XER Schedule Toolkit

User Manual // Overview & Function

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XER Toolkit Overview

The XER Toolkit is an Excel addin that provides intelligent access to primavera schedule data stored within an XER file or Primavera's underpinning database.

The objective of the XER Toolkit is to help drive successful project delivery by providing tools that assist with improving the quality of project schedules. It achieves this by:

- Promoting schedule visibility and understanding throughout a project team.
- Providing the ability to pinpoint deficient aspects of a project schedule which can then be resolved.
- Providing tools that make graphical analysis of schedule data both simple to use and outputs that are easy to understand.

The Toolkit operates entirely within the MS Excel environment and does not rely on or require any other software installation.

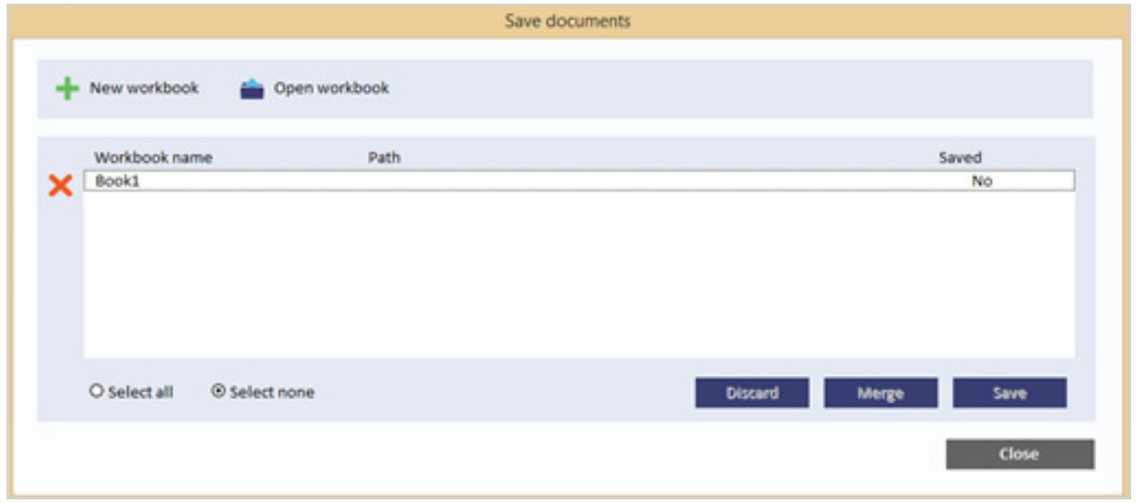
The Toolkit uses Excel's built-in database technology and can therefore handle and operate large multi-project XER files.

The original XER file/ Primavera database is never altered or affected by the XER Toolkit's operation.

All outputs are produced in standard Excel workbooks and can be saved or discarded by the user. The outputs can be manipulated by the user the same as any other Excel spreadsheet.

Manage Workbooks

When using the XER Toolkit, most of the options on Excel's standard 'FILE' menu are greyed out. Therefore in order to open and save Excel workbooks, including XER Toolkit outputs, use the 'manage workbooks' function on the main toolkit menu.



New

Create a new, blank workbook.

Open

Open an existing workbook.

Close

Close all workbooks that are currently selected in the workbook list. Changes will not be saved.

Save

Save all workbooks currently selected in workbook list. If a single workbook is selected in the list, then the option to 'Save As' will be offered.

Discard

All of the workbooks currently selected in the workbook list will be closed, changes will be discarded and the files will be deleted from disc.

Merge

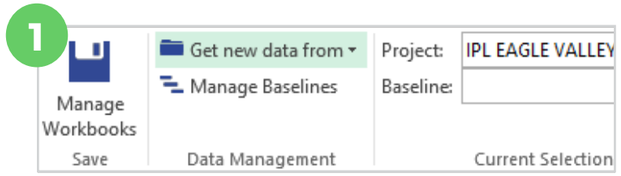
Every visible worksheet within the currently selected workbooks will be merged into a single, new workbook.

