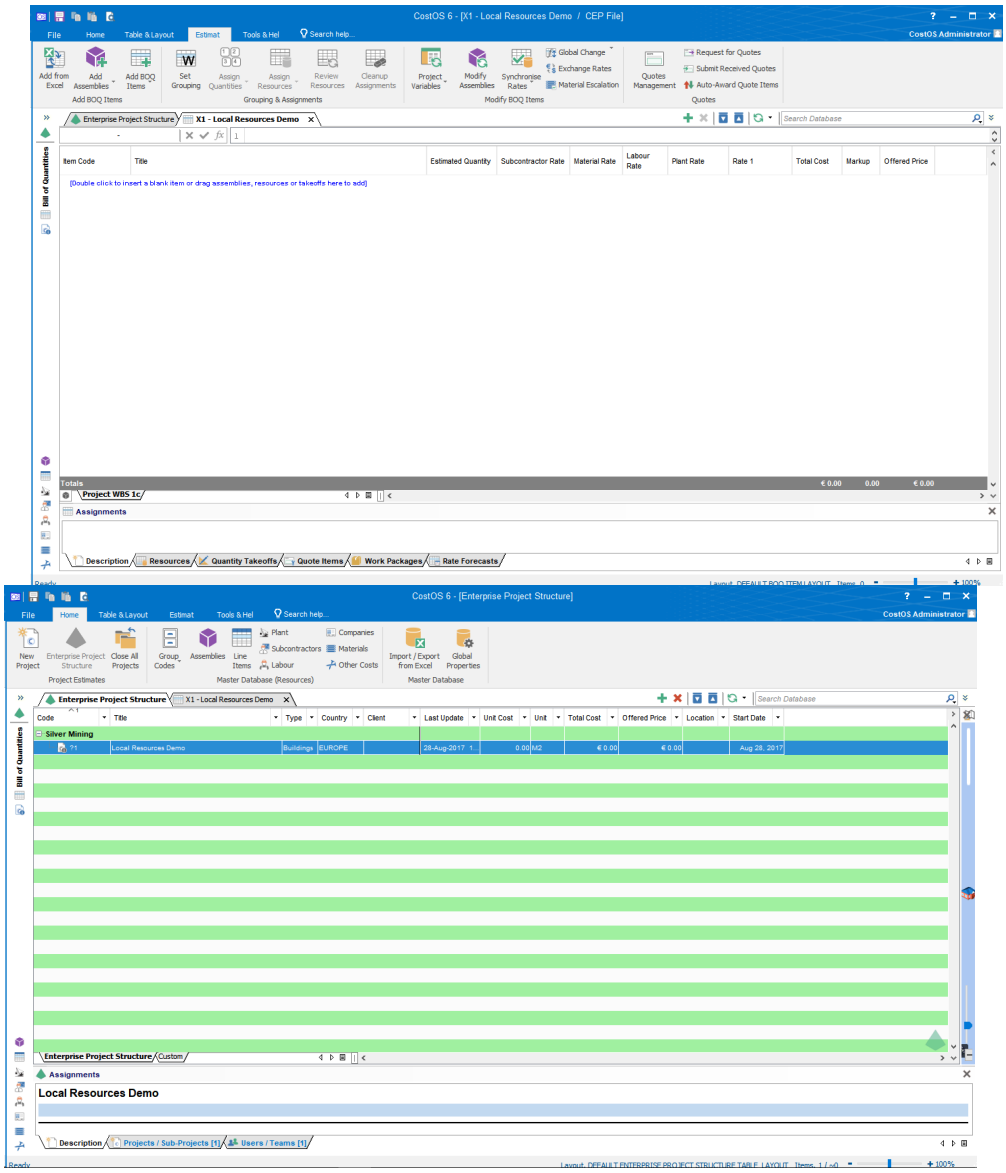


- To define the geographic location of your project, click on the ... button next to the *Geo-Location* field and use the map to pinpoint the exact place. The search field on the upper right corner of the window facilitates search for a particular place (city, street, etc.). In this case, we will leave it as is (0.0, 0.0).



By clicking on the *Finish* button, you can complete the creation of your new project.

The project's -empty still- *Bill of Quantities* table (or *Spreadsheet*) will load automatically and, in the table of the *Enterprise Project Structure* tab of home screen, you should be able to see your project as a new entry.

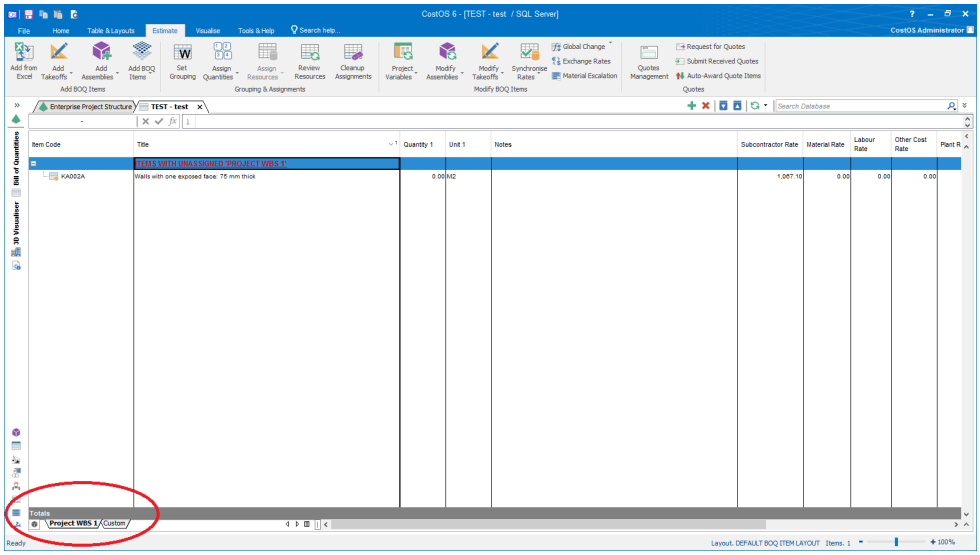


4.3 Managing Work Breakdown Structure (WBS)

After having created a project, a Work Breakdown Structure (WBS) must be defined, upon which all items of the project will be categorized. This will allow the team of estimators working on the same project to break down the whole estimate into smaller, manageable sections; "*a hierarchical decomposition of the total scope of work to be carried out by the project team to*

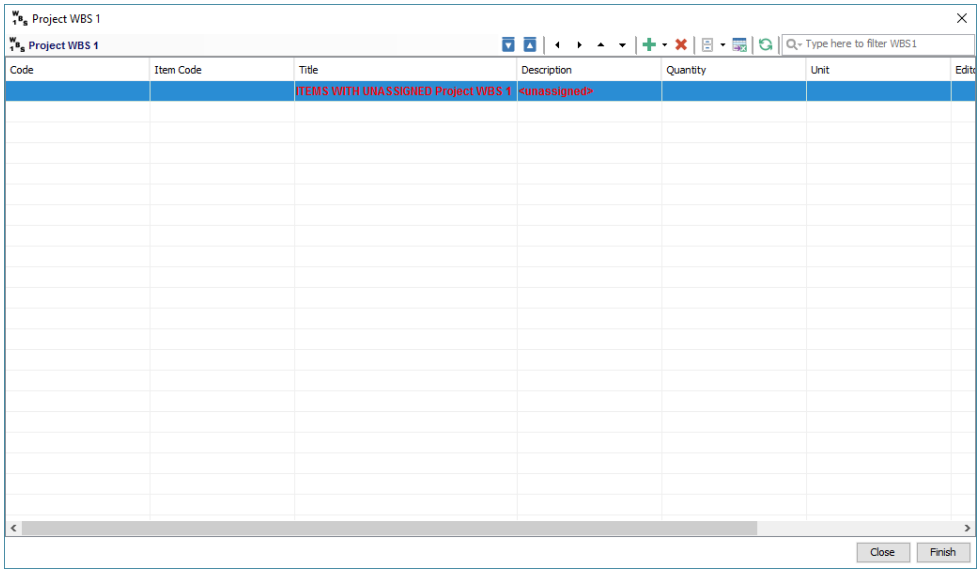
accomplish the project objectives and create the required deliverables" (PMBOK 5).

To manage a project's WBS in CostOS Estimating, which is unique for every project, first make sure that you have the *Project WBS 1* tab selected at the bottom of the estimate.



The Project WBS 1 tab is selected.

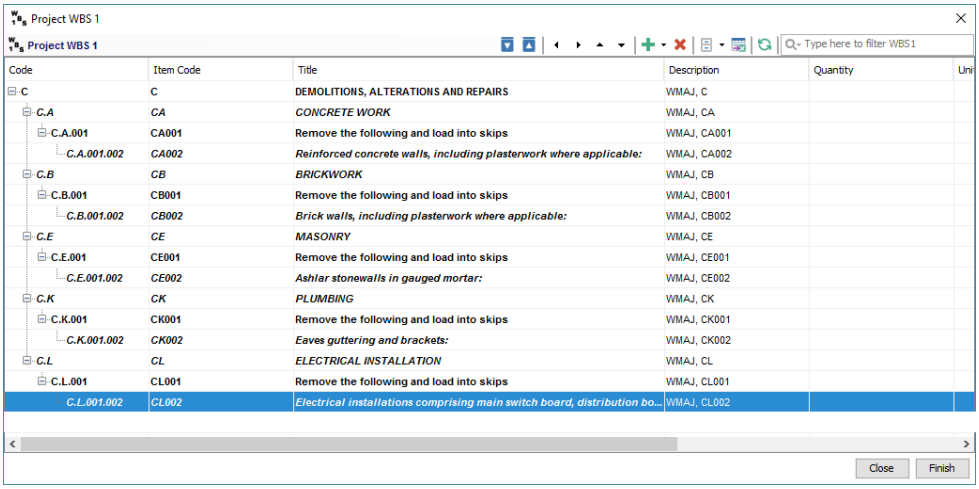
Then navigate to the *Estimate* tab of the Ribbon bar, *Set Grouping*. This will open up the dialog where you can, either manually or with the help with an Excel file, define the WBS structure.



The Set Grouping window.

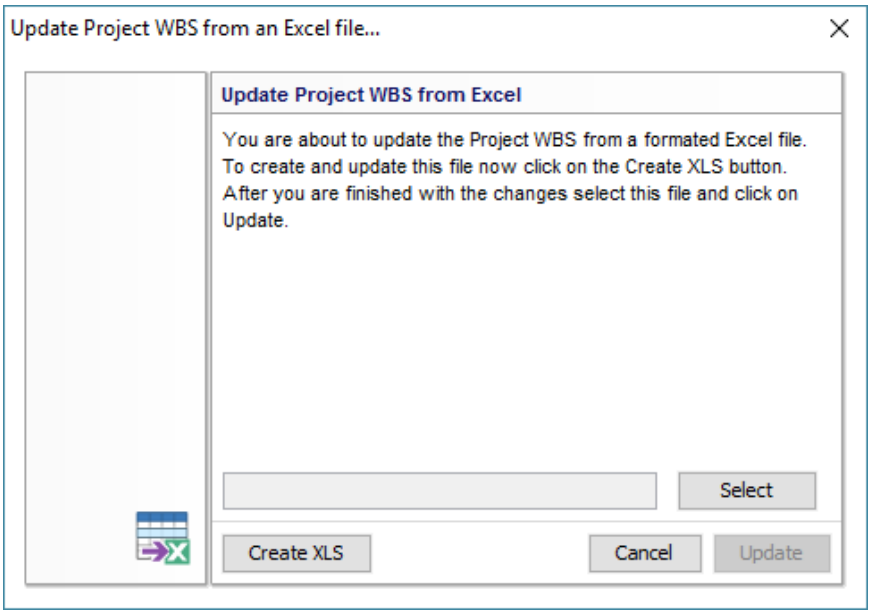
The WBS hierarchical structure can be defined in exactly the same way a Project Enterprise Stucture can; click on the ✚ button to add a main WBS category, the ✖ button to remove any categories not needed. The ▾ button on the right side of the ✚ button will allow you to *Insert New Child Below*, a sub-category to the selected category on the EPS window. To refresh your memory on further functionalities of this type of windows, see the Manage Enterprise Project Structure 44 topic.

A fully populated WBS structure should resemble to the below table:

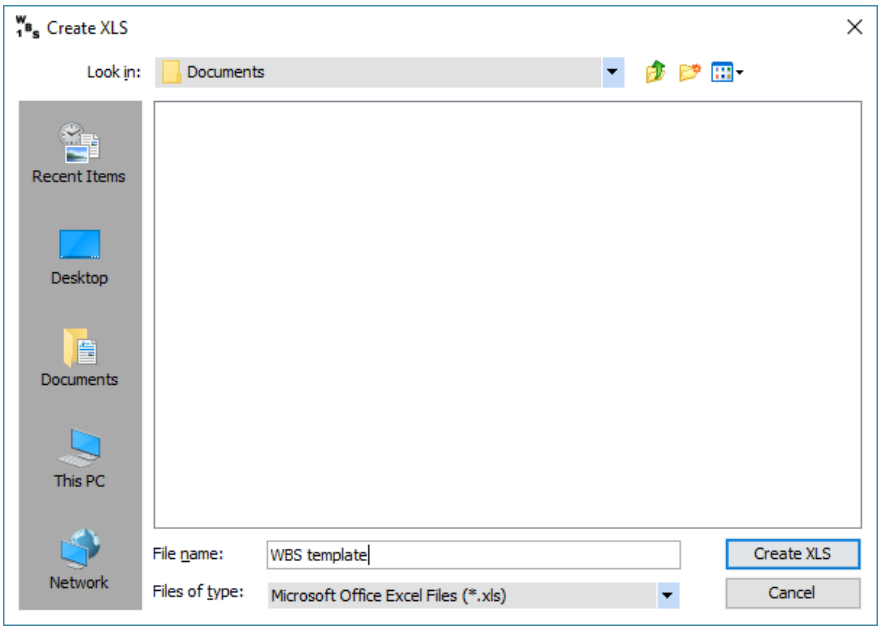


A populated Project WBS 1 table.

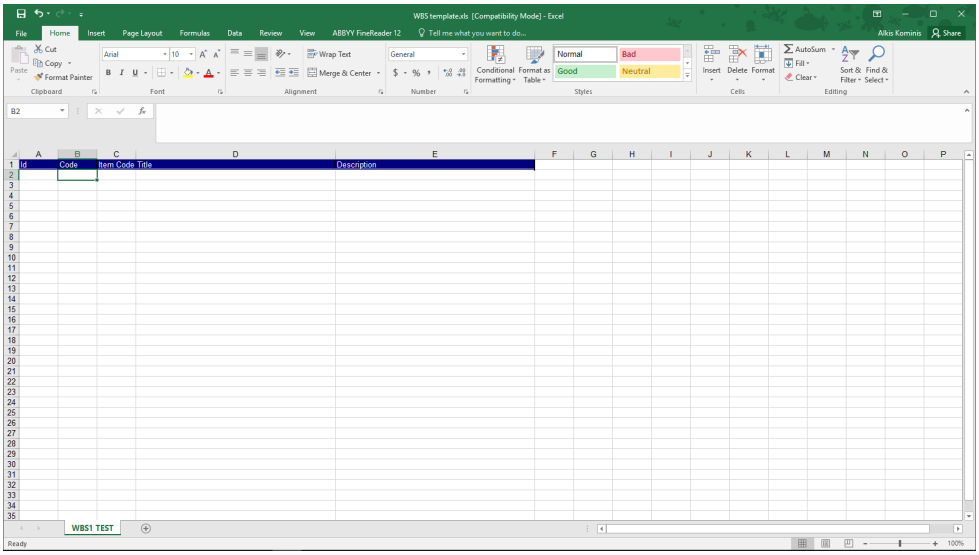
As mentioned above, except for the manual way of defining the hierarchical structure of a WBS, CostOS gives you the ability to do that by using a template as well. Having the *Set Grouping* window open, click on the button. This opens the dialog below:



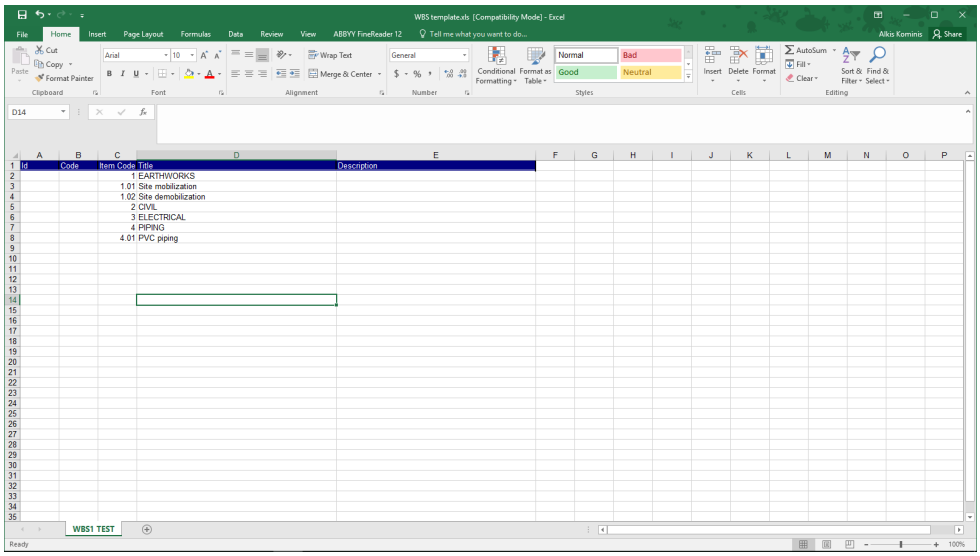
By clicking on the *Create XLS* button, an .XLS file is generated, with the help of which you will be able to define the WBS. Browse your files and save it:



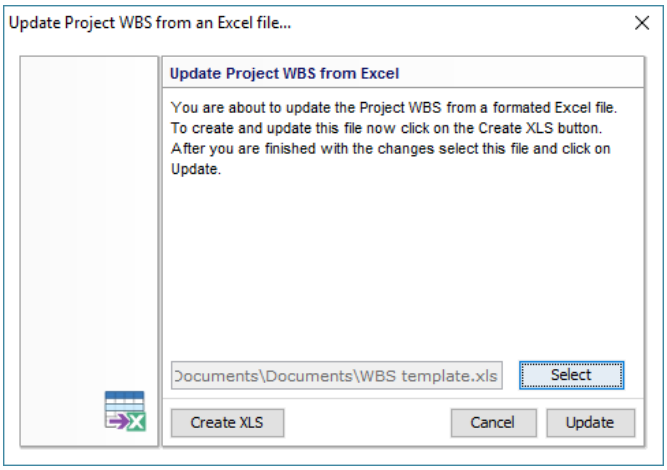
The Excel file opens up:

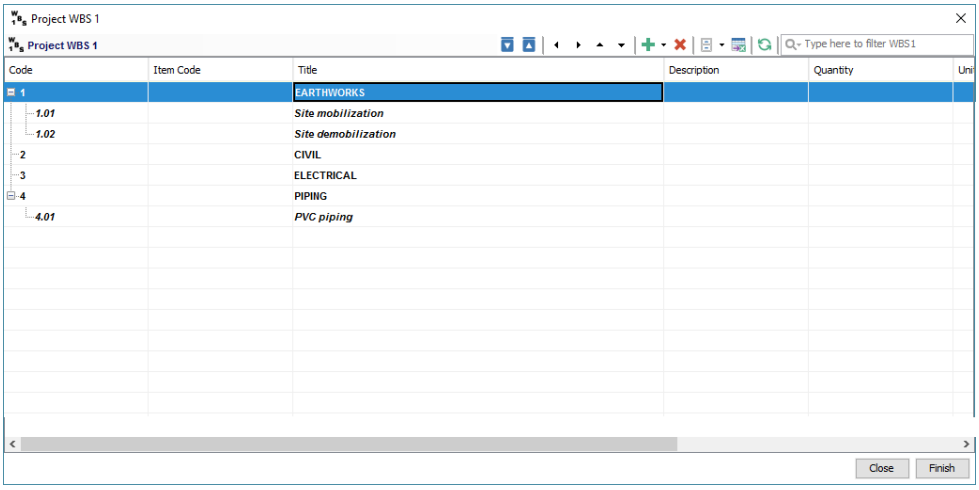


Fill in the *Code* and *Title* columns, as well as the *Item Code* and *Description* if required. The *ID* and *Code* columns are automatically filled in by the software:



Once you are done defining the structure save the file and return to <&BRAND&>, the software has automatically selected the file from which you are about to bring the WBS, click on *Update*:





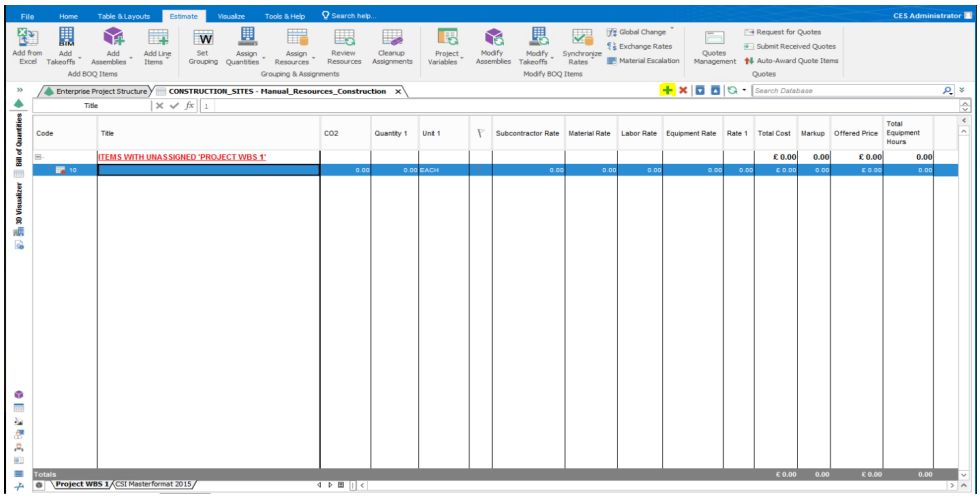
The incoming WBS from Excel has been successfully imported.

You can now start adding BOQ items to your estimate, by using the above structure as your WBS.

4.4 Populating BOQ table manually

This topic aims at demonstrating the simplest way to manage the BOQ table Items, **manually**. Even though this is perhaps the least efficient way to populate your Project from scratch, it is necessary to get to know its features as there will always be something specific about your Project that you will not be able to find using any sources. To get to know this fundamental functionality, please create a new CostOS project.

The simplest way to add new blank items in your BOQ table is by clicking on the green cross on the top right or double click anywhere inside the blank space of the table. A new Item will be generated.



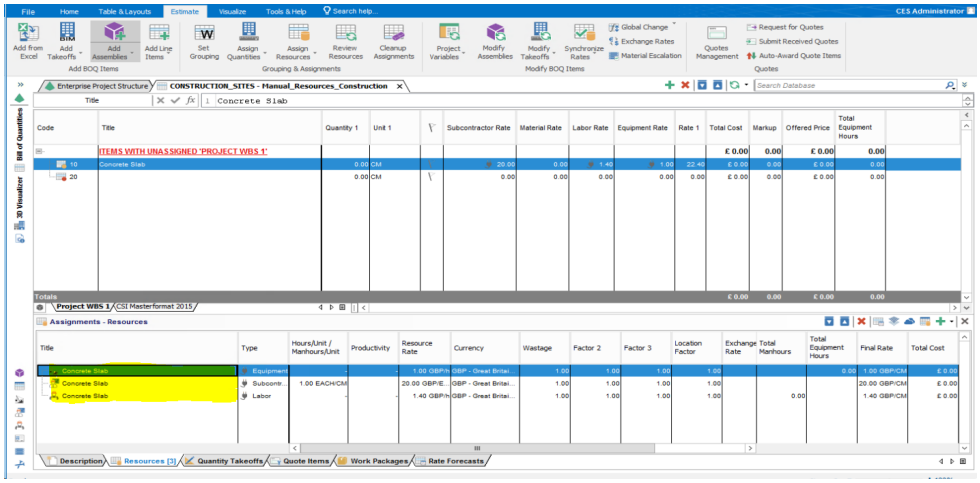
The new item will have no title, 0 Quantity and no rates, as you are expected to either fill this information yourself or use other resources to generate a cost.

