

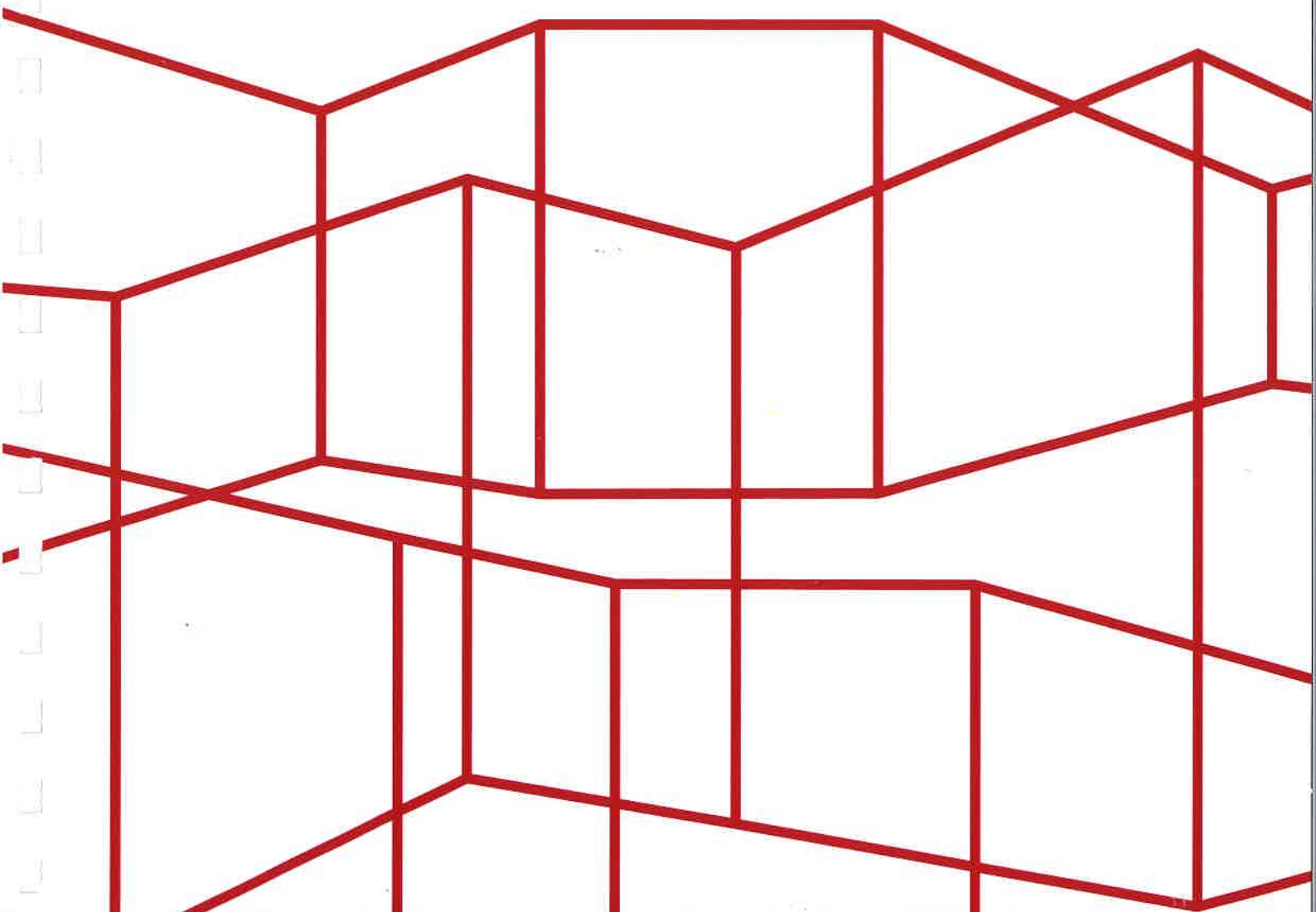
Elecosoft®

Building on Technology®



Powerproject Training

Managing Costs and Resources
with Powerproject



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Contents

Course Objectives	4
Cost Centres	5
Creating New Cost Centres	5
Setting Cost Centre Defaults	6
Setting a cost centre as a point spend	7
Allocating Costs	8
Creating a table to show cost	8
Showing/Hiding Cost Allocation Bars	9
Allocating Cost to a Task	10
Hiding Cost information	11
Creating a cost breakdown table	12
Incomes	13
Creating a Cost, Income & Net table	14
Cost Histograms	15
Creating Cost Histograms	15
Customising the histogram	16
Slicing the Histogram into Time Periods	17
Drill Down	18
Other Histogram tools	18
To display axis labels and legends on the histogram	18
To change the scale of the histogram	19
To display/print the Histogram without the Bar Chart	19
Exporting Data to Excel	20
Non-Linear Allocation	21
Assigning a resource curve to a cost allocation	21
Analyse Cost Usage	23
Using the Resource Usage View for costs	23
Displaying a Cost Breakdown Structure	25
Task Work	26
Display a Task Work Table	27
Display a Task Work histogram	27
Resources	28
Creating Permanent Resources	28
Setting Permanent Resource Defaults	28
Creating Consumable Resources	31
Setting Consumable Resource Defaults	31
Allocating Resources	33
Creating an Allocation Table	33
Showing/Hiding Resource Allocation Bars	33
Allocating Permanent Resources to a Task	34
Using Groups of Resources	35
Allocating Consumable Resources to a Task	35
Hiding resource information	36
Resource Report Table	36
Resource Breakdown Structure View (RBS)	37
Resource Histograms	38
Display a histogram showing Resource Allocation	38
Drill Down	40
To display a stacked resource allocation histogram	40
Display a histogram showing Allocation and any Over Allocation	41
.....	42

	3
Show Tasks	42
Using Resource Modelling to manage over allocation	42
Other Histogram tools	43
To display/print the Histogram without the Bar Chart	43
To show the axis labels and legends of the histogram	44
Exporting Data to Excel.....	44
Non-Linear Allocation	44
Assigning a resource curve to an allocation	44
Resource Profiling	46
Resource Usage View	46
Editing the properties of the resource usage view.....	48
Baselines	50
Creating Baselines.....	50
Displaying the baseline.....	52
Using baselines to compare costs.....	53
Using the Table.....	53
Using Histograms	54
Progressing the Project	56
Updating Progress using Multiple Progress Periods	56
Displaying progress in the bar chart	57
Entering progress into the Table	57
Entering Progress against other Progress Periods	59
Updating Progress using Task Work.....	59
APPENDIX	61
Resources	61
Creating new cost & income rates	61
Resource Modelling	62
Types of Resource Modelling.....	62
Using Modelled Resources – a work-based example	62
Setting the amount of work on a task	62
Allocating a modelled resource.....	63
.....	64
Changing the duration of a Resource Modelled task.....	64
Creating your own resource usage graph.....	65
Demand and Scheduled Resources	66
Allocating a Demand Allocation	67
Displaying Demand / Scheduled Resources in the Table.....	68
Satisfying Demand	68
Glossary	70
Exercises.....	73
Exercise 1 - Creating and Allocating Cost Centres.....	73
Exercise 2 - Cost Histograms	74
Exercise 3 - Creating and Allocating Resources.....	75
Exercise 4 - Resource Histograms.....	76
Exercise 5 - Comparing Planned v Current costs.....	77
Managing Costs & Resources – What Next?	78

Course Objectives

During the day you will learn how to:

- ▶ Create Cost Centres
- ▶ Allocate costs & income to tasks in a project
- ▶ Display cost histograms
- ▶ Use Task work
- ▶ Create permanent and consumable resources
- ▶ Allocate permanent and consumable resources to tasks
- ▶ Display resource histograms
- ▶ Use baselines to compare information
- ▶ Update progress

Topics will be backed up by exercises

This booklet is yours to take away

Please feel free to add any notes you feel are relevant

Please ask any question

 = Note, something of interest

 = Warning, something to make you aware of.

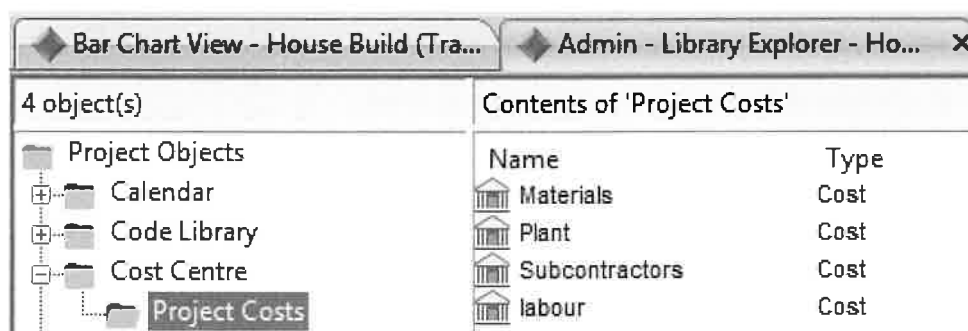
Cost Centres

A **Cost Centre** is like an account that used to allocate money. Tasks can take expenditure from or provide income to a cost centre.

Costs can either be fixed i.e. a subcontractor fee or variable so that they are dependent on time, work or the amount of resources used.

Cost centre libraries can be organised in a flat structure or in a hierarchy e.g. Overall Costs broken down into individual costs. You will need to adopt a hierarchical structure if you want to record or report on cumulative information from a group of cost centres.

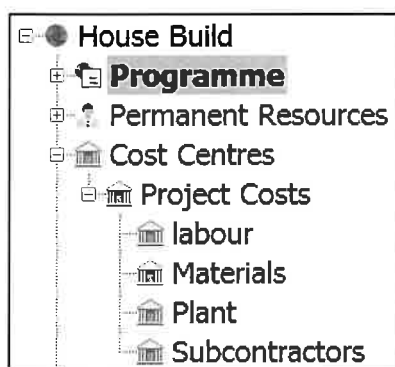
Creating New Cost Centres



To create the Project Costs Folder:

- ▶ Navigate to the **Library Explorer** *TOP RIGHT*
- ▶ Select the **Cost Centre** folder on the left-hand side
- ▶ *Right click* in the right-hand window and from the menu select **New Folder**
- ▶ Change the name to "**Project Costs**" and press **ENTER**
- ▶ *Double click* on the folder so that the right-hand window appears empty
- ▶ *Right click* with the mouse and select **New Cost Centre**
- ▶ Type in "**Labour**" and press **ENTER**
- ▶ Type in the remaining cost centres: **Materials**, **Plant** and **Sub-contractors** pressing **ENTER** after each one

Available cost centres are shown in the Project View

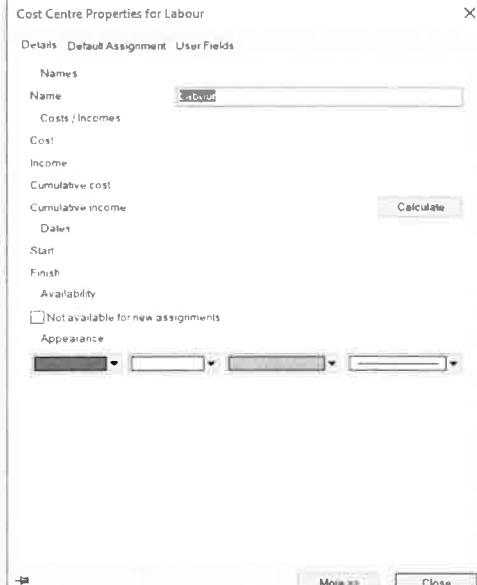
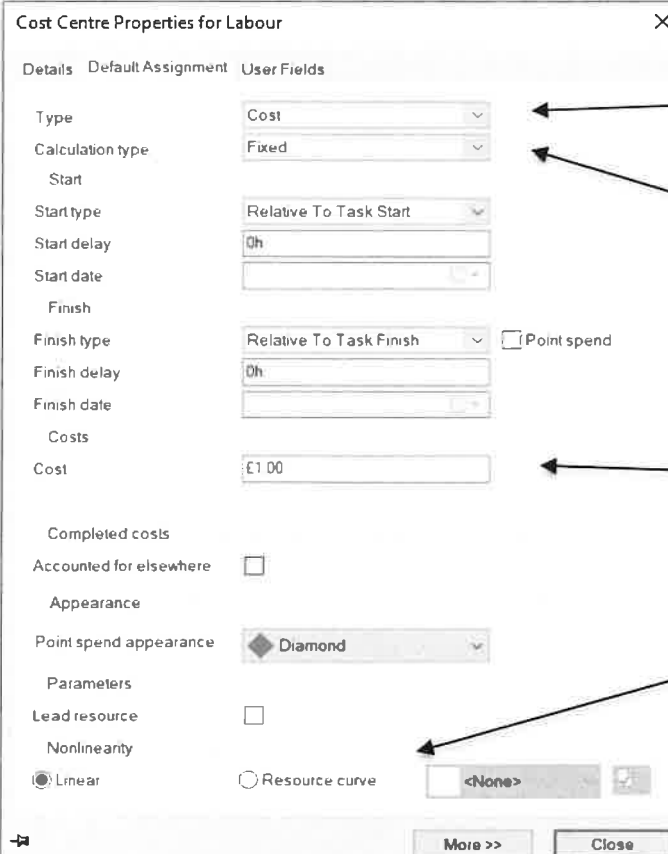


Setting Cost Centre Defaults

Default information can be set that will apply each time a cost is allocated through a project. For example, set a default appearance to recognise the cost allocation when shown in the bar chart and in histograms. It is also possible to control whether the cost centre records cost (expenditure) or income (revenue), how the cost is calculated, when it impacts the project & even the default amount of the cost.

The default properties can be set in the **library explorer** or from the 'project view'.

- ▶ *Right click* on a cost centre and select **Properties** from the menu.
- ▶ On the details tab, set the **Appearance** of your choice
- ▶ Select the Default Assignment tab

Type – this specifies whether the cost centre is a cost or income on allocation

Calculation Type – this specifies how the cost is calculated – fixed, time-based or task work based

Cost – this is the default amount that is allocated each time you assign this cost centre

Nonlinearity – choose a resource curve if the cost is not spread evenly across the duration of the task.

Setting a cost centre as a point spend

By default, a cost allocation is set to spread over the duration of the task. Sometimes it may be required to show that the cost impacts the project at a point in time - a 'point spend'. It can happen within the duration of the task or outside it, e.g. delayed payment for materials 10 days after delivery.

In this example, "**Materials**" will be a one off - a cost at a single point in time (Point Spend) that will be paid after receipt of the goods

- ▶ *Right click* on the **Materials** cost centre and select **Properties** from the menu
- ▶ Select the 'Default Assignment' tab
- ▶ Put a tick in the **Point Spend** box. The Finish section will grey out

Cost Centre Properties for Materials

Details Default Assignment User Fields

Type: Cost

Calculation type: Fixed

Start

Start type: Relative To Task Start

Start delay: 0h

Start date: []

Finish

Finish type: Relative To Task Finish

Finish delay: 0h

Finish date: []

Costs

Cost: £1.00

Completed costs

Accounted for elsewhere: ☐

Appearance

Point spend appearance: ☒ Point spend

Parameters

Lead resource: ☐

Nonlinearity

☒ Linear ☐ Resource curve <None>

More >> Close

- ▶ Set the **Start Type** to 'Relative to Task Finish' (this will make the point spend milestone appear at the end rather than at the beginning of the task)
- ▶ Set a **Start Delay** of 10ed (this will make the point spend milestone appear 10 elapsed days after the task)
- ▶ Click on **Close**

FIXED - SUBCONTRACTOR (TOTAL)
 TIME BASED - PAID PER HOUR
 TASK WORK BASED - COST PER UNIT

Allocating Costs

Tasks in a project can have a number of Cost Allocations. For example, these could be payments to sub-contractors or hire of equipment.

It is useful to set up a table to help us allocate and display our costs.

Creating a table to show cost

Create a table to show:

Line	Name	Duration	Start	Finish	Cost
------	------	----------	-------	--------	------

- ▶ Using the **Default Table**, right click on a column heading and select **Add Column**
- ▶ The column categories will appear in a dropdown list. Select the **Cost or Income** category and the **Cost** field
- ▶ In the Table Definition set this column to display 'Zero as blank'

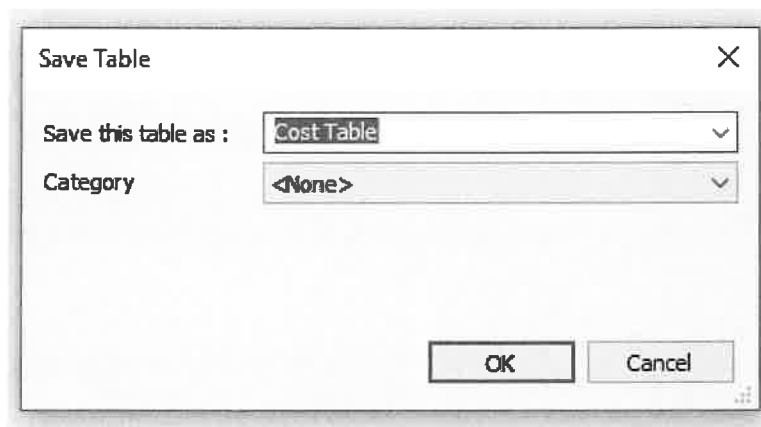


Table Definition Properties

Column Definitions

Field	Appearance		
Line	Column title	Cost	Word wrap ☒
Name	Title align	Centre	Blank for subheads ☒
Duration	Cell align	Right	Zero as blank ☒
Start	Width	22.50	
Finish	Detail		
Cost			

- ▶ Save the table using the **View** Tab. Select **Table > Save as** and name it '**Cost Table**'



Save Table

Save this table as : Cost Table

Category <None>

OK Cancel

 Tables can be organized into Categories e.g. to keep all 'cost' tables together. Choose a category for the table by selecting from the dropdown list.

Showing/Hiding Cost Allocation Bars

When assigning costs & resources, it is useful to display the allocation & its position under the task. Information about the allocation is also shown in the table. This is known as the 'Secondary field'

7	Sub structure			7	
8	Dig footings			8	
9	labour				
10	Plant				
11	Brickwork to DPC			11	
12	Slab			12	
13	labour				
14	Materials				

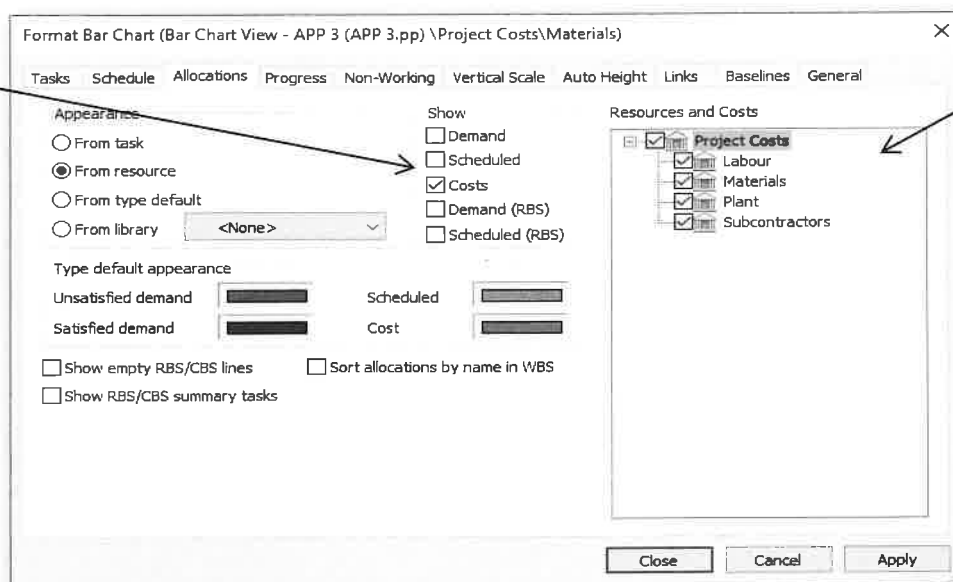
To switch cost allocations bars on or off:

- ▶ Select the **Format Tab** and click the **Cost Allocation** icon from the Show/Hide switches.



Alternatively, and for more control over the display of Cost & Resource Allocations

- ▶ Select **Format Bar Chart**
- ▶ Select the **Allocations Tab**
- ▶ Tick to display Costs in the 'Show' Section



Select the cost/resource allocations to display

Control the display of specific cost centres & resources

- ▶ Click **Close**

Allocating Cost to a Task

- Display the **Project View** on the left-hand side of the screen
- Click on the + button to the left-hand side of the **Cost Centres** in the project view
- Click on the + button to the left-hand side of **Project Costs** folder
- *Left click and hold* the mouse and drag the **Labour** cost centre over the **Set-up site** task until the pop-up box says, "**Assign Labour to Set up site**" and let go of the mouse



- The cost allocation is displayed on the bar chart and in the spreadsheet

+	4	Set up Site	3d	25 Jan	27 Jan	£1.00	
	5	labour	3d	25 Jan	27 Jan	£1.00	

- In the cost column change the default £1 allocation to £1,000
- Continue to allocate cost centres to tasks according to their value

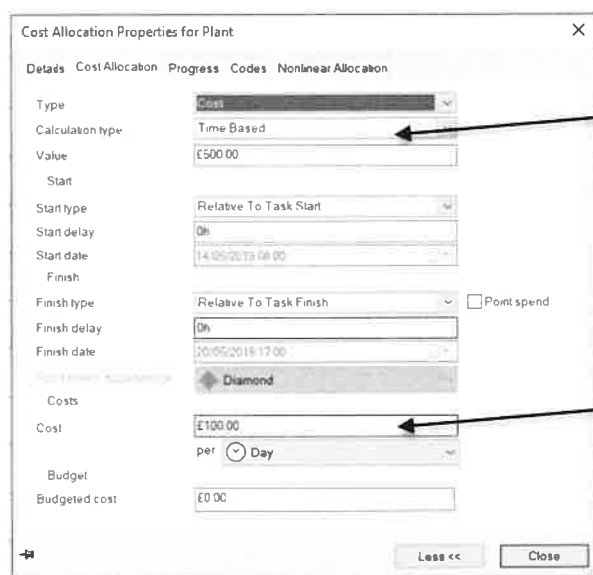
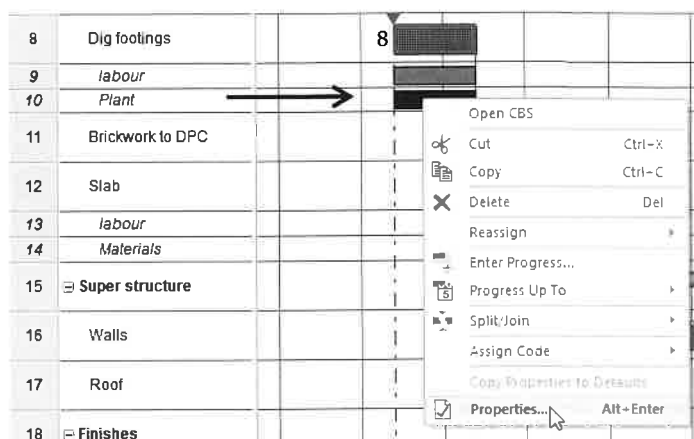
Line	Name	Duration	Start	Finish	Cost	
3	Pre construction	3w 2d	11 Jun	04 Jul	£1.00	
4	Design	2w	11 Jun	22 Jun		
5	Meetings	4d	25 Jun	03 Jul		
6	Set up Site	3d	27 Jun	29 Jun	£1.00	
7	Labour	3d	27 Jun	29 Jun	£1.00	
8	Start on site		04 Jul	04 Jul		
9	Sub structure	2w 1d	04 Jul	18 Jul	£6,500.00	
10	Dig footings	1w	04 Jul	10 Jul	£3,000.00	
11	Labour	1w	04 Jul	10 Jul	£2,000.00	
12	Plant	1w	04 Jul	10 Jul	£1,000.00	
13	Brickwork to DPC	3d	11 Jul	13 Jul		
14	Slab	3d	16 Jul	18 Jul	£3,500.00	
15	Labour	3d	16 Jul	18 Jul	£1,000.00	
16	Materials		30 Jul	30 Jul	£2,500.00	

Note the 'point spend' milestone appears at a later date on the bar chart. This is because the default properties were set so that this cost will not come into the project until 10 days after completion of the task.

Some costs are fixed costs. They do not change even if the task duration changes. Plant will be a Time-based cost. If not previously set in the default properties of the cost, this can be configured in the Properties of the allocated cost.

► Allocate Plant to Dig Footings.