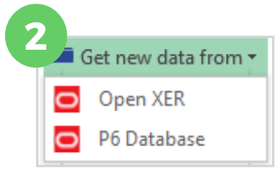
Contents

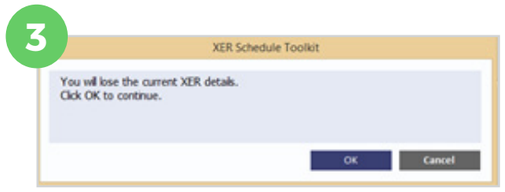
Opening Projects & Baselines

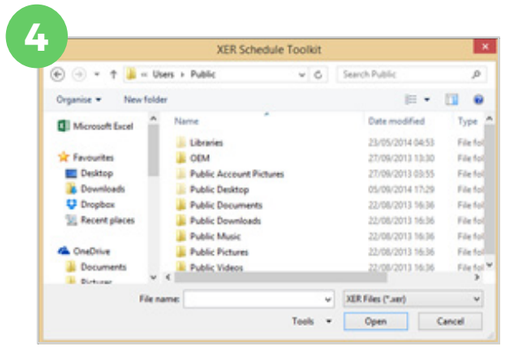
The XER Toolkit does not alter source data. Instead, projects are initially 'imported' to the XER Toolkit's database. The toolkit provides ability to import source data from XER files or directly from the Primavera database.

Opening project(s) from an XER file









1. From main toolkit menu, Select 'Get new data from'.

2. Select 'Open XER '

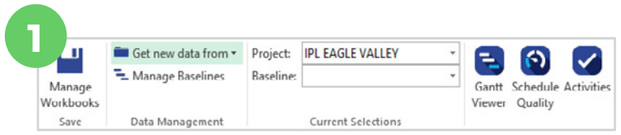
3. If project data has previously been imported to the toolkit, then you will be asked if it is ok to lose this data.

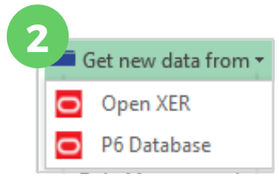
4. Select the XER file containing the project(s) to be imported.

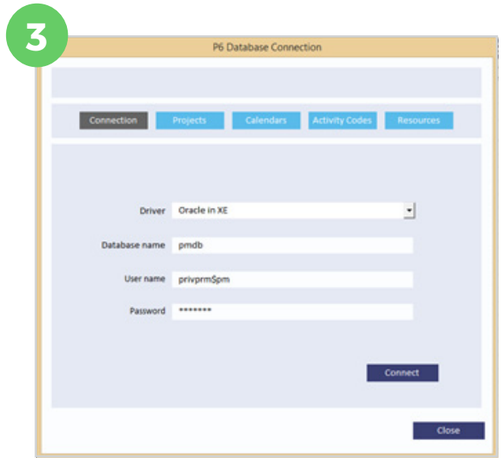
   NB: The XER Toolkit provides analysis and viewing tools for single projects. However, it can open XER files containing multiple projects, from which the 'current project' can then be selected.

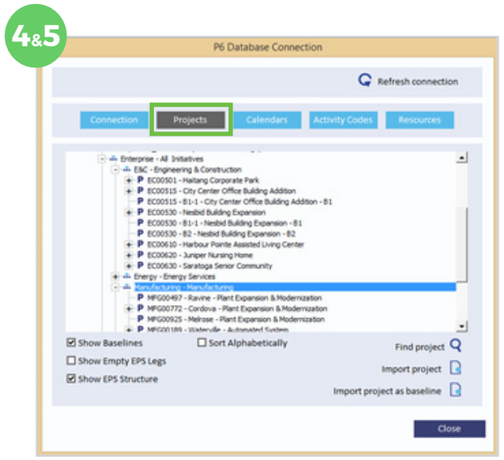
5. Once the toolkit has opened and imported the XER file, a Contents form will appear detailing the contents of the imported data. The items within the list relate to the table records that were exported from the P6 database to the XER file. E.g. Table TASK contains information relating to the project(s) tasks e.g. early/ late dates, durations, summary units etc.

Importing project from Primavera database









1. From main toolkit menu, Select 'Get new data from'.

2. Select 'P6 database'

3. Enter database connection details and click 'connect'

   NB: The XER Toolkit uses the Primavera database priv user account and can connect with either to an Oracle or MS SQL Server. Login details for the priv user account are therefore required in order to make direct connection with the database. If unsure, please refer to your database administrator.