After the new entry appears, you can double click on any of the fields to customize it. You will notice that some fields, such as *Total Cost* and *Rate 1* cannot be changed, since they are calculated by the software, based on other values.

You may delete one or multiple rows by selecting them and clicking on the red ✖ button on the right.

Apart from putting Rates manually for your item, you may generate its rate assigning resources from your Local Resource Database.

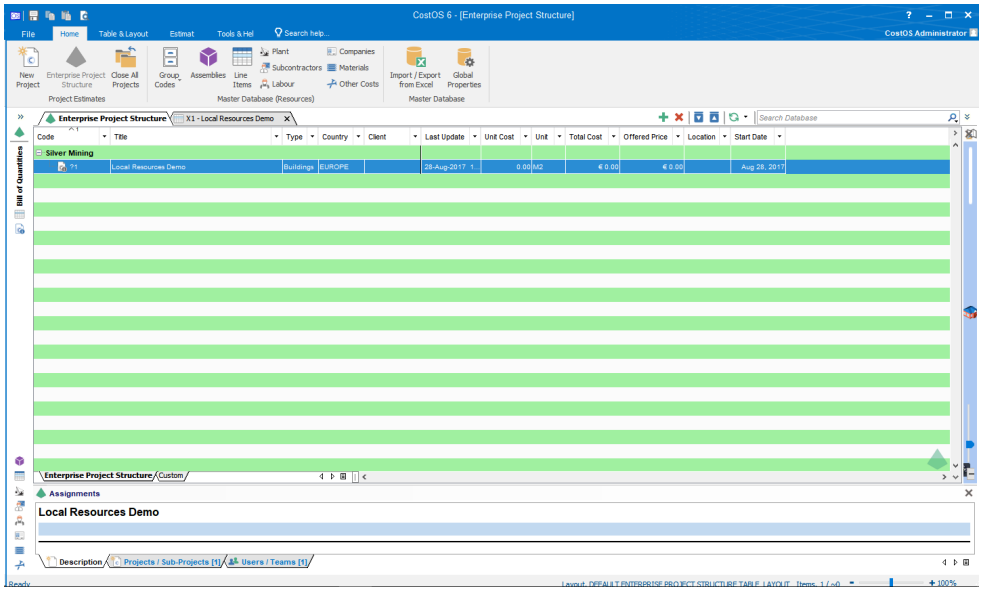
You can do that if you have the 'Assignments' panel in the bottom open and while on the Resources tab, double click anywhere on the blank space of the panel. You will then be prompted to select the type of resource you want to assign.



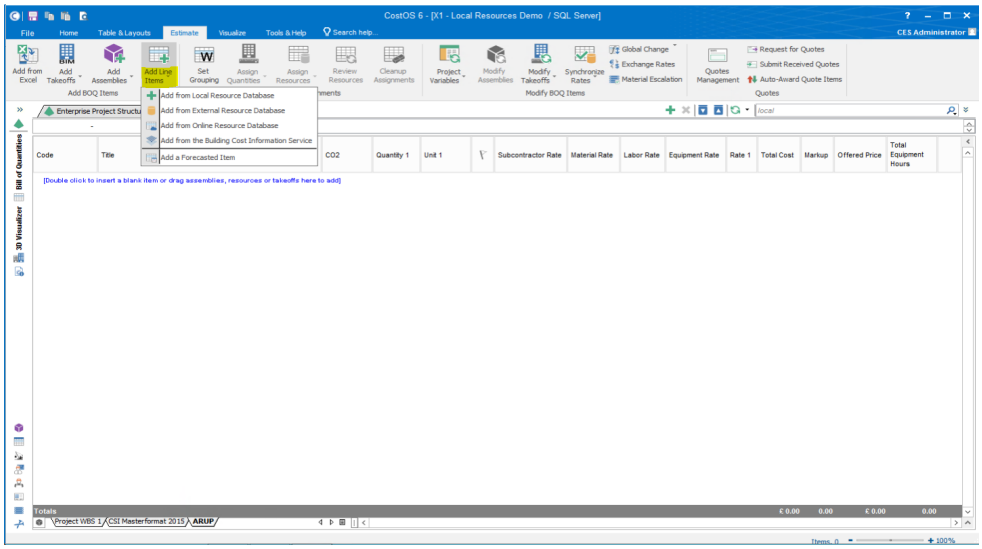
If you open the Assignment panel below and switch to tab 'Resources', you may see that for every value you put on rates a new 'Resource', named after the BOQ item, is automatically assigned to it.

4.5 Adding BOQ items using CostOS DB resources

In this chapter we will demonstrate how to populate a project's *Bill of Quantities* with items from the CostOS **Local Database**. We can use the *Local Resources Demo* project that we created in the previous topic. If not already open, you can open it from the EPS tab; simply double-click on it and it will open in a new tab.



The project's -empty still- Bill of Quantities table will open and you can see that the *Estimate* tab is selected. To access the Local Resource Database tables, click on the lower part of the *Add Line Items* button and from the list that appears, select *Add from Local Resource Database*.



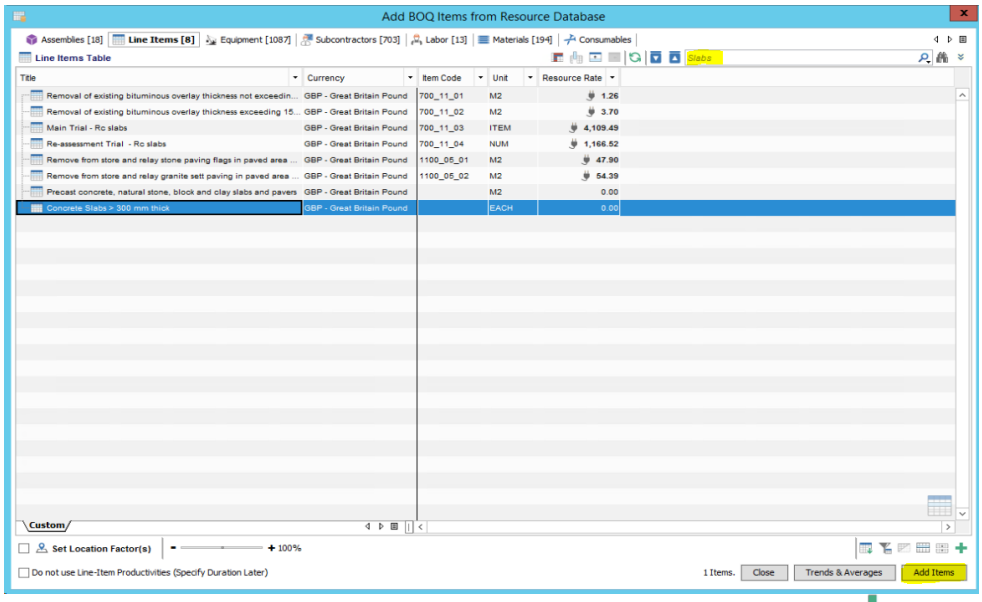
At the upper part of the window that appears, you can see the tabs from which you can access the 6 tables that the database resources are stored depending on their type:

1. *Labors,*
2. *Subcontractors,*
3. *Equipment,*
4. *Consumables,*
5. *Materials,*
6. *Line Items,*

plus *Assemblies*.

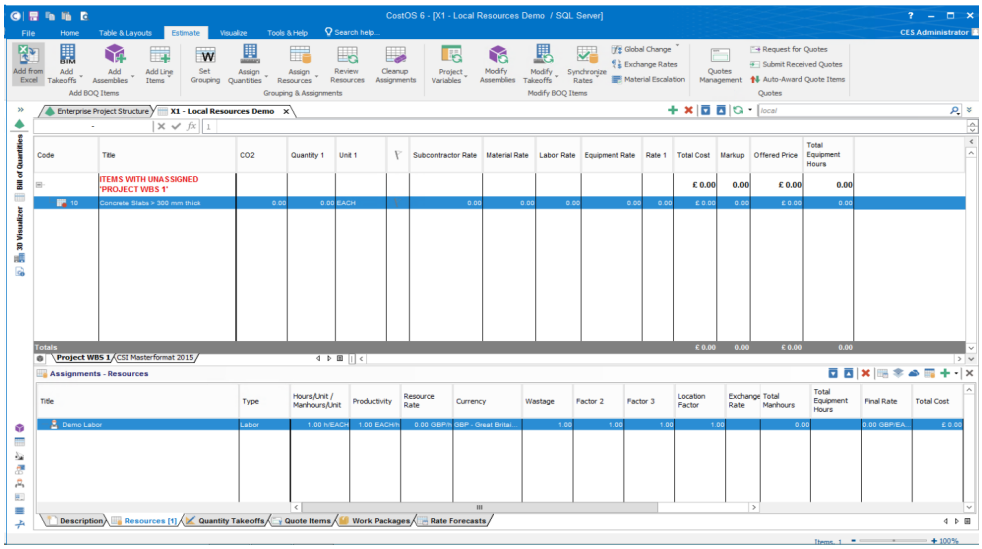
The latter are not resources themselves, but small utilities that help automate the population of a project with Resources in various ways. We will see how they work in topic *Running Assemblies* 82. For now we will use Line Items to populate our Project; all other resources follow the same pattern.

If not already selected, click on the *Line Items* tab at the top of the window. Using the search bar on the top right, search for *Slabs*, select *Concrete Slabs >300 mm thick* and click on *Add Items*.



You can also select multiple entries or even add your own, using the ✚ on the bottom right.

All selected Line Items are now added as BOQ items in the table:



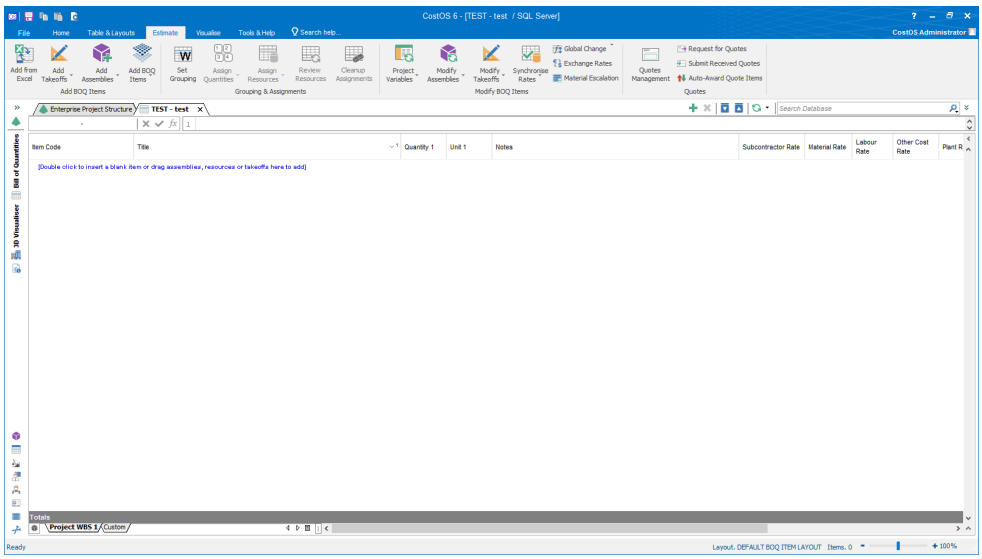
Repeat the process with other types of Resources, i.e. Materials, in the same manner with Line Items. Just choose the relevant tab when on the *Add BOQ Items from Resource Database* window.

4.6 Adding BOQ items using Online databases

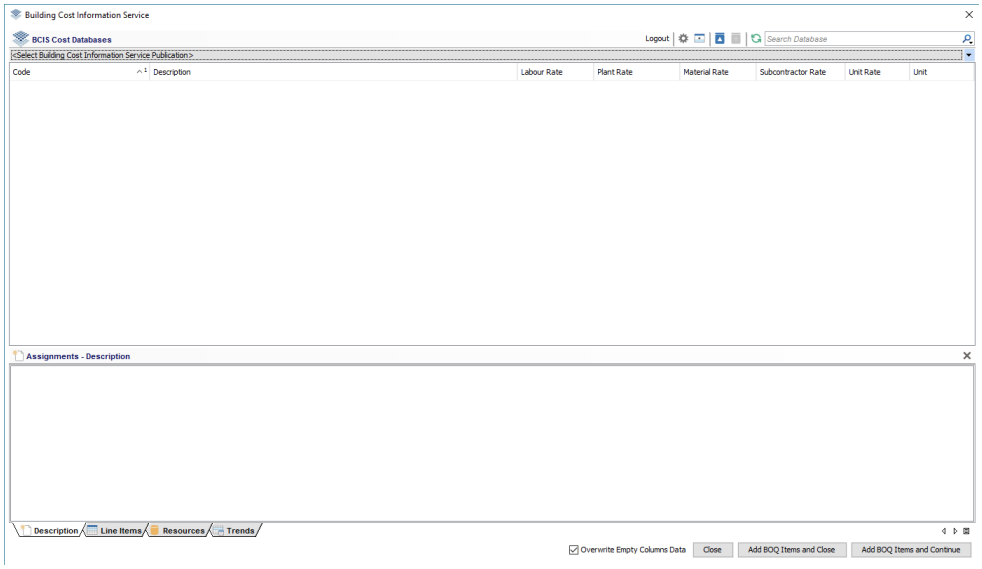
In this sub-chapter we are going to showcase how to access some online libraries and use their data to populate your project with new Items. This is exceptionally useful for customers and contractors whose projects item buildup follows that of well known libraries, like BCIS.

All third-party databases (or libraries) made available inside CostOS Estimating can be accessed by a company's users only if their organization has previously purchased them. In this Quick guide, we will examine how a user can add items from the RICS BCIS library.

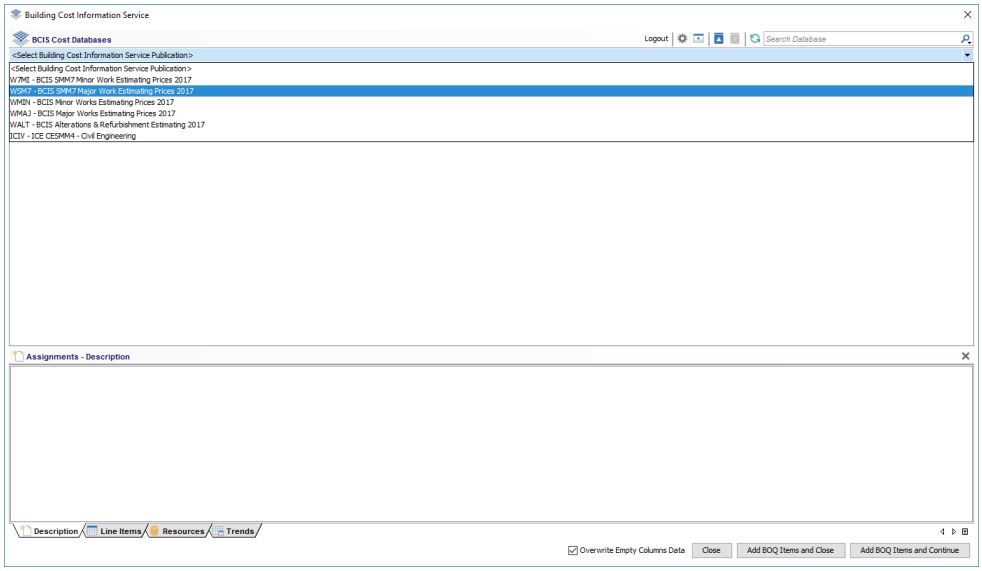
Navigate to the Bill of Quantities table:



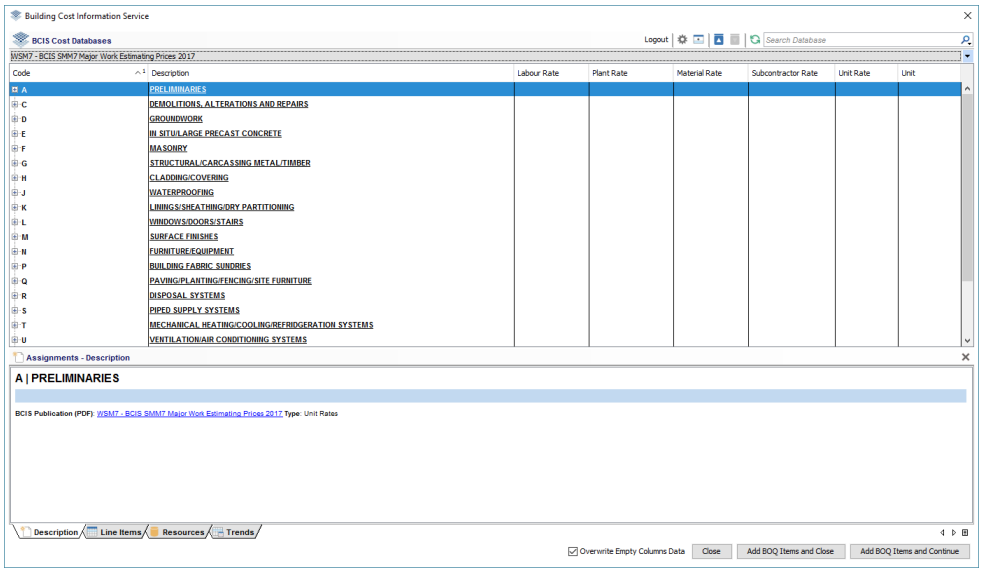
Click on the arrow next to the *Add BOQ items* button, from the expanded menu select *From the Building Cost Information Service*. You will be prompted to fill in your credentials in order to log in the online database; after successfully logging in, you will be taken to the BCIS database interface:



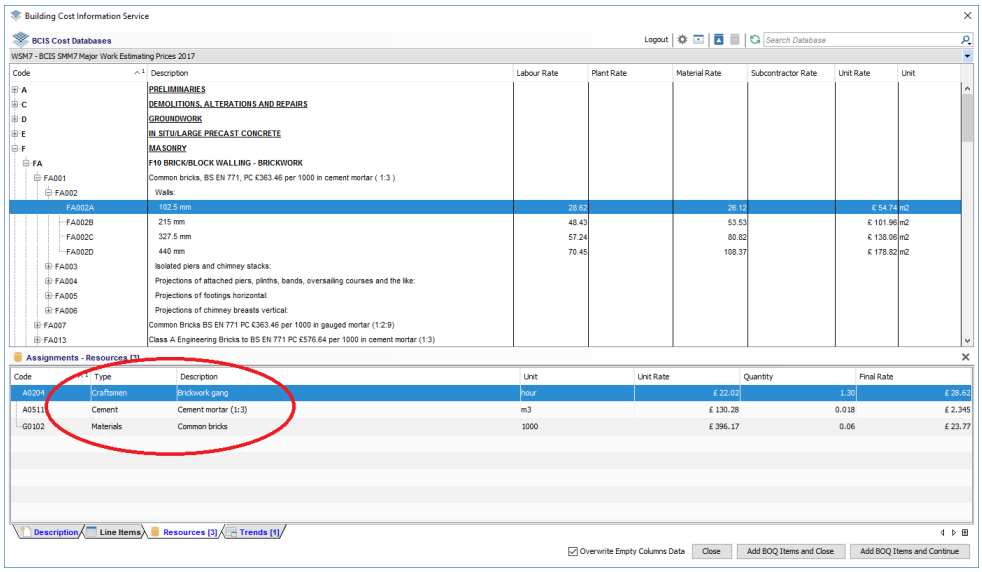
Select the BCIS book from which you would like to invoke a rate, which will be later added as a BOQ item in your estimate, in this example the *WSM7 - BCIS SMM7 Major Work Estimating Prices 2017.*



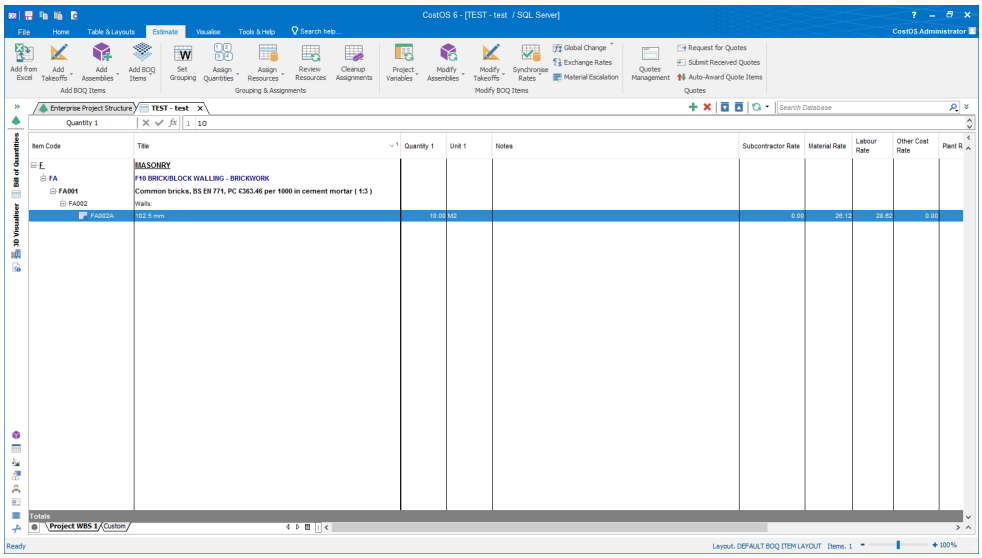
All categories of the WSM7 book are now shown; expand one corresponding to the type of rate you are looking for (you can also use the search field):



In this case, we selected *MASONRY, F10 BRICK/BLOCK WALLING - BRICKWORK, Common bricks, BS EN 771, PC £363.46 per 1000 in cement mortar (1:3), Walls: , 102.5 mm*. We can see the resources this rate consists of by clicking on the *Resources* tab at the Assignment panel:



Click on *Add BOQ items and Close* and the database entry will be assigned to your Estimate as an item, inheriting the WBS code and structure it has in the BCIS DB:



For further information on how the rest of the Online Databases cooperate with CostOS Estimating, please refer to the full User Manual.

4.7 Adding BOQ items using Takeoff methods

In this chapter we will examine how we can use several Quantity Takeoff plug-ins available in CostOS Estimating, in order to populate the Bill of Quantities of a project. This is a quick and easy method that replaces traditional measurements and calculations, using visual data files and custom functions instead.

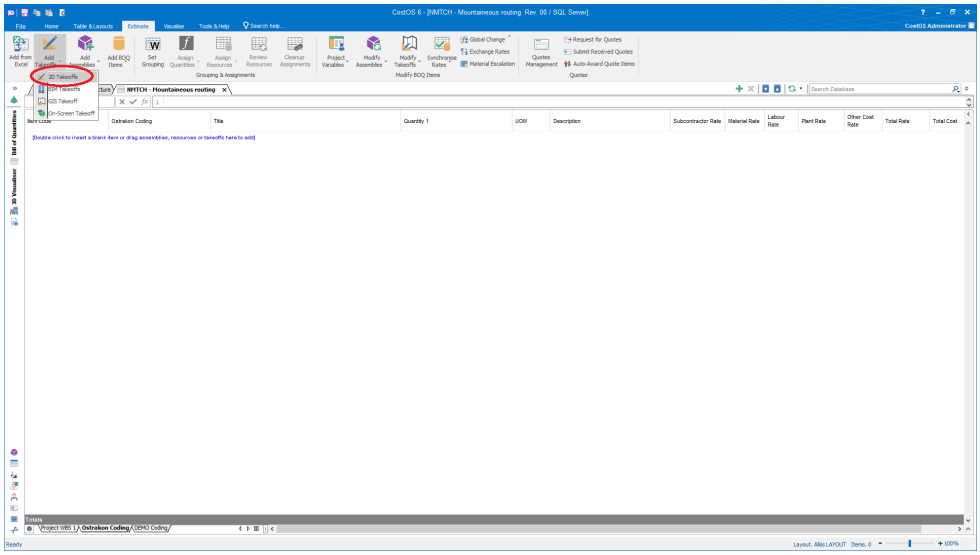
To enable the plug-ins, you (or your organization) need to acquire them first; if you are using a trial version of CostOS Estimating, they are included by default.