► Right click on the cost allocation bar & select properties



Set the Calculation type to time based

Set the cost per time unit

The cost is calculated to £500 for the 5d task. This cost is recalculated if the task increases or decreases.

✎ Right Click on the cost allocation bar & select '**Properties**' to edit an existing allocation.

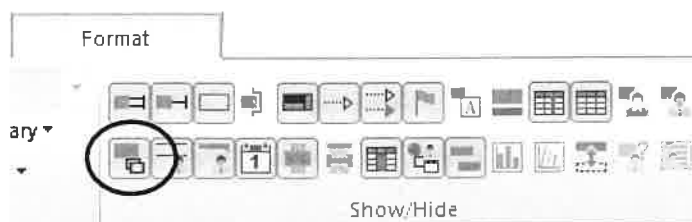
Right Click on a cost centre in the **Project View** to edit the default properties. This will affect all future assignments but will not affect any allocations that have already been made.

Hiding Cost information

Hide the individual cost detail by turning off the cost allocation bars on the bar chart.

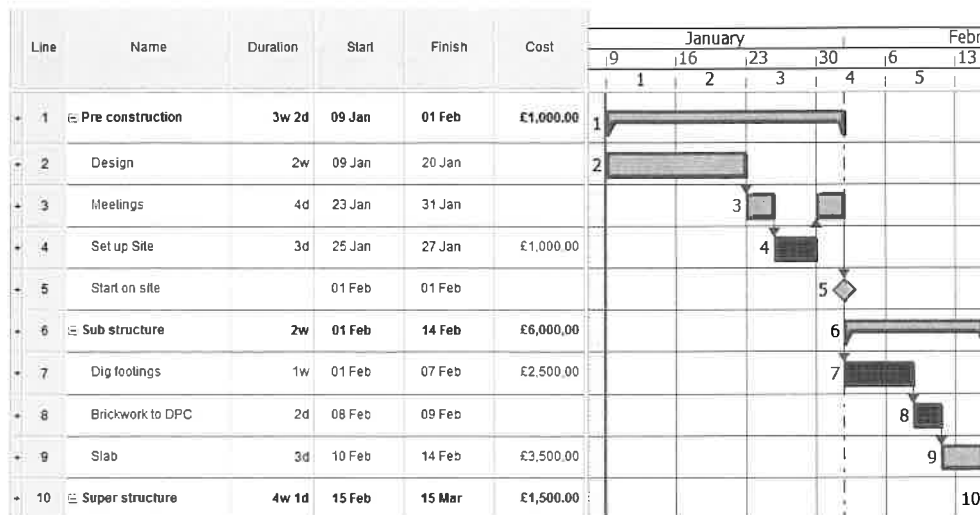
► Select the Format Tab

► Deselect the **Cost Allocations** button



Only the total cost for a task is displayed in the cost column.

The accumulation of cost allocations can be viewed on the summary/hammock or expanded tasks.



- Change the table to the default table

No cost information is displayed for the project.

Creating a cost breakdown table ^{for reporting}

It is possible to create a table to display values for each individual cost centre against each task. This enables costs to be allocated to tasks by typing directly into the spreadsheet.

- Display the **Cost Table**
- *Right click* the Duration column and '**Remove the column**'. Repeat for the Start & Finish columns
- *Right click* on the Cost column and select **Table Definition**
- Rename the cost column to one of the cost centres and set the **Attributes** to point the column at that cost centre.
- Place a tick in the '**Zero as Blank**' box to avoid seeing £0.00 in each cell.
- Click **Add** to add another cost field
- Repeat the steps above to create a column for each cost centre
- Click **Close**.
- Save the table.

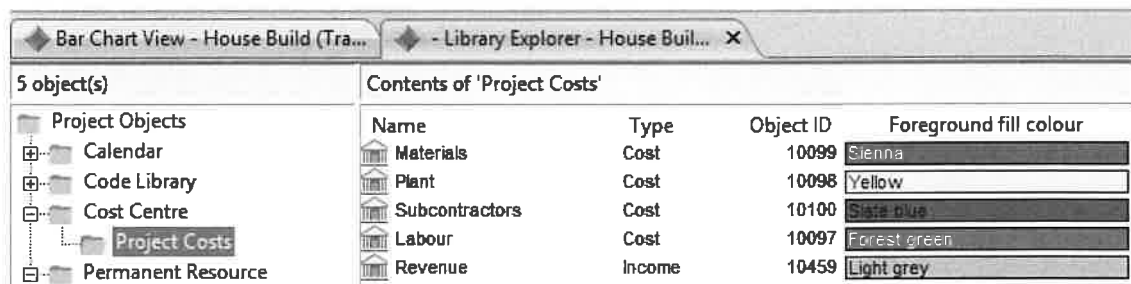
Line	Name	Labour	Materials	Plant	Subcontractor	Total Cost
+ 1	Pre construction	£1,000.00				£1,000.00
+ 2	Design					
+ 3	Meetings					
+ 4	Set up Site	£1,000.00				£1,000.00
+ 5	Start on site					
+ 6	Sub structure	£6,000.00	£2,500.00	£500.00	£500.00	£6,000.00
+ 7	Dig footings	£2,500.00		£500.00	£500.00	£2,500.00
+ 8	Brickwork to DPC					
+ 9	Slab	£3,500.00	£2,500.00			£3,500.00

This table allows costs to be allocated by typing directly into the table columns without displaying cost allocation bars & secondary fields.

Incomes

Cost centres can also be used to record incomes into a project, allowing Net expenditure or profit and loss to be tracked.

- Within the Project Costs folder, create a cost centre called Revenue



- Edit the default properties of the cost centre to set the **Calculation Type** as an Income
- Close the library explorer

Income can now be allocated to relevant tasks or milestones in the project.

Creating a Cost, Income & Net table

The table can be edited to display income fields and report on Net figures.

Line	Name	Duration	Cost	Income	Net
------	------	----------	------	--------	-----

- ▶ *Right click* on a column heading & select the **Income** field from the **Cost & Income** Category
- ▶ Edit the **Attributes** of the Income field to point the column to the Revenue cost centre
- ▶ Set 'Zero as blank'

Table Definition Properties

Column Definitions

Field	Appearance	Word wrap	Blank for subheads	Zero as blank	rolled-up
Line	Column title	Income	☒		
Name	Title align	Centre	☒		
Duration	Cell align	Right	☒		
Cost	Width				
Income	Detail				
Net	Apply view filter				
	Data				
	Dates				
	Specific task				
	Attributes				
	Cost centre				
	Rolled/Direct				
	Override currency				
	Cost type				

Field list: Line, Name, Duration, Cost, Income, Net

Appearance list: Column title, Title align, Cell align, Width, Detail, Apply view filter, Data, Dates, Specific task, Attributes, Cost centre, Rolled/Direct, Override currency, Cost type

Field list (dropdown): <All>, Project Costs, **Revenue**, Labour, Materials, Plant, Subcontractors

Cost centre (dropdown): <None>

Rolled Up Values (dropdown): <None>

Cost type (dropdown): All excluding satisfied demands

Show fields: Primary

Buttons: Up, Down, Add, Remove

Editing the private copy of the table definition that is stored in your view.

Buttons: Close, Cancel, Apply

Cost Histograms

Any number of histograms relating to cost or resource information can be shown with the bar chart and printed.

Any changes made to tasks or allocations in a project will update the histogram.

To display a histogram on the screen:

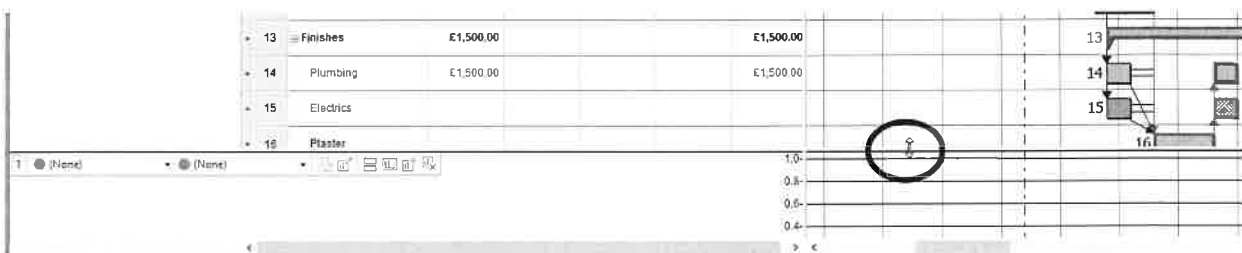
- Click on the **View** tab and select **New Histogram** from the **Graphs** group



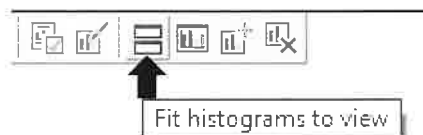
A histogram will be displayed at the foot of the screen.

To resize the histogram:

- Place the cursor over the top line of the histogram area until a double-sided arrow is displayed

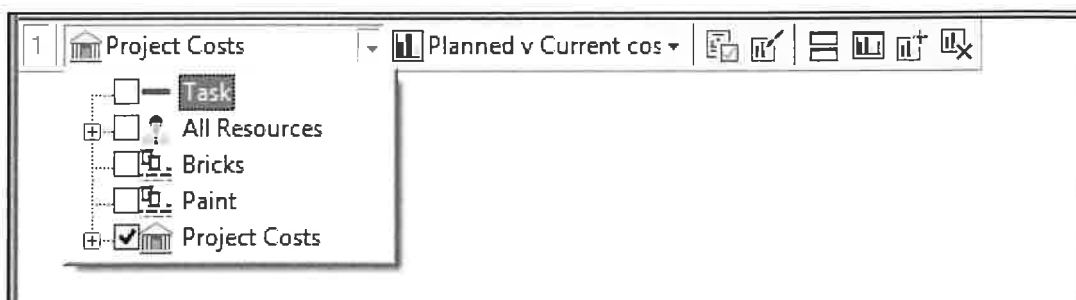


- Drag the histogram upwards
- To fit the histogram to the space at the foot of the screen, select the **'Fit histograms to view'** icon

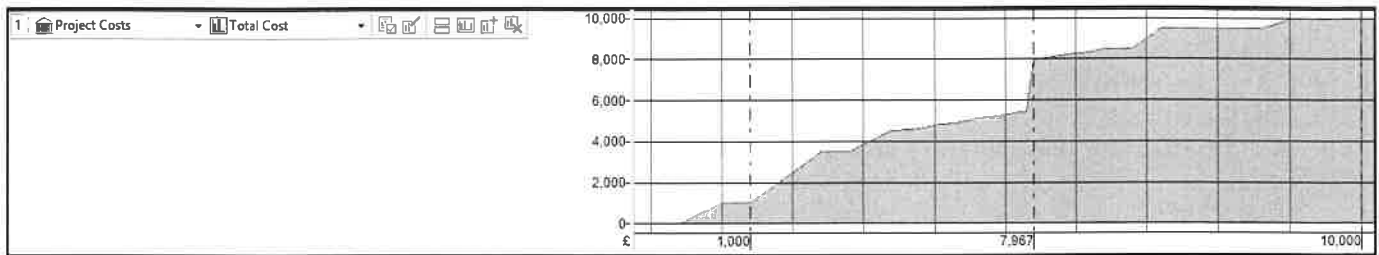


Creating Cost Histograms

- Left click on the first drop-down window to select the library item to be shown in the histogram. Select **Project Costs**



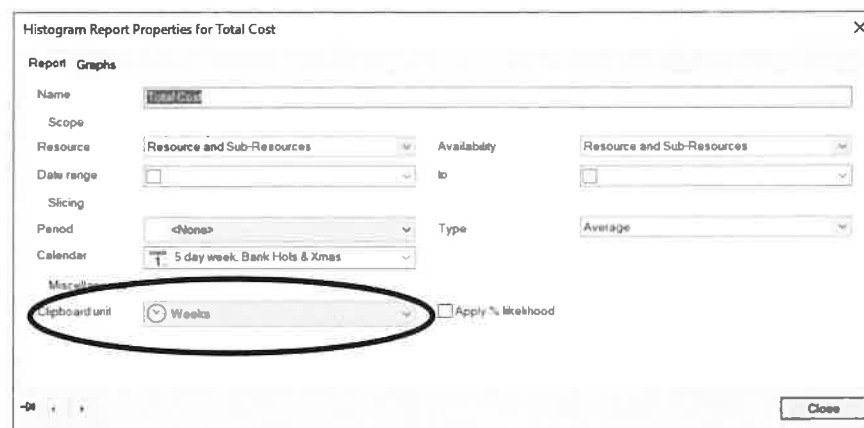
- ▶ *Left click* in the next drop down to select a histogram from those that exist in the project or template. Select **Total Costs**



The histogram shows the expenditure of the project (cashflow). The Data grid underneath the histogram shows the monthly values.

Customising the histogram

- ▶ *Right click* on the histogram and select **Report Properties** or
- ▶ Select the Histogram report properties icon from the histogram toolbar
- ▶ Change the '**Clipboard Unit**' to Weeks to show weekly totals for the cumulative graph

Histogram Report Properties for Total Cost

Report Graphs

Name:

Scope:

Resource: Availability:

Date range: To:

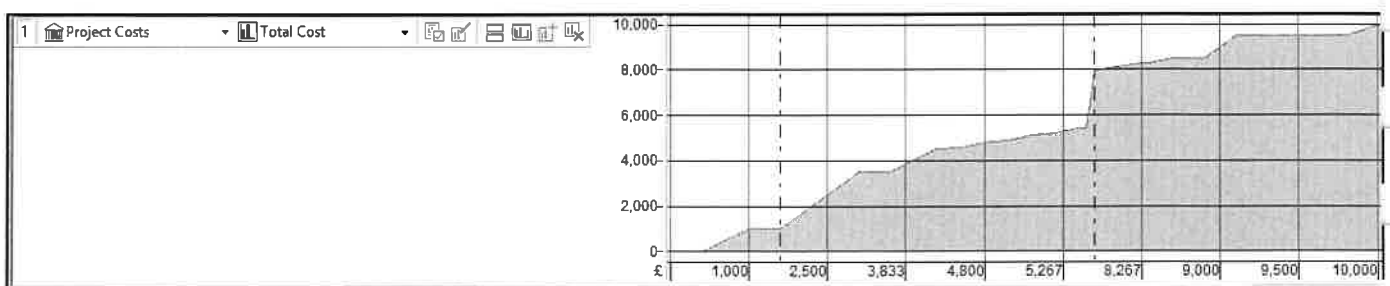
Slicing: Type:

Period:

Calendar:

Miscellaneous: ☐ Apply % likelihood

Close



- ▶ Select the Graphs tab to further customise the graph

Histogram Report Properties for Total Cost

Report **Graphs**

Graph Name: 1 Cost To Date

Details

Legend Name: £

Data: Live

Scope: All Scope

Filter: <None>

Complete Option: Complete and Incomplete

Currency Unit: <None>

Display Style

☒ Area

☐ Line

☐ Use resource / cost centre / standard work appearance

Display Options

☒ Include in data-grid

☒ Allow stacking

Scale multiplier: ☐ Automatic ☒ Fixed 1.00

Buttons: Up, Down, Add, Remove, Close

Annotations:

- Set an appearance for the graph or tick to use the appearance set in the cost centre /resource properties (points to Display Style)
- Remove the tick to hide the values from the bottom of the graph. (points to Include in data-grid)
- Edit the Axis Labels /Legends (points to Legend Name)
- Select a existing Filter or remove data for completed tasks (points to Filter)
- Report on the whole project or limit the scope (points to Scope)

Slicing the Histogram into Time Periods

To edit the graph to show how much is spent in each time period

- ▶ Select the Report Tab
- ▶ The Slicing for the cumulative graph is set to 'None'
- ▶ Change the 'Slicing' Period to Elapsed Weeks
- ▶ Click on **Close**

Histogram Report Properties for Total Cost

Report **Graphs**

Name: Total Cost

Scope: Resource and Sub-Resources

Date range: []

Slicing

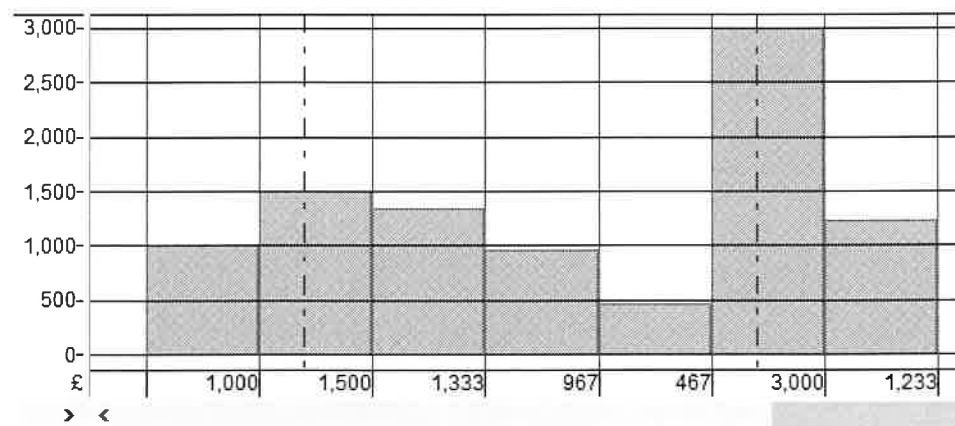
Period: ☒ Elapsed Weeks

Calendar: 5 day week, Bank Holidays & Xmas

Miscellaneous

Clipboard unit: ☒ Elapsed Weeks

The Histogram now displays as a bar graph showing weekly cost figures



The Construction Template contains a Monthly Costs histogram

Drill Down

Creating a hierarchical structure for cost centre libraries enables a view of costs at different levels. For example, the 'Project Cost' Centre, when selected, will show the total cost of all cost centres that are within that folder. To view the sub entries costs:

- ▶ Right click on the graph area

Show Tasks

Drill Down (Project Costs)

Drill Up

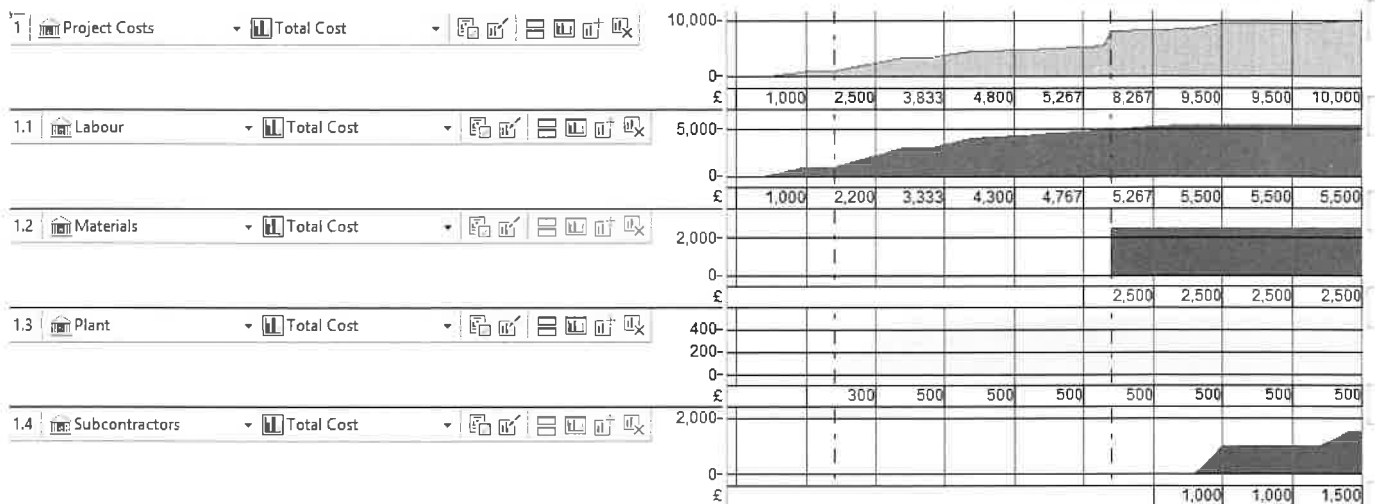
Bring to Front

- ▶ Select '**Drill Down**'

- ▶ The individual graphs are now displayed underneath the overall graph. Use the scroll bar on the right hand- side of the screen to see the graphs or use the '**Fit histograms to view**' button to resize the histogram pane to display all graphs



Fit histograms to view



- ▶ Right click on any of the lower graphs and select **Drill Up** to close the graphs
- ▶ Close the histogram by selecting '**Delete Histogram**' from the **View** tab

Other Histogram tools

To display axis labels and legends on the histogram

- ▶ Right click on the histogram or use the histogram toolbar to select **Format Histogram**.



Format histogram

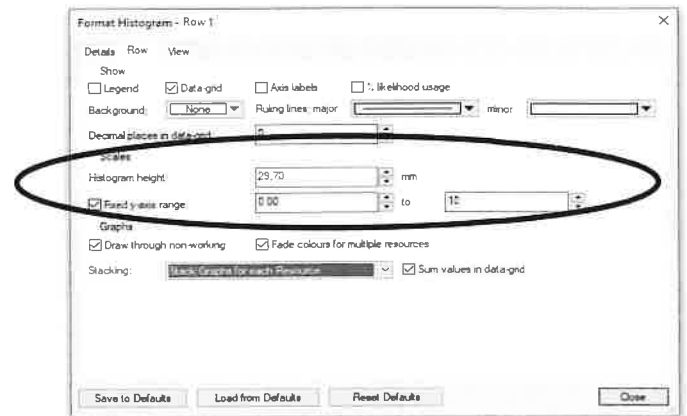
- ▶ Tick to display **Axis Labels** and **Legends** at the top of this dialog box

Details	Row	View
Show		
☐ Legend	☒ Data-grid	☐ Axis labels
☐ % likelihood usage		

The text used for the Axis Labels & Legends is set in the Graphs tab of the Histogram Report Properties

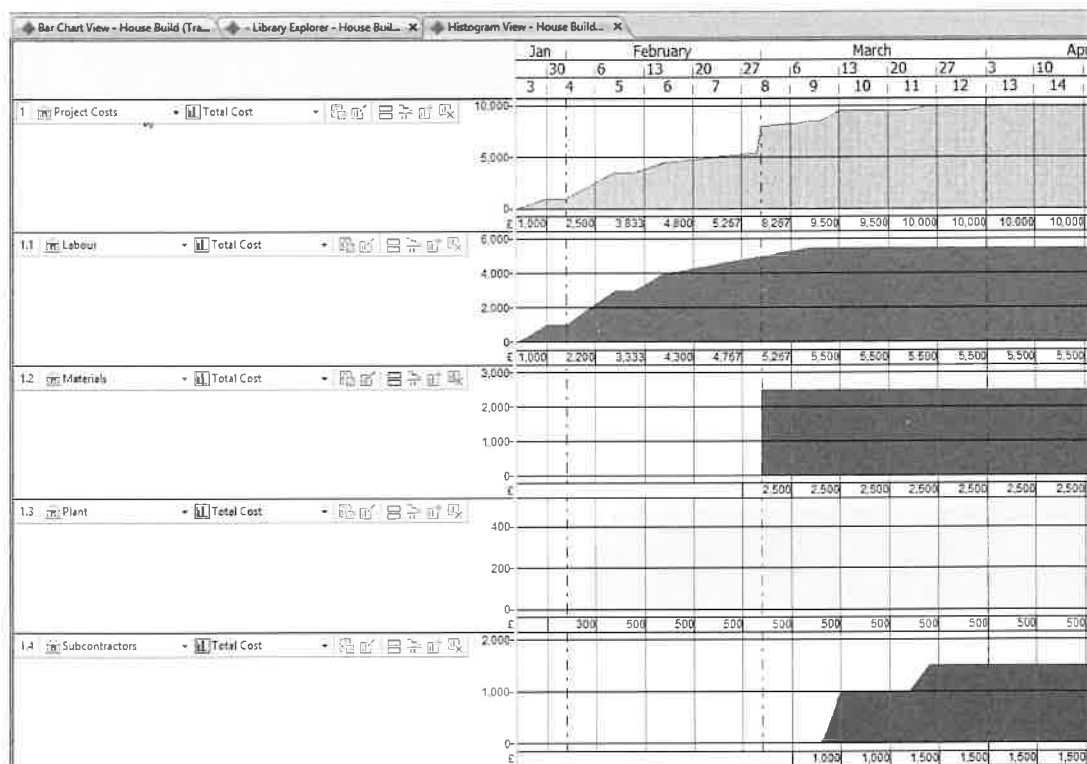
To change the scale of the histogram

- ▶ Select the **Row Tab**
- ▶ In the middle of the dialog box put a tick against 'Fixed y axis range:' and then enter the range you want



To display/print the Histogram without the Bar Chart

- ▶ *Right Click* on the histogram or use the histogram toolbar to select **Move to Histogram View**
- ▶ The histogram will be displayed in its own tabbed view.