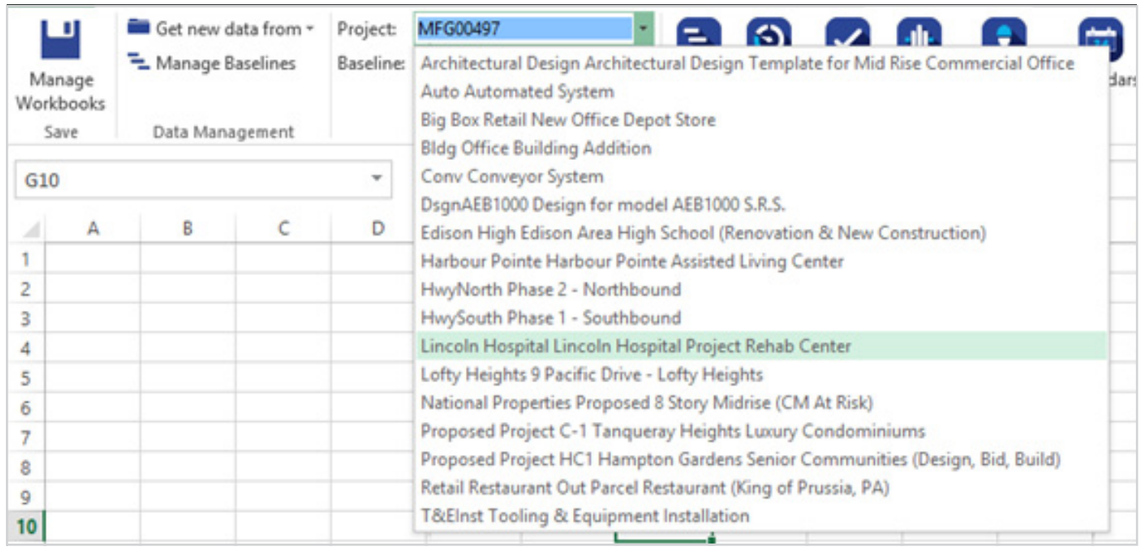
4. Once connected, projects can be selected from the EPS tree within the 'Projects' window.

5. Once desired project is selected, click 'Import project' (Click 'Import Project as baseline' if directly importing to the XER Toolkit's baseline database).

   NB: Use the display options to refine the project tree contents.

Contents

Selecting current project



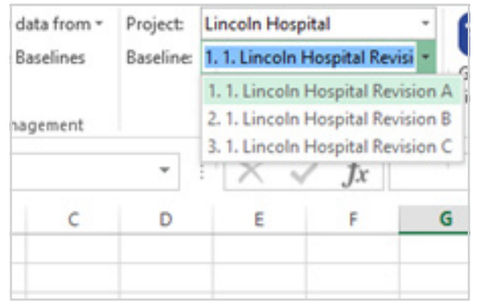
1. Once an XER file has been opened, or a project imported from the Primavera database, the 'Project' drop down list will be populated with the currently available projects. Simply select the project to be viewed/ analysed.

   NB: If projects appear in the drop down list that were not exported to the current XER file, this reflects that inter-project relationship links exist between the projects exported and these additional projects. If this is the case, then minimal data is exported in relation to the 'external' projects.

Baseline Management

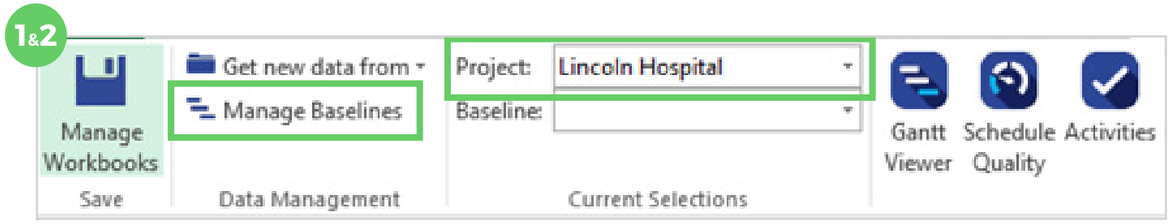
Overview

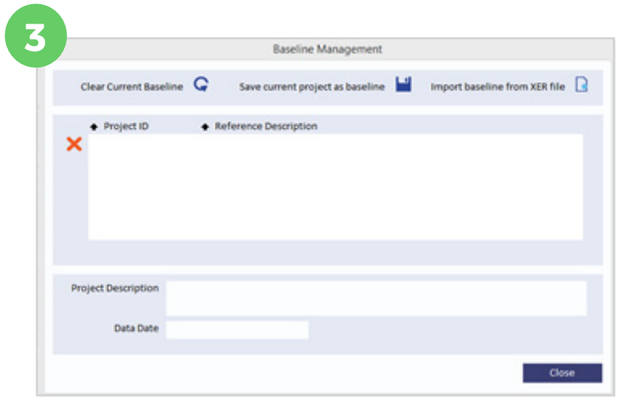
'Baseline' projects can be imported into the toolkit's database. They can then be analysed and compared against the 'current project'. There is no limit to the number of baseline projects that can be saved within the toolkit's database.