For further information, please contact us at sales@nomitech.net

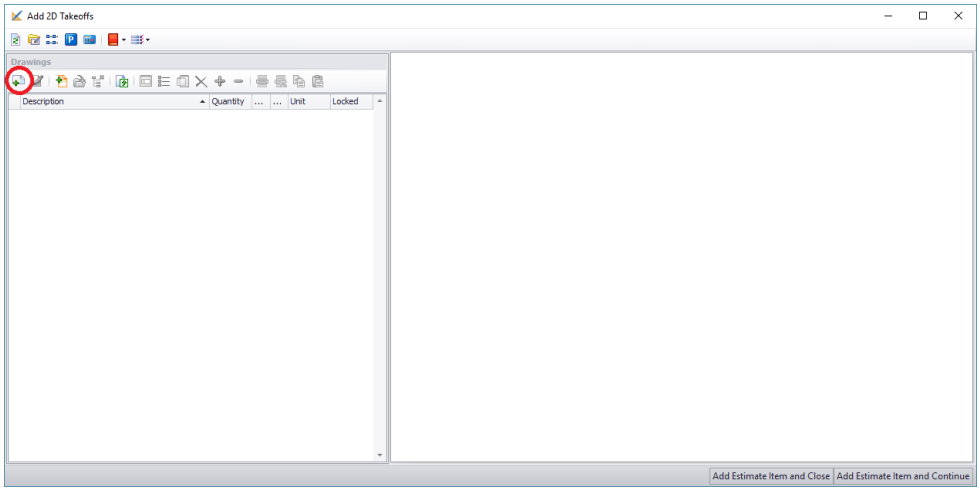
4.7.1 By 2D takeoffs

In order to add two-dimensional quantity takeoffs as items in your Estimate, you first need to load the project you're interested in working on

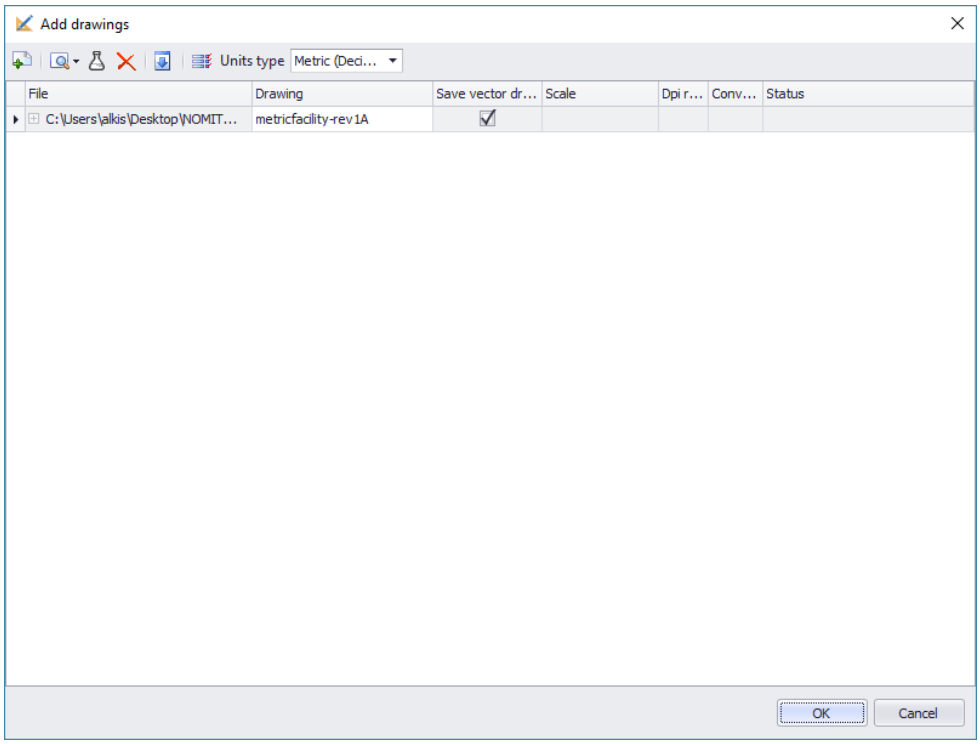
(from the EPS table). Then, navigate to the *Estimate* tab, click on the lower part of the *Add Takeoffs* button and then *2D takeoffs*:



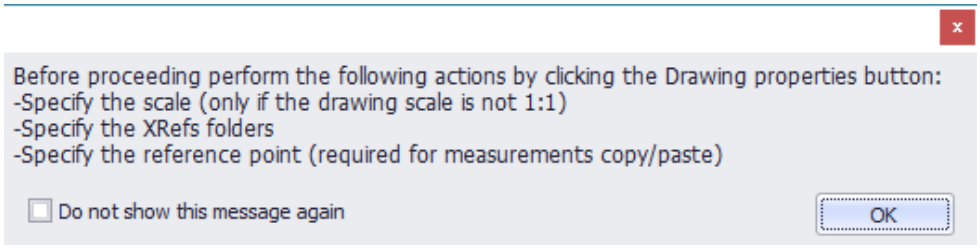
The window below allows you to load any two-dimensional drawing, either in an vector file format, such as .DWG files, or as raster files, such as JPEG and PDFs, and start making measurements. In this example, we will add a .DWG file, by clicking on the *Add Drawings* button :



We browse our files and load the drawing we want, then *OK*:

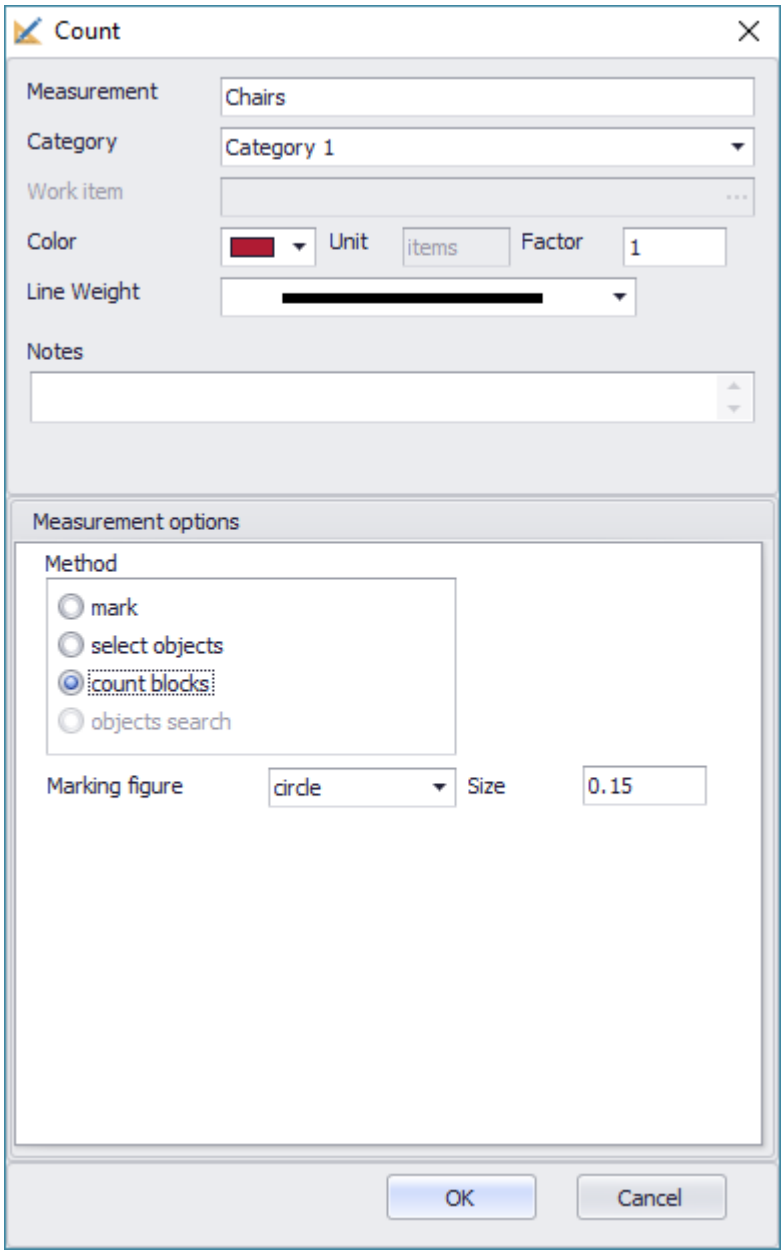


We click *OK* on the following message since the scale is already defined from CAD:

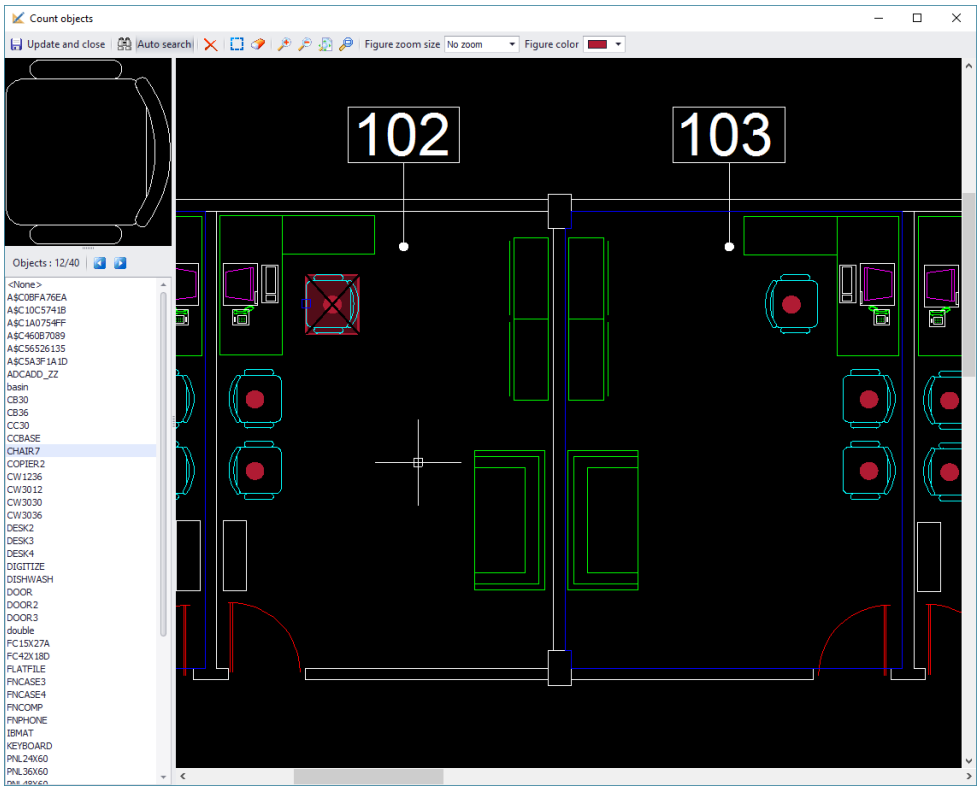


Then we decide what sort of measurement we want to make and we press one of the main buttons accordingly:

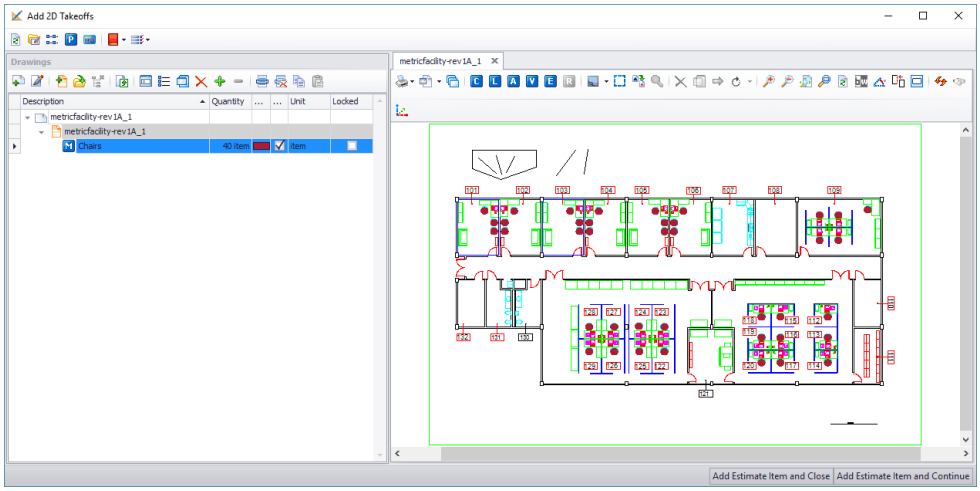
1. *Count* button: We can count number of times a specific element (has to be defined as **block** in designing software) is used in the drawing. For instance, if we want to measure how many times a chair has been used in this drawing and then add this result as an item in our Estimate, we have to do the following; Name our measurement (here as *Chairs*), select a Color of measurement and select the *Count Blocks* method:



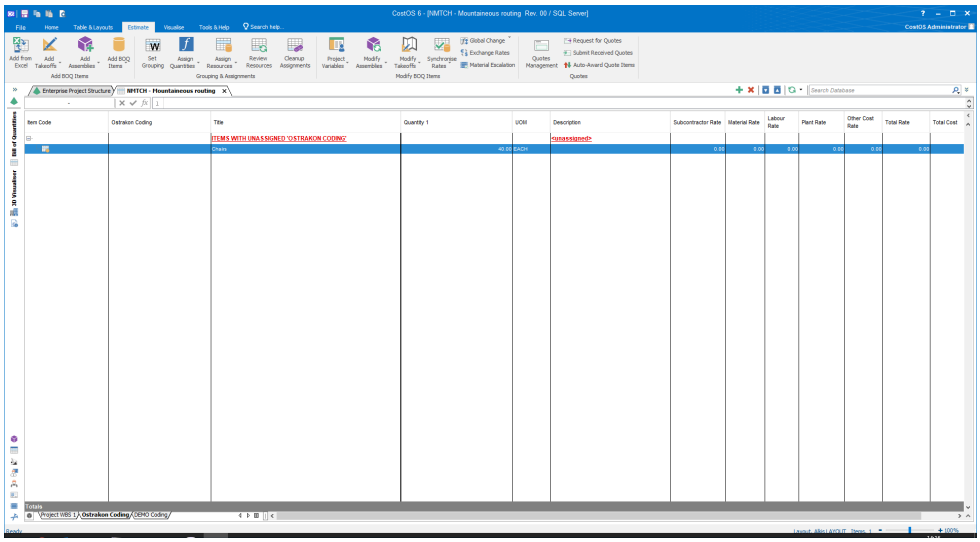
By clicking *OK*, we will be taken to another window where we will have to specify, on the drawing, which block we want to count, in this case the chair shown in light blue (block named *Chair7*).



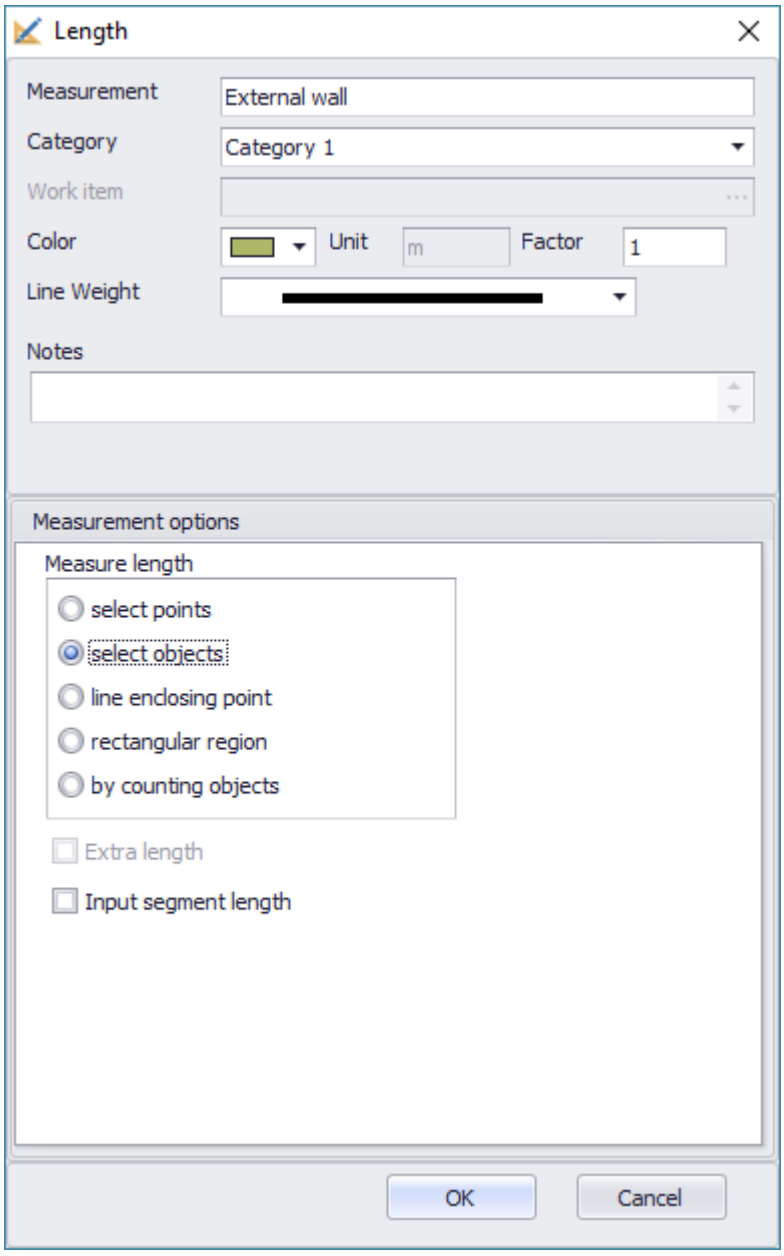
Press *Update and Close*, you can now see the measurement, 40 chairs:



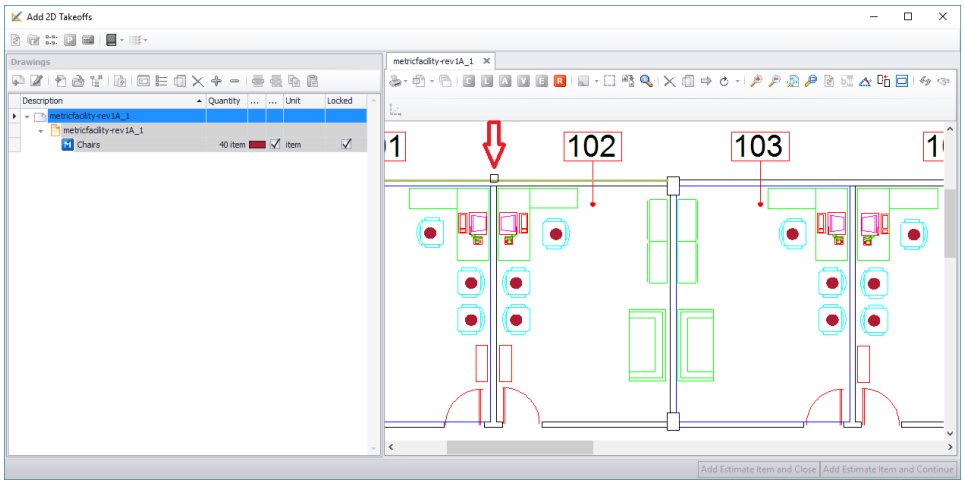
Once you press *Add Estimate Item and Close*, the measurement will become a BOQ item:



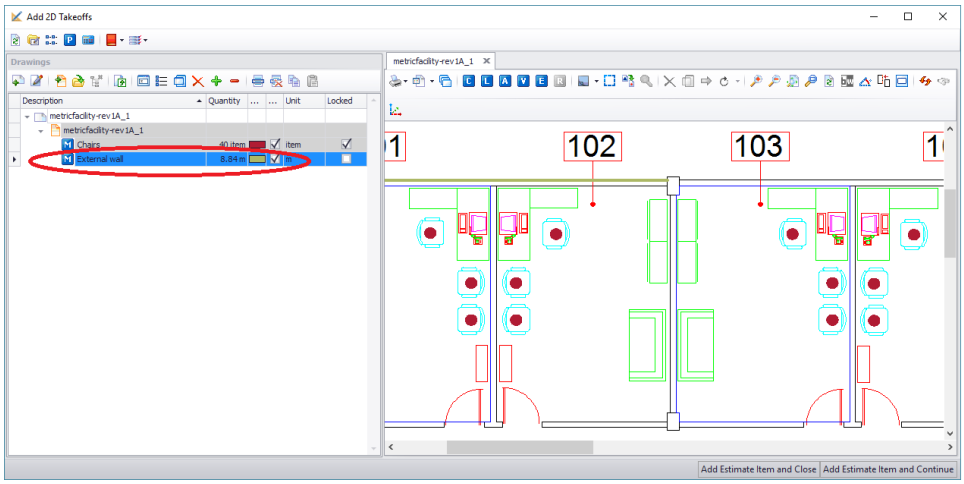
2.  *Length* button: To quickly measure the length of a line, click on the Length button and then, in the window, name the measurement (External wall) and select to measure the length by Selecting objects:



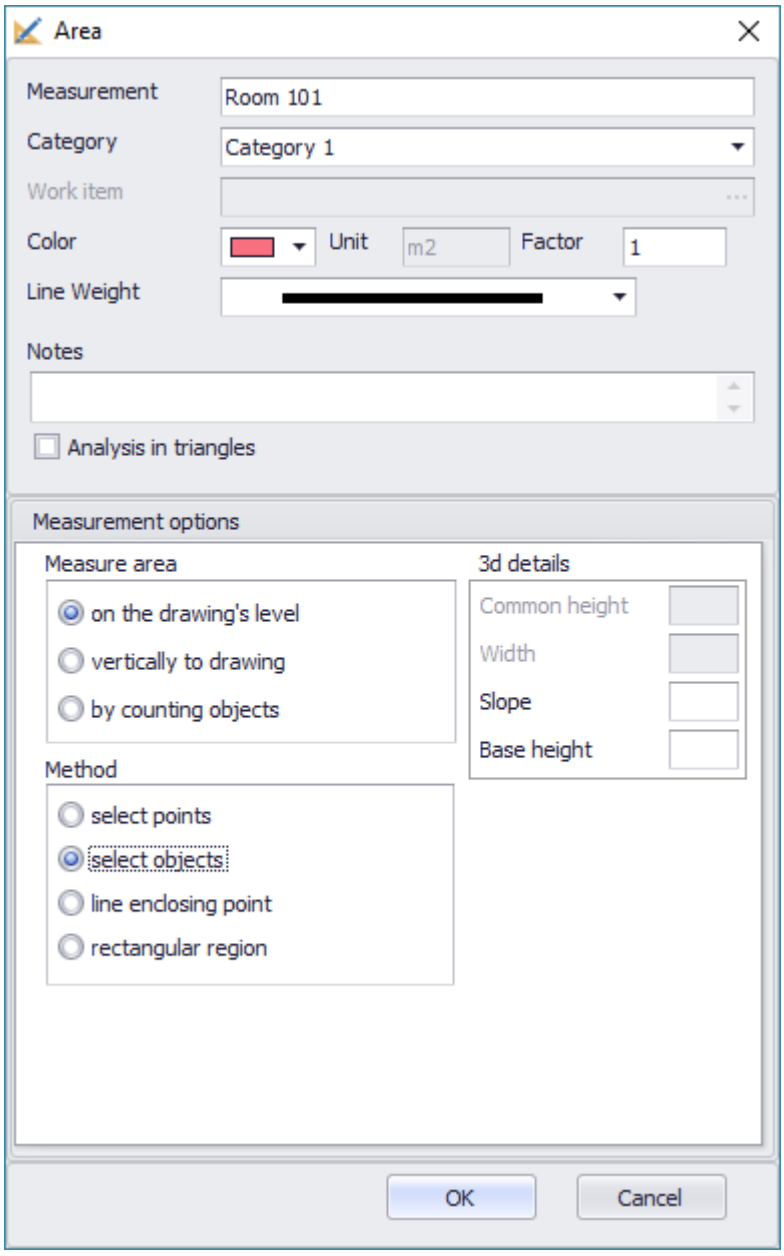
We press OK and then we zoom in the drawing, so as to define which length we want to measure with the help of the square cursor, in this case the external wall of a room:

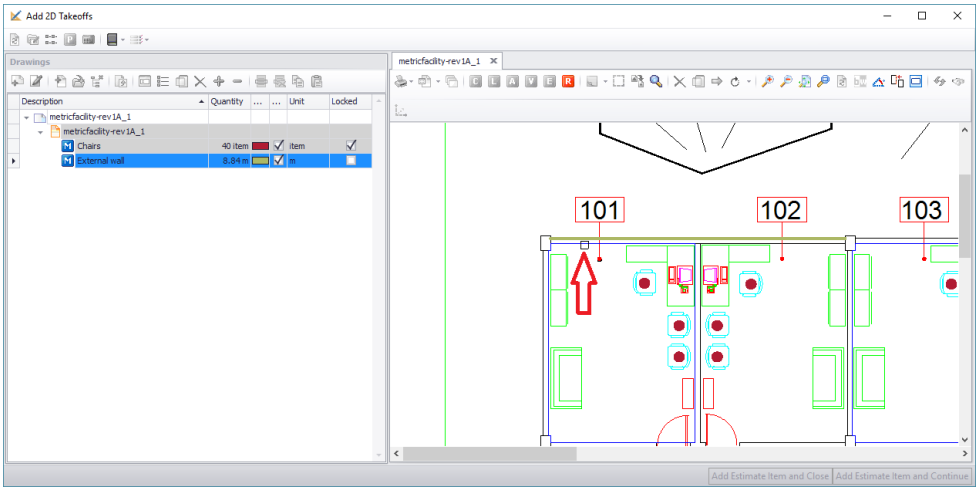


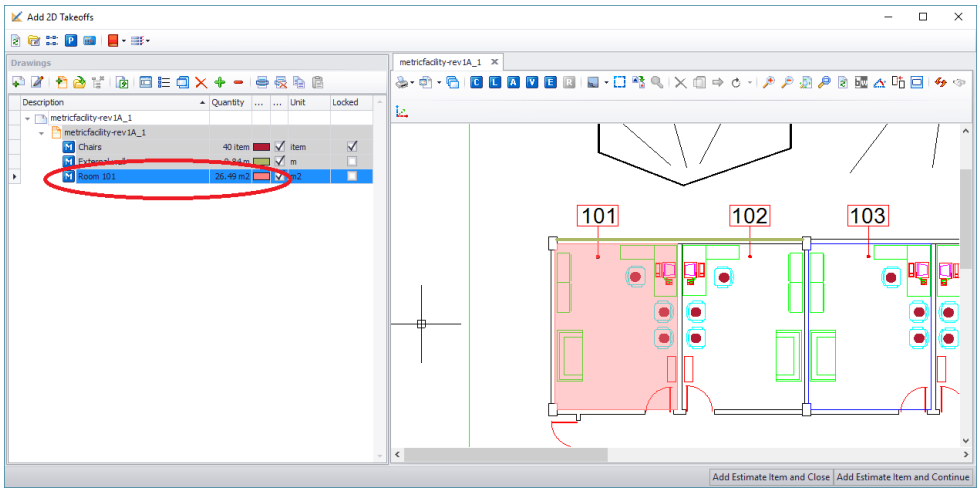
To end the measurement, we double-hit *Escape key*; the measurement is now shown and ready to be used:



3.  *Area* button: As we did with the Length measurement, the same principle is applied for Area measurements as well. We click on the *A* button, the measurement's property window opens, we define a name (*Room 101* here), where the measurement is going to take place (*On* or *Vertical to the drawing's level)*, then the measurement method (by selecting objects) and then OK:

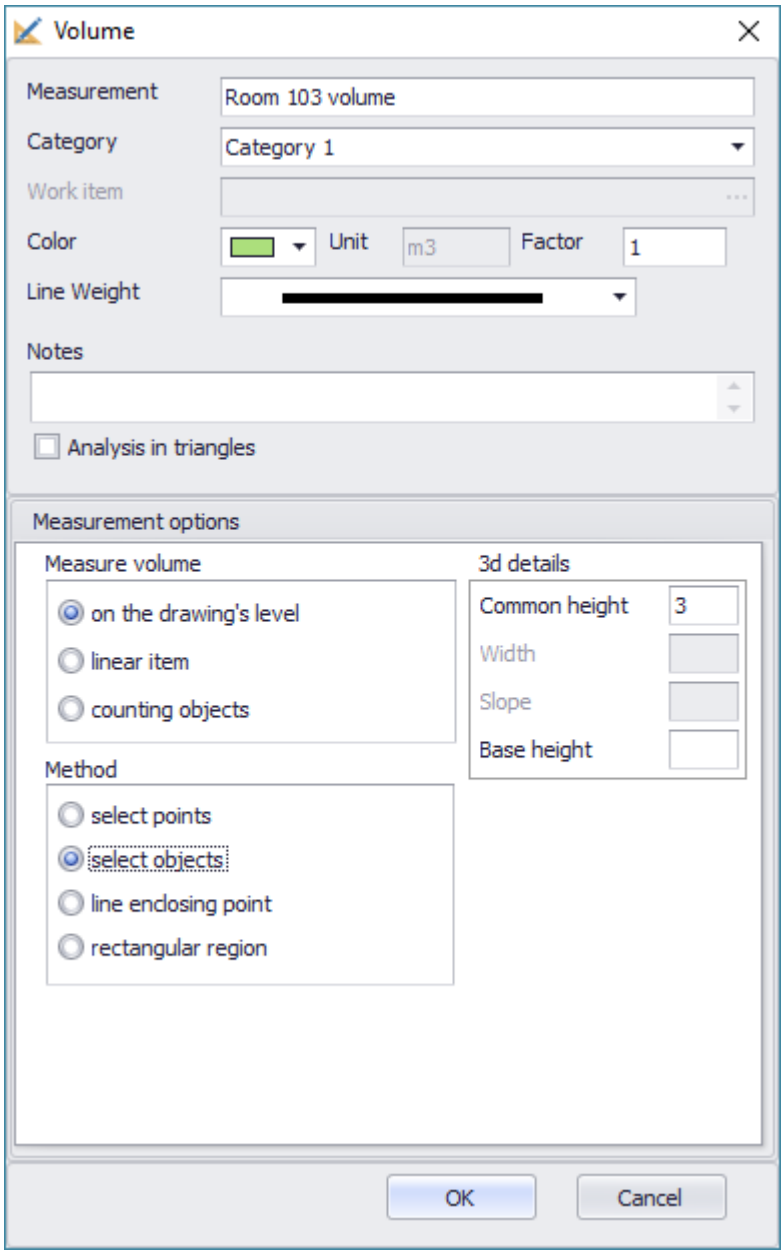


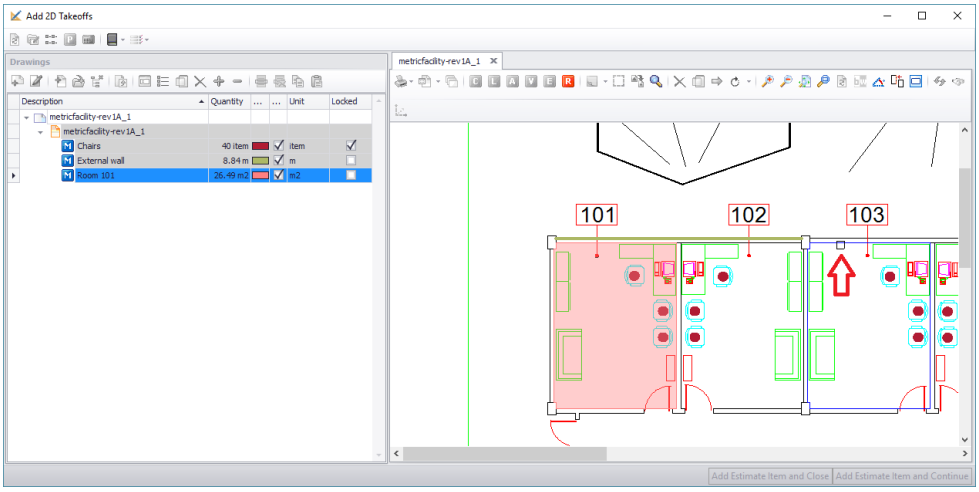


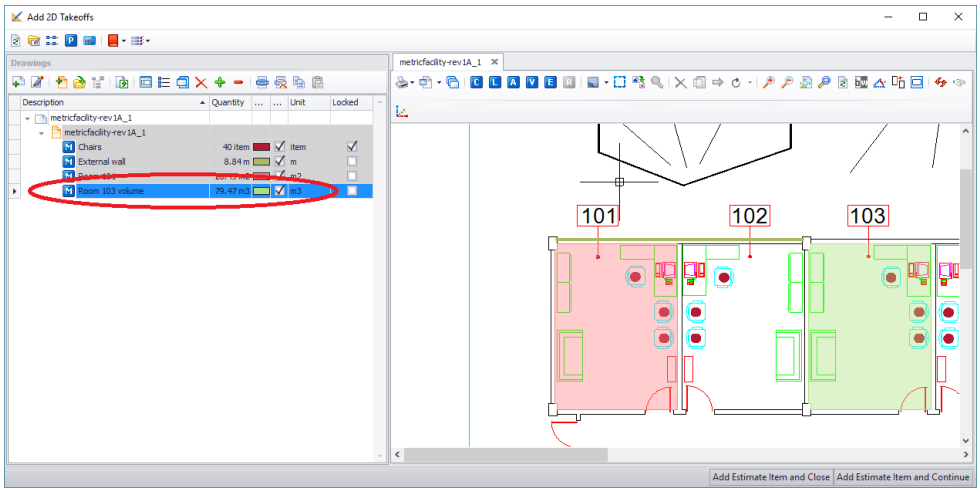


NOTE: An area measurement can be also used for measurements vertical to the drawing's level, such as walls. Just change the *Measure Area* option to *Vertically to the drawing* and define a *Common height* for the wall.

4. *Volume* button: Exactly the same with the Area measurement, only with one difference; since Volume is essentially an Area extruded by a specific height, you will define an Area on the drawing, but you will also have to define a *Common height* this time:



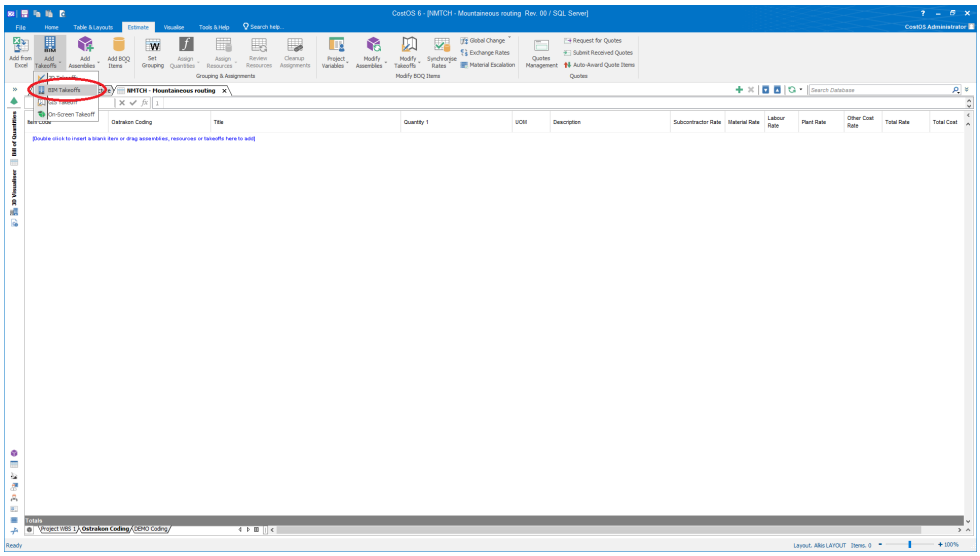




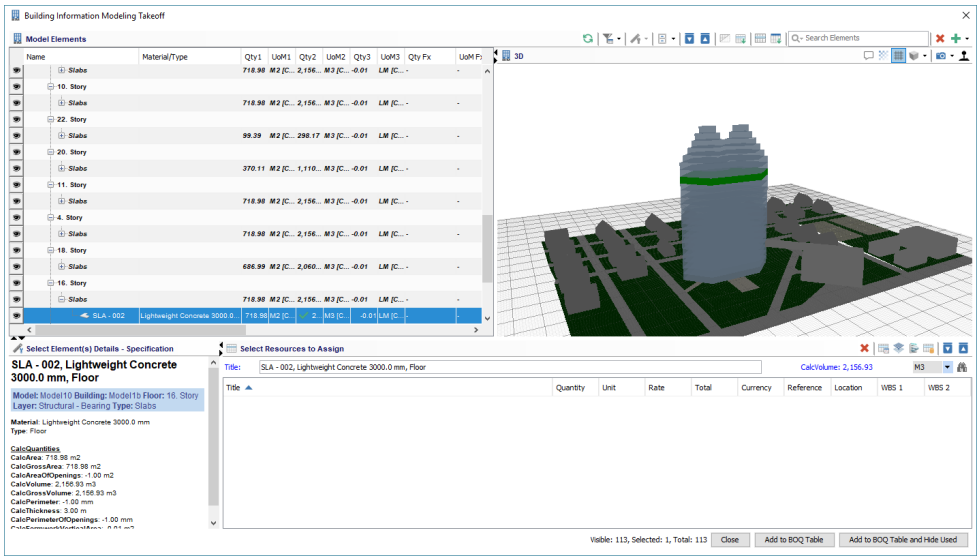
5. *Custom Measurement* button: Allows you to access custom defined measurements on the drawing. Refer to CostOS Estimating Manual for more info on this topic.

4.7.2 By 3D/BIM takeoffs

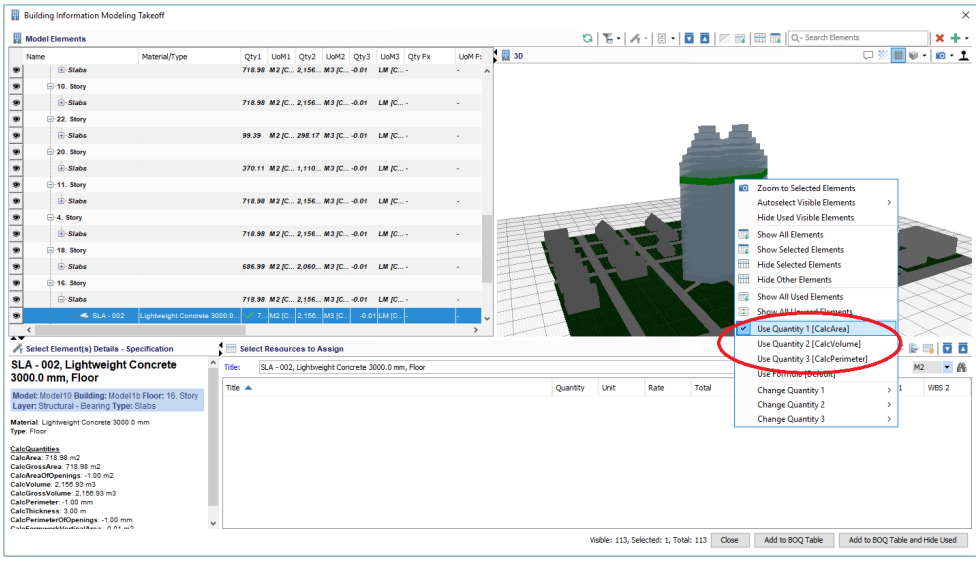
The 3D/BIM Quantity takeoff method allows you to load an .IFC file, browse its elements, select the ones you would like to measure and easily add them to your Estimate. Go to the *Estimate* tab, click on the lower part of the *Add Takeoffs* button and select *BIM Takeoffs*:



Click on the ✚ button to load your IFC file, then *From Local IFC file (slow loading)*, browse your files and select the model you want, then *Open*:

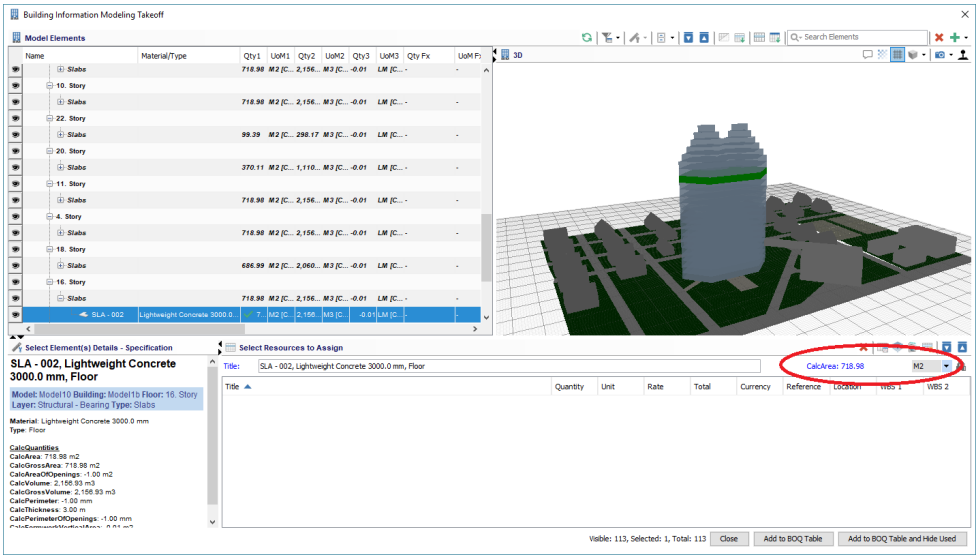


You will notice that every time you select an item from the visualizer on the right, the element is highlighted on the left panel and vice versa. Right-click on the element to select which quantity, Area, Volume or Perimeter, you want to takeoff from the model:

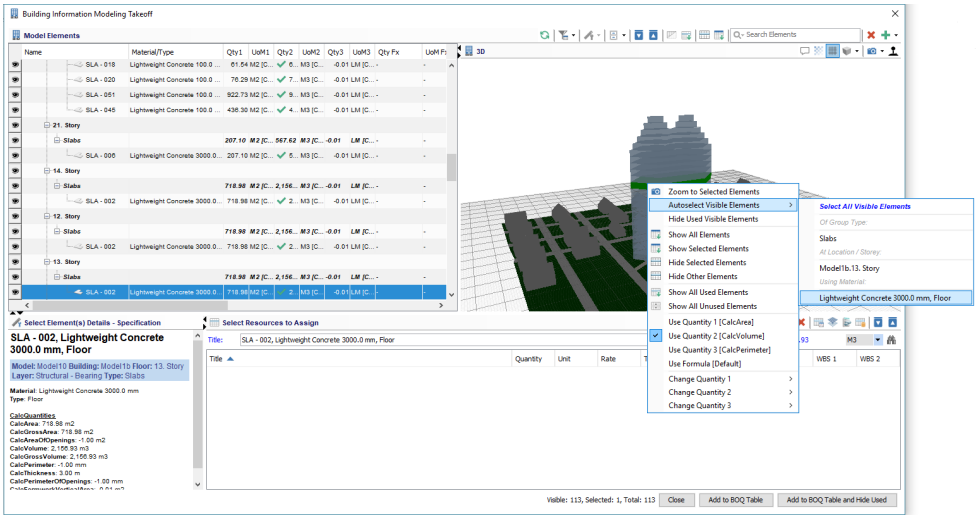


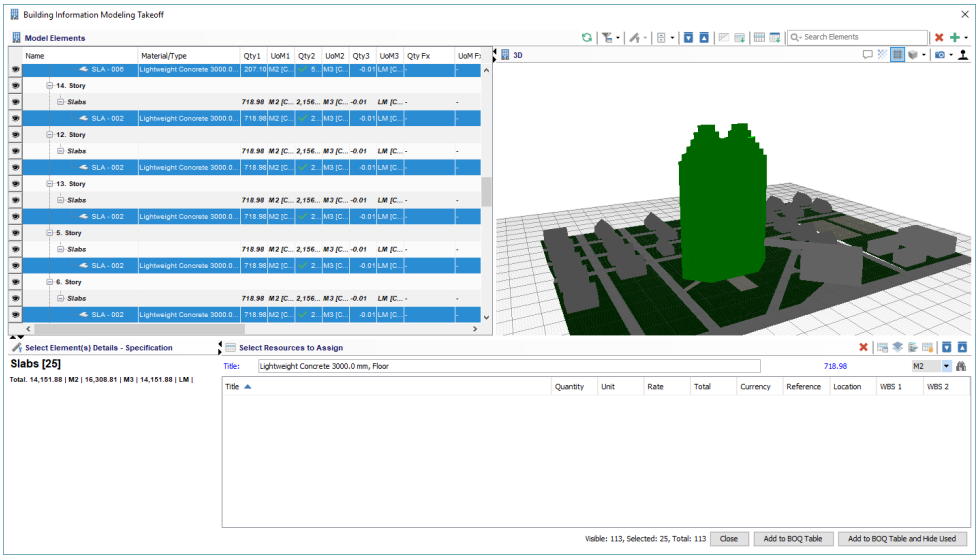
In case you want to use other properties of the model, you can select from other properties available under the *Change Quantity 1,2* or *3* menus.

Supposing we select to use *Quantity1 [CalcArea]*, the quantity is shown in blue, right under the visualizer:

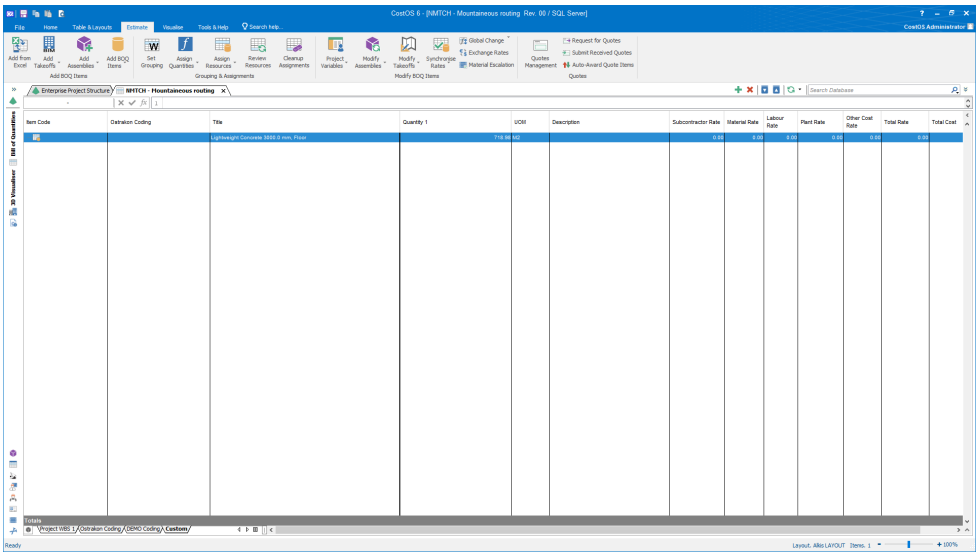


We can also select multiple elements, based on a common characteristic they have; right-click on one of the elements, go to *Autoselect Visible Elements* and then select which property you'd like to use as a selection criterion, for instance *Lightweight Concrete 3000.0 mm, Floor*:





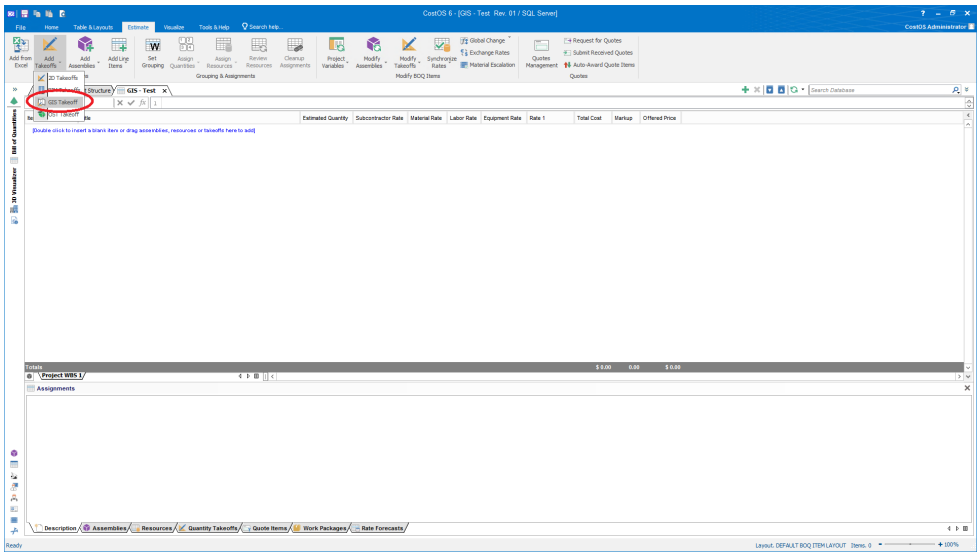
Click on Add to BOQ table and the selected elements will become Estimate items in your project:

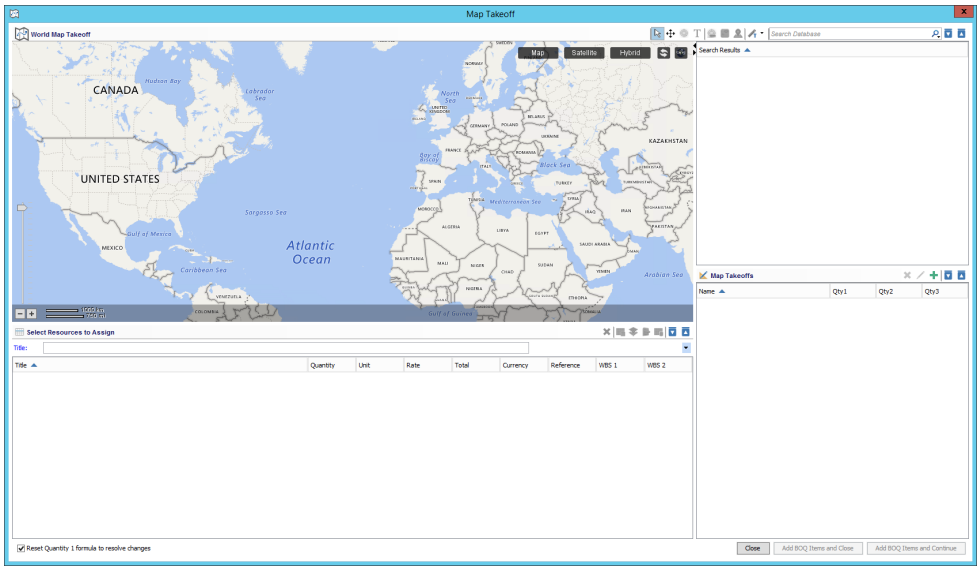


4.7.3 By GIS takeoffs

One more Takeoff plug-in available in CostOS Estimating is the GIS plug-in. GIS Takeoff gives you the ability to measure distances (point A to B, including elevation), areas or even load your own coordinates, as layers over a Google Maps window.