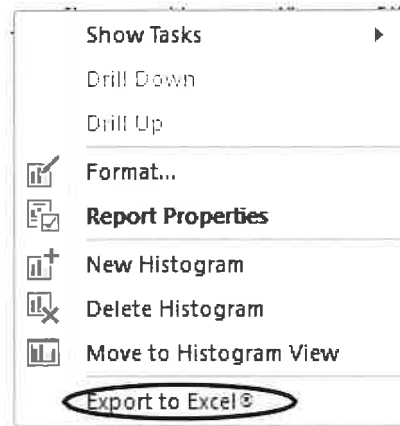


- ▶ Close the Histogram view tab to return to the project or select **Move to bar chart view** on the histogram toolbar

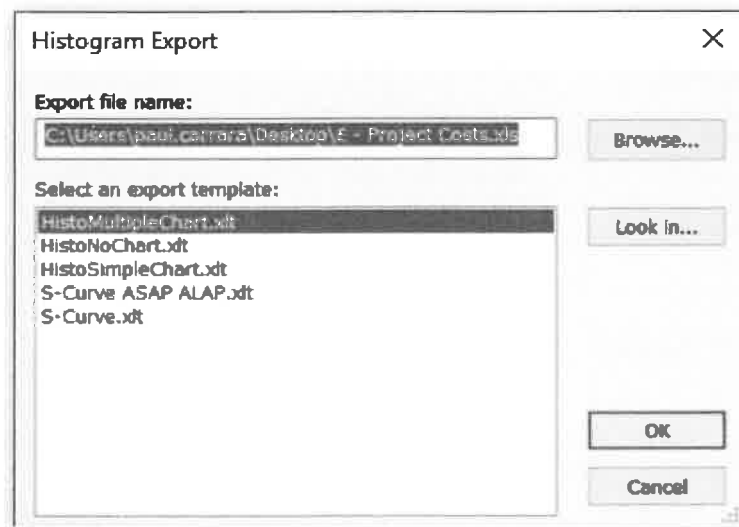


Exporting Data to Excel

- Right click on the histogram and select **Export to Excel**



- Select a location for the Excel file & a template to include a Chart if required

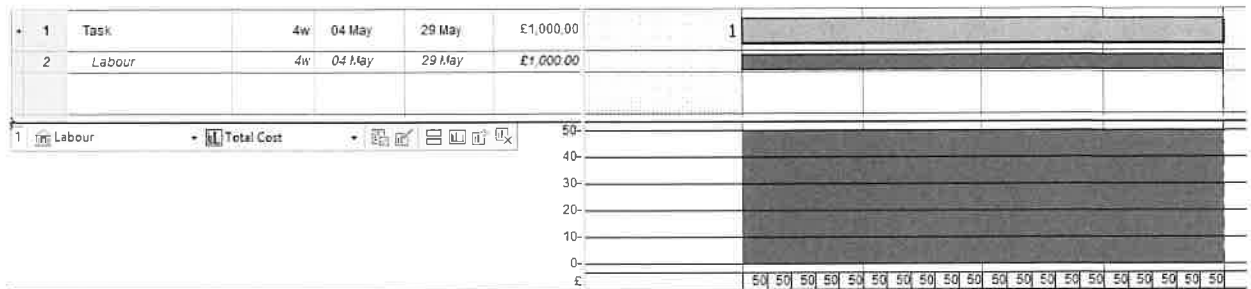


- The 'Clipboard Unit' set in the Histogram Report Properties controls how the histogram values are displayed in the excel table i.e./ daily, weekly or monthly totals

Non-Linear Allocation

By default, when we allocate a cost or resource to a task, its allocation is distributed evenly across the task. Such allocations are referred to as "linear" allocations because a straight line can represent the cost (or effort or quantity in the case of resources)

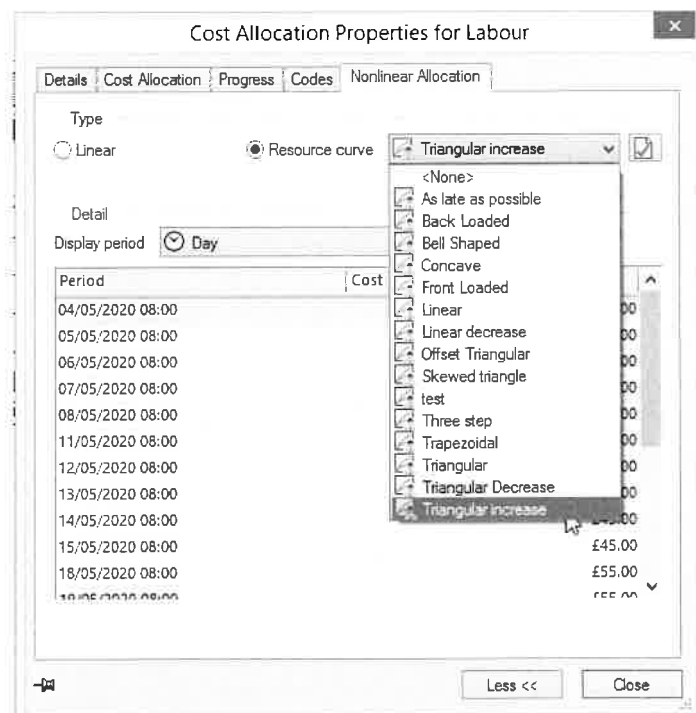
The task below has a £1000 labour cost, which is distributed as £50 per day, as shown in the histogram



To allocate a cost in a specific way that is non-linear, e.g. most of the expenditure is at the start of the task, you can choose to assign a **resource curve** to the cost centre to reflect the non-linear assignment of the cost. This can be set as a default, to apply to all allocations of that cost centre or edited in the properties of a specific cost allocation assigned to a task, so it applies only to that allocation.

Assigning a resource curve to a cost allocation

- ▶ Right-click the resource or cost allocation and select **Properties** to display the allocation's **Properties** dialog.
- ▶ Click the **Nonlinear Assignment** tab.
- ▶ Click the **Resource curve** radio button.
- ▶ Select a resource curve from the list to apply to the allocation



- The figures in the grid on this tab will show how the cost is going to be allocated through each time period of the task duration. Each resource curve will show different allocations

Cost Allocation Properties for Labour

Details Cost Allocation Progress Codes Nonlinear Allocation

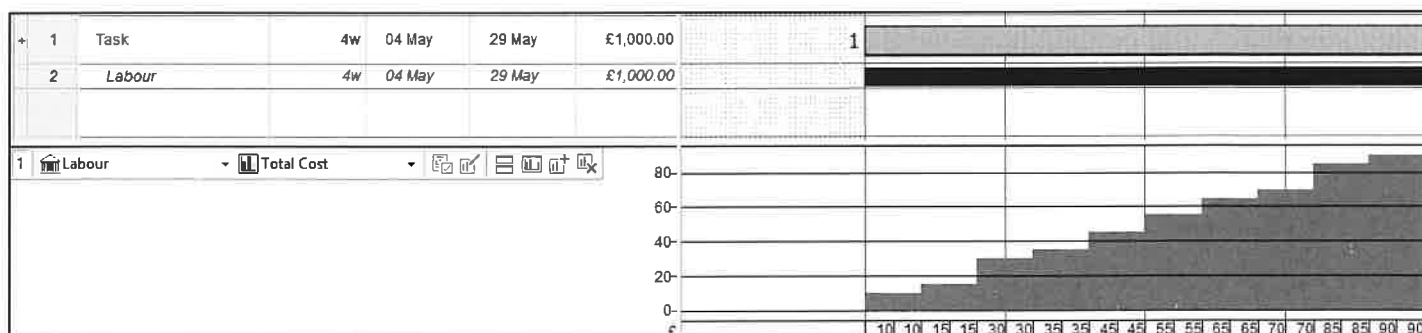
Type
☐ Linear
☒ Resource curve Triangular increase

Detail
 Display period Day

Period	Cost
04/05/2020 08:00	£10.00
05/05/2020 08:00	£10.00
06/05/2020 08:00	£15.00
07/05/2020 08:00	£15.00
08/05/2020 08:00	£30.00
11/05/2020 08:00	£30.00
12/05/2020 08:00	£35.00
13/05/2020 08:00	£35.00
14/05/2020 08:00	£45.00
15/05/2020 08:00	£45.00
16/05/2020 08:00	£55.00
17/05/2020 08:00	£55.00
18/05/2020 08:00	£65.00
19/05/2020 08:00	£65.00
20/05/2020 08:00	£75.00
21/05/2020 08:00	£75.00
22/05/2020 08:00	£85.00
23/05/2020 08:00	£85.00
24/05/2020 08:00	£95.00
25/05/2020 08:00	£95.00
26/05/2020 08:00	£100.00
27/05/2020 08:00	£100.00
28/05/2020 08:00	£100.00
29/05/2020 08:00	£100.00
30/05/2020 08:00	£100.00
31/05/2020 08:00	£100.00
01/06/2020 08:00	£100.00
02/06/2020 08:00	£100.00
03/06/2020 08:00	£100.00
04/06/2020 08:00	£100.00
05/06/2020 08:00	£100.00
06/06/2020 08:00	£100.00
07/06/2020 08:00	£100.00
08/06/2020 08:00	£100.00
09/06/2020 08:00	£100.00
10/06/2020 08:00	£100.00
11/06/2020 08:00	£100.00
12/06/2020 08:00	£100.00
13/06/2020 08:00	£100.00
14/06/2020 08:00	£100.00
15/06/2020 08:00	£100.00
16/06/2020 08:00	£100.00
17/06/2020 08:00	£100.00
18/06/2020 08:00	£100.00
19/06/2020 08:00	£100.00
20/06/2020 08:00	£100.00
21/06/2020 08:00	£100.00
22/06/2020 08:00	£100.00
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30/06/2020 08:00	£100.00
01/07/2020 08:00	£100.00
02/07/2020 08:00	£100.00
03/07/2020 08:00	£100.00
04/07/2020 08:00	£100.00
05/07/2020 08:00	£100.00
06/07/2020 08:00	£100.00
07/07/2020 08:00	£100.00
08/07/2020 08:00	£100.00
09/07/2020 08:00	£100.00
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15/07/2020 08:00	£100.00
16/07/2020 08:00	£100.00
17/07/2020 08:00	£100.00
18/07/2020 08:00	£100.00
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16/08/2020 08:00	£100.00
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27/09/2020 08:00	£100.00
28/09/2020 08:00	£100.00
29/09/2020 08:00	£100.00
30/09/2020 08:00	£100.00
01/10/2020 08:00	£100.00
02/10/2020 08:00	£100.00
03/10/2020 08:00	£100.00
04/10/2020 08:00	£100.00
05/10/2020 08:00	£100.00
06/10/2020 08:00	£100.00
07/10/2020 08:00	£100.00
08/10/2020 08:00	£100.00
09/10/2020 08:00	£100.00
10/10/2020 08:00	£100.00
11/10/2020 08:00	£100.00
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16/10/2020 08:00	£100.00
17/10/2020 08:00	£100.00
18/10/2020 08:00	£100.00
19/10/2020 08:00	£100.00
20/10/2020 08:00	£100.00
21/10/2020 08:00	£100.00
22/10/2020 08:00	£100.00
23/10/2020 08:00	£100.00
24/10/2020 08:00	£100.00
25/10/2020 08:00	£100.00
26/10/2020 08:00	£100.00
27/10/2020 08:00	£100.00
28/10/2020 08:00	£100.00
29/10/2020 08:00	£100.00
30/10/2020 08:00	£100.00
31/10/2020 08:00	£100.00
01/11/2020 08:00	£100.00
02/11/2020 08:00	£100.00
03/11/2020 08:00	£100.00
04/11/2020 08:00	£100.00
05/11/2020 08:00	£100.00
06/11/2020 08:00	£100.00
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16/11/2020 08:00	£100.00
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26/11/2020 08:00	£100.00
27/11/2020 08:00	£100.00
28/11/2020 08:00	£100.00
29/11/2020 08:00	£100.00
30/11/2020 08:00	£100.00
01/12/2020 08:00	£100.00
02/12/2020 08:00	£100.00
03/12/2020 08:00	£100.00
04/12/2020 08:00	£100.00
05/12/2020 08:00	£100.00
06/12/2020 08:00	£100.00
07/12/2020 08:00	£100.00
08/12/2020 08:00	£100.00
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15/12/2020 08:00	£100.00
16/12/2020 08:00	£100.00
17/12/2020 08:00	£100.00
18/12/2020 08:00	£100.00
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26/12/2020 08:00	£100.00
27/12/2020 08:00	£100.00
28/12/2020 08:00	£100.00
29/12/2020 08:00	£100.00
30/12/2020 08:00	£100.00
31/12/2020 08:00	£100.00

Less << Close

- Change the **Display period** field to display values for different time period as required.
- Click **Close**.

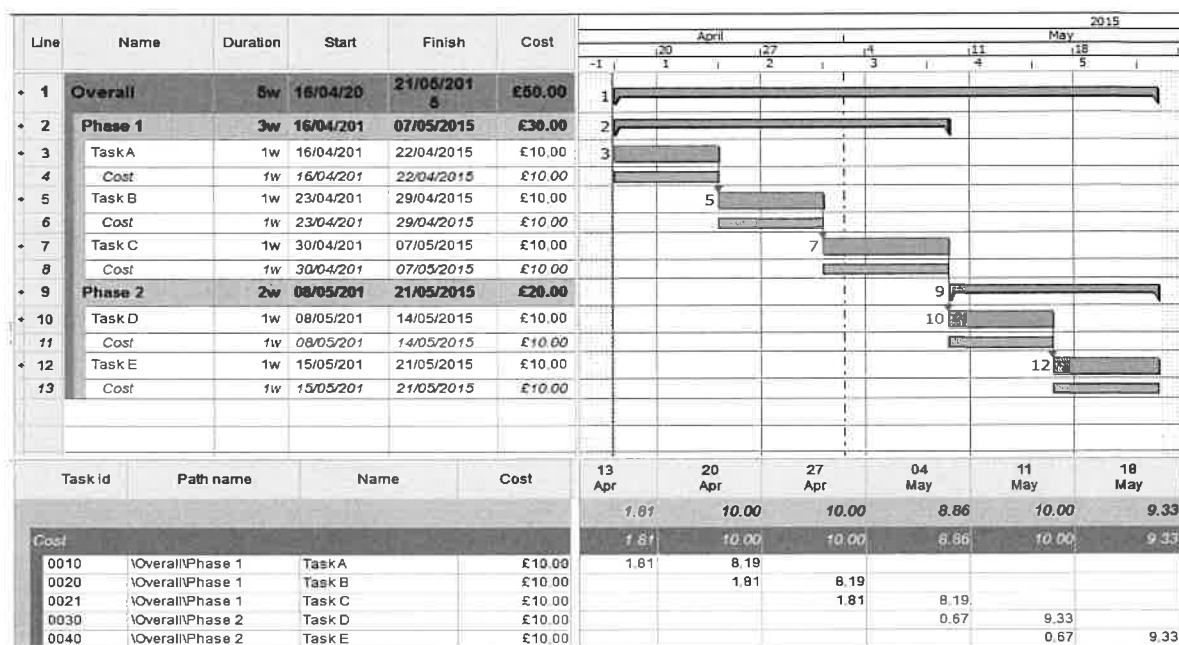


 The Construction Template contains several typical Resource Curves to profile the distribution of your allocations. It is also possible to create your own resource curves. See appendix for more information.

Analyse Cost Usage

Designed to assist with the planning & profiling of resource effort, the **Resource Usage View** can also be used to visualise the planned or actual assignments of costs on a daily, weekly, monthly or quarterly basis.

This is a useful way to visualise your costs & expenditure in a project by task and time period and is a useful reporting tool alongside the histograms & table.

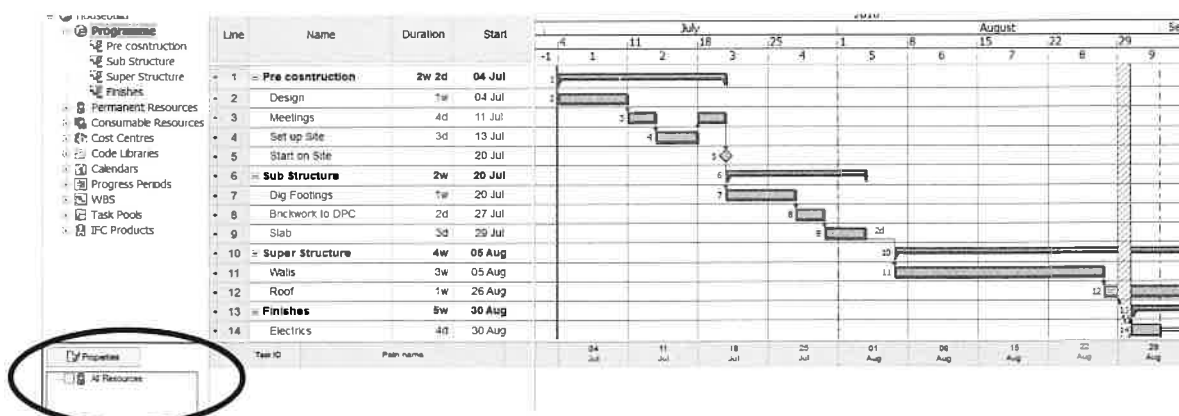


Using the Resource Usage View for costs

- Click on the **View** tab
- Select **New Resource Usage**



The Resource Usage View will appear at the bottom of the screen. By default, it is configured to show *resource* information



- Select **Properties** on the left of the screen

The Resource Usage Properties is displayed

- ▶ On the Allocations Tab change the **Type of Allocation** to **Cost**

- ▶ Select the **Fields** Tab to change the columns that appear in the graph

- ▶ Click on Effort Remaining in the field column and select **Cost** from the dropdown list.

- ▶ The time unit for the graph can be set on the **Appearance** tab

- ▶ Click **Close**

- ▶ Select the Cost Centres to display by ticking from the library items on the left

The Resource Usage view now displays the costs for each task and each week of the project and each task.

Task id	Path name	Name	Cost	25 Jun	02 Jul	09 Jul	16 Jul	23 Jul	30 Jul	06 Aug	13 Aug	20 Aug
Project Costs				£1,000	£1,800	£1,200	£1,000		£2,500	£500	£500	£500
Labour				£1,000	£1,200	£800	£1,000					
0030	\Pre construction	Set up Site	£1,000.00	£1,000								
0050	\Sub structure	Dig footings	£2,000.00		£1,200	£800						
0070	\Sub structure	Slab	£1,000.00				£1,000					
Materials									£2,500			
0070	\Sub structure	Slab	£2,500.00						£2,500			
Plant					£600	£400						
0050	\Sub structure	Dig footings	£1,000.00		£600	£400						
Subcontractors										£500	£500	£500
0100	\Finishes	Plumbing	£1,000.00							£500	£500	
0101	\Finishes	Plumbing	£500.00									£500

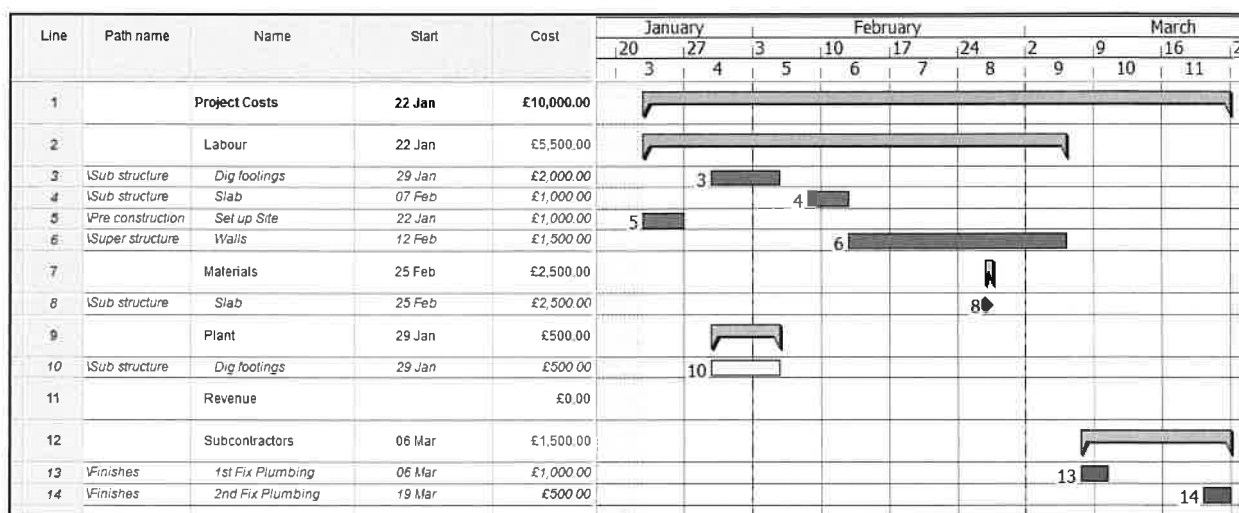
Displaying a Cost Breakdown Structure

Another useful display of cost information is a Cost Breakdown Structure or (CBS). This displays allocations, grouped by cost centre in the bar chart.

- ▶ Open the project view & display the Cost centres
- ▶ *Right click* on the Project Costs folder to display a breakdown of all costs within that folder or a specific cost centre to display only information for that cost.
- ▶ **Select CBS**

A CBS view of all of the costs within the selected folder is displayed underneath a main summary task that represents the folder itself.

- ▶ *Double click* to expand the Project Cost summary



The view shows cost allocations grouped by cost centre, showing where each cost is allocated in our project & which task they are allocated to



Control whether summary tasks are shown for each cost centre on the **Allocations Tab** of the **Format Bar Chart** dialogue box.

Task Work

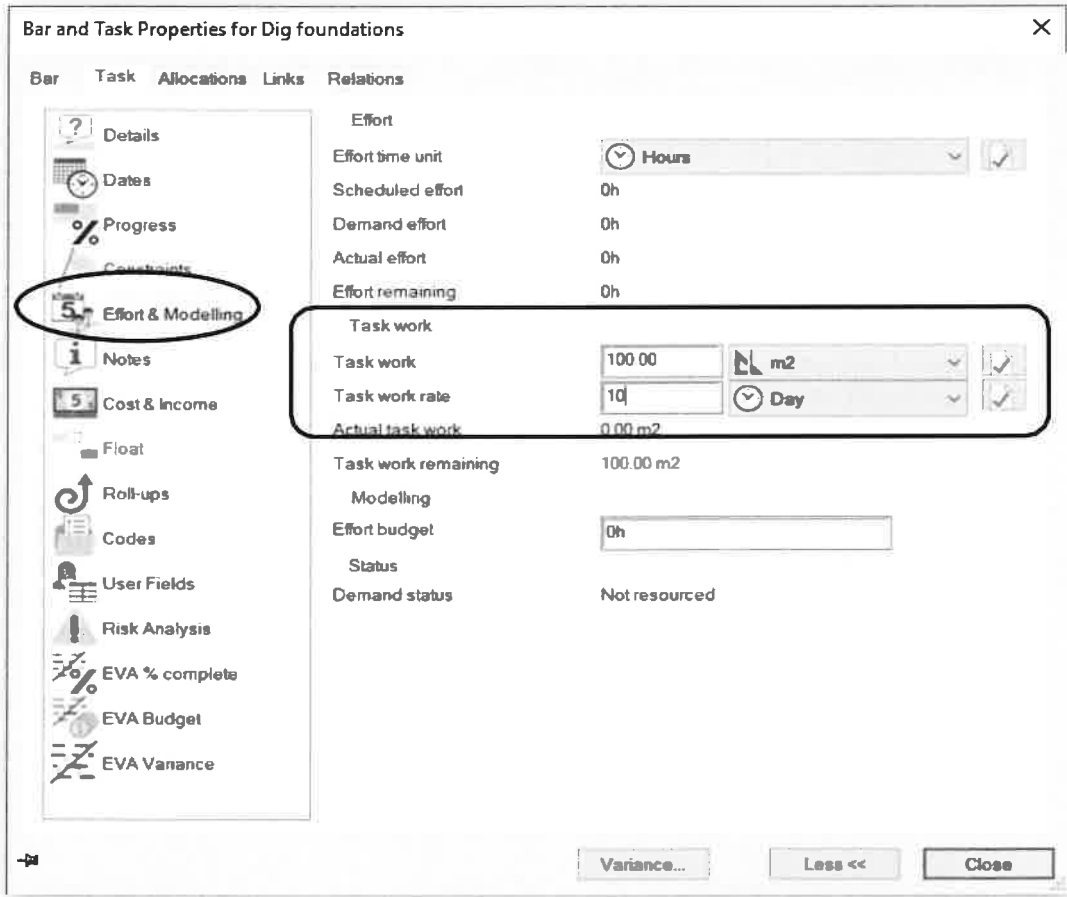
Powerproject allows an amount of work & the work rate associated to be stored within the properties of a task. This information can be used to help calculate the cost & durations of tasks without the need to allocate resources. This is especially useful in the early stages of project creation when submitting tenders/bids for the work.