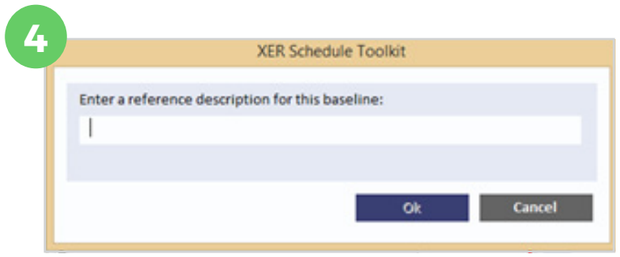


Once a baseline project has been imported, it will appear in the 'Baseline' dropdown list within the main toolkit menu. Baseline analysis can then be carried out between the 'current project' and any available baseline project by simply selecting it from the drop down list.

Save 'current project' as baseline







1. From the main toolkit menu, select the project to be saved as a baseline from the 'Project' drop-down list.

2. Click 'Manage Baselines'

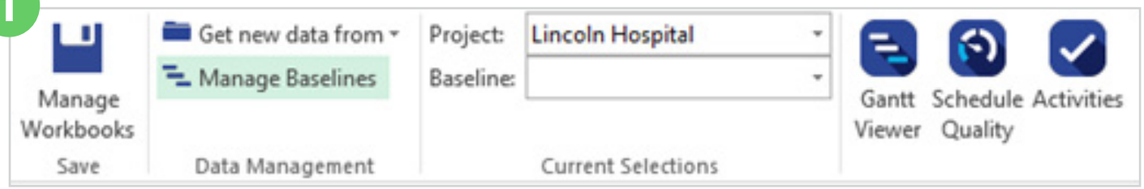
3. Click 'Save current project as baseline'.

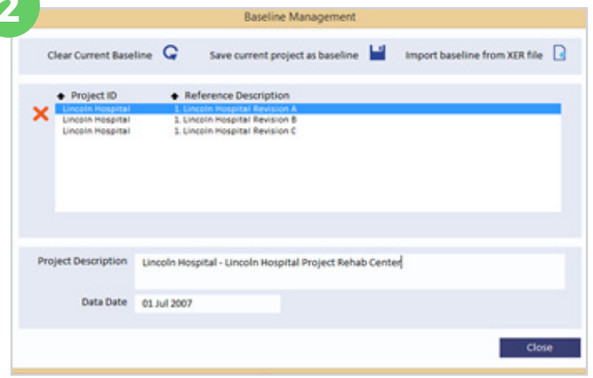
4. Enter reference description and click ok.

   NB: This reference description entered here will appear in the main toolkit menu's 'Baseline' drop-down list.

Contents

Import baseline project from XER file



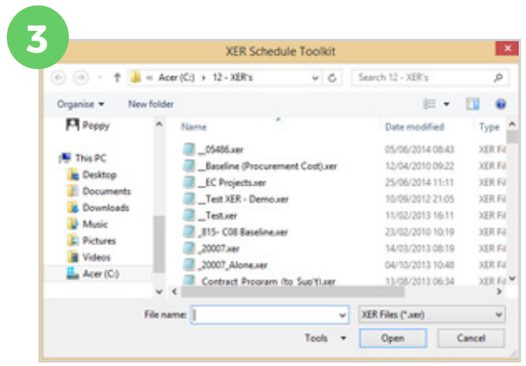


1. Select ‘Manage Baselines from the main toolkit menu.

2. Click ‘Import baseline from XER File’.

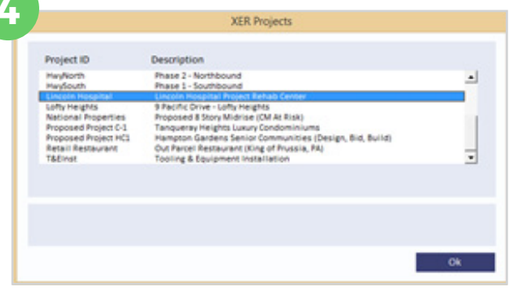
3. Select XER file that contains the baseline project.