To add a GIS takeoff as an item to your estimate, press the lower part of the *Add Takeoffs* button and select *GIS Takeoff*:

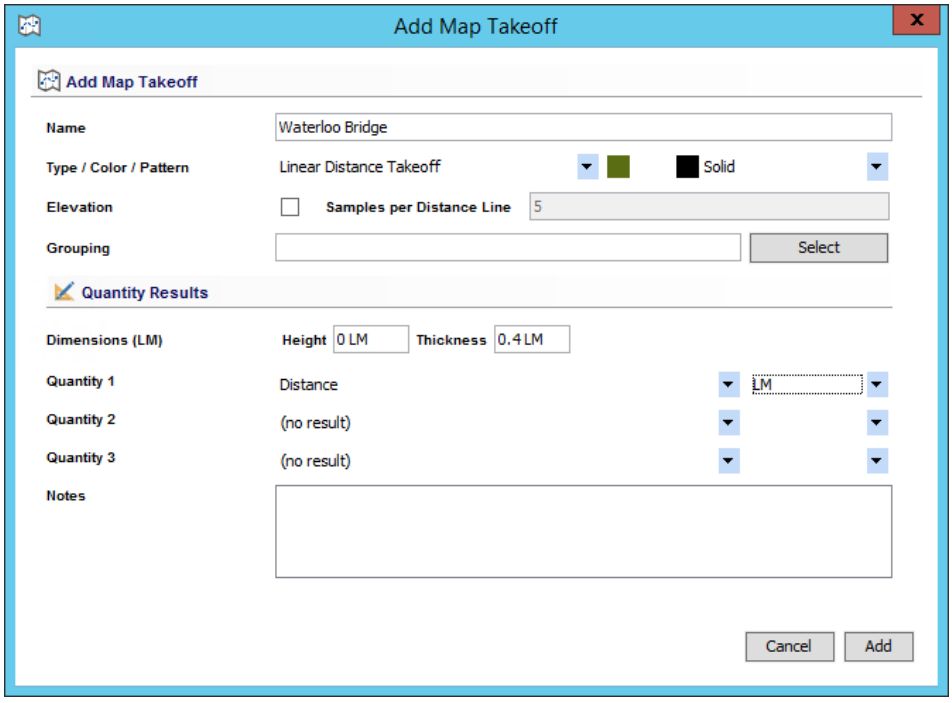




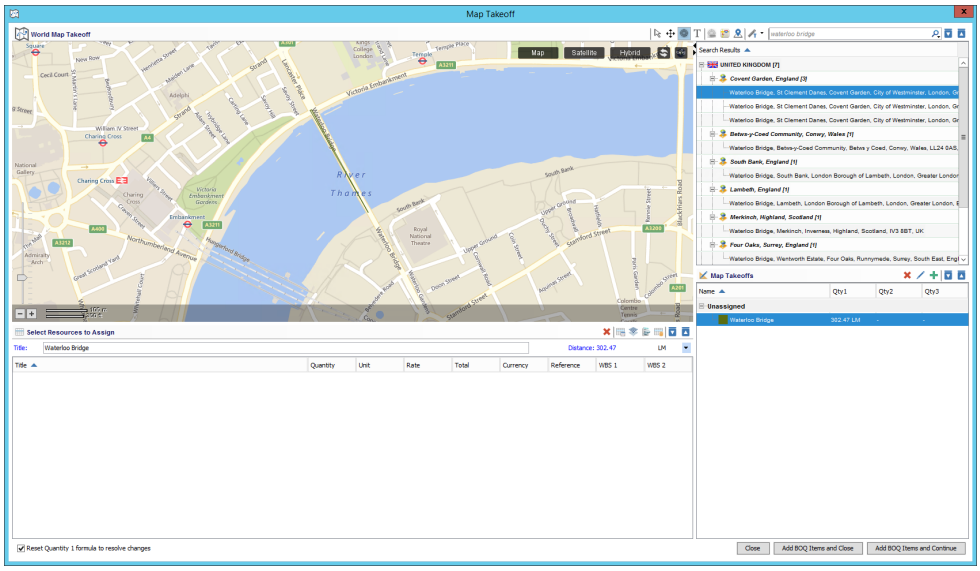
The *Map Takeoff* window opens up, consisting of four panels:

i. The *Map* panel, where all measurements are shown,
ii. The *Search results* panel, which shows all locations relative to the keyword define in the search bar, after a search,
iii. The *Resources assignment* panel, which allows you to link quantities measured on the map, such as Length, with cost data of your database, i.e. Trenching rate per LM and
iv. The *Map Takeoffs* panel, where all the created measurements are listed.

Let's see how you can make your first measurement on a map. In this example, we will roughly measure the span of Waterloo Bridge in Central London. To do that, we type *Waterloo Bridge* in the Search field of the above window and we then we choose the UK result (shown first).Click on the ✚ button in the *Map Takeoffs* panel; this will create a new measurement and will open the below window:

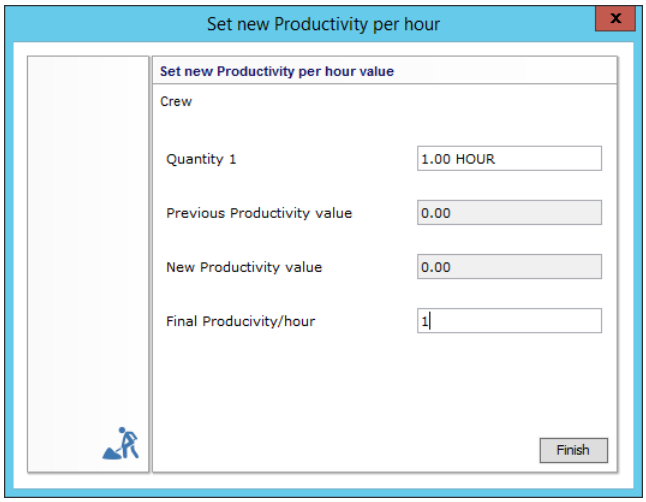


Fill in the details as shown, select *Linear Distance Takeoff* and *Distance* in *Quantity 1* field. Change the unit of measure from *KM* to *LM* and press *Add*. You can now see that, while hovering over the map, instead of the regular cursor, you have a crosshair; this means that you are in measurement mode and you can start selecting points on the map. Once you are done, double-click on the last point to close the measurement, the measurement should show like the one below:

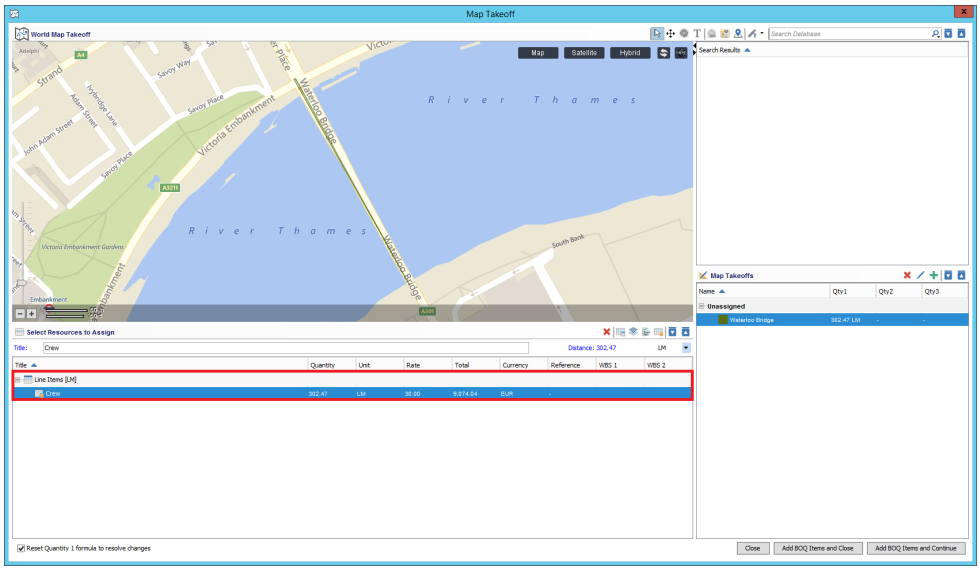


The exact length of your measurement is now shown in the *Map Takeoffs* field. You can make several measurements and of different types (length, area, count spots), however you can only add one at a time. All measurements remain in the project database for future use.

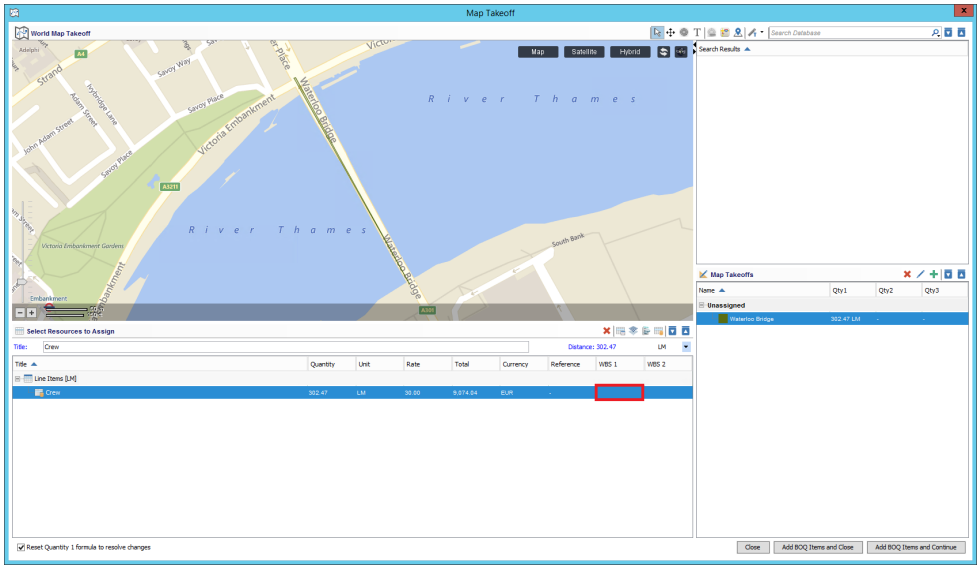
You can now link the measurement with an entry of your cost database; simply click on the *Find Cost Data from Local Database* button ( ) and select Line item(s) or other sorts of resources to link with. In this case we will link it with a **Labor** resource named *Crew*. After selecting the resource(s), define Quantity and Productivity, in this case equal to 1 :

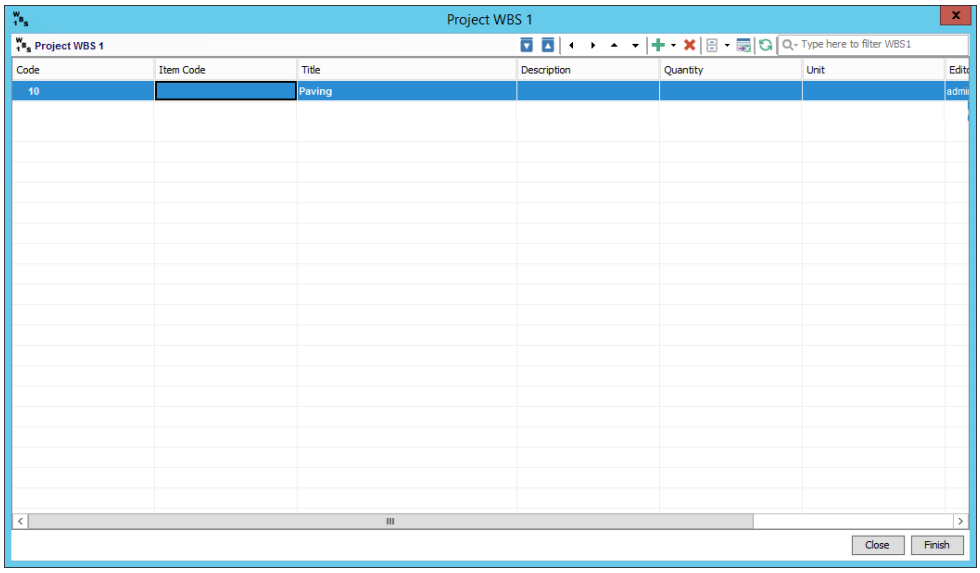


Press *Finish*:

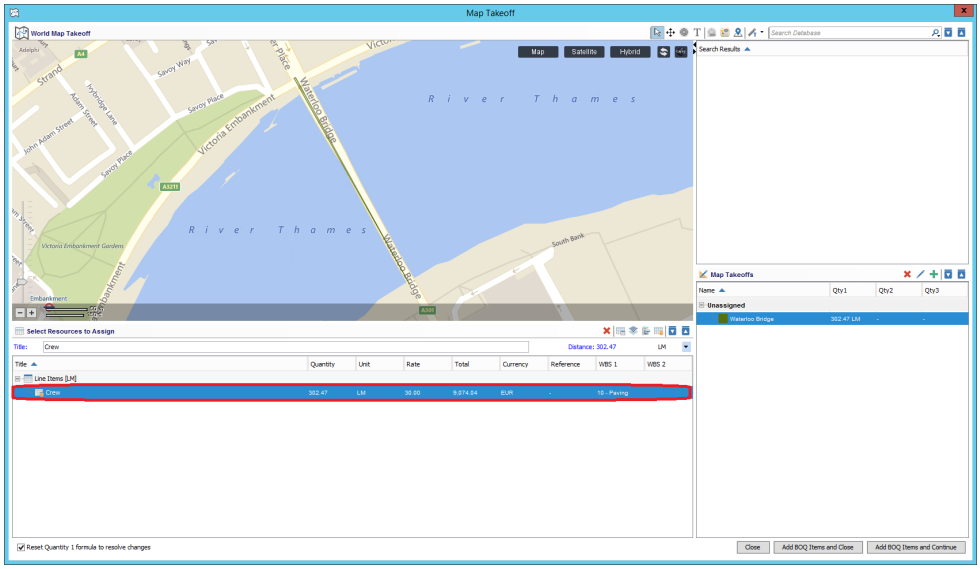


The *Crew* labor rate is now linked with the quantity. If you also want to assign a WBS code to the item-to-be, double-click on the WBS cell of the resource and select a WBS category and press *Finish*:





The measurement now has a resource assigned to it, as well as a WBS code:



To add the measured quantity as an item in your Estimate, click on *Add BOQ Items and Close*.

Pricing BOQ table

5 Pricing BOQ table

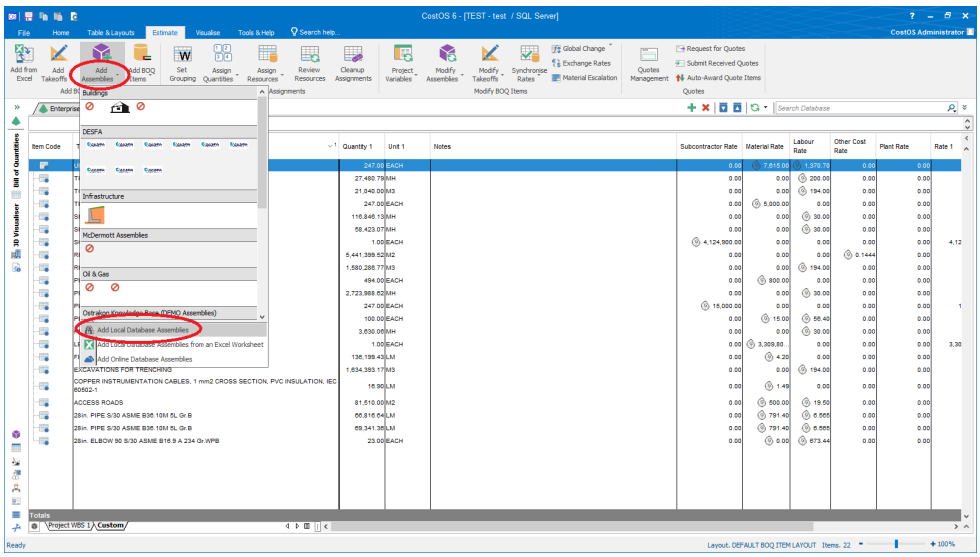
5.1 Using Assemblies

This chapter analyses how a user can efficiently generate multiple Bill of Quantity items with the use of Parametric Cost Models, or *Assemblies*, of all AACE Estimate Classes.

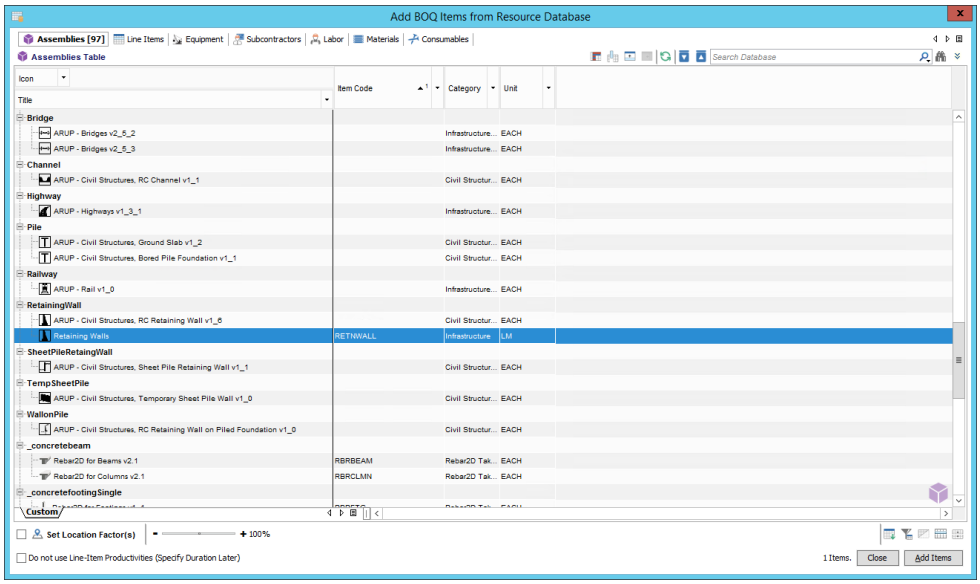
In this Quick Guide, we will only examine how a user can run **already developed** assemblies that are part of his organization's database (purchased assemblies); the actual development of assemblies lies in the scope of advanced training, thus you will have to refer to CostOS Estimating Manual and Tutorial.