To enter an amount of work & a work rate:

- ▶ *Right click* on a task in the bar chart and select **Properties**
- ▶ Select **Effort & Modelling**
- ▶ Enter a figure in the **Task work** field and edit the work unit as required
- ▶ Enter a figure in the **Task work rate** field and edit the time unit as required
- ▶ Close

When closed the duration of the task will be recalculated.

 The Construction Template contains a number of pre-defined Work Units & Time Units. These can be edited or added to in the Library Explorer



Bar and Task Properties for Dig foundations

Bar Task Allocations Links Relations

Details
Dates
Progress
Constraints
Effort & Modelling
Notes
Cost & Income
Float
Roll-ups
Codes
User Fields
Risk Analysis
EVA % complete
EVA Budget
EVA Variance

Effort

Effort time unit: Hours

Scheduled effort: 0h

Demand effort: 0h

Actual effort: 0h

Effort remaining: 0h

Task work

Task work: 100.00 m2

Task work rate: 10 Day

Actual task work: 0.00 m2

Task work remaining: 100.00 m2

Modelling

Effort budget: 0h

Status: Not resourced

Demand status: Not resourced

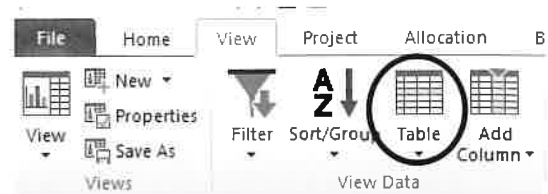
Variance... Less << Close

In the above example of 100 m2 @ 10 m2 per day, the task duration is calculated at 10d.

Display a Task Work Table

The Construction Template contains a table that can be used to enter & display task work information.

- ▶ Select the **View** Tab
- ▶ Select **Table**
- ▶ From the **Tasks** category select the table called **Task Work**



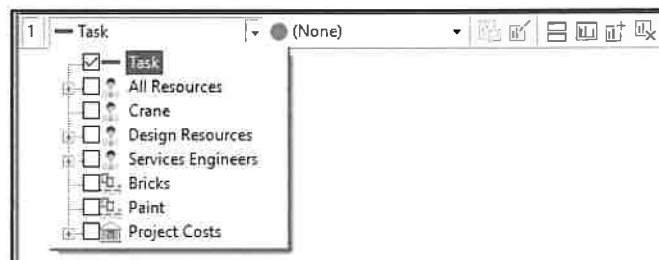
Line	Name	Task work	Task work rate (Amount)	Task work rate (Units)	Task work rate (time)	Actual task work	Planned task work	Task work remaining	Duration	Start	Finish
------	------	-----------	-------------------------	------------------------	-----------------------	------------------	-------------------	---------------------	----------	-------	--------

Display a Task Work histogram

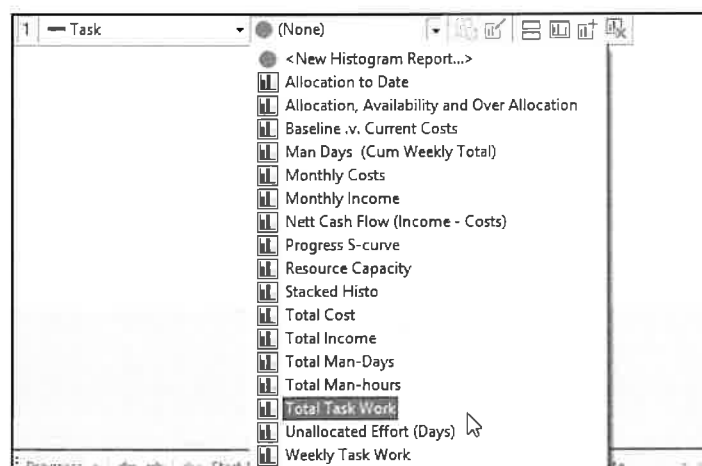
- ▶ Select the **View** tab and select **New Histogram** from the **Graphs** group

A histogram will be displayed at the foot of the screen.

- ▶ Left click on the first drop-down window and select **Task**



- ▶ Left click in the next drop down to select a histogram from those that exist in the project or template.



- ▶ To fit the histogram to the space at the foot of the screen, select the **'Fit histograms to view'** icon



Resources

Both permanent and consumable resources can be recorded for a project.

A **Permanent Resource** is a type of resource that is reusable i.e. labour and equipment. **Consumable Resources** are consumed by or supplied to tasks in a project i.e. materials, components etc.

Creating Permanent Resources

The resource library can be organised in a flat structure or teams can be planned hierarchically i.e. create resources in folders to report on groups of allocations as well as individual resources.

The Construction Template contains some example Permanent Resources. These can be deleted or edited to meet requirements.

We will create a new folder called '**All Resources**'

6 object(s)	Contents of 'All Resources'	
Project Objects	Name	Availability (Resource)
Calendar	Bricklayers	1.00
Code Library	Carpenters	1.00
Cost Centre	Electricians	1.00
Permanent Resource	Labourers	1.00
All Resources	Roofers	1.00
Progress Period	Plumbers	1.00

- ▶ Open the Library explorer
- ▶ Select **Permanent Resources** from the folders on the left-hand side
- ▶ In the right-hand window, *right click* and select **New Folder**
- ▶ Name the folder '**All Resources**', once created, *double click* on top of it
- ▶ *Right click* on the right-hand side and select **New Permanent Resource**
- ▶ Type "**Bricklayers**" in the name field and press **ENTER**
- ▶ Type in additional resources & create additional folders of resources as required

Setting Permanent Resource Defaults

Default information can be set on resources that will apply each time the resource is allocated through a project.

For example, set a default appearance to recognise the resource when shown in the bar chart & histograms. It is also possible to set the availability of the resource, the cost/income associated with it & even how many of the resource are assigned by default & how this affects the duration of the task.

- ▶ *Right click* on a resource and select **Properties**

The Details Tab

Permanent Resource Properties for Bricklayers (All Resources)

Details Cost/Income Assignment Codes Standard Work

Names

Name: Bricklayers

Short single name:

Short plural name: Bricklayers

E-mail address:

Attributes

Calendar: 5 day week, Bank Hols & Xmas

Availability: 4.00

Skill: 4.00

Available from: 22/04/2019 00:00 to 22/04/2019 00:00

☐ Not available for new assignments

Resource appearance: [dropdown]

Miscellaneous

Site Progress user: [dropdown]

Roll-ups: [button] Levelling: [button]

Less << Close

Set an Appearance

Set an 'Availability' figure for the resource if you would like to monitor 'over allocation'.

Any **over allocation** will be indicated in a pop up on the bar chart when assigning the resource and on the status bar at the bottom of the screen. It can also be displayed in a histogram

The Cost/Income Tab

It is possible to record a cost associated with the use of a resource e.g. directly employed resources. Resources may also earn income for a project (i.e. charge out rates)

- Click **Assign Rate** & select the cost/income rate for this resource

Permanent Resource Properties for Bricklayers (All Resources)

Details Cost/Income Assignment Codes Standard Work

Assigned Cost/Income rates

Name: Standard Charge-OutRate

Standard Cost Rate

Standard Overtime Rate

Assign Rate... Unassign Rate

New Rate...

Available Cost/Income rates

Contents of 'Cost And Income Rate'

Name	Object ID	Locked to	Amount	Fixed cost offset
Standard Charg	56		£50.00	0s
Standard Cost R	54		£25.00	0s
Standard Overti	55		£32.00	0s

For more information on setting up new Cost/Income rates see Appendix

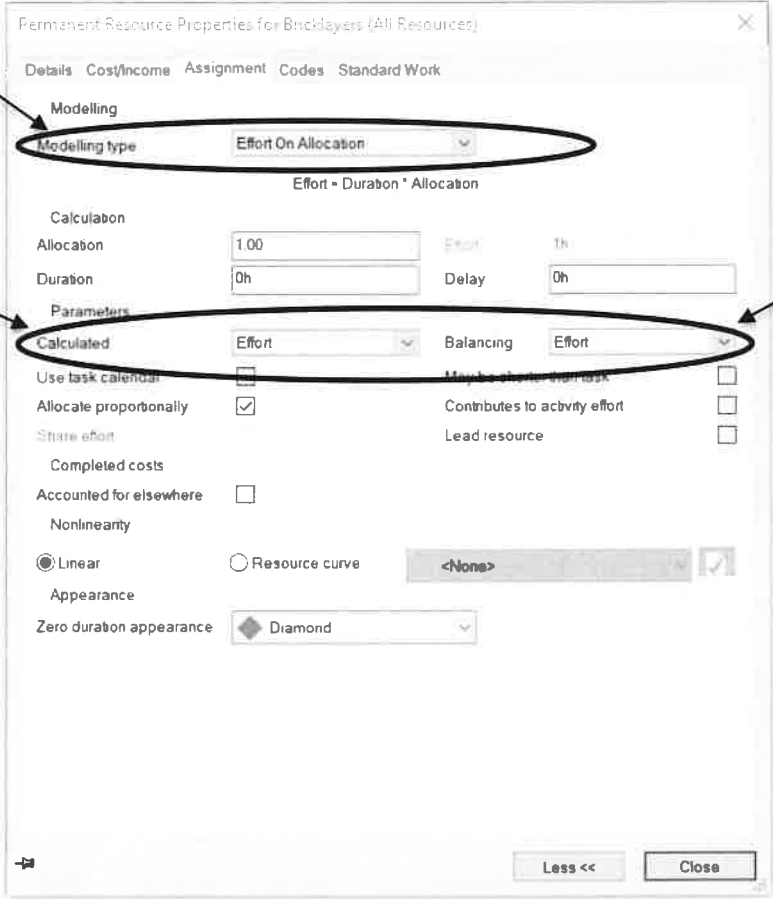
The Assignment Tab

The Assignment tab allows 'Modelling' to be set to control how the assignment of this resource will affect the tasks duration.

Non-modelled resource allocations have no effect on the task duration. They are known as duration-driven allocations.

A **modelled resource allocation** is a resource-driven allocation where the length of time that the resource works on the task determines the duration of the task.

By default, new resources are set to calculate the duration of the task. To keep the duration of a task fixed when a resource is allocated the default settings should be changed.



Set the 'Modelling type' to **Effort on Allocation**

Set the 'Calculated Parameter' to **Effort**. This means that the number of resources assigned will calculate the man-hours required but will not change the duration of the task.

Set the 'Balancing Parameter' to **Effort**. This means that if the duration of the task is changed, the resources effort (man-hours) will change proportionately but the number of resources assigned will remain constant.

Put a tick against 'May be shorter than task' to permit a resource to be allocated for only part of the task's duration

By default, the resource allocation will be linear. Choose a resource curve to control how the resources time/ effort is spread across the task

 **Modelling Resources** allows the software to perform calculations for us when allocating resources to tasks. For example, you may know how much work needs to be done on a task and you may know how long you have to complete the work. By modelling, we can get Powerproject to work out how many resources are required to get the work done. For examples of Resource Modelling, see Appendix.

Creating Consumable Resources

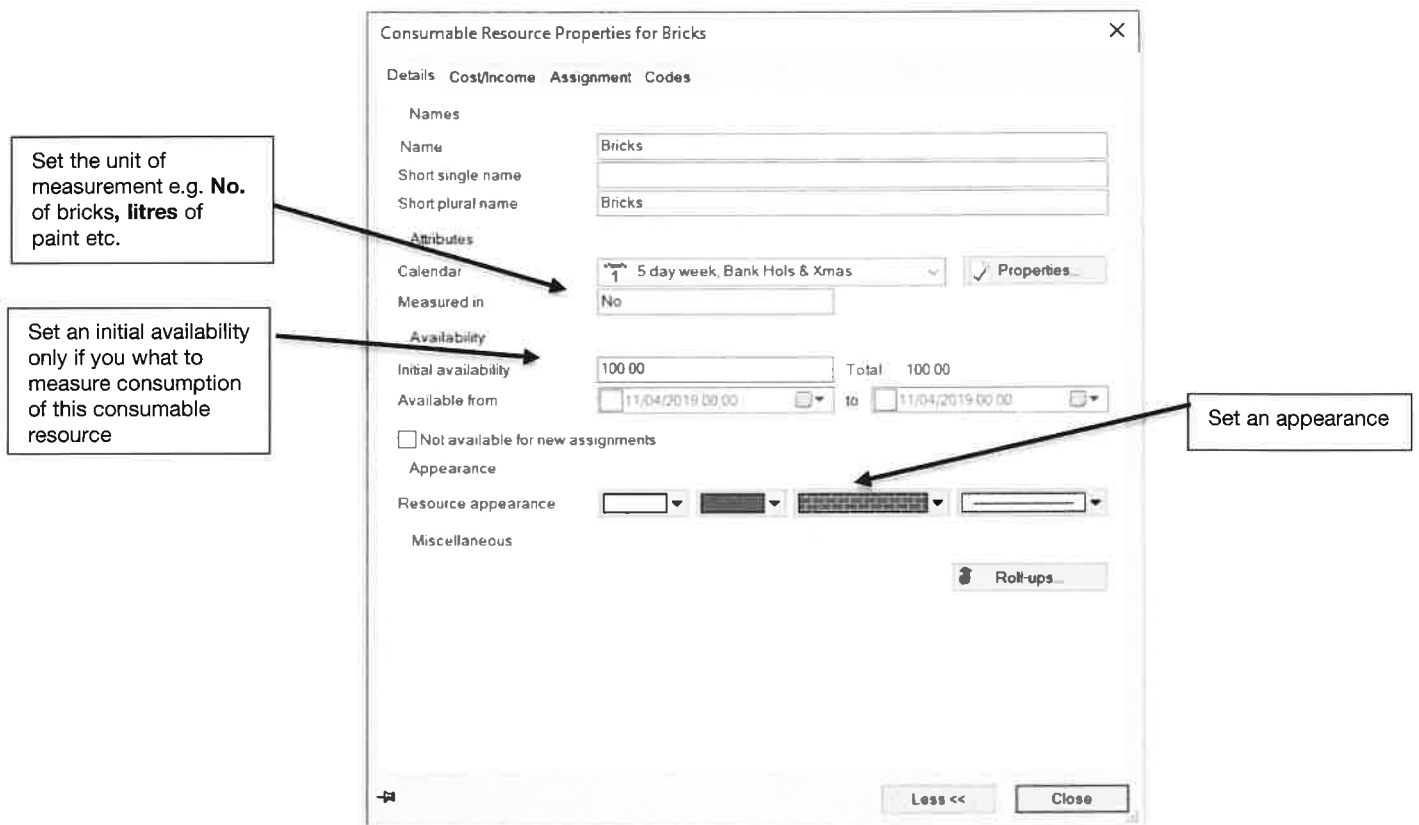


- ▶ Select **Consumable Resource** on the left-hand side of the Library Explorer
- ▶ *Right click* in the right-hand window and select **New Consumable Resource**
- ▶ Enter a name and press **ENTER**

Setting Consumable Resource Defaults

- ▶ *Right click* on a resource and select **Properties**

The Details Tab



Cost/Income Tab

Use this tab to specify the cost and /or income associated with the use of this resource. The cost could be a one-off fixed **Cost per use** (e.g. a delivery fee) or a **Cost per unit** of the resource used (e.g. cost per brick)

Consumable Resource Properties for Bricks

Enter the **Cost per use** and/or the **Cost per unit**

Specify the **Cost Centre** the cost should be recorded in.

Details		Cost/Income		Assignment		Codes	
Per use							
Cost per use		£0.00					
Income per use		£0.00					
Per unit							
Cost per unit		£0.25					
Income per unit		£0.00					
Cost centre							
Expenditure cost centre		Materials					Properties...
Income cost centre		Project Costs					Properties...

The Assignment Tab

It is possible to model consumable resources so that the allocation of the resource can control the duration of the task. Alternatively, the software can help calculate the quantity of the resource required or the consumption rate.

If this is not required, the modelling can be switched off.

Consumable Resource Properties for Bricks

Details Cost/Income Assignment Codes

Modelling

Modelling type: **Non Modelled**

Consumption Rate = Quantity / Duration

Quantities

Quantity: 1,000.00

Calculation

Rate type: Units Per Time Unit

Consumption rate: 1.00 unit per Hour

Duration: 0h

Delay: 0h

Parameters

Calculated: Rate

Use task calendar: ☐

Completed costs: ☐

Accounted for elsewhere: ☐

Nonlinearity

☒ Linear ☐ Resource curve **<None>**

Appearance

Zero duration appearance: Diamond

Consumed: ☒ Lead resource: ☐

Less << Close

Set the modelling type to '**Non-modelled**'

Set a default quantity of the resource to be allocated in the **Quantity** field.

Ensure the calculated parameter remains as **Rate** or is changed to 'none'

By default the resource allocation will be linear. Choose a resource curve to control how the quantity of the consumable resource is spread across the task.

Allocating Resources

A task can have any number of permanent resource allocations. We will assume that our resources will work the total duration of the task.

Creating an Allocation Table

Firstly, set up a table to allocate resources and display the information clearly.

Line	Name	Duration	Effort	Allocation	Cost
------	------	----------	--------	------------	------

Using the default table

- ▶ *Right click* on the Start column and select **Field**, select Allocations **Category** > **Allocation**
- ▶ *Right click* on the Finish column and select **Field**, select the **Resource** category > **Effort**
- ▶ *Right click* on the Effort Column and select **Add Column**, select **Cost or Income**, **Cost**
- ▶ Tick '**Zero as Blank**' in the Table Definition Properties. **Close**
- ▶ Move the columns into position. Save this table as a 'Resource Allocation' Table.

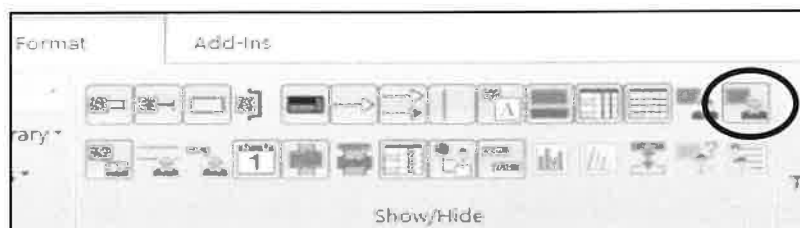
Showing/Hiding Resource Allocation Bars

When working with resources it is useful to display an allocation bar under the task. Information about the allocation is shown in the table. This is known as the 'Secondary field'.

+	12	Super structure			12	
+	13	Walls			13	
	14	Bricklayers				
	15	Labourers				
+	16	Roof				16
	17	Carpenters				
	18	Roofers				

To switch permanent resource allocations bars on or off:

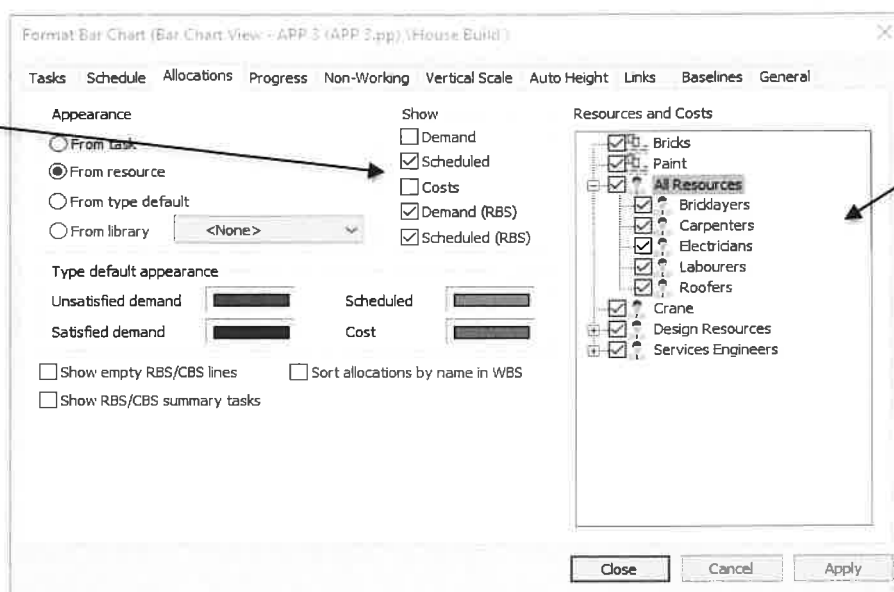
- ▶ Select the **Format Tab** and click on the **Scheduled Allocations** icon



Alternatively, and for more control over the display of Cost & Resource Allocations

- ▶ Select **Format Bar Chart**
- ▶ Select the **Allocations Tab**

- Tick to display '**Scheduled**' resource allocations in the '**Show**' Section



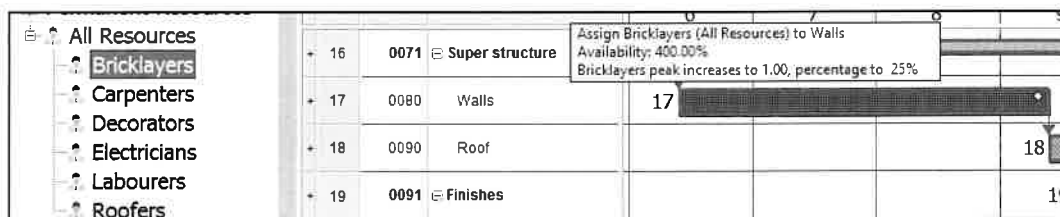
Select the cost/resource allocations to display

Control the display of specific cost centres & resources

For more information on Demand and Scheduled resources see Appendix at the back of this book

Allocating Permanent Resources to a Task

- Display the Project View
- Click on the + buttons to expand the Permanent Resources library
- *Left click* the mouse and drag the **Bricklayer** resource over the **Walls** task until the pop-up box says, "**Assign Bricklayers to Walls**" and let go of the mouse



The allocated resource is displayed in the Bar Chart and in the spreadsheet

Line	Name	Duration	Effort	Allocation	Cost	July				
						16	23	30	6	10
+ 11	Super structure	4w	360h		£9,000.00	11				
+ 12	Walls	3w	360h		£9,000.00	12				
13	Bricklayers	3w	360h	3.00	£9,000.00					

- Change the figure in the allocation column from 1 to 3 to show that 3 bricklayers are required to do this task.

The 'Effort' or *Man Hours* required is calculated. If this resource has a cost/Income rate associated with it the cost is shown in the column.

Using Groups of Resources

If Bricklayers and Labourers work together on this project, they could be allocated separately but this will become time consuming if the project is large. Instead, we can create a 'team' or 'gang' using an Allocation Group.

- ▶ Allocate both bricklayers and labourers to a task in the desired quantities
- ▶ *Right click* on the task and select **Copy Allocations to Group**

Line	Name	Duration	Effort	Allocation	Jan February													
					4	3	10	17	24	2	9	10						
13	Walls	3w	480h				13											
14	Bricklayers	3w	360h	3.00														
15	Labourers	3w	120h	1.00														
16	Roof	1w																
17	Finishes	5w 1d	144h															
18	Plumbing	4d																
19	Electrics	4d	48h															
20	Electricians	4d	48h	2.00, 1.00														
21	Plaster	1w																
22	Decorate	1w 1d																

- ▶ Give the group a name and click **OK**

Name Allocation Group

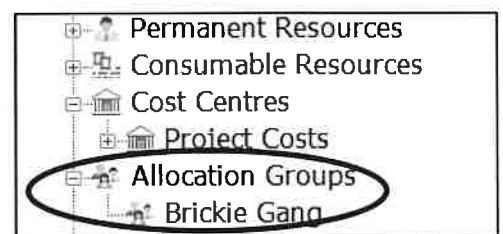
☒ Create ☐ Replace

Brickie Gang

OK Cancel

This combination of Bricklayers & Labourers now exists as an Allocation group and is displayed in the project view.

- ▶ To allocate the group, drag & drop to a task in the normal way.



Allocating Consumable Resources to a Task

A task can have a number of consumable resource allocations. We can use the same allocation table to display this information.