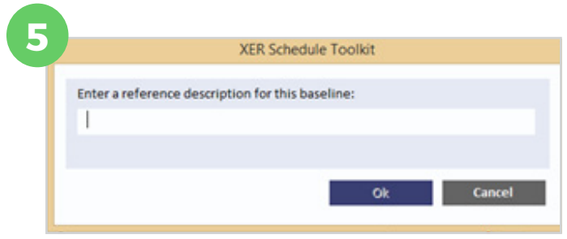
4. Select the project from available list.



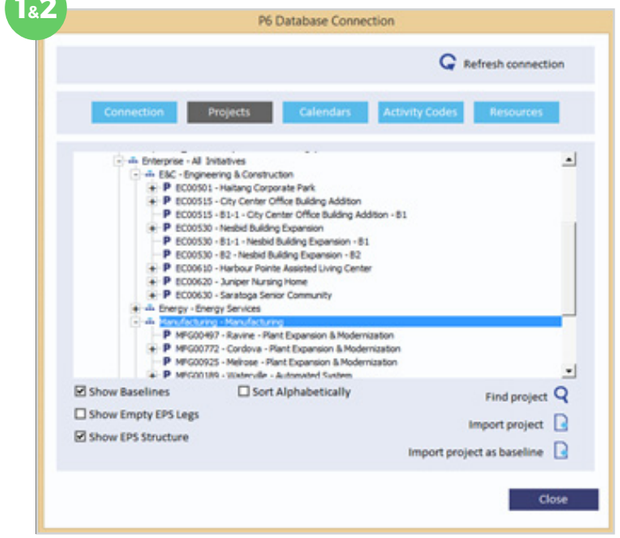
5. Enter reference description and click ok.

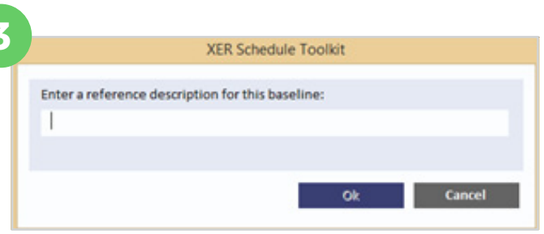
   NB: This reference description entered here will appear in the main toolkit menu’s ‘Baseline’ drop-down list.





Importing baseline project from Primavera database





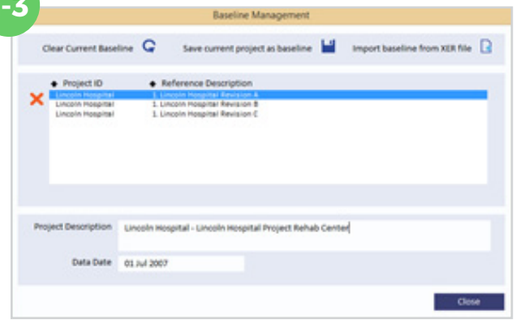
1. Refer to ‘Importing project from Primavera database’ with the exception of the final step.

2. Once desired project is selected, click ‘Import project as baseline’.

3. Enter reference description and click ok.

   NB: This reference description entered here will appear in the main toolkit menu’s ‘Baseline’ drop-down list.

Importing baseline project from Primavera database



Deleting

1. Select the baseline project to be deleted from the list.

2. Click on the ‘Delete baseline’ button.

Clearing Current Baseline

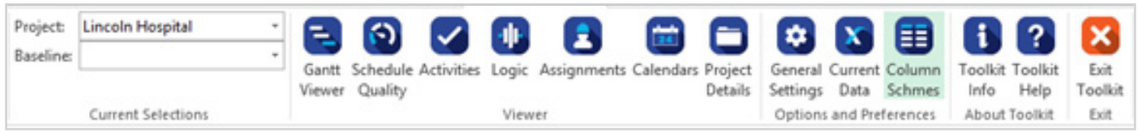
3. To clear the currently selected baseline from the main toolkit menu’s drop-down list, click the ‘Clear Current Baseline’ project.