5.1.1 Running Assemblies

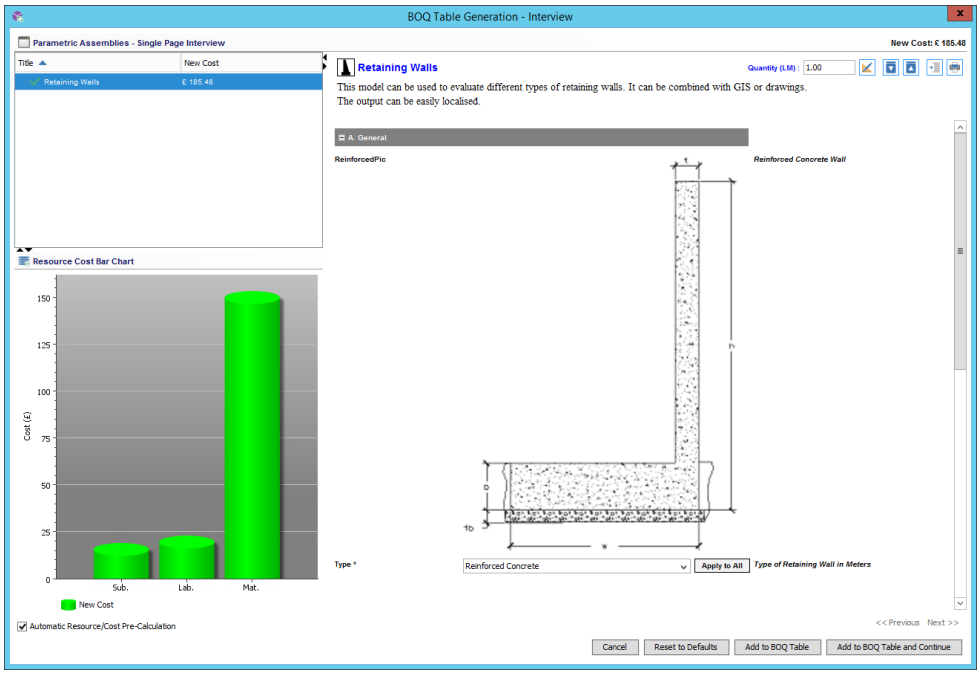
To add (or run) an Assembly in your Bill of Quantities, while having your project open, navigate to the *Estimate* tab and click on the lower part of the *Add Assemblies* button. This will expand the following menu; select *Add Local Database Assemblies*:



By clicking on *Add Local Database Assemblies*, the Assemblies table of your DB will open; browse them until you find the "*Retaining Walls*" model:

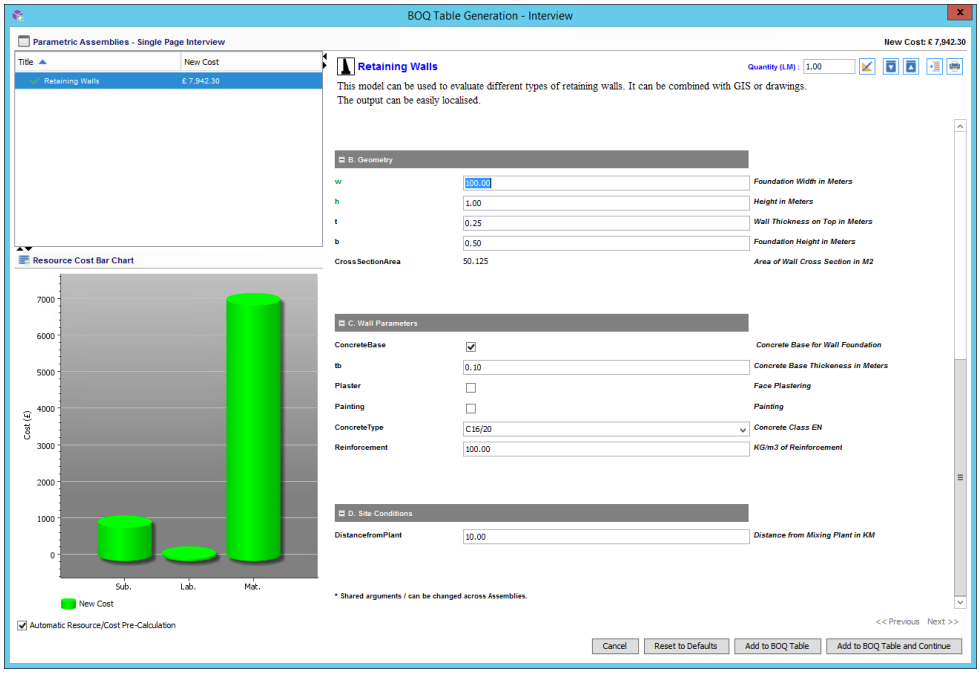


You can either select *Add Items* or simply drag and drop the assembly title in your BOQ table, in order to run it; the below window opens:

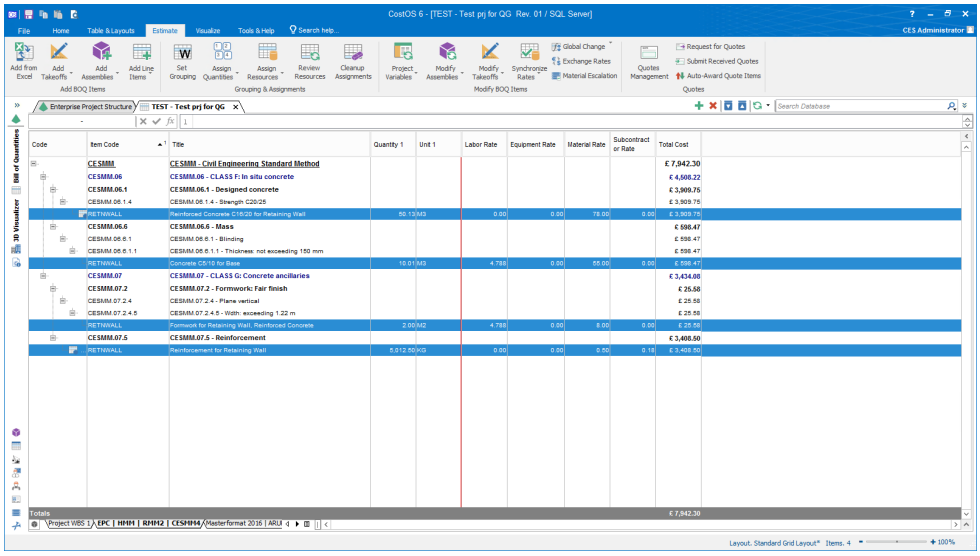


This window is the dialog between the software and the user, the platform in which the user will give input required from the model so it can generate BOQ items which, in turn, will be added to the project. It consists of three panels; the main dialog on the right hand side, the Cost Pre-calculation panel on the upper left corner, which gives the cost of the items to be generated based on the current input, and the Bar Chart, which breaks down the Total Cost into Costs per type of Resource, such as Subcontractor cost, Labour Cost, Material Cost etc.

In this particular assembly, the first input to define is the type of retaining wall we would like to calculate the cost for; the *Type* selection list allows us to select from Reinforced Concrete, Gravity, Masonry, Stone and New Type Walls. Next input required is the geometry of the wall, width, length, thickness and foundation height. Let's change the Retaining wall length to 100 m (simply type 100 in the corresponding field), as shown below:



Assuming we leave the rest of the parameters as they are, if we click on *Add to BOQ table*, the model will be executed and will generate items.



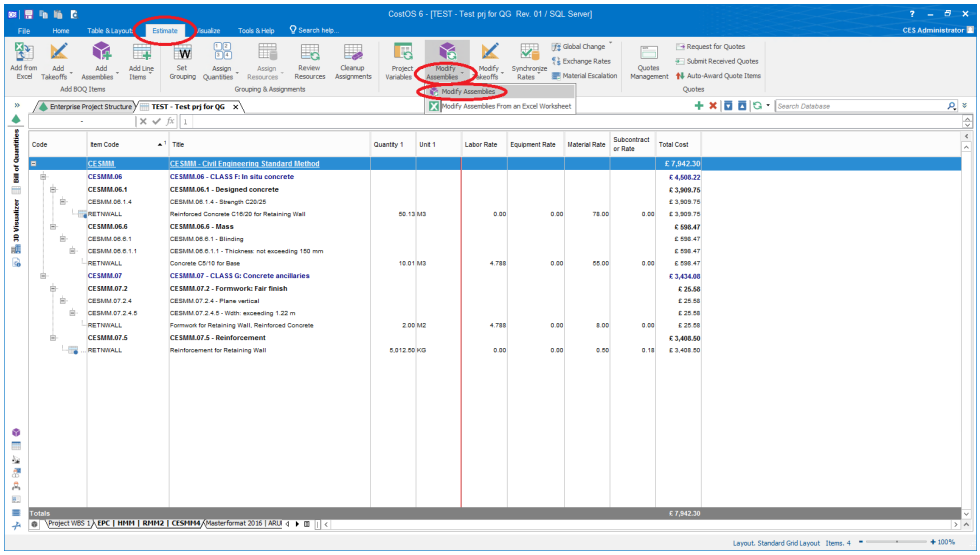
As we can notice, four BOQ items have been generated and added to our project; all of them bearing quantities and at least one resource rate (labor/material/subcontractor). They are also sorted according to a specific hierarchical structure, in this case CESMM4.

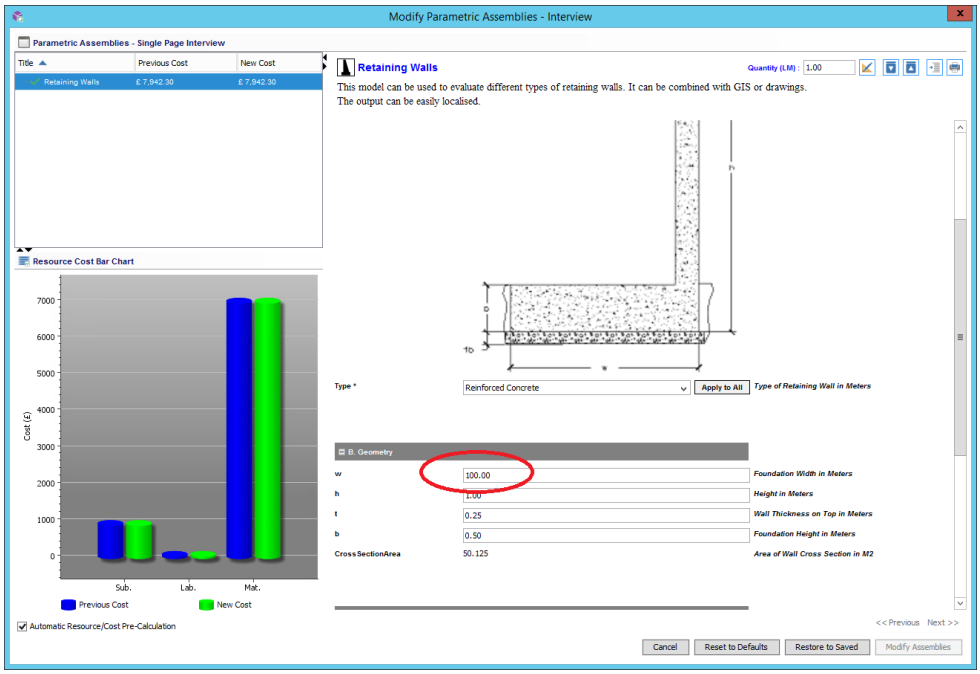
NOTE: The total calculated cost for this set of parameters (input) is £7,942.30; this information will be useful for the next topic.

5.1.2 Modyfying already added Assemblies

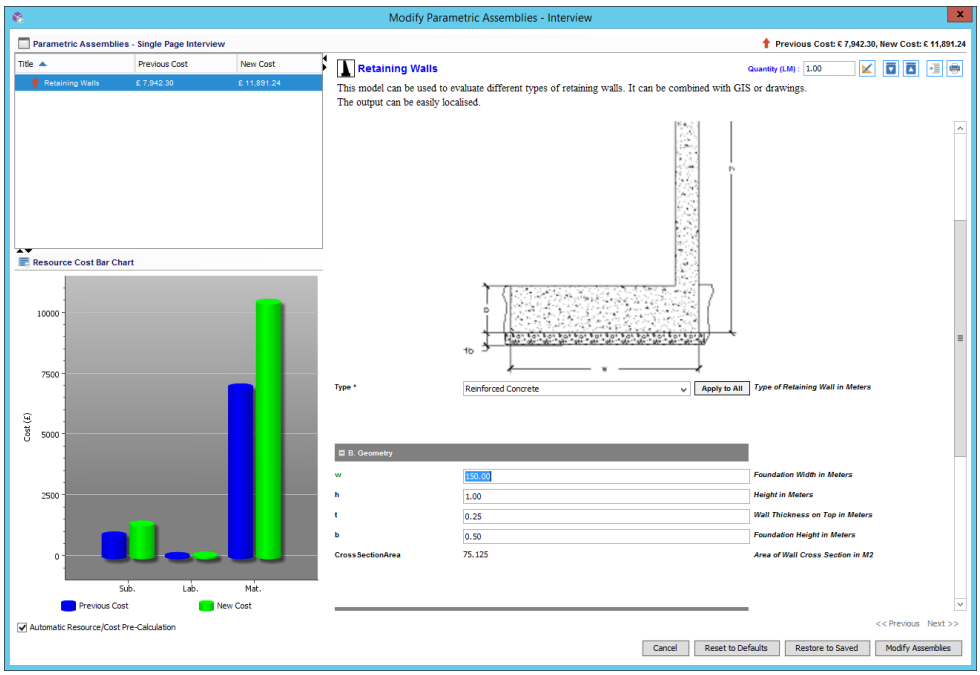
In some cases, you might have already ran an assembly and realize that you would like to change the parameters previously defined (input of assembly), with a set of new ones. Obviously, tracking and deleting all BOQ items generated by an assembly in the past would be a very difficult and time consuming task, that's why CostOS Estimating gives you the ability to see which assemblies you've ran so far and revise only some fields, instead of running the whole model once again.

To track which assemblies have been previously added to your project, navigate to the *Estimate* tab and click on *Modify Assemblies*.



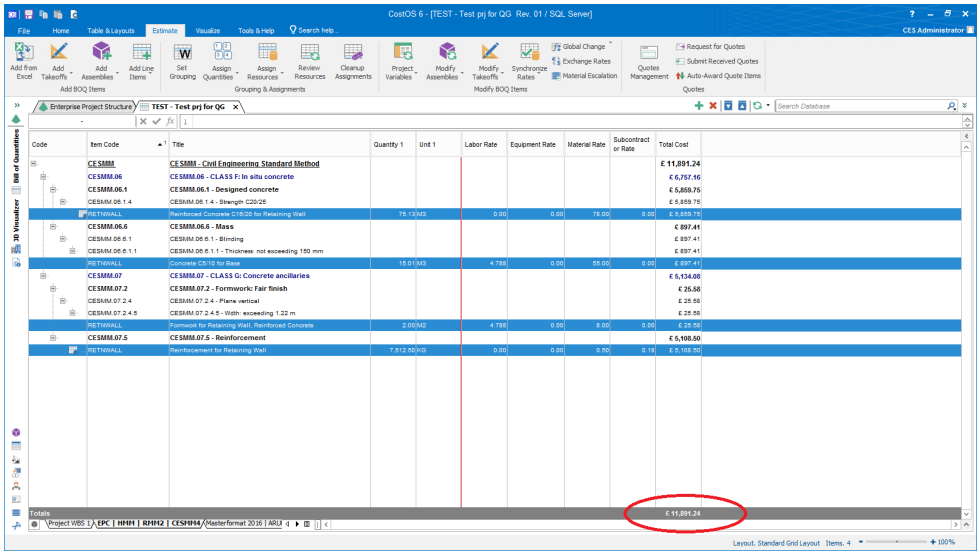


The Assembly dialog is loaded again, showing the figures in the input fields as previously defined, for example *Foundation Width in Meters* is equal to 100. We can now revise this number to 150 meters. By doing so, the Total Cost will change from £7,942.30 (see last Note of previous topic) to £11,891.24.



The Bar Chart now has two sets of bars, a blue one showing the Previous Cost Breakdown and a green one, showing the current one. The red arrow in the Cost Calculation field shows that the Total Cost has increased with the new input. If we are done making changes to our parameters, we click

on *Modify Assemblies* and the changes are taken into consideration in the costs of the BOQ items, as shown below:

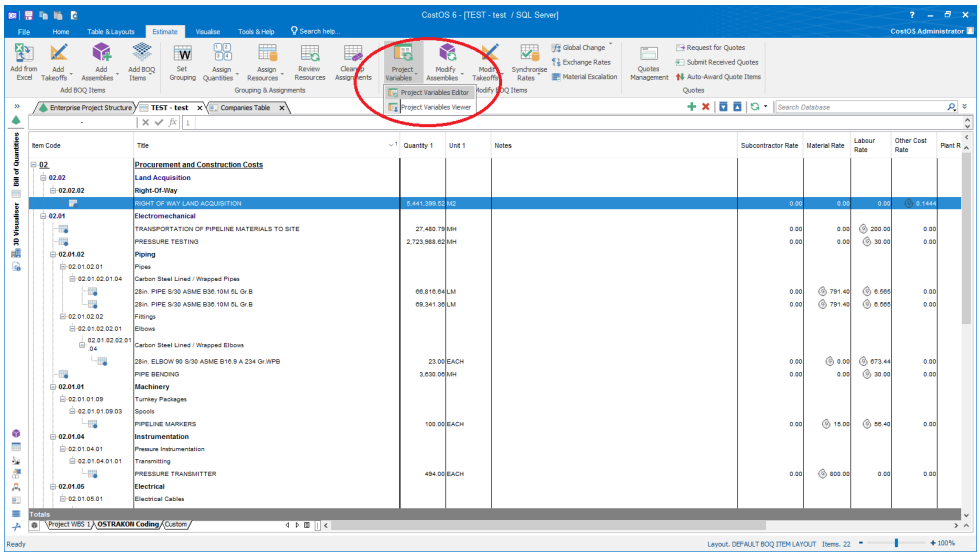


5.2 Using Project Variables

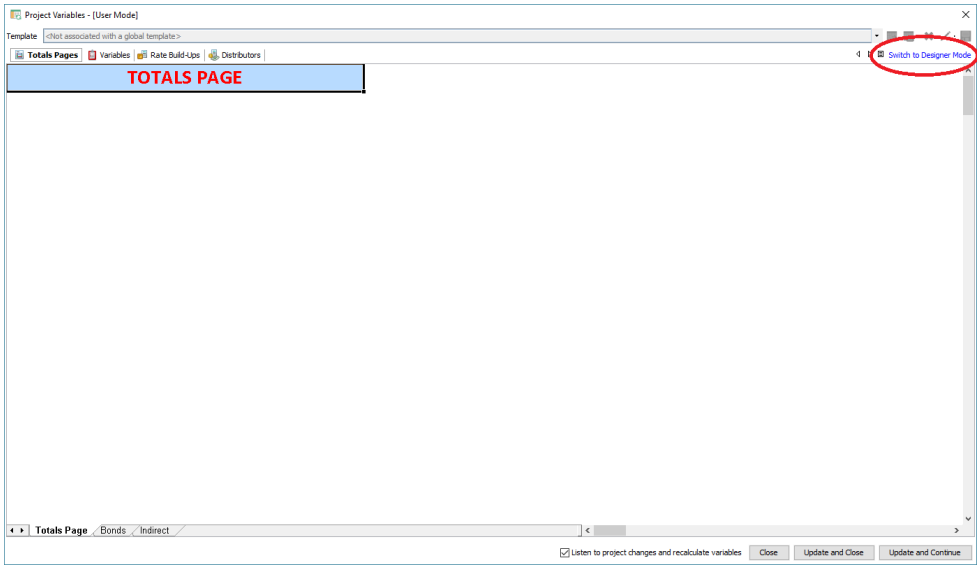
The Project Variables is an environment where you can create, modify and report your Indirect costs, Markups, Summary page, as well as define your rate build-ups. It is an Excel look-and-feel table, embedded in CostOS Estimating, that can be directly linked with your project; let's see how.

5.2.1 Direct Costs

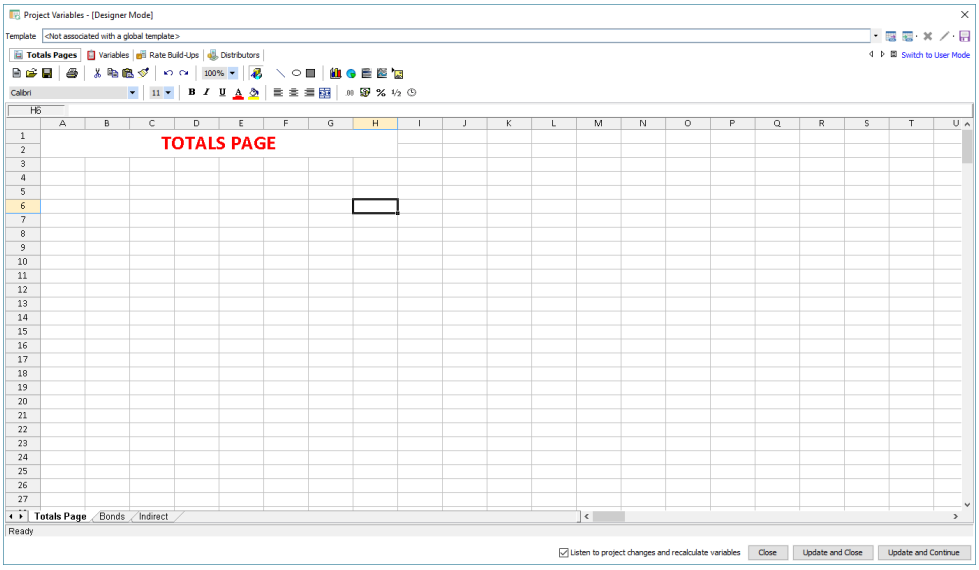
After having completed working on a project, navigate to the *Estimate* tab and click on the lower part of the *Project Variables* button, then *Project Variables Editor*.



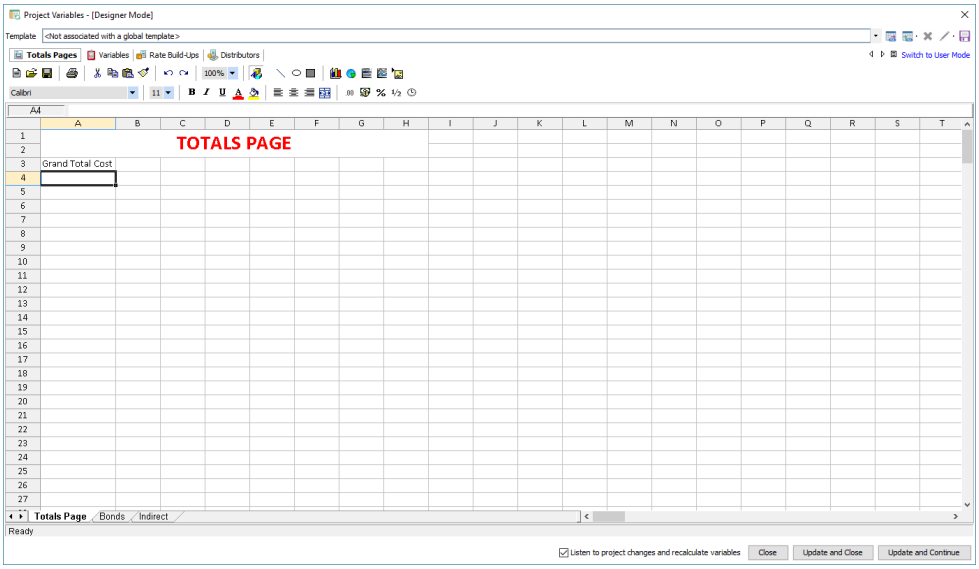
The following window opens, in *User mode*. Click on *Switch to Designer Mode* to start linking you PV template to your project :



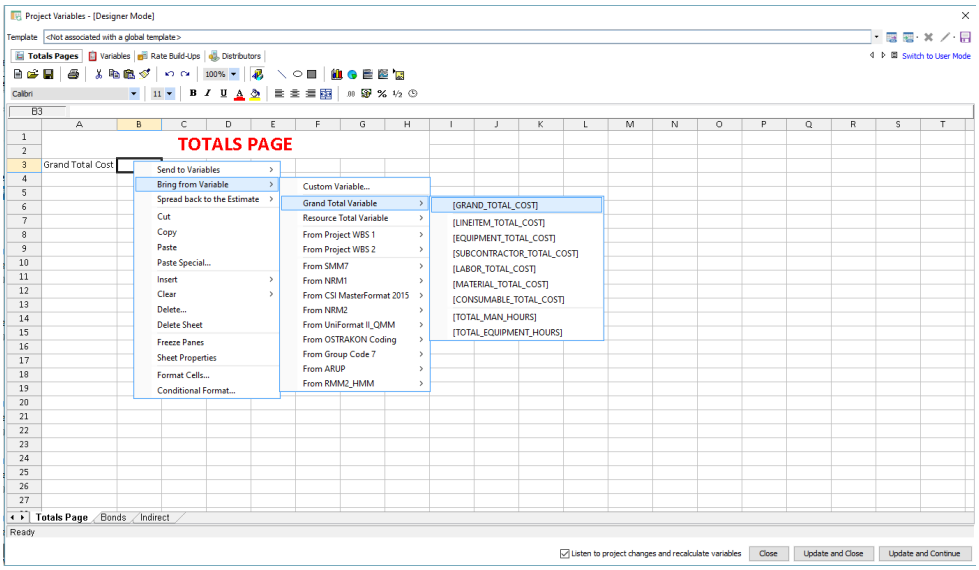
The PV spreadsheet opens:



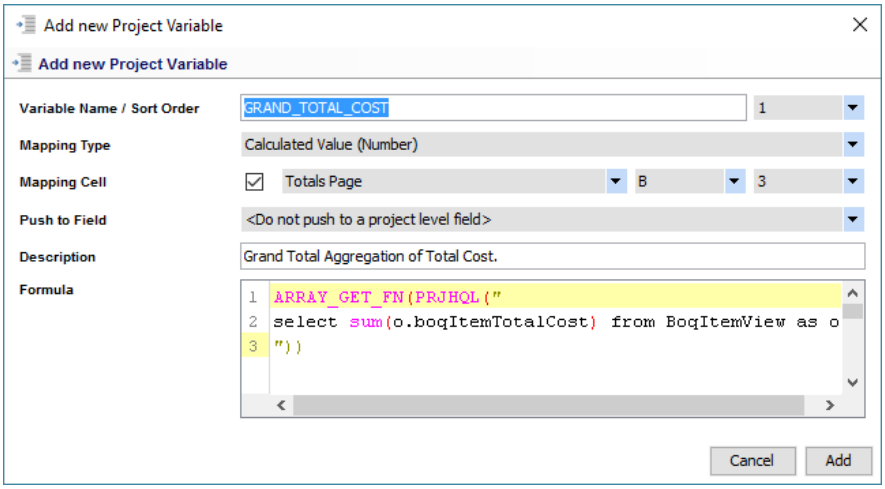
As an example, on cell A3 of the PV spreadsheet we will type "Grand Total Cost" and we will try to dynamically link cell B3 with the current Grand Total Cost of the Project.