- ▶ Click on the + button to expand the Consumable Resources Library
- ▶ *Left click* Drag the **Bricks** consumable resource over the **Walls** task until the pop-up box says, "**Assign Bricks to Walls**" and let go of the mouse
- ▶ Edit the allocation in the table to 5000

Line	Name	Duration	Effort	Allocation	Cost	
+ 11	Super structure	4w	480h		£10,250.00	11
+ 12	Walls	3w	480h		£10,250.00	12
13	Bricklayers	3w	360h	3.00	£9,000.00	
14	Labourers	3w	120h	1.00		
15	Bricks	3w		5,000.00	£1,250.00	

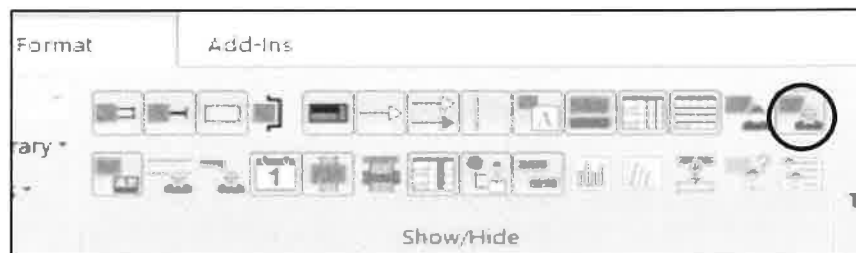
Note there is a cost of £1,250 associated with this allocation. This is because we set the default properties to show a cost per brick of 0.25p.

Hiding resource information

Once we have finished allocating our resources, we can hide the individual detail by turning off the

Scheduled allocation bars on the bar chart.

- Select the **Format** tab
- Deselect the Scheduled Allocations button.



The details and allocation quantities are no longer displayed on the table. The effort and cost values are displayed for the tasks.

- Change the table to the default table
- No resource information is displayed.

Resource Report Table

This table allows resource to be entered straight into the spreadsheet so it could be used as an alternative to the 'drag and drop' method above. It is also useful for reporting on resource allocations throughout our project

Line	Name	Duration	Bricklayer	Roofers	Bricks

From the Default table

- **Right Click** on the **Start** column and select '**Remove this Column**'.
- Repeat for the **Finish** column
- **Right click** in the space between the table & the bar chart and select **Add Column > Resource > Resources Allocations**

The **Table Definition** dialogue will appear

- Edit the Column Title to rename as per one of the project Resources e.g. Bricklayer

Set the **Attributes** section to point the field to a specific library.

- Set the '**Cons/Perm/All**' field to '**Permanent Resources**' and change '**Resource**' field to Bricklayers

- Place a tick in '**Zero as Blank**'

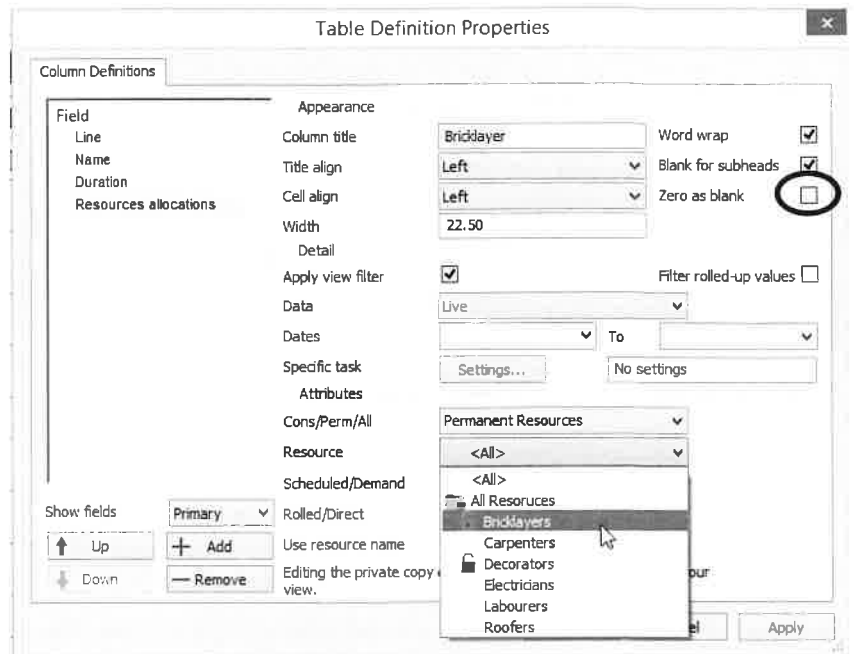
- Click '**Add**' to add additional Resources Allocations columns

- Repeat as above, to create a column for all resources

- Click on **Close**

- **Save** the table

Type a resource allocation into a column to assign a resource.



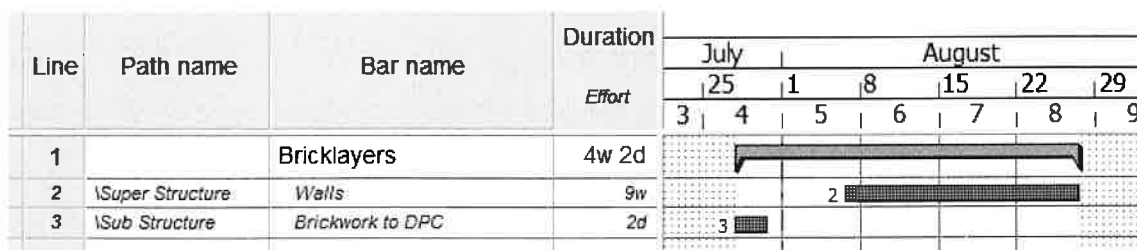
Resource Breakdown Structure View (RBS)

Sometimes it is useful to have a view of a project grouped by resource. This makes it easy to see where in the project resources are allocated/required. This type of view is called a **Resource Breakdown Structure** or **RBS**.

- Open the project view and display the Permanent Resource library
- *Right click* on a resource and select '**Open RBS**'

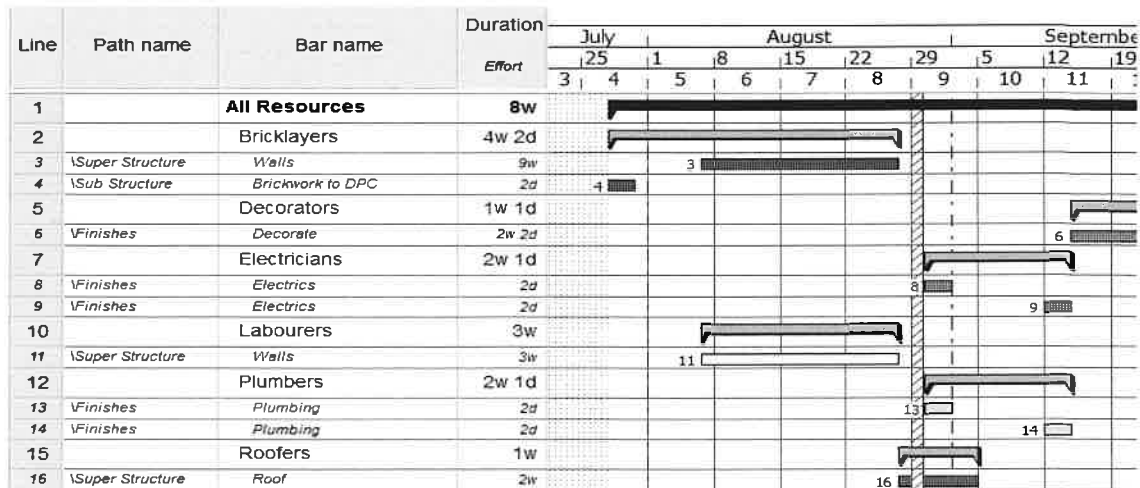


A view of bricklayer allocations is displayed below



- Hold down the **CTRL** key and then select multiple resources in the Project View to build RBS views of more than one resource

- To display all resources *Double click* the All resources folder in the **Project view** then expand the summary which represents the folder



- To return to the project click once on **Programme level** in the project view or the top level of your project hierarchy

Resource Histograms

The construction template contains several useful resource histograms. We will look at a selection here.

Display a histogram showing Resource Allocation

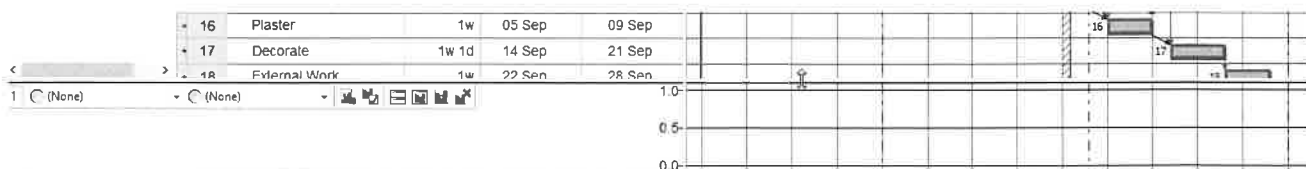
- Click on the **View** tab and select **New Histogram** from the **Graphs** group



A histogram will be displayed at the foot of the screen.

To resize the histogram:

- Place the cursor over the top line of the histogram area until a double-sided arrow is displayed.



- Drag the histogram upwards
- To fit the histogram to the space at the foot of the screen, select the **'Fit histograms to view'** icon



-
- The screenshot displays the Microsoft Project application window. The 'Task' pane on the left lists resources under the 'All Resources' folder, which is currently expanded. The resources listed are Bricklayers, Carpenters, Decorators, Electricians, Labour, Plasters, Roofers, and Crane. The 'Resource' pane on the right is empty. The top status bar indicates that neither a task nor a resource is currently selected, showing '(None)' for both.

- 1 All Resources Allocation to Date Histogram report properties

-
- Histogram Report Properties for Allocation to Date
- Report Graphs
- Graph Name
1. Scheduled Allocation
- Details
- Legend Name: Allocated Resources
- Data: Live
- Scope: All Scope
- Filter: <None>
- Complete Option: Complete and Incomplete
- Currency Unit: <None>
- Display Style
- ☒ Area
- ☐ Line
- ☒ Use resource / cost centre / standard work appearance
- Display Options
- ☒ Include in data-grid
- ☒ Allow stacking
- Scale multiplier: ☐ Automatic ☒ Fixed: 1.00
- Up Down Add Remove
- Close

- [illegible]

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Drill Down

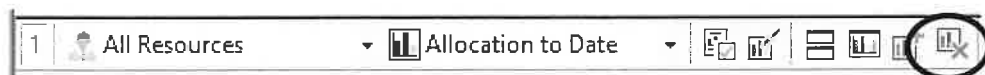
The **All Resources** folder contains several individual resources. It is possible to create graphs for each of these individual resources from this overall graph.

- *Right click* on the graph area and select **Drill down (All)**



The individual graphs are now displayed underneath the overall graph. Use the scroll bar on the right-hand side of the screen to see the graphs

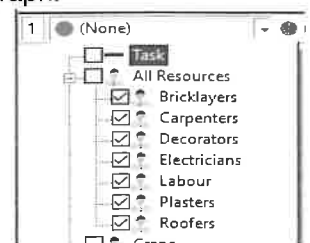
- *Right click* on any of the lower graphs and select '**Drill Up**' to close the graphs
- To close the histogram, select '**Delete Histogram**' from the **View** tab or the histogram toolbar.



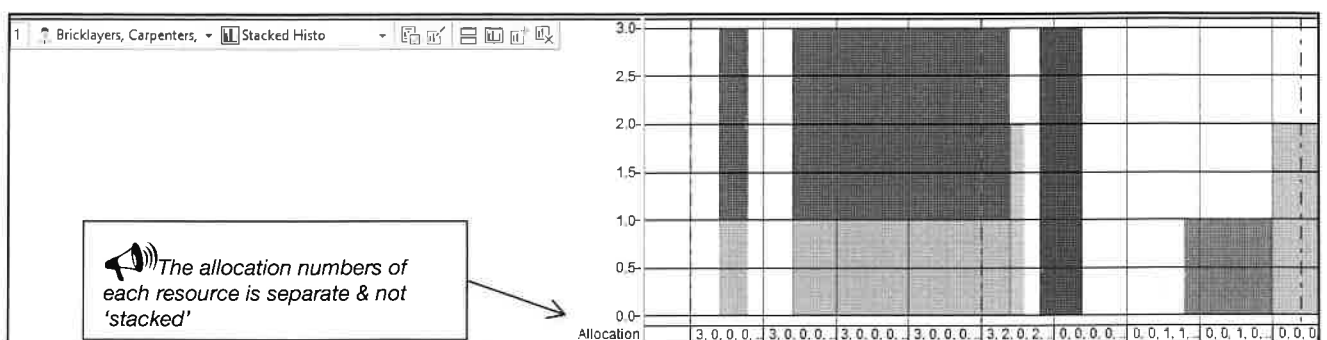
To display a stacked resource allocation histogram

A stacked histogram will display the allocation of each resource on one graph.

- Select '**New Histogram**' from the **Graph** group on the **View** tab
- In the first drop-down window place a tick in the boxes to select *each* of your resources
- In the second drop-down window select the histogram called '**Stacked Histo**'



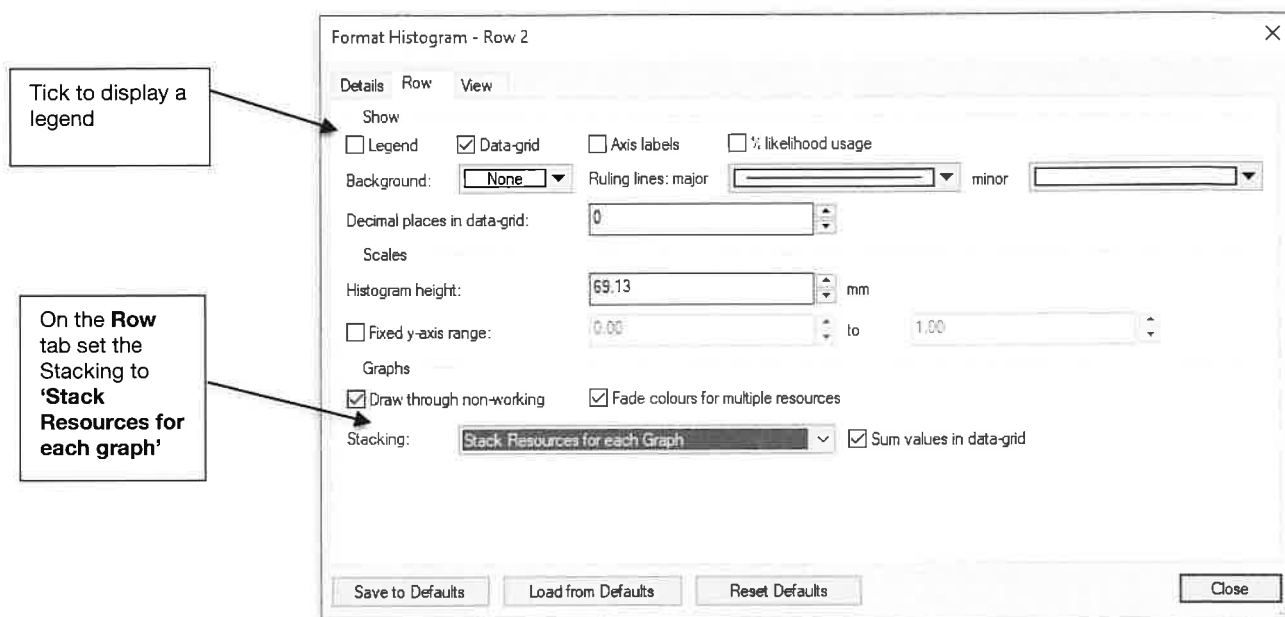
The histogram shows allocation of each resource on a single graph. However, where resources are working at the same time, they are currently displayed overlapping each another instead of stacking on top of each other



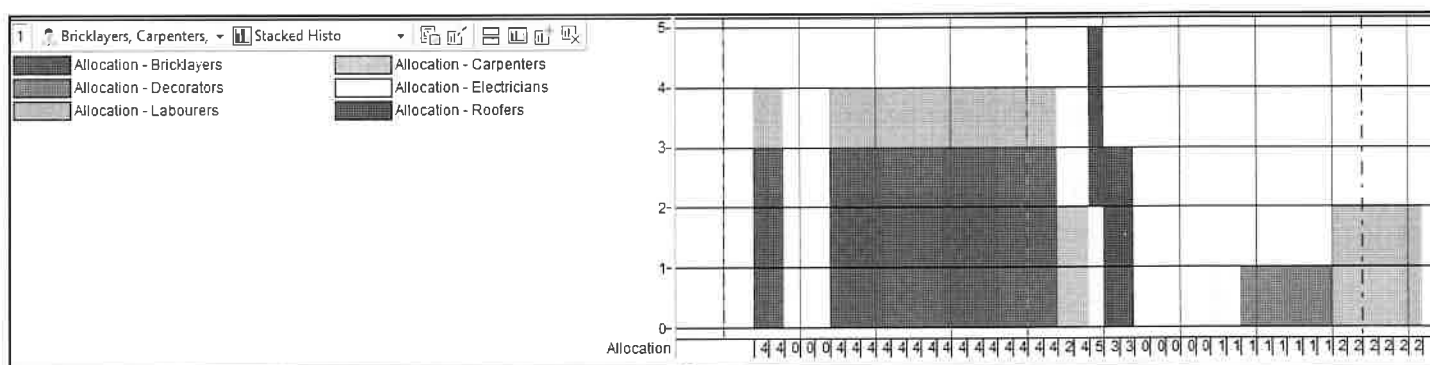
- ▶ Select '**Format histogram**' from the histogram toolbar



- ▶ Change the Stacking options to Stack Resources for each Graph



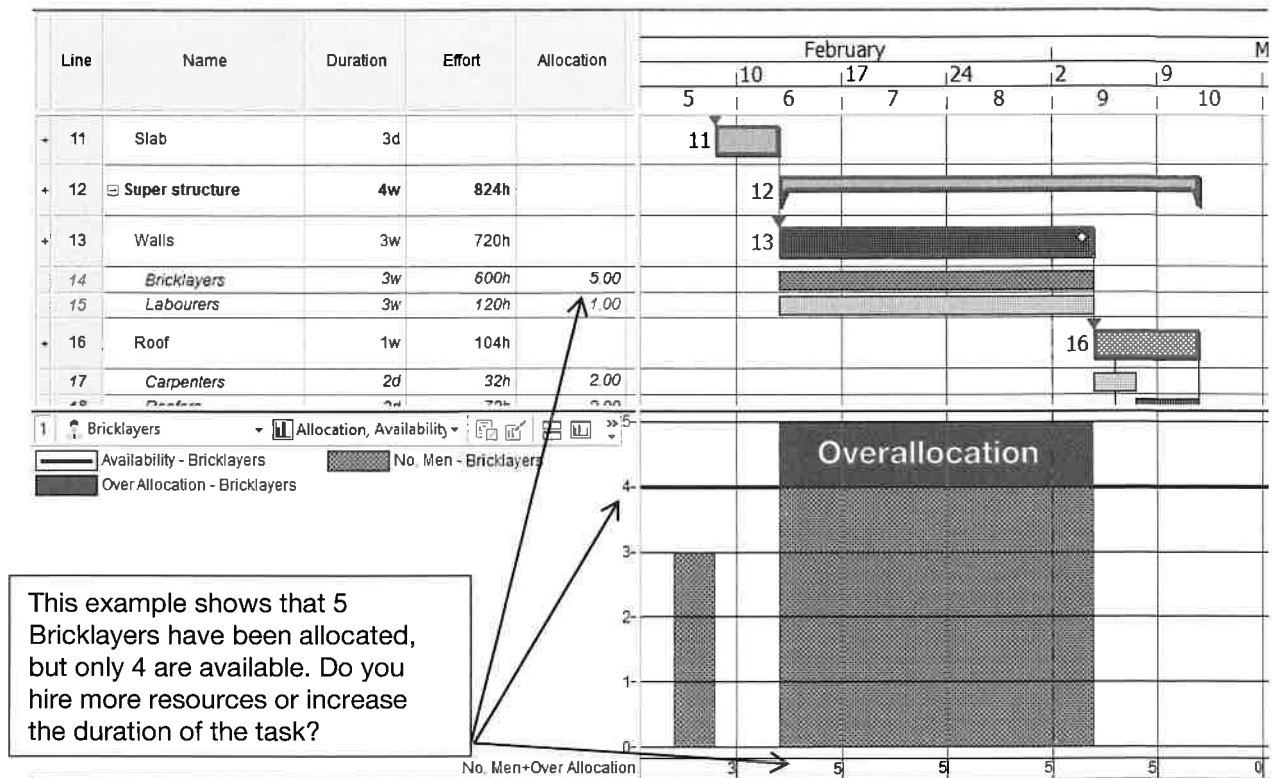
The histogram is now 'stacked'. It shows total resource usage whilst differentiating by colour each individual resource.



Display a histogram showing Allocation and any Over Allocation

It is also useful to display resource allocation, showing the availability of the resource and any over allocation (i.e. allocations over & above your maximum availability of a resource.) We will display a graph to show for Bricklayers

- ▶ Select '**New Histogram**' from the **Graph** group on the **View** tab
- ▶ In the first dropdown select Bricklayers
- ▶ In the second drop down, select the '**Allocation, Availability and Over Allocation**' graph.



Show Tasks

In large projects it is sometimes difficult to identify the tasks that contribute to the over allocation. It is possible to show those tasks in a view

- ▶ Right click directly over the red area on the histogram
- ▶ Select **Show Tasks** from the menu

A new view is displayed showing only the tasks where the over allocation has occurred

Using Resource Modelling to manage over allocation

Modelling resources facilitates decisions such as weighing up the pros and cons of assigning more resources to a task and the impact this could have on costs and project finish dates.

Earlier we set our Resource Modelling for all of our resources to calculate *Effort* because we did not want the allocation of resources to affect the duration of our tasks. Now we could use the modelling to help us answer questions like *How much longer will it take the bricklayers to complete a task if I have less resources available?*

- ▶ Locate the Walls task which has an over allocation of Bricklayers & display the resource allocation bar on the Bar Chart.
- ▶ Right click on the bricklayer's allocation bar and select **Properties**
- ▶ Set the **Balancing Parameter** to Allocation

▶

- ▶ Using the mouse drag to extend the duration of the task in the bar chart until the pop up shows the allocation fall to 4 or below

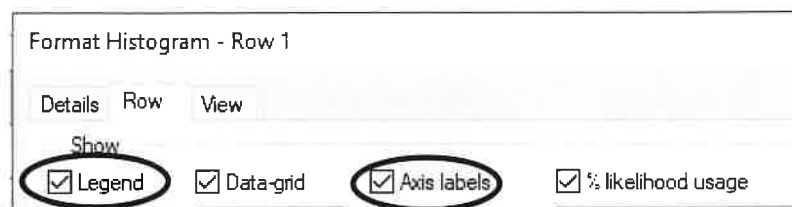
In this example, the original allocation was 5 men working on the 3w task, which was a total of 600-man hrs. With only 4 bricklayers it would take 19d to complete 600 hrs

To display/print the Histogram without the Bar Chart

- 
- Move to bar chart view

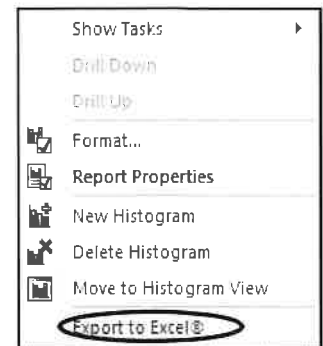
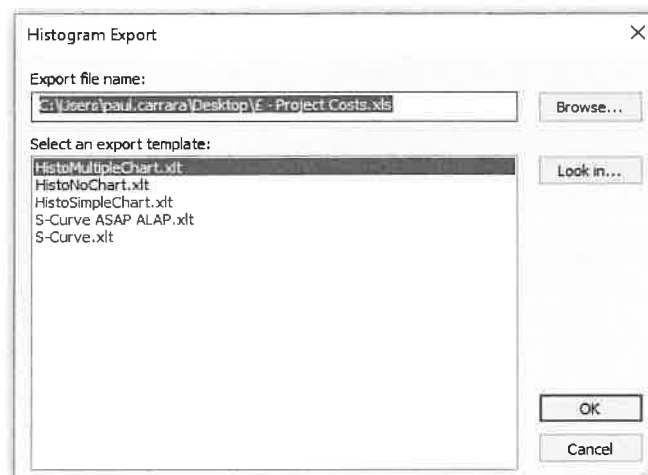
To show the axis labels and legends of the histogram

- ▶ On the **Row** tab, tick the **Axis Labels** and **Legends** boxes at the top of this dialog box:



Exporting Data to Excel

- ▶ *Right click* on the histogram and select **Export to Excel**
- ▶ Select a location for the Excel file & a template to include a Chart if required



- ▶ The 'Clipboard Unit' set in the Histogram Report Properties controls how your histogram values are displayed in the excel table i.e./ daily, weekly or monthly totals

Non-Linear Allocation

By default, cost or resource is allocated to a task, its' allocation is distributed evenly. This means that the amount of effort or quantity per hour, or per day, is the same. Such allocations are called "linear" allocations because the cumulative effort or quantity can be represented by a straight line.