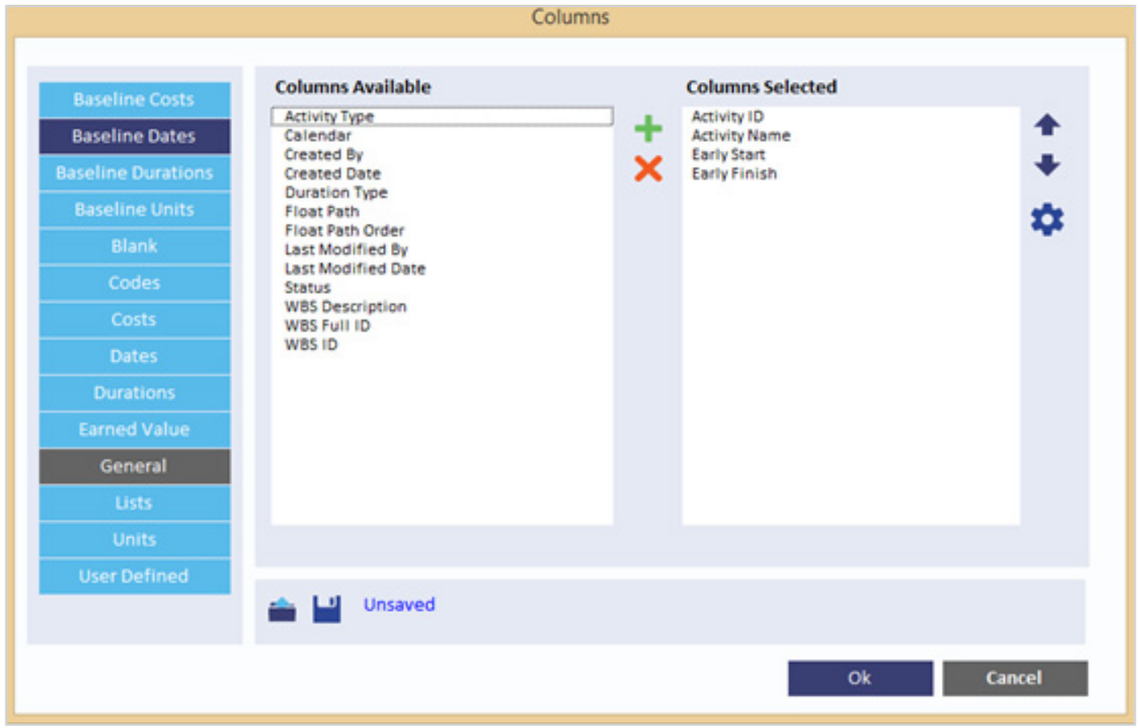
Contents

Column Schemes

Column schemes are used by various functions within the XER Toolkit. They define the activity data content that the user wishes to display in an output table.

The XER Toolkit is pre-loaded with a basic column scheme (Activity ID/ Description/ Start/ Finish). Users can also define and save as many additional column schemes as required. Saved column schemes can be exported and shared with other toolkit users.