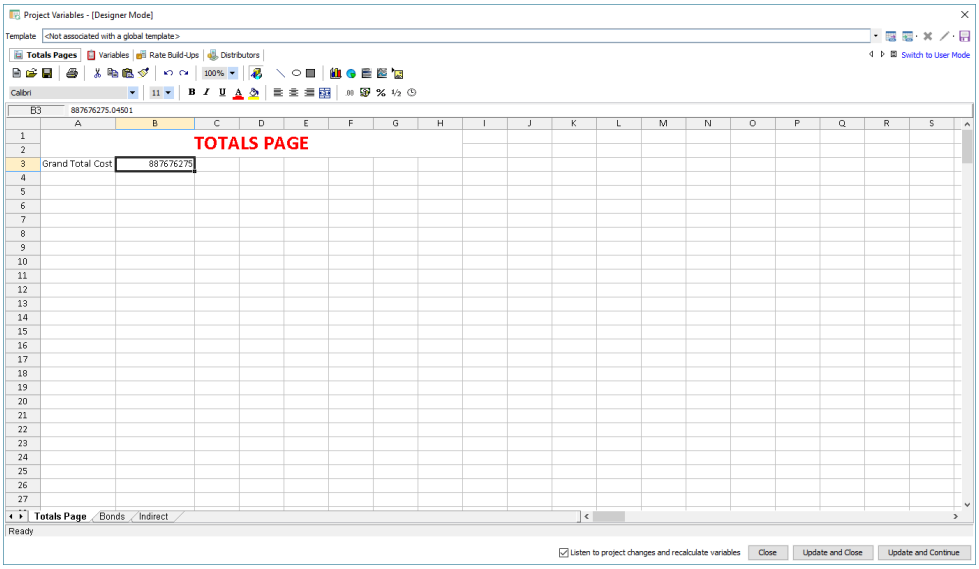


To bring the Grand Total Cost value in cell B3, we will right-click on it, *Bring from Variable, Grand Total Variable* and then *[GRAND_TOTAL_COST]*:



This will give us a Query window, in which it is automatically defined how the information (Grand Total) will be "read" from the Project. In this example, we don't have to change the query, so just click *Add*.



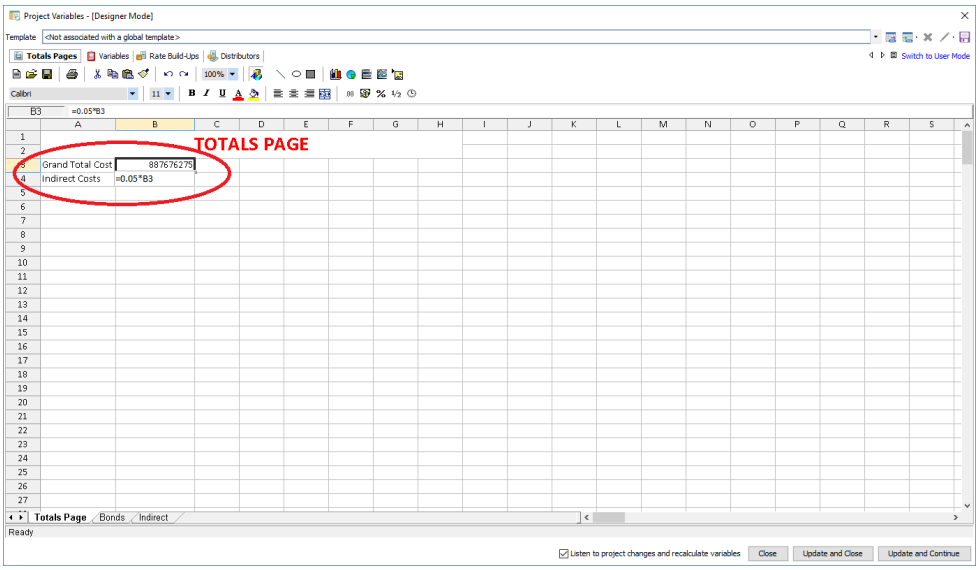


The Grand Total has been brought in. You can repeat the same procedure for other Total costs, i.e. Total Material Cost.

5.2.2 Indirect Costs

Now, let's calculate the I**ndirect Costs** in cell b4, as a percentage over the Grand Total Cost of cell B3, say 5%. Type *Indirect Costs* in cell A4 and then "*=0.05*B3*", in cell B4, exactly as you would in Excel. Press enter; the Indirect Costs figure is now calculated based on the direct costs above.

Press *Update and Close* to save all changes. You can also name and save the template by clicking on the button, on the upper right corner of the PV window.

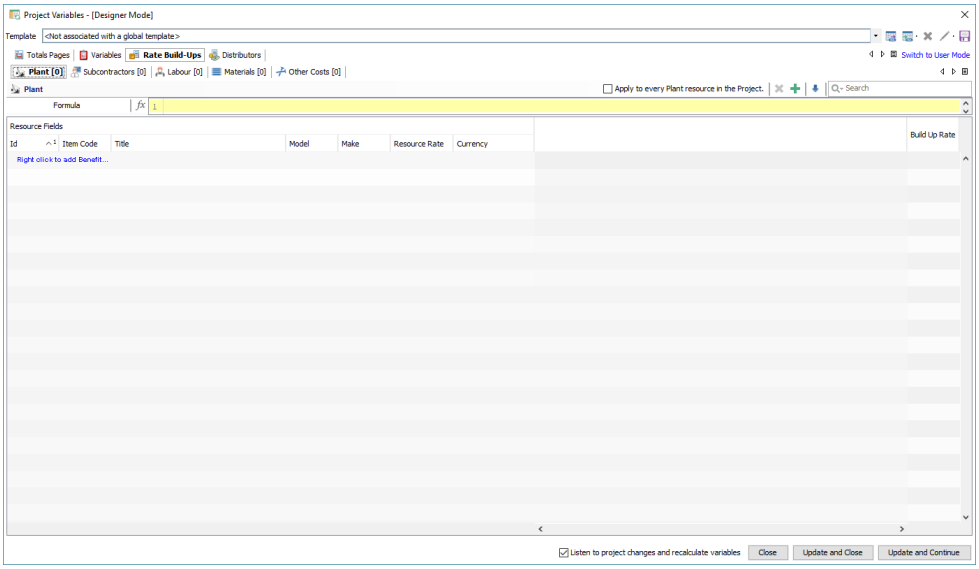


NOTE: If we go back to the project and change the cost of the project, once we open the PV template again, we will notice that both figures (Grand Total and Indirect cost) have been updated. This is due to the fact that the PV template is **dynamically** linked with the project, with the help of queries.

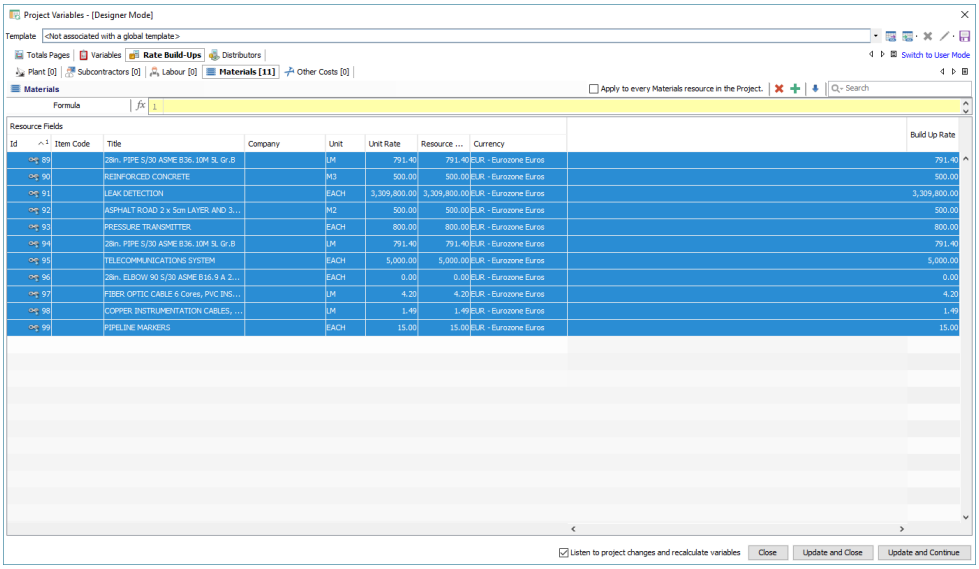
5.2.3 Rate Build-Ups

One more, very helpful functionality of the Project Variables environment is the *Rate Build-ups,* where you can apply factors on all currently used resources of the project.

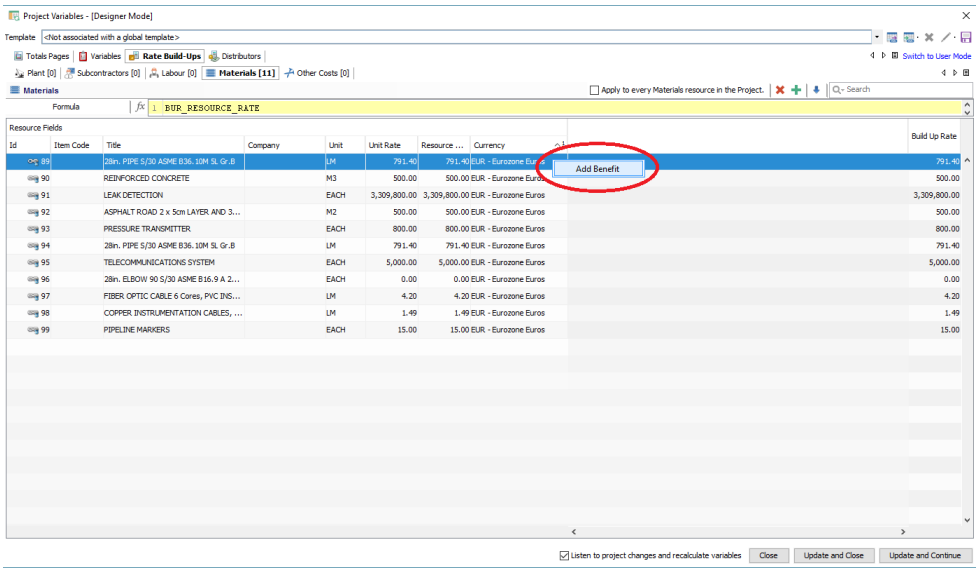
In the Project Variables window, click on the *Rate Build-Ups* tab; this will take you to the table below:



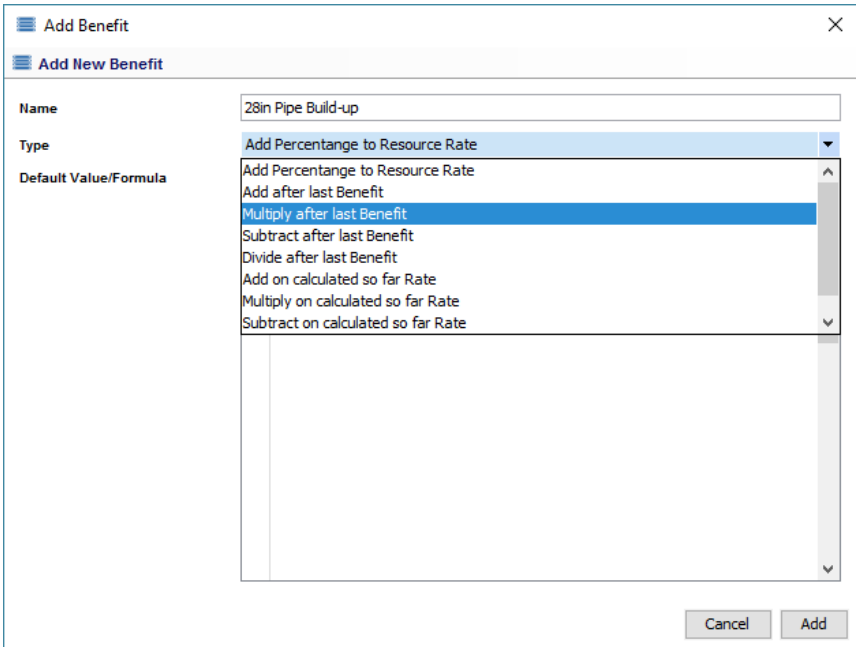
The next step would be to decide for what sort of resource you want to apply rate build-up; let's choose Materials. Then, click on the button to load all the resources that have been assigned to at least one of the BOQ items.



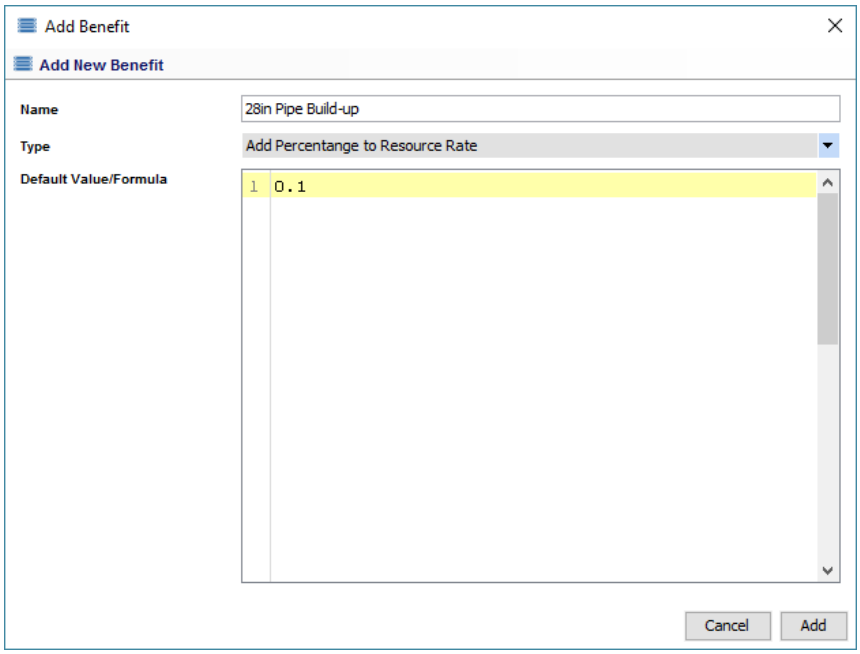
We select one of the materials and we right-click on it, then *Add benefit*:



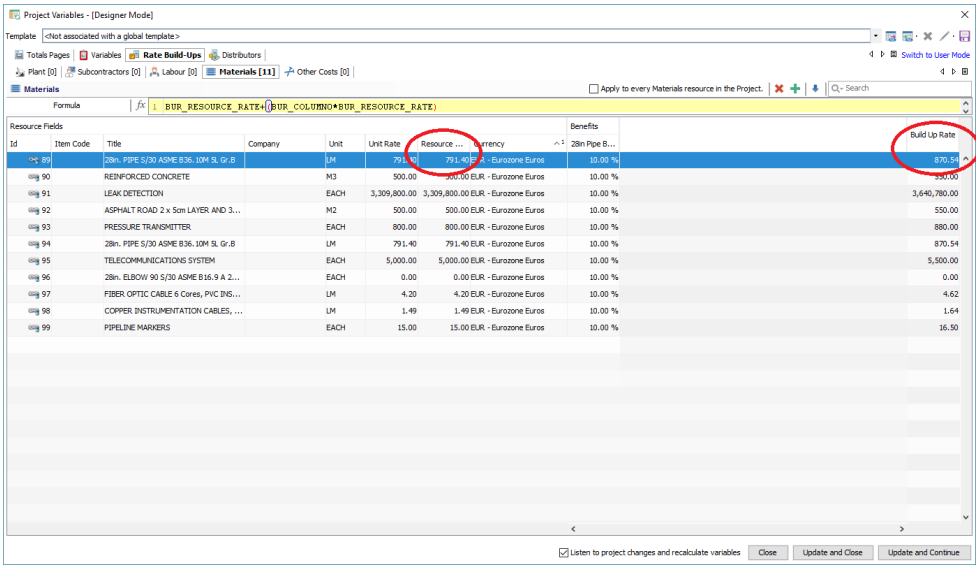
If we want to add a rate build-up of 10% to all materials, we first name the Benefit (here 28in Pipe Build-up) and then, from the selection list, we select *Multiply after last Benefit*:



In the Value field we type 0.1 and the *Add*:



The new rates are shown in the *Build-up Rate* column on the right side of the window.



Once we press *Update and Close*, the project will be updated according to the new material's rate(s).

Quotations

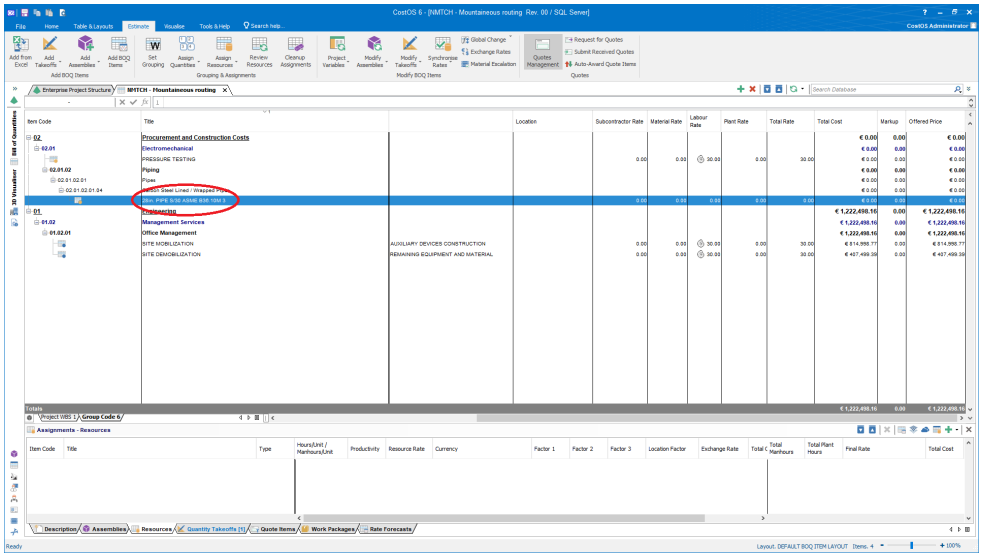
6 Quotations

6.1 Calling for Quotation

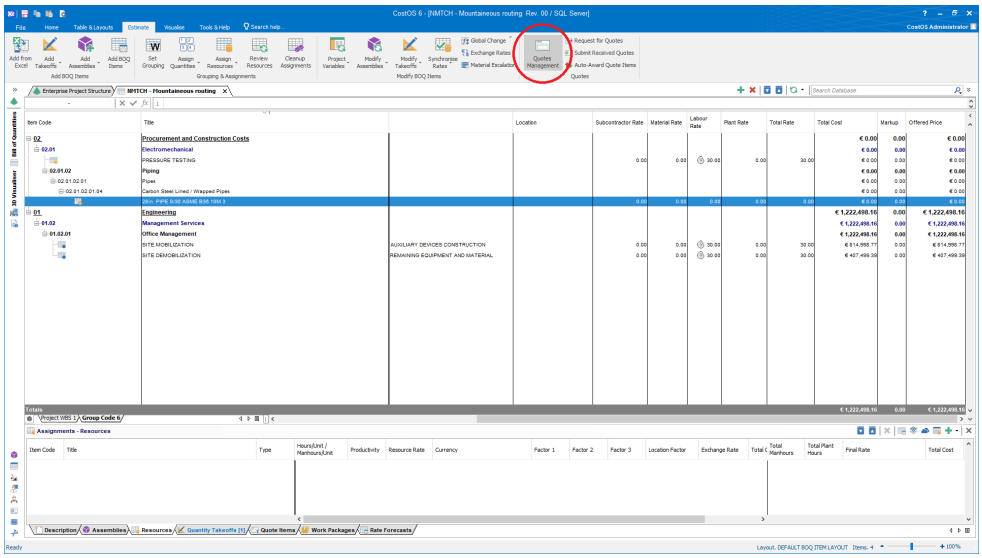
While building an estimate, there is a chance that the estimator does not have available all required rates for material(s) and/or activities, or they might be obsolete. Normally, he would have to contact a supplier and manually key in the updated rate(s) in the BOQ table.

However, with the *Quotes* functionality of CostOS Estimating, he can not only get the rates easily from any supplier, but also submit them automatically.

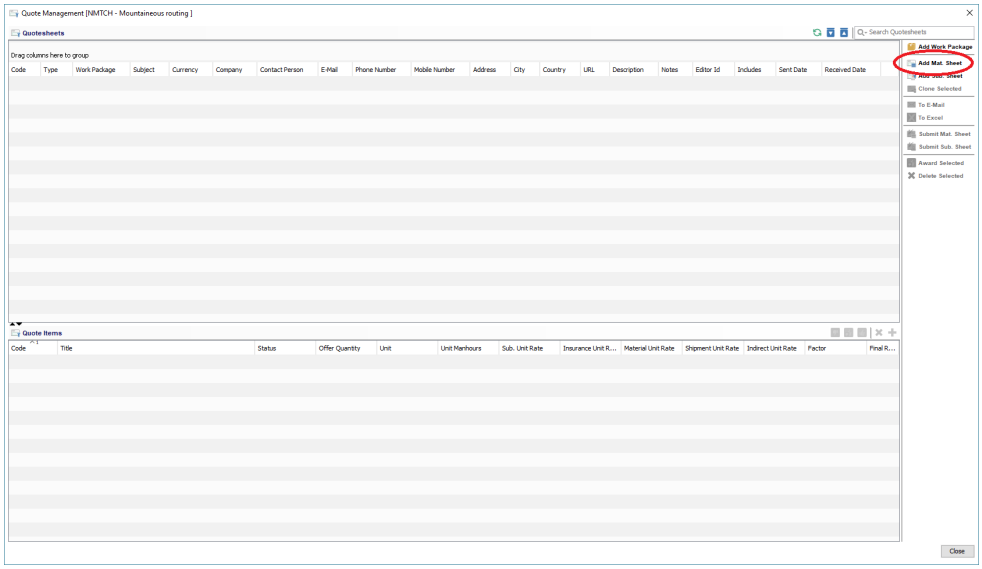
Step 1: Select the BOQ item(s) that need(s) to be quoted; it can either be a material or an activity by a Subcontractor:



Step 2: Click on *Quotes Management*, under the *Estimate* tab of the ribbon bar:

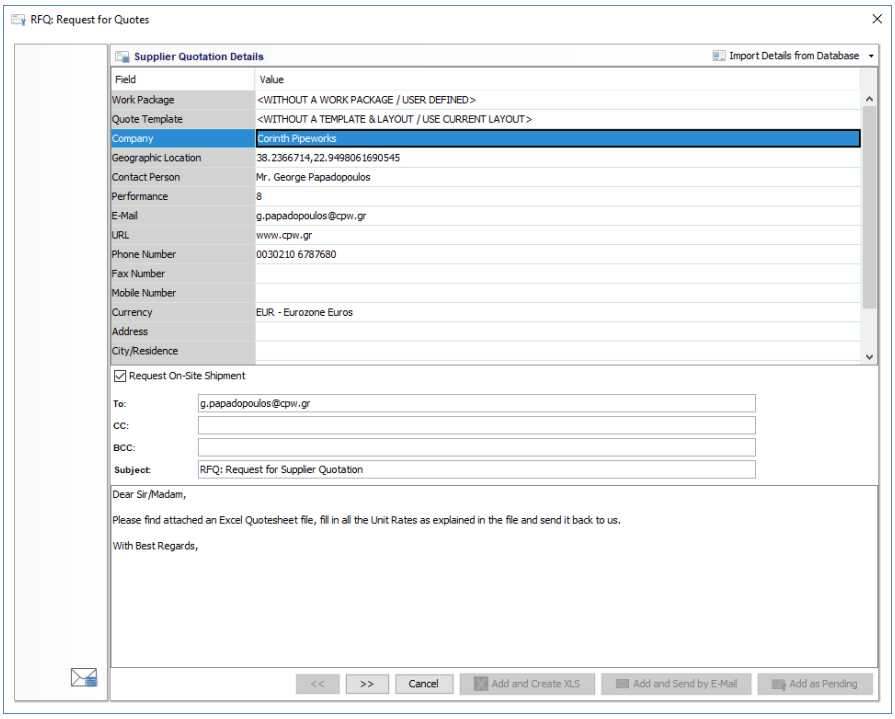


The below window shows up, if interested in receiving a Material quote, click on the *Add Mat. Sheet* button:

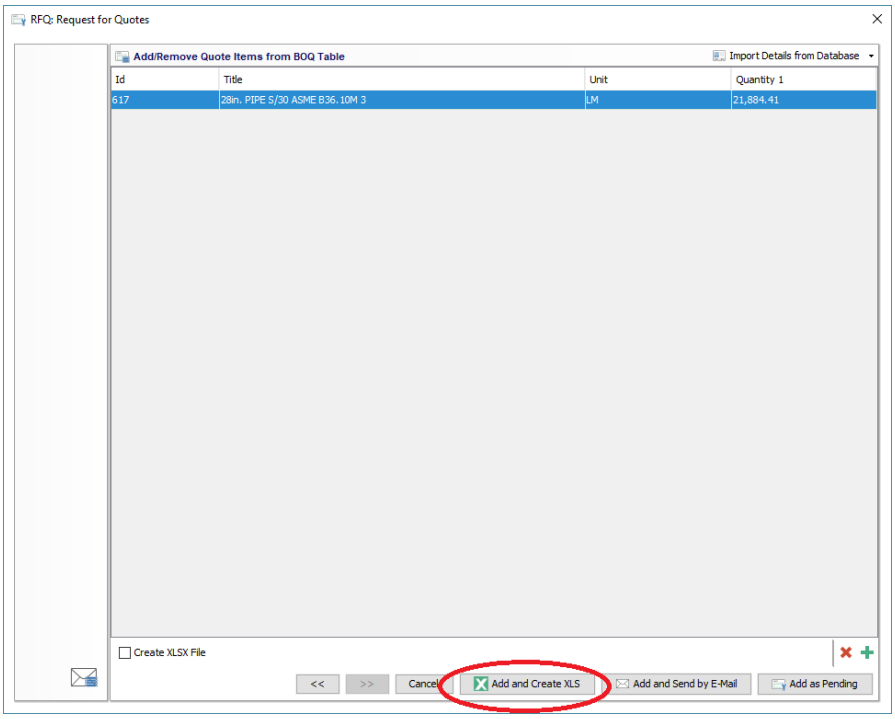


NOTE: For *Subcontractor* Quotes, the exact same procedure is followed ; only difference is that, instead of selecting "Add Mat. Sheet", the "Add Sub. Sheet" will have to be selected at this step.