If resources need to be allocated in a specific way e.g. most of the work is at the start of the task, choose to assign a resource curve to the allocation or profile the resources to specify the precise number of hours required to work on a task per day/week etc.

Assigning a resource curve to an allocation

- ▶ *Right-click* the resource or cost allocation and select **Properties** to display the allocation's **Properties** dialog.
- ▶ Click the **Nonlinear Allocation** tab.
- ▶ Click the **Resource curve** radio button.

- Select a resource curve from the list to apply to the allocation

Permanent Allocation Properties for Labour (All Resources)

Details Cost/Income Modelling Progress Codes Nonlinear Allocation

Type

☐ Linear ☐ Profile ☒ Resource curve

Detail

Display period

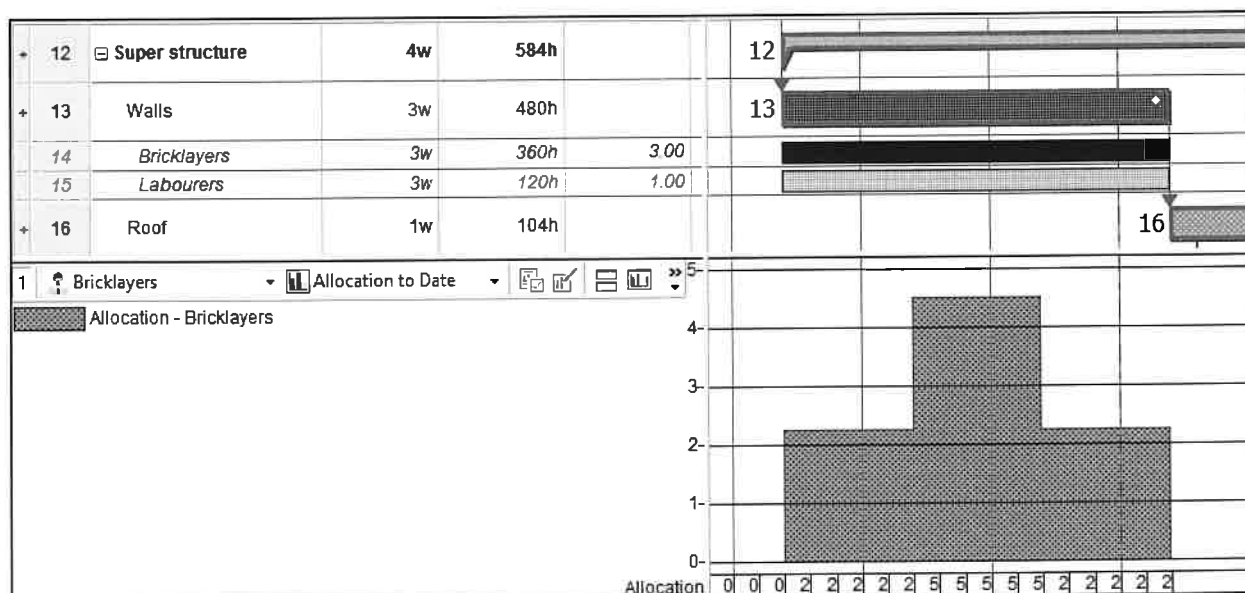
Period	Effort	Allocation
26/06/2019 08:00	6h	0.75
27/06/2019 08:00	6h	0.75
28/06/2019 08:00	6h	0.75
01/07/2019 08:00	6h	0.75
02/07/2019 08:00	6h	0.75
03/07/2019 08:00	12h	1.50
04/07/2019 08:00	12h	1.50
05/07/2019 08:00	12h	1.50
08/07/2019 08:00	12h	1.50
09/07/2019 08:00	12h	1.50
10/07/2019 08:00	6h	0.75
11/07/2019 08:00	6h	0.75
12/07/2019 08:00	6h	0.75
15/07/2019 08:00	6h	0.75

Less << Close

- The figures in the grid on this tab will show how the resource is going to be allocated through each time period of the task duration. Each resource curve will show different allocations

 The Construction Template contains several typical Resource Curves to profile the distribution of your allocations. It is also possible to create your own resource curves. See the appendix for more information.

The histogram below shows an example of non-linear allocation of Bricklayers using the Three step curve, where more effort is required in the middle of the task.



Resource Profiling

With permanent resources, there is also an option to 'Profile' resource allocations. This allows control of the precise hours a resource should work across a particular task.

- Select the **Profile** radio button from the **Non-Linear Allocation** tab of the Resource Allocation properties

Change the **Display period** field to display values for different time period as

Edit the **Effort** required in each time period for the resource

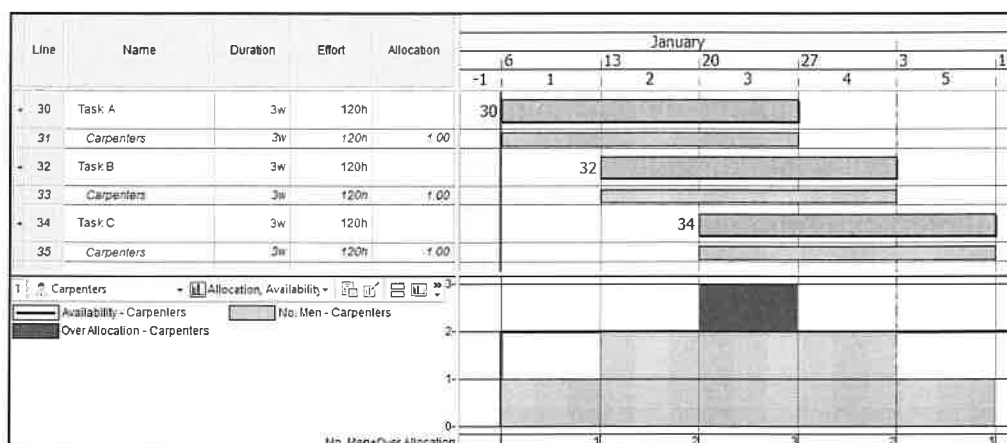
- To save this profile as a curve to be used again click '**Create curve from profile**' and give the profile curve a name

Resource Usage View

You can use the resource usage view to display the planned or actual assignments for one or more resources on a daily, weekly, monthly or quarterly basis. Resource usage views provide period-by-period work plans for your resources, as well as a retrospective detailed view of actual effort.

This is a useful way to visualise resource effort by task and time period in a grid format and is a useful reporting tool alongside the histograms & table.

In the example below, a Carpenter has been assigned to 3 tasks. This has created an Over-Allocation as shown in the histogram



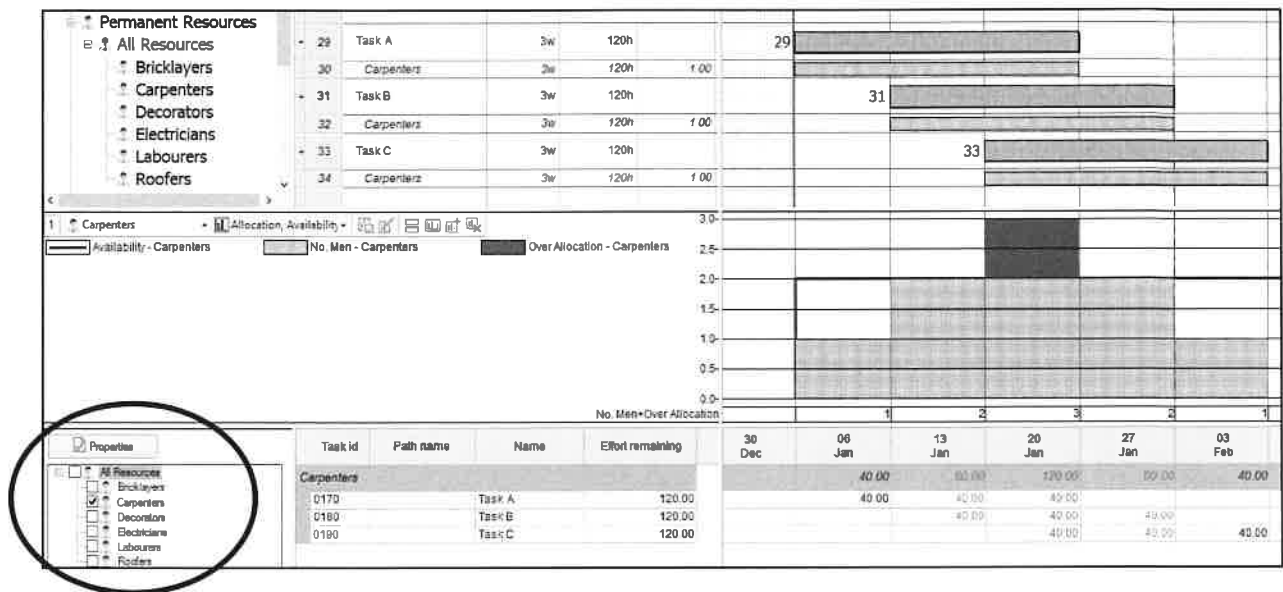
► Click on the **View** tab

► Select **New Resource Usage**



► The Resource Usage View will appear at the bottom of the screen

► Select one or more resources to display from the selector pane on the left of the screen



The Project View must be open to display the Properties button & resource selector pane

The resource effort is displayed in the grid. The cells are coloured by default.

Blue = Under allocated
Green = Fully Allocated
Red = Over Allocated

► Type directly into the relevant cell in the Resource Usage grid to customise the hours of effort and consequently the allocation of the resource that is assigned to the task

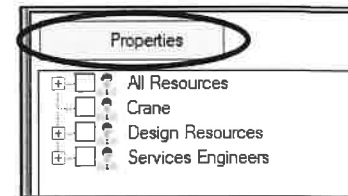
	1	2	2	2	1
	06 Jan	13 Jan	20 Jan	27 Jan	03 Feb
	40.00	80.00	80.00	80.00	40.00
	40.00	40.00	20.00		
		40.00	40.00	40.00	
			20.00	40.00	40.00

Editing the Resource Usage view in this way will automatically change the allocation to a profiled allocation

Editing the properties of the resource usage view

To configure the view to requirements

- Click Properties on the left-hand side of the screen



Choose the **Type of Allocation** you wish to detail in the grid

Detail Demand Resources if used. More on this in the Appendix

By default Total effort is included but you can customise to display Actual or Remaining Effort

- Select the **Fields** Tab to change the columns that appear in the graph

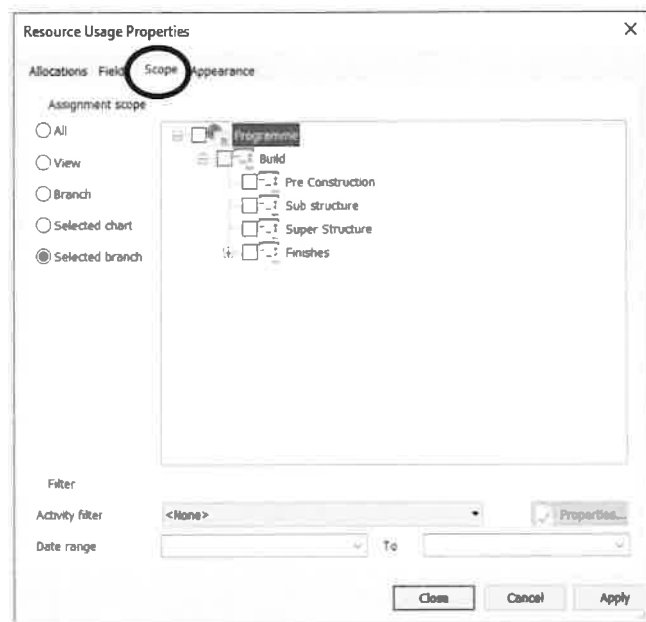
Click in the **Field** column to select the field to be displayed

Field	Source	Ali.	Wi.	Title	Format
Unique task ID	Task	Left	24.00	Task ID	Format
Path name	Bar	Left	71.00	Path name	Format
Name	Bar	Left	45.00	Name	Format
Effort remaining	Alloc	Right	32.00	Effort Remaining	Format

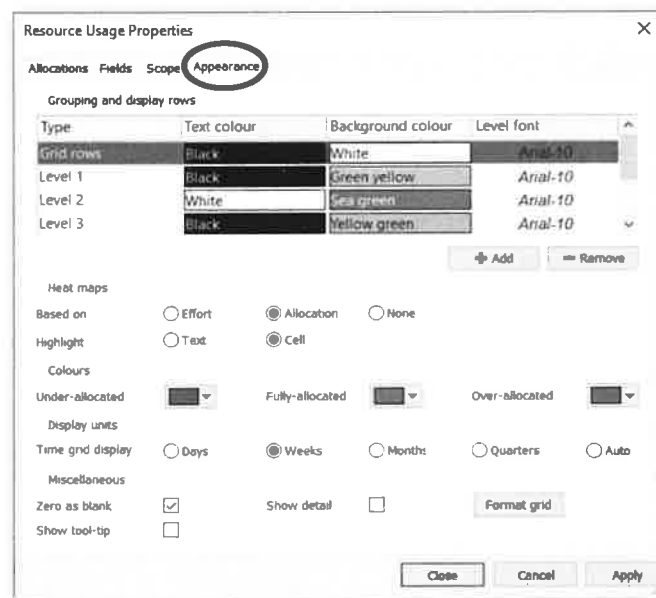
Field	Source	Group	Ascending
Path name	Resour...	☑	☑
Name	Resour...	☑	☑

The data will be sorted by the Name of the Allocation

- Control the Scope of the data display & apply a filter on the **Scope** tab



- The time unit for the graph can be set on the **Appearance** tab, along with the coloured banding and the under/over allocation appearance



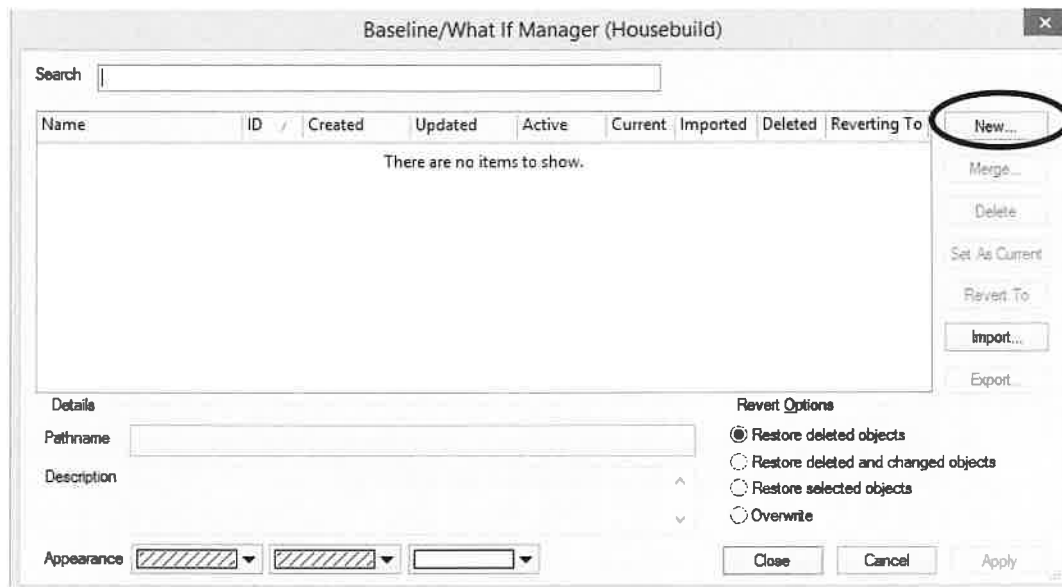
- Click **Close** to Apply the changes

Baselines

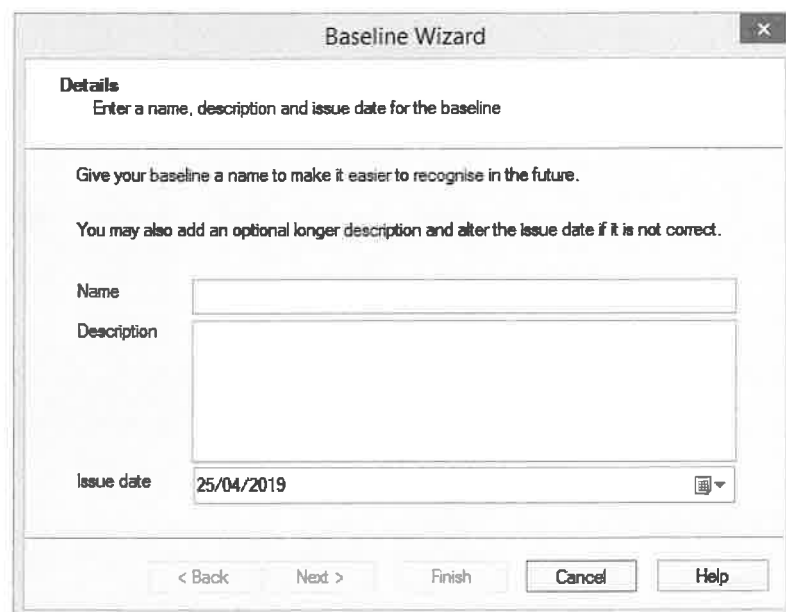
Baselines are created to record the project at a particular point in time (e.g. the contract programme at the beginning of a project). This allows a comparison to be made of current information with planned information. A baseline is a record of all or any part of a project including bars, tasks, links, resource/cost allocations, libraries and histograms.

Creating Baselines

- In the **Project** tab, choose the **Baseline Manager** command



- Click **New**. The Baseline Wizard appears



- Enter a name for the baseline and a description if required e.g. **Contract Programme**
- The **Next** button will become active once details have been completed. Click **Next** to continue to the next stage.

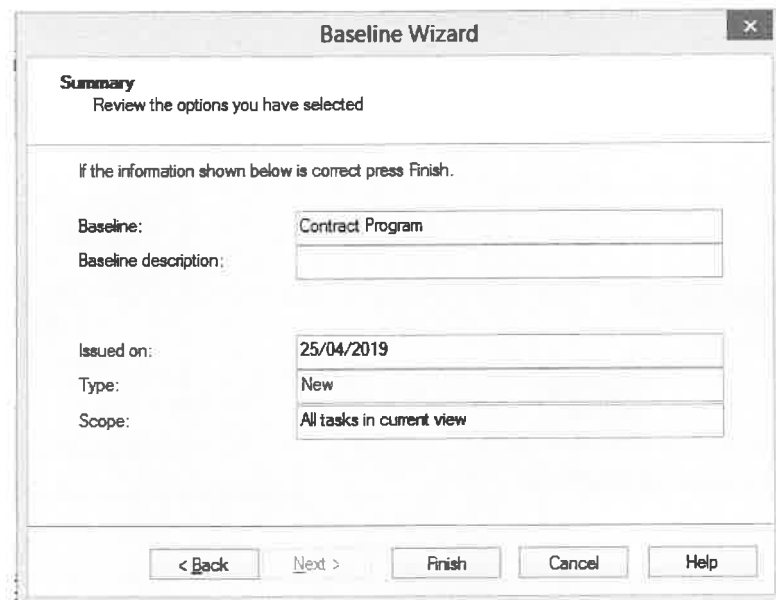
- ▶ On the **Scope** screen, choose '*All tasks in the current view*'.

✍ If you are at the top level of the project this will include any tasks held within expanded tasks or sub charts (N.B., you can alternatively choose to baseline a selection from the programme)



The image shows the 'Baseline Wizard' dialog box, specifically the 'Scope' screen. The title bar reads 'Baseline Wizard'. The main heading is 'Scope' with the instruction 'Define the data you want to baseline'. Below this, there is a section titled 'Define the data you want to baseline.' containing two radio button options: 'All tasks in the current view' (which is selected) and 'Selected tasks only'. At the bottom of the dialog, there are five buttons: '< Back', 'Next >', 'Finish', 'Cancel', and 'Help'.

- ▶ Click **Next** to continue
- ▶ Check the information is correct on the final screen

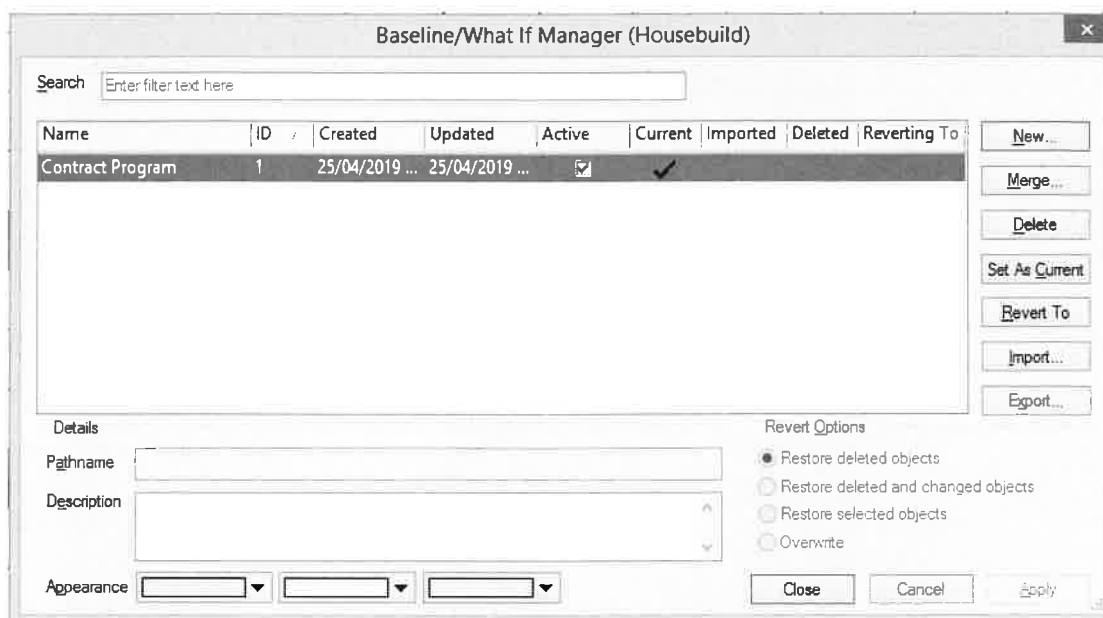


The image shows the 'Baseline Wizard' dialog box, specifically the 'Summary' screen. The title bar reads 'Baseline Wizard'. The main heading is 'Summary' with the instruction 'Review the options you have selected'. Below this, there is a section titled 'If the information shown below is correct press Finish.' containing several input fields: 'Baseline:' with the value 'Contract Program', 'Baseline description:' (empty), 'Issued on:' with the value '25/04/2019', 'Type:' with the value 'New', and 'Scope:' with the value 'All tasks in current view'. At the bottom of the dialog, there are five buttons: '< Back', 'Next >', 'Finish', 'Cancel', and 'Help'.

- ▶ Select **Finish**

The Baseline/What If manager box is displayed.

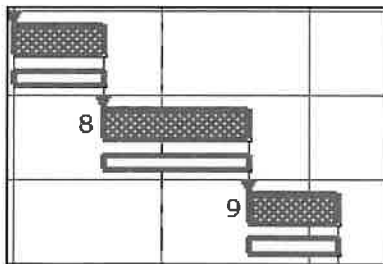
- Click on the name of the baseline to see the baseline details



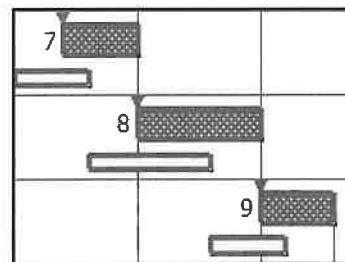
N.B. The baseline has a tick under 'Current' indicating that it is the current baseline that will be used for reporting.