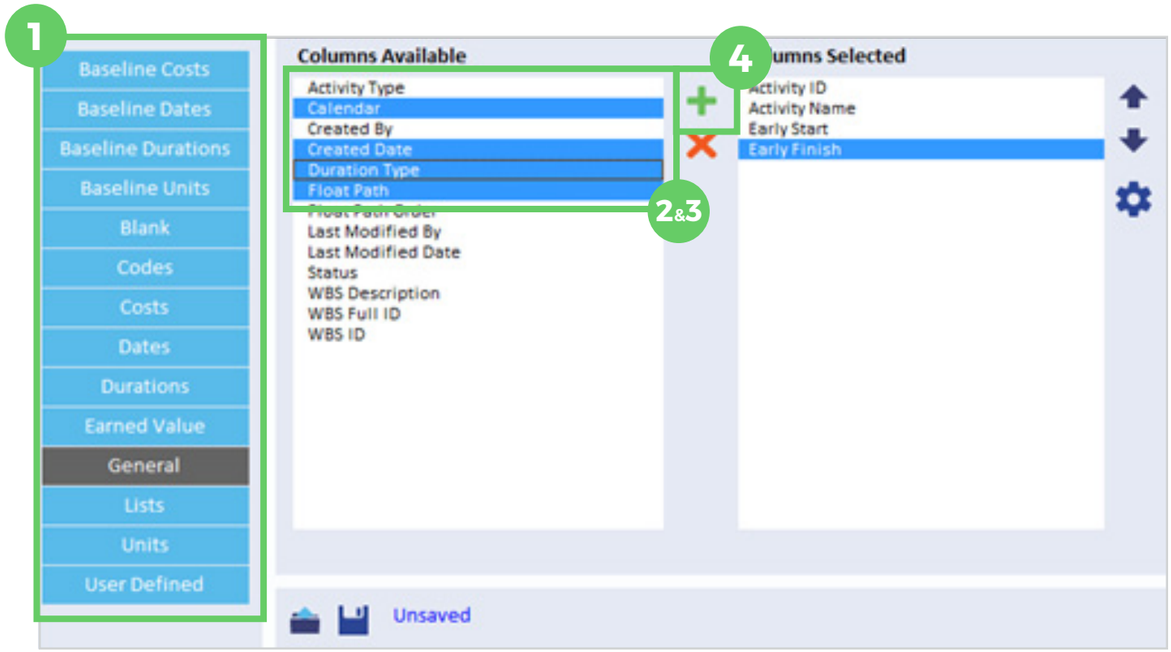


The current column scheme

The current column scheme is defined by the columns that appear in the 'Column selected' list. All toolkit outputs that include a data table will include the columns defined by the current column scheme.

The Column appearing at the top of the list will appear as the leftmost column in the data table and the column at the bottom of the list will appear as the rightmost column in the data table.

Adding a column to the current scheme

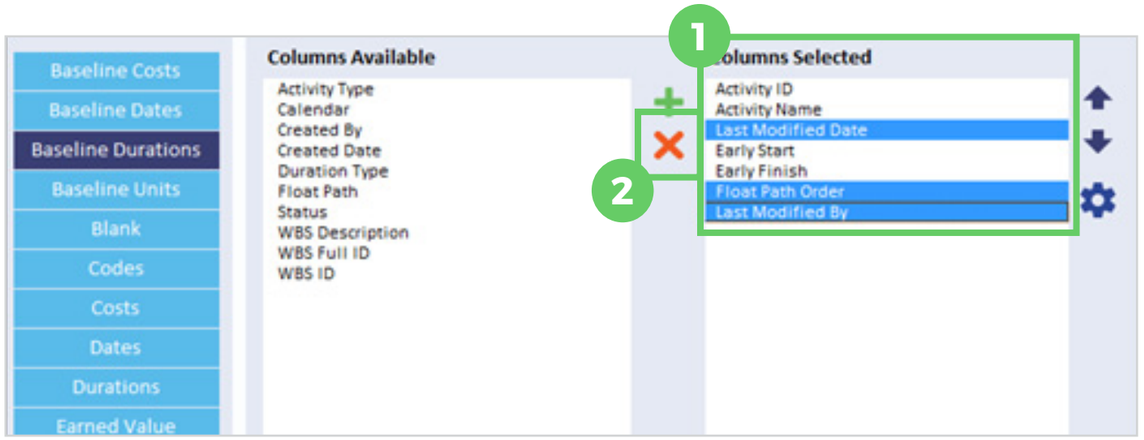


1. Select the column type
2. Select the required column(s)
3. Select the column in the current scheme that is to appear directly to the right of the added columns. Skip this step if you simply want to add the new columns to the far right of the data table
4. Click the 'Add Icon' icon

   NB: In order to select multiple columns, press and hold the keyboard Ctrl key and then select by clicking with mouse the columns to be inserted.

Contents

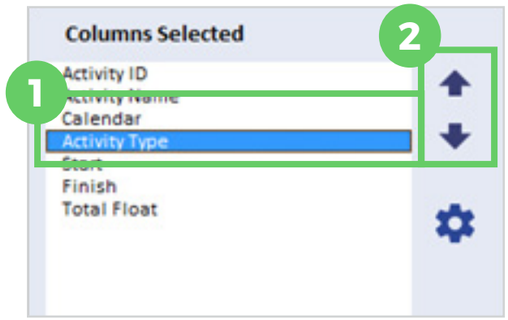
Deleting column(s) from the current scheme



1. Select the columns to be deleted
2. Click the ‘delete column’ icon

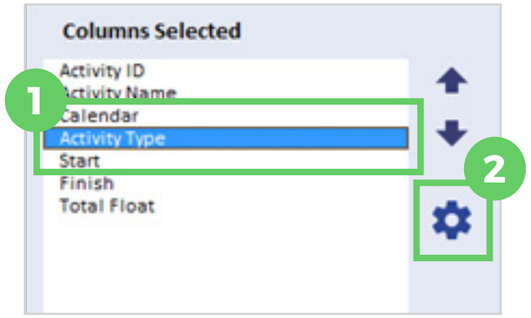
   NB: In order to select multiple columns, press and hold the keyboard Ctrl key and then select by clicking with mouse the columns to be deleted.