Step 3: Fill in the details of the supplier (or import them by clicking on *Import Details from Database* and then *Import Details from Local Database)*, then click on the double arrow button.

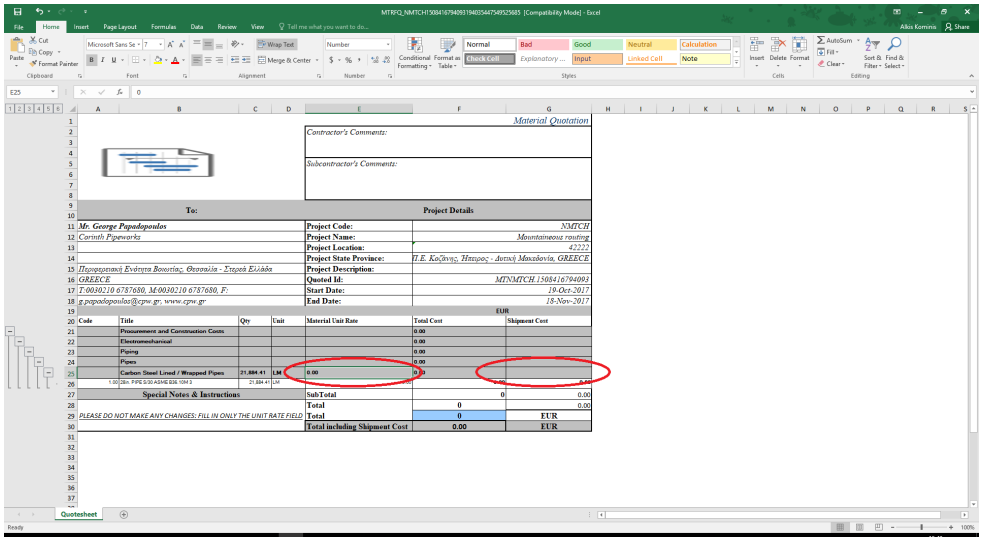


Step 4: The selected material (or activity) is shown in this new window. Should any other materials or activities be added, click on the + button. Click on *Add and Create XLS* to generate the quote sheet to be sent to the supplier or subcontractor.



Step 5: The generated quote sheet will be of the below format. Save it on your system and send it to the supplier/subcontractor as an attachment. The supplier will, in turn, fill in the *Material Unit Rate* and *Shipment Cost* cells (or

the *Sub. Unit Rate*, *Insurance Unit Rate* and *Indirect Costs* cells, in case this is a Subcontractor quote sheet). He will then have to save it and send it back to the user so he can submit it into CostOS Estimating.

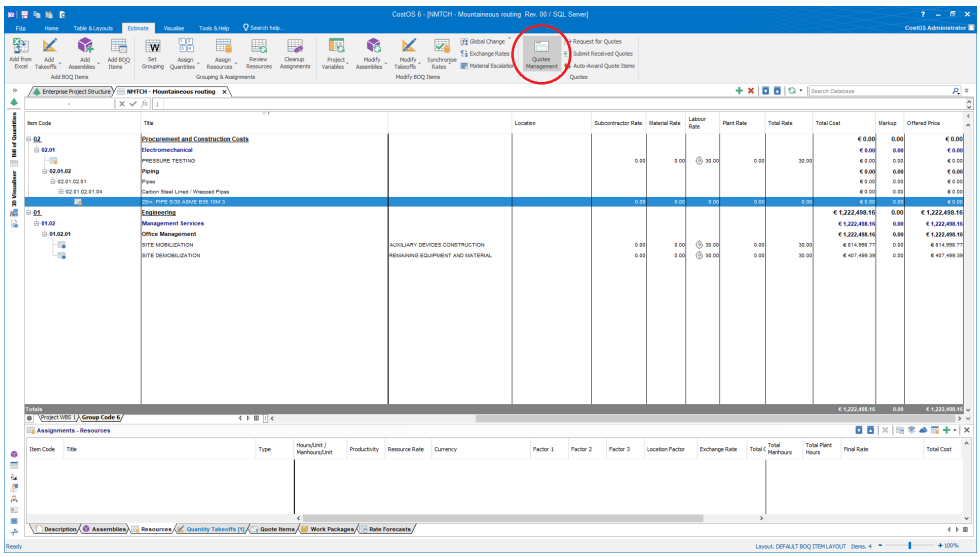


Submitting the received Quotations is explained on the next topic.

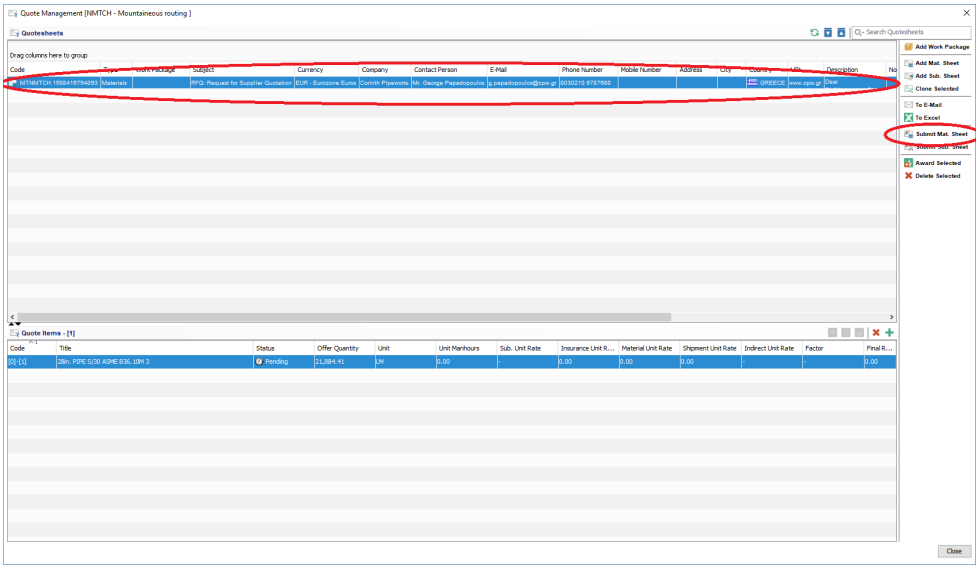
6.2 Submitting a received Quotation

After having received one or even several quote sheets, the user can now submit them to the system.

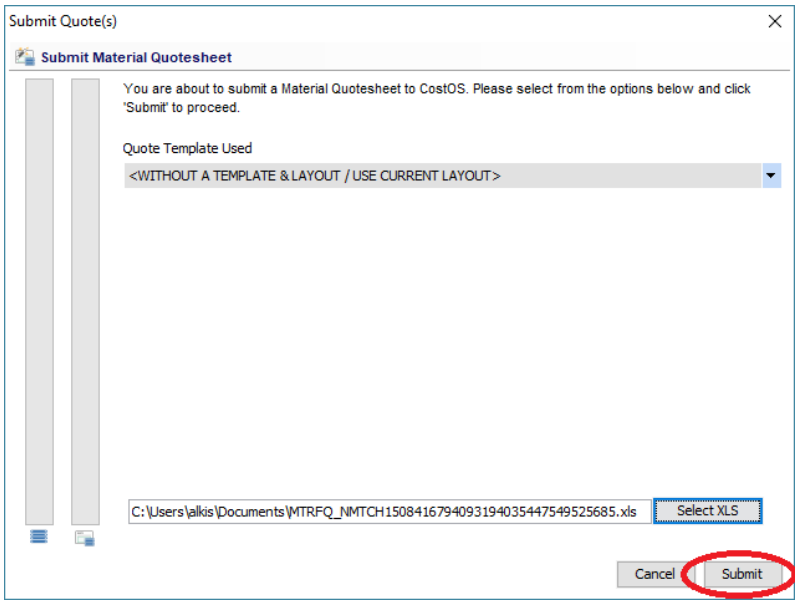
Step 1: Click on *Quotes Management* of the *Estimate* tab:



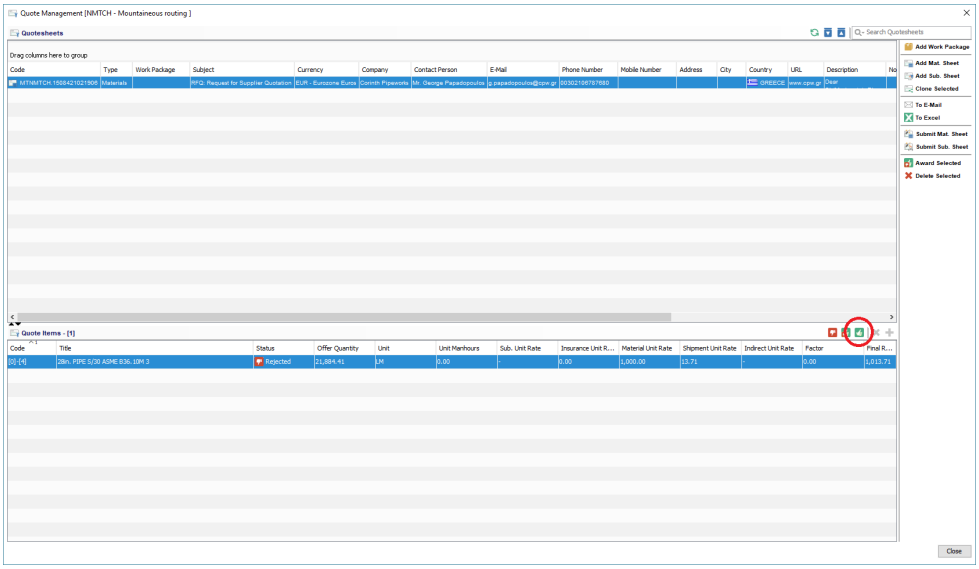
Step 2: As shown below, the received quote sheet is automatically recognized by the system, however it is still in a *Pending* status. To submit it and make it part of the project's database, click on the *Submit Mat. Sheet*.



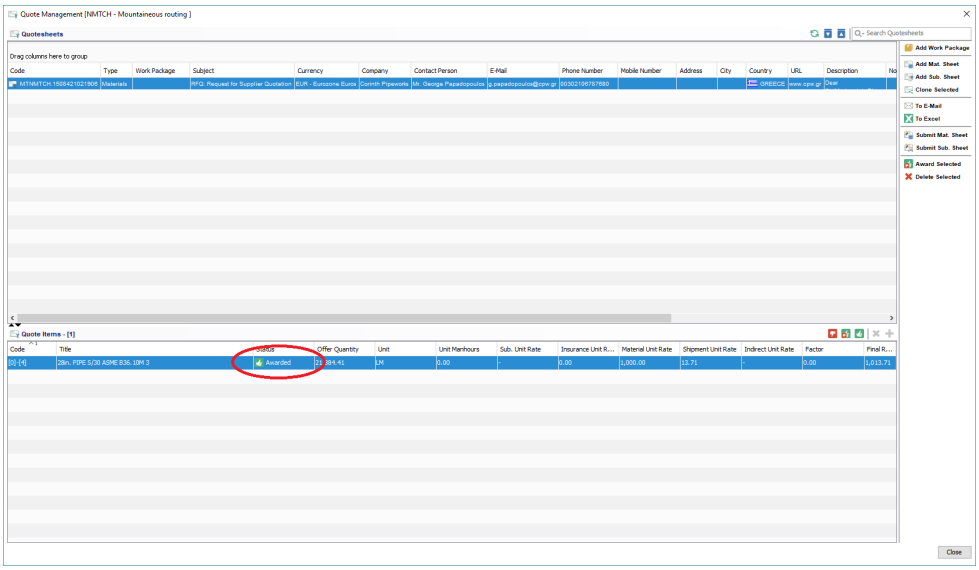
Step 3: Press on *Select XLS* and browse your files in order to select the received quote sheet; click *Submit* and, on the next screen, *Commit*:



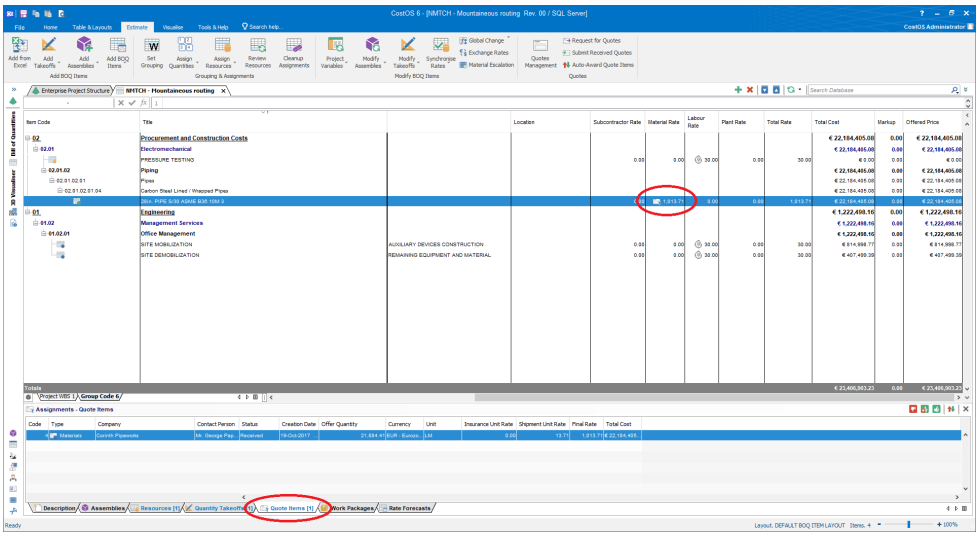
Step 4: The quote sheet is now submitted and its rates can be used for the Estimate. Simply select the rates that you want to award and then press the button (submitted rates are automatically rejected by the system in order to prevent the user from awarding rates to the estimate, without him being fully aware of it):



The rates are now awarded to the item.



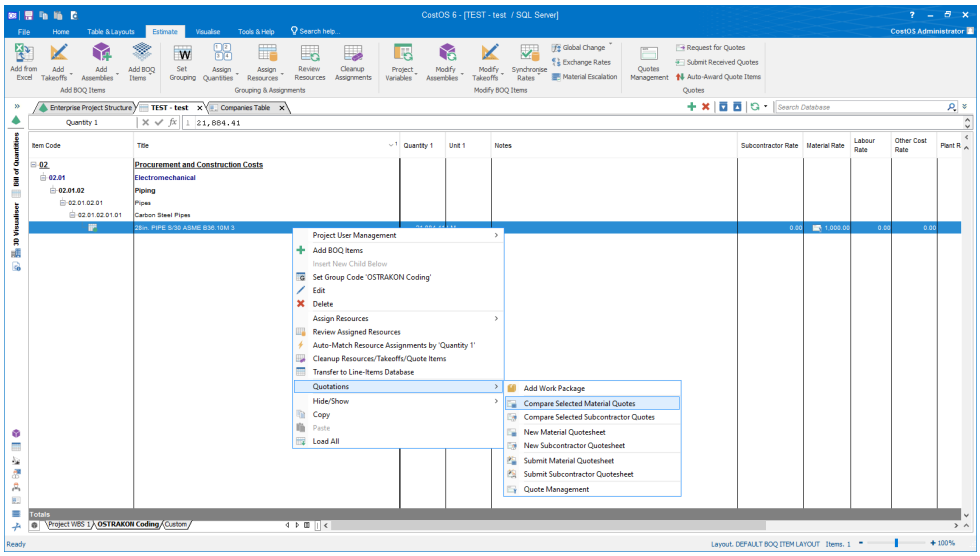
Step 5: Note that the rates has been properly assigned to the material/subcontractor column of the item and the quotes are mentioned in the Assignments panel.



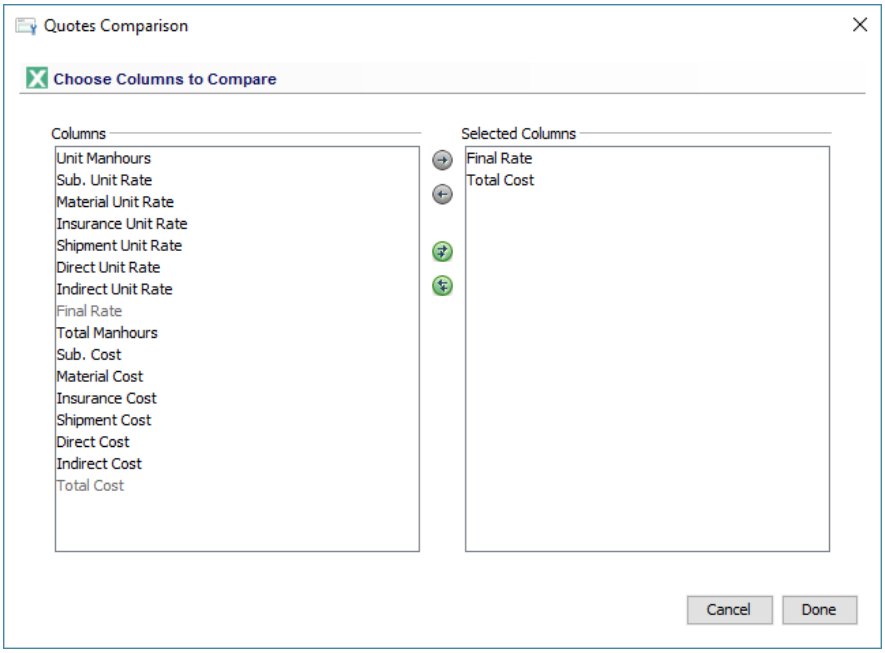
6.3 Comparing received Quotations

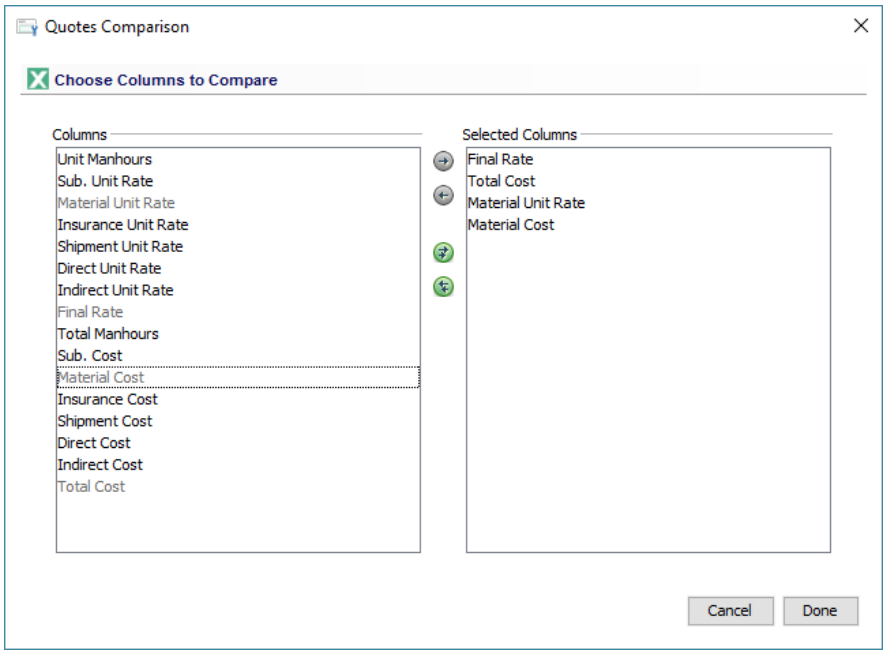
When having received more than one Quotation for an item (or group of items), you can make a side-by-side comparison of all quote sheets.

To do that, right click on the BOQ item you want to compare quotations for and select *Quotations* and then *Compare Selected Material Quotes:*

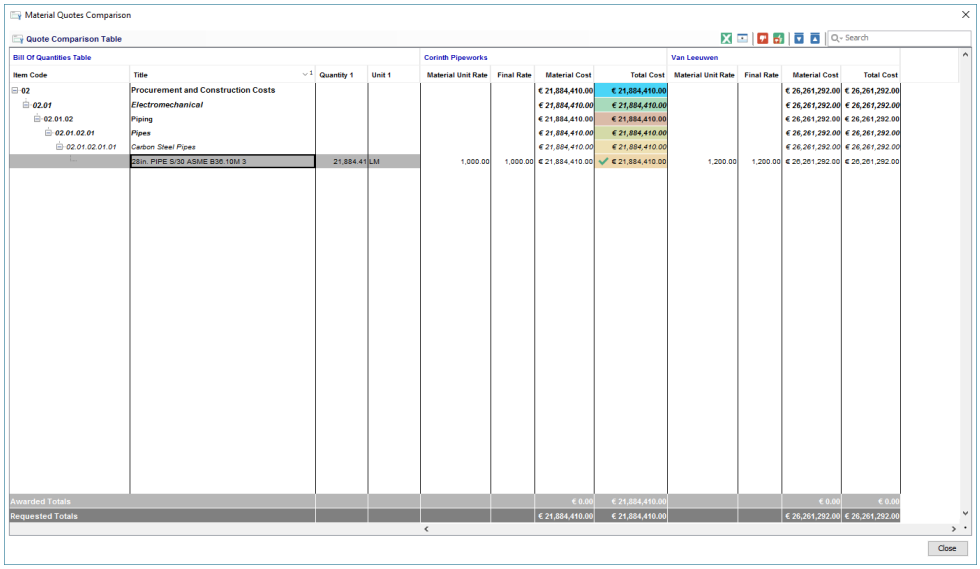


Select the elements (columns) that you would like to compare; the panel on the left gives you all the available columns, while the one on the right the columns currently added for comparison. Add the *Material Unit Rate* and *Material Cost* by selecting them first and then by clicking on the arrow showing to the right:





Press *Done* and the Comparison table opens:



In this table you will be able to see all received quote sheets for the specific material (28in. pipe); each supplier's quotation showing in form of a column. The highlighted and checked costs signify the currently awarded rate for the material selected. If you want to award another supplier's rate, then select on the corresponding rate and click the  button (*Award Selected and Reject others*). Press *Close* once you have awarded all rates for all items.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