Displaying the baseline

The Baseline will appear as a second line mirroring the task above. (N.B. Should the programme change e.g. an anticipated delay; the baseline will not move)



Live project matching baseline



tasks showing a delay against a baseline project

To change the colour of the baseline

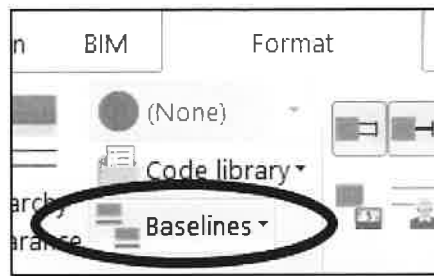
- In the **Project** tab, choose the **Baseline Manager** command
- Select the appropriate baseline
- Click the appearance colour bar at the bottom left
- Click **Close**

To hide a baseline from the view

- In the **Format** tab, choose the Show/hide baselines  command

To choose specific baselines to show or hide

- ▶ Select the **Format** tab on the ribbon
- ▶ Click the **Baselines** drop down



- ▶ Select the baseline(s) to be displayed

Using baselines to compare costs

Once a project has been created, with cost and resources allocated, a baseline can be created to record that information. The baselined information can be referenced in tables and histograms to report in the planned costs, sometimes referred to as budget costs.

As the project is updated over time, the costs of a project may change. The cost and/or resource allocations can be changed and by using the baseline, it is possible to compare if the project is over budget or under budget.

Below are a couple of examples of using a baseline to report against current information.

Using the Table

Line	Name	Forecast Cost	Current Cost	Total cost variance
------	------	---------------	--------------	---------------------

- ▶ Start with the **Default Table** and remove the Start & Finish Columns
- ▶ *Right click* on the duration column and select **Table Definition** from the menu.
- ▶ *Left click* on the duration field, click on the + beside **Cost or Income** and select **Cost**.
- ▶ Click on the **Add** button to add another **Cost** column.
- ▶ Click **Add**, click on the + beside **Earned Value** and select the **Total Cost Variance** field

Formatting the Cost columns

- ▶ *Right click* on the first Cost column and edit the column title to be '**Forecast Cost**' and tick '**Zero as blank**'

- In the Detail section adjust the Data field to report the **Current Baseline**

- Repeat this to rename the second **Cost** column '**Current Cost**' and leave the data field pointing to the **Live** programme
- Select the **Total Cost Variance** field and tick '**Zero as blank**'
- Click on **Close**
- Select the **View** tab > **Table** > **Save As** and save the table as '**Forecast vs Current Cost**' and click **OK**

Using Histograms

Baseline information can be compared in histograms. We will create a cost histogram similar to that used earlier and adjust it to include baseline data.

- Open a new histogram, point the first drop down to **Project Costs** and in the second drop down select **New Histogram Report**
- On the histogram report properties dialogue, name the histogram "**Planned Vs Current Costs**"
- Click on the **Graph** tab. Click on the 'Allocation' graph name and change it to show '**Cost to Date**'.

- In the **Details** section change the Legend name to **Budget Cost**
- Edit the **Data** to reference the **Current Baseline**

Histogram Report Properties for Planned v Current costs

Report Graphs

Graph Name	Legend Name	Data	Filter	Complete Option	Currency Unit
1. Cost To Date	Budget Cost	Current Baseline	<None>	Complete and Incomplete	<None>
2. Cost To Date					

Scope: All Scope

Display Style

☐ Area ☐ Line

☐ Use resource / cost centre / standard work appearance

Display Options

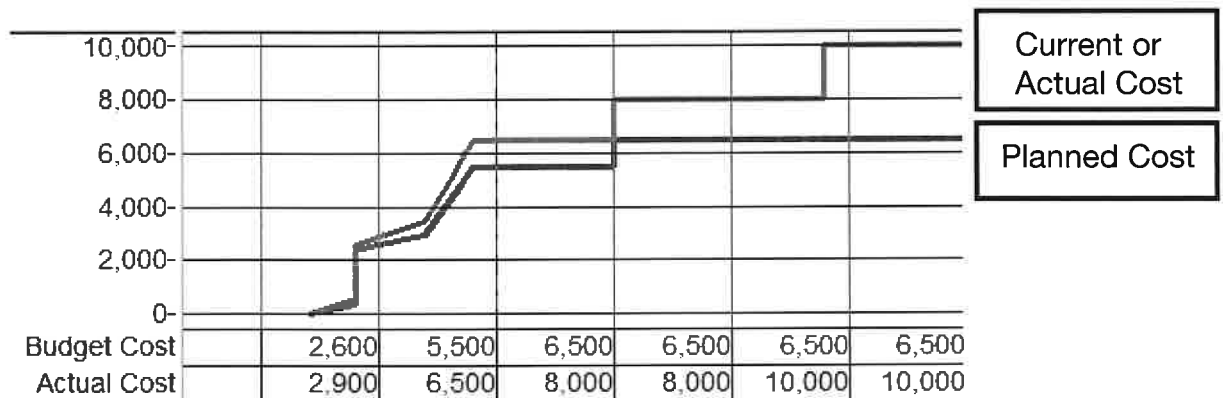
☒ Include in data-grid ☐ Allow stacking

Scale multiplier: ☐ Automatic ☒ Fixed: 1.00

OK Cancel

- Select **Add** to bring in another **Cost to Date** graph. Adjust the legend to read '**Current Cost**' and leave the data as '**Live**'
- Set the **Display Style** for each graph to **Line** and select an appearance by clicking on the drop-down arrow and selecting a colour from the right-hand side of the box
- Finally make sure **Allow stacking** is **unticked** for both graphs
- Click on **OK**

As the Actual Costs are updated in the project, variances against the baseline will be shown in the histogram. The example below has the clipboard unit set to weeks.



Progressing the Project

Once the project is underway, its progress should be recorded at regular intervals. Recording progress ensures that the project is kept up to date and shows if work is progressing as planned or if there are delays. It also highlights how much work remains to be done to complete the project and will give a projected programme end date.

Updating Progress using Multiple Progress Periods

Powerproject allows multiple report dates to be created to record progress. This allows a record of *when* the work was carried out and enables more accurate *As-built* records to be kept.

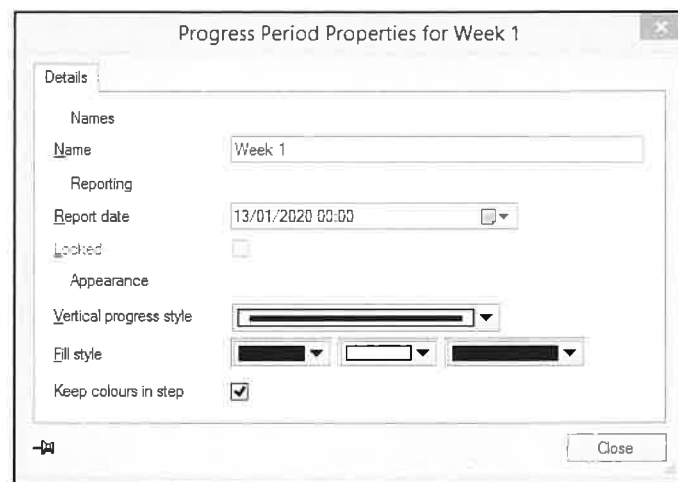
To create weekly progress periods:

- ▶ Open the Library Explorer by selecting on the **Quick Access Toolbar**
- ▶ Select the *Progress Period* folder on the left-hand window



Contents of 'Progress Period'		
Name	Report date	Line style
 Project Report Date	06/01/2020 00:00	

- ▶ In the right-hand pane, *double click* on the default '**Project Report Date**'.
- ▶ *Rename* it to Week 1; choose a Report date 1 week into your project.



- ▶ Edit the Vertical Progress style (Drop down line colour) and Fill Style (Progress colour on task) if desired

 Note that the time of the date defaults to 00:00 (midnight). Therefore, to set a report date of Friday you would need to change the time or choose the next day at 00:00 to ensure that Friday's work is included.

- ▶ Select **Close**
- ▶ *Right click* in the space below Week 1 and select '**New Progress Period**'
- ▶ Name it '**Week 2**' then press **Enter** on the keyboard
- ▶ The date of week 2 has defaulted to 7 days after week 1 and the next colour has been selected. Press **Enter**

- ▶ Type '**Week 3**', Press **Enter** etc.:

Contents of 'Progress Period'		
Name	Report date	Line style
Week 1	13/01/2020 00:00	████████
Week 2	20/01/2020 00:00	████████
Week 3	27/01/2020 00:00	████████
Week 4	03/02/2020 00:00	████████

- ▶ Close the Library Explorer

✎ If progress is not updated weekly, change the date of week 2 as required. Choose regular intervals between each report date; Powerproject will recognise the pattern & default to these intervals after three dates have been set.

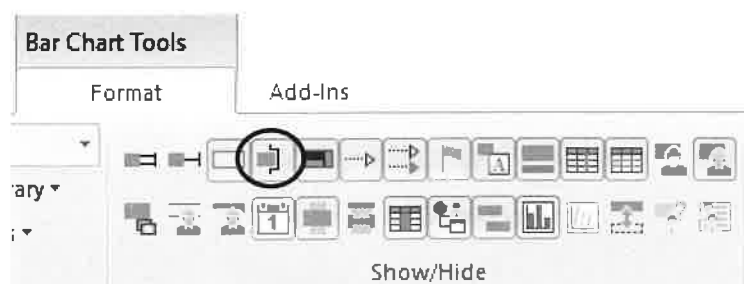
Displaying progress in the bar chart

To view the jagged progress line and shading on tasks within the Bar Chart

- ▶ On the **Format** tab select the **Progress lines** toggle switch

This will display a line for the current '**Progress Entry Date**'.

By default, this is the earliest progress period (the 1st Progress Period date in the library)



Entering progress into the Table

There are several ways to enter progress into a project. One of the easiest is using the table. When updating progress, it is also important to keep track of Actual Cost and/or Actual Effort.

An example table:

Name	Planned percent complete (PPC)	Overall percent complete	Planned Cost	Actual cost	Cost remaining
------	--------------------------------	--------------------------	--------------	-------------	----------------

- ▶ Add **Planned % Complete** and **Overall % Complete** columns from the **Progress category**
- ▶ Add **Cost**, **Actual Cost** and **Cost Remaining** columns from the **Cost & Income category**
- ▶ In Table Definition, edit the **Cost** column to point to the **Baseline** and rename '**Planned Cost**'
- ▶ Edit the attributes of the **Actual Cost** column to report to the '**Progress Entry Period**' and tick '**Cumulative**'
- ▶ Save the Table

- Enter the required progress into the '**Overall Percent Complete**' column to progress the tasks. Tasks will be shaded to indicate progress

As progress is added to the tasks, the associated cost is calculated and displayed in the Actual Cost column.

Line	Name	Planned percent complete (PPC)	Overall percent complete	Planned Cost	Actual cost	Cost remaining	Jan		
							56	57	58
+ 11	Dig footings	60.00	50.00	£1,500.00	£700.00	£800.00			
12	Labour	60.00		£1,000.00	£500.00	£500.00			
13	Equipment	60.00		£500.00	£200.00	£300.00			

- Edit the Actual Cost if it is different to the % calculation

In the above example, labour is a fixed cost. The Actual Cost is 50% of the total cost. Equipment is a time-based cost of £100 per day. Due to snapping associated with Overall % complete 2 days have been progressed on the task so £200 Actual Cost has been calculated.

Reschedule

To see the effects of the progress entered, Powerproject can straighten the progress line and move any uncompleted tasks to the right of the report date. This will show any variance against the baseline.

- Select **Reschedule**

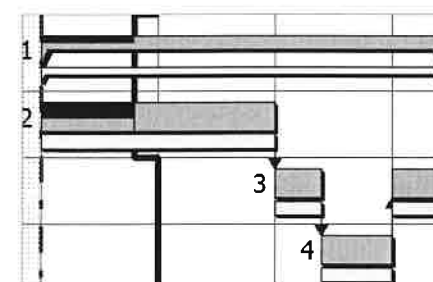


The dialog box 'Reschedule Progress Period Warning' contains the following fields and controls:

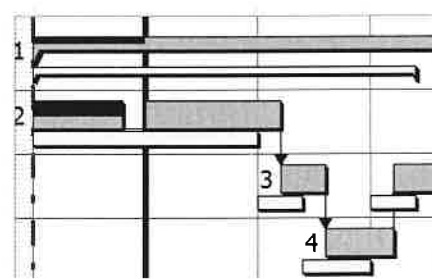
- Straighten progress period:** A text label.
- The reschedule will straighten the progress line to this period:** A text label.
- Progress entry period:** A dropdown menu currently showing 'Progress entry period'.
- Progress is being recorded against this progress period:** A text label.
- Project Report Date (06/01/2020 00:00):** A dropdown menu.
- Do not warn again:** An unchecked checkbox.
- OK** and **Cancel** buttons.

When rescheduling with multiple progress periods, each is listed in the Straighten Progress Period menu. Select a period to reschedule to that specific date or select the 'Progress entry period' to use the current period selected on the Home tab.

The progress line will straighten, and the uncompleted section of the project will move to the right of the report date.



Before



After

Entering Progress against other Progress Periods

The first-time progress is entered, the earliest date will be set as the progress report date.

- Edit the progress period in the Progress section of the Home tab



- Continue to enter progress & update Actual Cost as required

Line	Name	Planned percent complete (PPC)	Overall percent complete	Planned Cost	Actual cost	Cost remaining	Total cost variance	
11	Sub structure	100.00	100.00	£4,960.00	£4,060.00	£1,000.00	£100.00	
12	Dig footings	100.00	100.00	£1,500.00	£1,600.00		£100.00	
13	Labour	100.00		£1,000.00	£1,100.00		£100.00	
14	Equipment	100.00		£500.00	£500.00			
15	Brickwork to DPC	100.00	100.00	£1,460.00	£1,460.00			
16	Bricklayers	100.00		£960.00	£960.00			
17	labourers	100.00						
18	Bricks	100.00		£500.00	£500.00			
19	Slab	100.00	100.00	£2,000.00	£1,000.00	£1,000.00		
20	Labour	100.00		£1,000.00	£1,000.00			
21	Materials			£1,000.00		£1,000.00		

Updating Progress using Task Work

If Task work amounts have been stored against tasks, it is possible to update progress by entering the amount of task work that has been completed.

- On the View tab select **Table**
- Select **Progress** and the **Progress – with a Baseline** table

This table displays Remaining Task Work & Planned Task Work that should be completed by the current report date

Line	Task ID	Name	Actual start	Actual dur	Actual finish	Rem. Dur	% Complete	Planned % Complete	Actual TW	Planned TW	Rem. TW	
2	0010	Design				2w	50.00			50.00 units	100.00	
3		Labour				80h	50.00					

- Enter work units completed into the Actual Task Work column
- Remaining task work is calculated by Powerproject

- If there is a cost associated with the work, it will be calculated according to the % Complete of the task

Line	TaskID	Name	Planned % Complete	% Complete	Planned TW	Actual TW	Rem. TW	Planned Cost	Actual cost	Cost remaining
+ 2	0010	Design	50.00	36.00	50.00 units	36.00	64.00	£1,000.00	£360.00	£640.00

APPENDIX

Resources

Creating new cost & income rates

From the properties of a permanent resource, select the Cost & Income tab

- ▶ Click **New Rate** and give the rate a name
- ▶ *Right click* on the rate in the bottom window & select **Properties**
- ▶ Set the **Amount** per time unit. E.g. £25 per hour. If you want to record a fixed fee, select 'First Use' from the list
- ▶ Set the **Rate Type** as 'Cost' or 'Income'
- ▶ If income is earned as a % of cost leave the rate type as Cost but specify the % return here

Cost And Income Rate Properties for Bricklayer Rate

Details

Rate properties

Name: Bricklayer Rate

Amount: £25.00 per Hour

Rate type: Cost Rate

Income as % of cost: 0.00

Library resources

Cost centre: Labour

Calendar exception category: Working

Cost/Income: Relative To Start

Fixed cost/income offset: 0s

Close

- ▶ Select a **cost centre** to which these resource costs will be recorded e.g. labour
- ▶ Specify if this rate is for all working exceptions or just 'working time'. You may have a different rate for Overtime or Weekend work, in which case you will set up another cost rate for this resource for any work that take place during overtime, as defined by the calendar exceptions.
- ▶ If you have selected 'First Use' for the Amount, you can specify when this cost/income is incurred in relation to the task the resource is assigned to. By default, the cost/income will be incurred across the duration of the task.

Resource Modelling

Modelling consists of getting Powerproject to perform calculations to work out specific parameters for us when allocating resources to tasks.

For example, you may know how much work needs to be done on a task and you may know when the work needs to be done by. Using modelling, Powerproject can work out how many resources are required to get the work done.

Types of Resource Modelling

There are two general types of modelling

Work Based Model:

This type of model is used if the resources output is *measurable*, i.e. we can measure the Work Rate of the resource.

In this type of model, we can get Powerproject to calculate any one of these four parameters:

- **Work** – the amount of work we can achieve in a set amount of time
- **Work Rate** – the rate at which we need to do the work to achieve the work specified
- **Duration** – the amount of time required to get the work done
- **Allocation** – the amount of resources required to get the work done

To get Powerproject to perform a model on any one these four parameters, you must know the values of the other three.

Effort Based Model:

This type of model is used if we *cannot measure the Work Rate* of a resource.

In this type of model, we can get Powerproject to calculate any one of these three parameters:

- **Effort** – the amount of effort required to get the work done
- **Duration** – the amount of time required to get the work done
- **Allocation** – the amount of resources required to get the work done

To get Powerproject to perform a model on any one these three parameters, you must know the values of the other two.

Using Modelled Resources – a work-based example

When we model resources, we must first decide what Modelling Type we want to use & what it is that we wish the software to calculate. This is the *Calculated Parameter*.

For this example, we know that:

- There are 240 metres squared to paint (Work) for the Decorate task
- There is 1 Decorator (Allocation)
- The Decorator can paint 20 metres squared a day (Work Rate)
- We want the software to calculate how long the task will take (Duration)

Based on the information we know, we will use a **Work Based Model** and set the 'Work from Task'

Our calculated parameter is *Duration*.

Setting the amount of work on a task

To add 240 meters squared of work required onto the task

- ▶ *Right click* on the Decorate task and select **Properties**
- ▶ Select **Effort & Modelling** from the options on the left-hand side.

The screenshot shows the 'Bar and Task Properties for Set up site' dialog box. The 'Effort & Modelling' tab is selected in the left-hand pane. The right-hand pane shows various effort-related fields. The 'Task work' field is highlighted with a red circle, and an arrow points from a text box to it. The text box contains the instruction: 'Enter the Work as 240 and change the Work Unit to m2'.

Field	Value
Effort time unit	Hours
Scheduled effort	0h
Demand effort	0h
Actual effort	0h
Effort remaining	0h
Task work	240.00 m2
Task work rate	20.00 Day
Actual task work	0.00 m2
Task work remaining	240.00 m2
Modelling	
Effort budget	0h
Status	Not resourced
Demand status	

Allocating a modelled resource

- ▶ In the Project View *right click* on **Decorator** resource and select Properties
- ▶ Select the **Assignment** tab (If this tab is not displayed, click on the **More >>** button at the bottom of the Properties box)
- ▶ Change the *Modelling Type* to **Work from Task (1)**
- ▶ Leave the *Allocation* as 1 man (2)
- ▶ Change the *Calculated Parameter* to **Duration** & set the *balancing parameter* to **Allocation** (3)
- ▶ Untick **Recalc work rate on assign** (4)
- ▶ Change the *Work Unit* to **Metres Squared (5)**
- ▶ Change the *Work Rate* to **20m2 per day (6)**
- ▶ Click **Close**
- ▶ Allocate **Decorators** to the Decorate task in the bar chart. The task was originally 6 days long – it should increase to 12d.
- ▶ **Reschedule** the project

Permanent Resource Properties for Decorator (All Resources)

Details Cost/Income Assignment Codes Standard Work

Modelling

Modelling type **Work From Task**

Duration = Effort / Allocation

Calculation

Allocation **1.00** Effort 1h

Duration 0h Delay 0h

Parameters

Calculated **Duration** Balancing **Allocation**

Use task calendar ☐ May be shorter than task ☐

Allocate proportionally ☒ Contributes to activity effort ☐

Lead resource ☐

Recalc work rate on assign ☒

Work based data

Work 1.00 **2.00 m2**

Work from task factor 1.00

Rate type Units Per Time Unit

Work rate **20.00** m2 per Day

Completed costs

Accounted for elsewhere ☐

Nonlinearity

☒ Linear ☐ Resource curve <None>

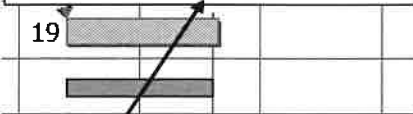
Less << Close

Changing the duration of a Resource Modelled task

We will now use modelling to recalculate the number of resources required if we change the duration of the task. This is known as the *Balancing Parameter*.

- ▶ Right click on the resource allocation bar for the Decorate task and select **Properties**
- ▶ Select the **Modelling** tab
- ▶ Set the *Balancing Parameter* to **Allocation** (This specifies what will be recalculated when you alter the duration of a task)
- ▶ Click on **Close**
- ▶ Using the cursor decrease the duration of Decorate to 6d. In the pop-up box, the Allocation is recalculated as you shorten the task. (The shorter the task, the more men required)

Name	Decorate
Start	24/07/2013
Finish	31/07/2013
Duration	6d
Allocation	2.00 Decorators 240.00 m2



When the task is 6d, 2 men are required to complete the work

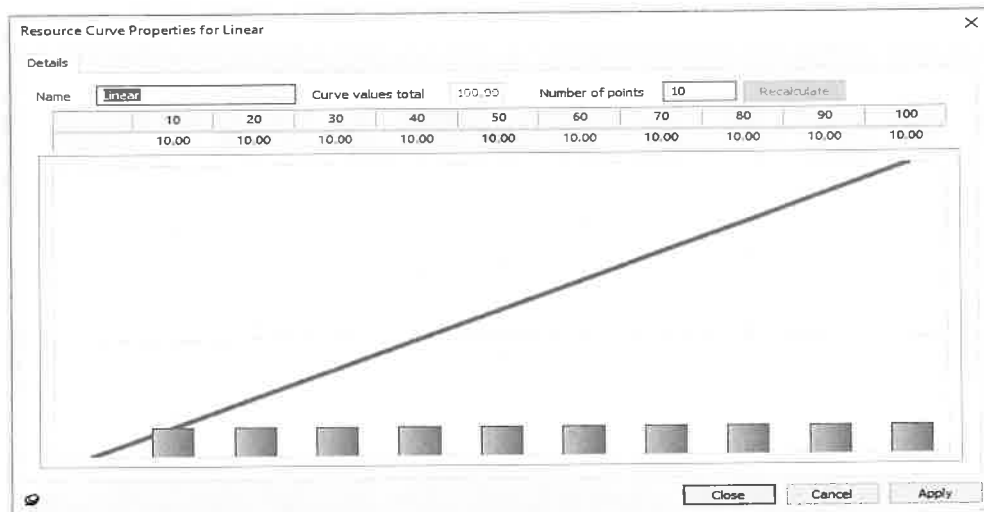
- ▶ **Reschedule** the project

Creating your own resource usage graph

- ▶ Open the library explorer
- ▶ Open the **Resource Curve** folder

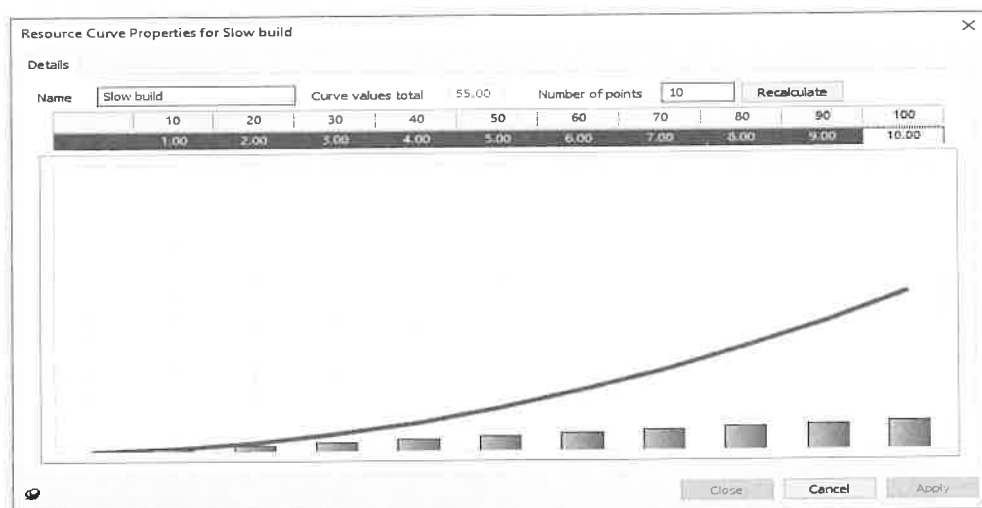
 If this is not visible, **right click** in the right-hand pane & select '**Show Libraries**'.
Find the Resource Curve library on the left & click '**Add**' then **Close**

- ▶ Select the Resource Curve **library**
- ▶ Right click and select **New Resource Curve**
- ▶ Name your curve e.g. 'Slow Build' and then double click on it



The graph tab shows the percentage of the allocations duration for each point in your graph and allows you to edit both the number of points up to 33) & the values to detail the spread of effort, quantity or cost for this curve. The totals must equal 100%.

Currently with 10 points in this graph, the curve allocates 10% at each point. We will edit this so that the curve will increase gradually across the duration of its allocation.

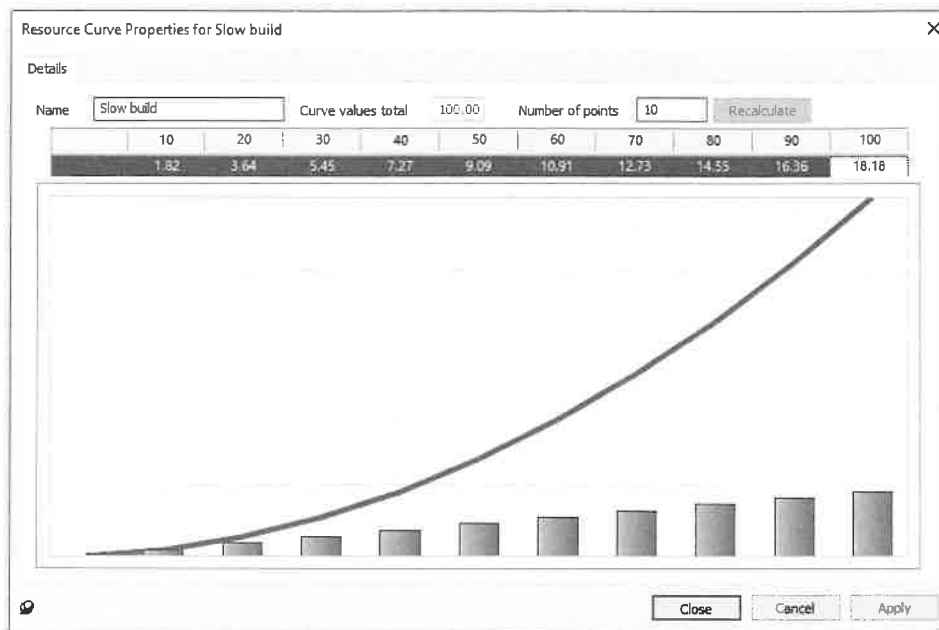


- ▶ Edit the grid at the top of the graph entering 1 under 10, 2 under 20, 3 under 30 etc. through to 100

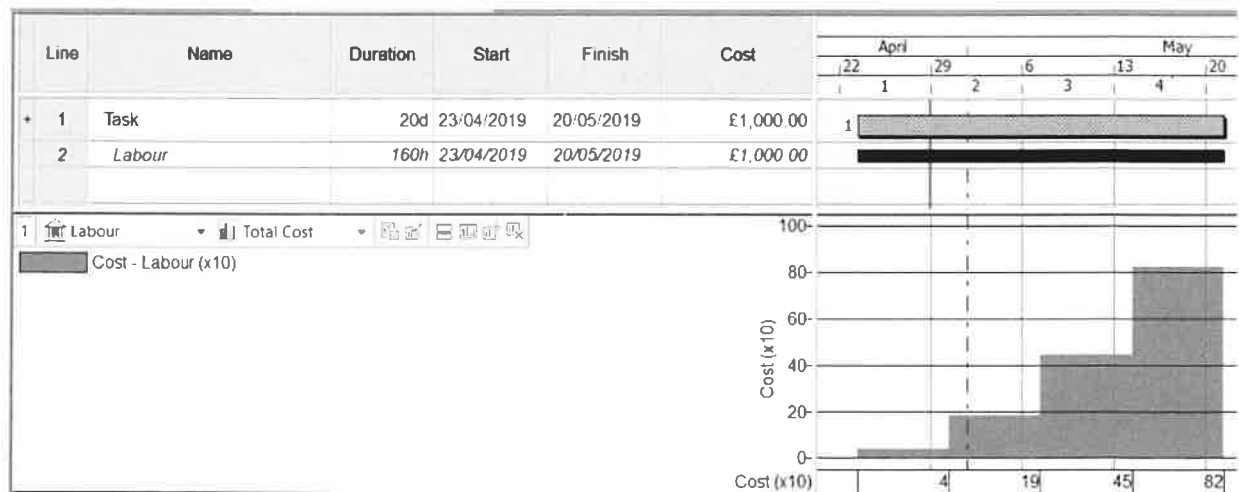
Note how the curve has changed to build gradually across the duration of the allocation

► Click **Recalculate**

Curve totals must equal 100% so the software will use your figures as the basis for the curve equation and recalculate to spread this proportionally



Now we have created a resource curve, this can be allocated to a Cost or Resource Allocation and when allocated to a task it will show the expenditure or effort building across the duration of the task.



Demand and Scheduled Resources

Each resource allocation we have made so far has been a **scheduled** allocation i.e. a job has been assigned to a particular individual.

There are occasions however when we may only know that a certain skill is required, and we will leave it up to someone else to define the exact individual who will carry out the task.

To work with our resources in this way we need to create folders representing skills and resources within the folders representing the individuals. In construction we may not deal with named individuals but may use 'gangs' or teams of people in a similar way.

In this example, we will say that the Walls task requires 360 hours of Bricklayers effort to be completed.

- In Library explorer create a folder called Bricklayers and inside create three resources called gang1, gang2 & gang3.

Contents of 'Bricklayer'					
Name	Availability (Resource)	Res appearance Foreground...	Res appearance Backgroun...	Res appearance Pattern	Calculated parameter
Gang 1	1.00	Tan	White		Effort
Gang 2	1.00	Tan	White		Effort
Gang 3	1.00	Tan	White		Effort

By assigning the folder Bricklayers to the task, we will be creating a **Demand** for Bricklayers, but we will not know which gang we will assign in the early stages of project planning. At the same time, we will use modelling to work out how many gangs we require from the Bricklayers folder. We will then schedule resources to satisfy this demand.

*When you allocate a resource folder (or skill set) this automatically becomes a demand allocation IF it has been set to do so set in **File - Options - Assign** tab*

Allocating a Demand Allocation

- Allocate the Bricklayers resource by dragging the *folder* on to the Walls task
- Select the Resource allocation bar

Walls	3w		120h	16	
Bricklayers	3w	1.00	120h		

- Use the Resource Modelling group on the Allocation tab to set the Modelling Method to **Effort: Calc Allocation**

	Allocation	BIM	Format	Add-Ins
sign list	Resource	Bricklayers	Work (#)	120.00h
	Model	Effort : Calc Effort	Rate (R)	Rate
	Quantity	3.00	Factor (F)	Factor
Resource Modelling				

- Change the **Work (#)** to 360h effort

Note that the allocation quantity has now changed to 3

Walls	3w		360h	16	
Bricklayers	3w	3.00	360h		

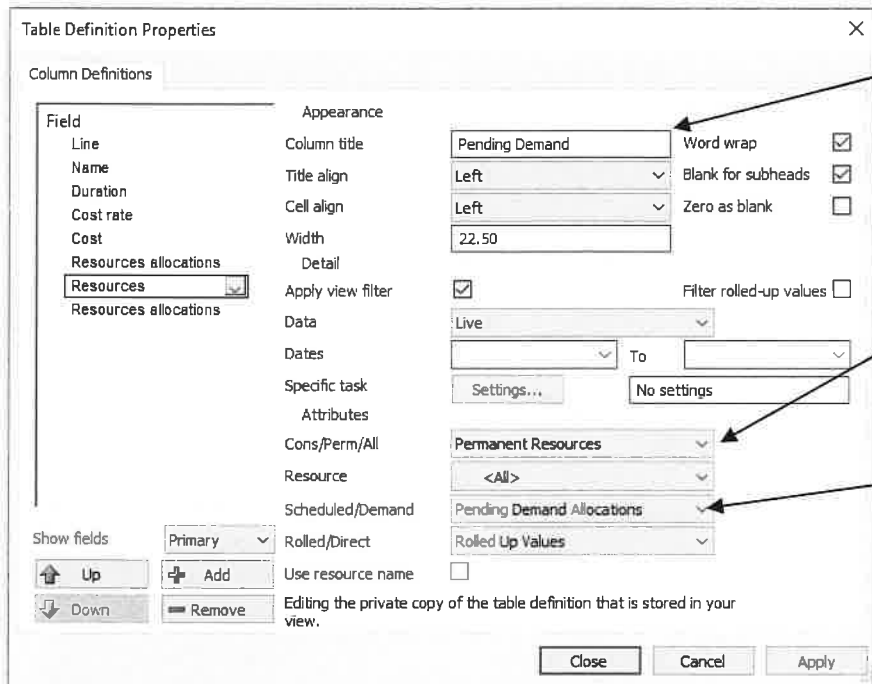
Displaying Demand / Scheduled Resources in the Table

To see clearly within the project where our demand is, we can show this in a table.

Line	Name	Pending Demand	Scheduled Resources
------	------	----------------	---------------------

Using the Default Table:

- ▶ Right Click on any of the column titles and select **Table Definition**
- ▶ Left click on the Duration column and select *Resource* > **Resources**.
- ▶ Edit the Appearance & Attributes as follows



The screenshot shows the 'Table Definition Properties' dialog box. The 'Column Definitions' tab is active. The 'Field' list on the left includes 'Line', 'Name', 'Duration', 'Cost rate', 'Cost', 'Resources allocations', and 'Resources'. The 'Resources' field is selected. The 'Appearance' section shows 'Column title' set to 'Pending Demand', 'Title align' to 'Left', 'Cell align' to 'Left', and 'Width' to '22.50'. The 'Detail' section shows 'Apply view filter' checked, 'Data' set to 'Live', 'Dates' set to 'No settings', 'Specific task' set to 'Permanent Resources', 'Cons/Perm/All' set to '<All>', 'Resource' set to 'Pending Demand Allocations', and 'Scheduled/Demand' set to 'Rolled Up Values'. The 'Show fields' section shows 'Primary' selected. The 'Use resource name' checkbox is unchecked. The 'Editing the private copy of the table definition that is stored in your view.' checkbox is unchecked. The 'Close', 'Cancel', and 'Apply' buttons are at the bottom.

Annotations:

- Change the column title name to **Pending Demand**
- Change the Resource Type to **Permanent Resources**
- Set the Allocation to **Pending Demand**

- ▶ Repeat to set the Start column to show Scheduled Allocations
- ▶ Remove the Finish column and click **Close**

Satisfying Demand

The table will show *pending resources* i.e. a requirement for a particular resource or skill.

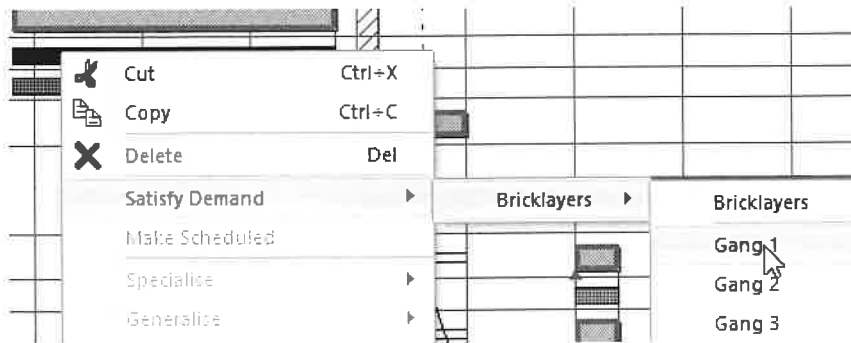
Line	Name	Pending Demand	Scheduled Resources	August				
				5	6	7	8	
15	Super Structure	Bricklayers		15				
16	Walls	Bricklayers		16				
17	Bricklayers	Bricklayers						

Once we satisfy that demand, the pending column will go blank and the resource, that has satisfied the demand, will appear under the scheduled column.

- ▶ To satisfy the demand you can assign the individual resources to the task by dragging from the project view

Or

- ▶ *Right click* on the Demand Allocation, select Satisfy Demand and choose the resource you wish to assign



- ▶ Only a resource from the right skill set (i.e. Bricklayers) will satisfy the demand. If the task requires more than one resource, the first column will only go empty when all of the demand is met

Line	Name	Pending Demand	Scheduled Resources	August			
				5	6	7	8
15	Super Structure		Gang 1, Gang 2, Gang 3	15			
16	Walls		Gang 1, Gang 2, Gang 3	16			
17	Gang 1		Gang 1				
18	Gang 2		Gang 2				
19	Gang 3		Gang 3				

After the demand is satisfied with 3 resources

Glossary

Allocation

This is the name given to any *Permanent* or *Consumable Resource* or a *Cost Centre* that may be assigned to a task. It can be shown on the *Bar Chart* underneath the task

Bar

Horizontal area, identified by a line number, including the information in the Spreadsheet and one or more tasks on the Bar Chart

Bar Chart

The area of the screen where Tasks are displayed graphically.

Baseline

A copy of the project recorded at a single point in time. Powerproject can record and display multiple baselines allowing for tracking of major changes; production of what-if scenarios; comparison of information (e.g. budget cost to actual cost)

Border File

A print function which contains information to be included in your printouts, including graphics such as company logo, project information such as the project title and relevant dates.

Code (Colour)

A facility to allow the assignment of colours to tasks to represent information about the task.

Code Library

This is the library (or folder) that contains Codes, allowing you to have multiple 'categories' of codes.

Constraint (Flags)

These are used to enforce dates on a Task can outside of the logic defined by the links. (stopping a task starting before a certain date, or stopping a task finishing after a certain date). Using Constraint Flags within the project can have a major effect on your Critical Path

Consumable Resource

This is a resource that once used, no longer exists to be used again (e.g. materials)

Control Key (CTRL)

A key on the key board normally found at the bottom left (and one on the right) used throughout windows applications for either commands (e.g. CTRL + S for saving) or for selective highlighting. (To highlight everything that is clicked upon whilst the key is held down)

Cost Centre

These are items that represent the costs you wish to record in a project (e.g. Labour, materials, plant) They are used to assign costs to Tasks either directly or indirectly via Cost and Income Rates on a resource. Cost Centres can be used to represent money coming in to the project (Income) as well as money leaving the project

Cost and Income Rates

These are items that can be assigned to Resources to show how much they cost per 'time unit'. It could be a daily cost or even an hourly rate. These act as the 'middle man' between Cost Centres and Resources allowing Cost Centres to be used indirectly

Critical Path

This is the sequence of tasks through a project whose duration affects the project end date & the overall project duration. If any of the tasks on the critical path are changed the end date of the project will change. It is shown as a red outline on Tasks and as red Links.

Date Zero

Normally at the start of the project but can be moved without affecting the project. Date Zero is the point where the elapsed week ruler in the Date Zone starts counting.

Date Zone

This is the area above your project that contains rulers of information (e.g. week numbers, week start)

Exceptions

These are working or non-working types used to make up the work patterns used in calendars. E.g. holidays, working, overtime etc.

Expanded

This type of task is similar to a Summary Task in that it is used to group together Tasks within the project. Unlike a Summary Task, the content is held off the main chart in its own Sub Chart.

Filter

This is a tool that will leave on screen only those items that meet a particular criteria, for example all the items that a particular contractor is doing (Code based filtering) or everything happening during a 6 week period (time based filtering) even to show only those items that have been completed (Progress based filtering)

Float

This appears on items that are not on the Critical Path. Float is the amount of time a Task may be delayed or extended before the item re-joins the critical path and pushes out the end date of the project.

Free Float

Free float means that if the task is extended or delayed in anyway during its period of float only this item is affected, nothing else will move

Library Explorer

An area that allows you to navigate all of the folders of items used in your project. (Cost Centres, Calendars, Codes, Permanent Resources etc.) Some library items are displayed in the Project View others can only be viewed & edited from the Library explorer (e.g. Exceptions, Link Categories, and Currency)

Link

The relationship between two tasks, displayed as an arrow. If shown in red, then the link is Critical.

Milestones

Milestones are points in time; they have no duration of their own (0 days) and are used to represent key events within projects (e.g. handover)

Permanent Resource

This is a resource that once used remains to be used again. (E.g. People, machinery)

Progress Period

The progress report date; the date at which progress is updated to the project. Can be displayed as a line going down the screen that will bend to the left to show items behind time and bend to the right to show items ahead of time.

Project View

The white window that opens on the left-hand side of the screen. Used to navigate around the project, and to view & assign items into the project like Code Libraries, Cost Centres, Permanent Resources, Consumable Resources and Calendars.

Sort

To Re-order the project according to a set of criteria. E.g. the project tasks could group together all the tasks according to the code that has been assigned to them.

Spreadsheet

This is the yellow and white stripped table down the left-hand side of the screen (assuming the Project View is closed) The Spreadsheet is made up of different columns which contain data fields. Columns can be removed, added and moved within a table.

Summary

This type of task groups together Tasks on screen. The tasks can be rolled up & hidden so only the summary is shown. Items are grouped because they share certain information, for example, summaries could be used to group together all the Tasks on different floors. A Summary could also be used to show different phases or stages within a project. Multiple summaries can be placed inside of each other allowing a project structure or hierarchy to be created.

Task

The activities that appear within a Bar on the Bar Chart.

Template

A template is a project file that is used when creating a new project. A Template typically contain items needed in all new projects i.e. Calendars, Permanent Resources, Cost Centres, Code Libraries, Task Pools.

Total Float

Total float means that if the task is extended or delayed during its period of float, then all items directly after it (those containing Float) will also be affected.

UDF

A User Defined Field. The software already has a large range of data fields that can be used. UDF's are created by the user for additional reporting needs e.g. to record notes or have a tick box to indicate whether an H&S check has been completed.

View

A view is the method used for the software to remember screen settings. When saved the 'View' will remember if the Project View is opened or closed, it will remember the current column configuration within the Spreadsheet. It will also remember the current settings of the Bar Chart, the Date Zone and finally whether there are any Filters or Sorts running within the program. Putting all of this together a view is the ability to change all of these settings to a predefined set by only doing one click of the mouse. The software can have unlimited number of views saved.

Exercises

Exercise 1 - Creating and Allocating Cost Centres

Open the **Shed Build** project that is in your 'Projects for APP3' folder. You need to include relevant projects costs against the tasks

Create Cost Centre Library

- ▶ Create a cost centre folder called *"Overall Project Costs* with 3 *cost centres*

Labour
Plant
Material

- ▶ Change the foreground fill colours to those of your choice

Create a Table

- ▶ Add a 'Cost' column to the Table that displays costs from the 'Overall Project Costs' cost centre folder
- ▶ Set the column to display 'Zero as blank'
- ▶ Save the table as your *'Cost Table'*

Allocate costs to your tasks

Task	Cost Centre	Amount
Market Research	Labour	£100.00
Buy Shed	Material	£1100.00
Delivery Period	Labour	£50.00
Dig Base	Labour	£150.00
	Plant	£100.00
	(This Plant payment is made 15 days after the completion of the task)	
Pour Concrete	Labour	£150.00
	Plant	£35.00
	Material	£40.00
Erect Sides	(This Material payment is made 30 days after the completion of the task)	
	Labour	£125.00
Paint (Undercoat)	Material	£10.00
	Labour	£90.00
Paint (Topcoat)	Material	£50.00
	Labour	£90.00
Roof	Material	£60.00
	Labour	£65.00
Window	Material	£12.00
Door	Labour	£25.00
Lock	Labour	£30.00
Final Checks	Labour	£15.00
	Labour	£40.00

- ▶ What is the total cost of your project?
- ▶ Hide all of the cost allocation bars and change the table back to the default table.
- ▶ **Save and Close** the project

Exercise 2 - Cost Histograms

- ▶ Open the **Shed Build** project from earlier
- ▶ Display your '*Cost Table*' that you saved in Exercise 1

Display a Cost Histogram

- ▶ To track the costs of the project, display a histogram to show the 'Total Cost' curve for your '*Overall Project Costs*'
- ▶ Ensure the Cost to Date histogram *Legend* is showing so a key of the shaded area is displayed
- ▶ *Drill down* so that each individual cost centre has its own histogram visible
- ▶ Add another histogram to display **Monthly Costs**

Exercise 3 - Creating and Allocating Resources

- Open the **Shed Build** project from earlier

Create a Permanent Resource folder

- Create a folder called **"Trades"** in your library.
- Inside this new folder, list the following 3 trades and alter the appropriate attributes as seen below:

Name	Colour	Availability	Modelling Type	Calculated Parameter
Painters	Your choice	3	Effort on allocation	Effort
Joiners	Your choice	2	Effort on allocation	Effort
Labourers	Your choice	4	Effort on allocation	Effort

Create a table

- Add columns to display 'Allocation' and 'Effort' in your spreadsheet
- Save the table as your **'Resource Table'**

Allocate resources to your tasks

Task	Resource
Dig Base	Labourer x2
Pour Concrete	Labourer
Paint – Undercoat	Painter
Paint – Topcoat	Painter
Roof	Labourer x2
Window	Joiner
Door	Joiner x2
Lock	Labourer

- **Save** and **Close** the project

Exercise 4 - Resource Histograms

Display Allocation & Over allocation

- ▶ Select a histogram to check the allocation & any over allocation of your 'Trades' through the project
- ▶ *Drill down* to check each permanent resource
- ▶ Put a legend on display

Are there any over allocations in your project?

Display a Stacked Histogram of all trades

- ▶ Select a histogram to show all allocations of your 'Trades' stacked on one graph.

What is the maximum number of trades on site at one time?

- ▶ **Save** and **Close** the project

Exercise 5 - Comparing Planned v Current costs

- ▶ Open the **Shed Build** project
- ▶ Create a baseline of your project and call it '*Master Programme*'
- ▶ Once created, go through your project and increase/ decrease the costs of some of your tasks within the project

Create a table

Ensure you have the following columns in your spreadsheet:

- Line
- Name
- Cost (rename the column '*Budget Cost*' and point it to the '*Current Baseline*')
 - Cost (rename this column '*Current Cost*' and point it to the '*Live*' data)
 - Total Cost Variance (point it to the '*Current Baseline*')
 - ▶ Save this as your '*Budget vs. Current Cost Table*'

Display Budget vs. Current costs in a histogram

- ▶ Display a histogram to show the '*Baseline v Current Costs*' of your project
- ▶ Ensure a legend is on display
- ▶ **Save** and **Close** the project

Managing Costs & Resources – What Next?

1. Identify the next Powerproject course for you:

- **Progress Analysis & S Curve Reporting with Powerproject**

Learn to accurately monitor progress & produce S Curves to demonstrate progress trends in a project.

- **Satisfying NEC Programme requirements using Powerproject**

This course focuses on Powerproject features that can be used to meet contract requirements but also gives a good refresher to general project management including Critical Path Management, assigning responsibility & effective progress updates to monitor change.

- **Introduction to Powerproject BIM**

Learn how to visualise projects in 4D.

Check our website or call us for available dates.

2. Find out your Serial Number and write it here. You'll need this should you have to call our Helpdesk

Serial No.

3. Use your serial number to create a login to the **Customer Support Portal** at <http://support.elecosoft.com> for access to FAQ's, advice & the latest software releases.

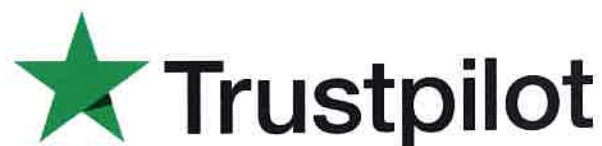
Support lapsed?

A current support contract provides unlimited access to our Helpdesk & access to the latest software releases via our Online Support Portal.
Contact 01844 261700 for a quotation to renew

Enjoyed your training course today? Please visit:

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Powerproject Course Notes

Develop the skills you need to manage projects effectively with our software.

Elecosoft provides a wide range of standard and tailored courses at our Training Centre in Haddenham, Buckinghamshire, at customers' premises and at regional locations throughout the UK. We also offer comprehensive consultancy services including implementation, integration, project set-up and customisation.

To find out more about our training courses, visit our website www.elecosoft.com/training, email training@elecosoft.com or call the training team on +44 (0)1844 261 700.

More information

For more information please visit www.elecosoft.com/powerproject or contact us on **+44 (0)1844 261 700** or info@elecosoft.com