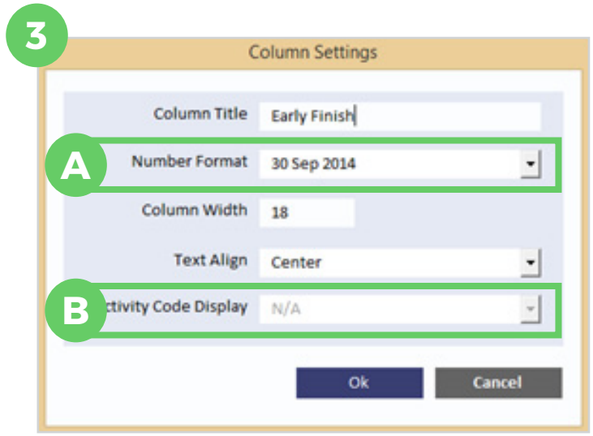
Changing the position of a column in the current scheme

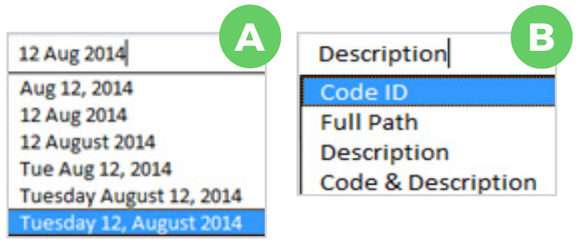


1. Select the columns to be moved.
2. Click the ‘Up’ icon to move the column left in the output data table. Conversely, click the ‘Down’ icon to move the column right.

Format column settings







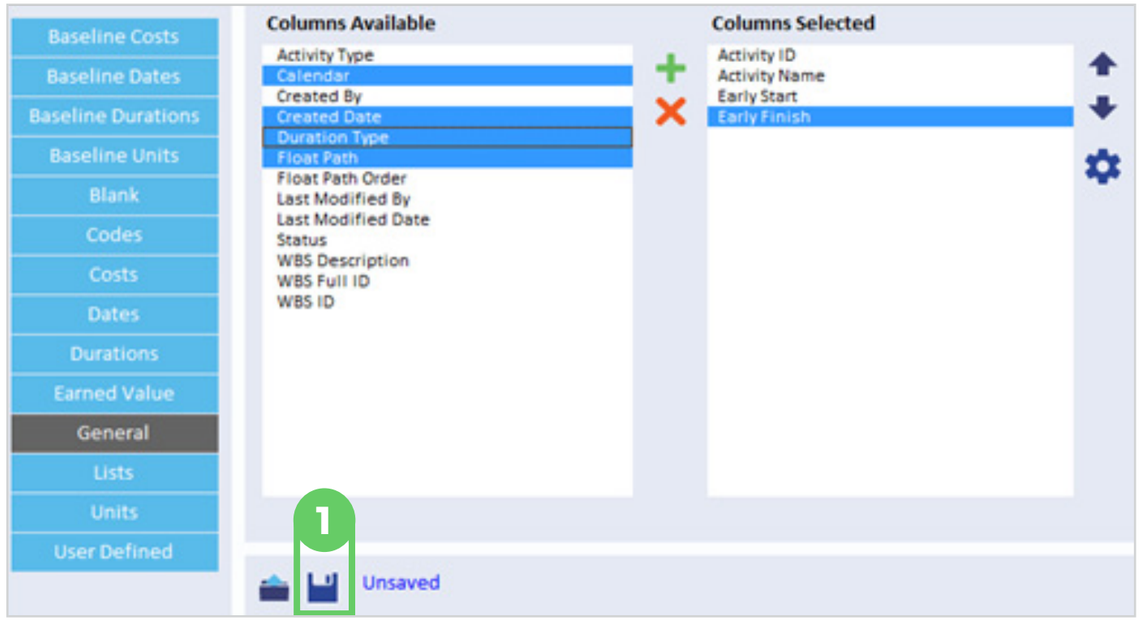
1. Select the columns to be formatted.
2. Click the ‘Settings’ icon.
3. All column settings refer to the data table formats for toolkit outputs.

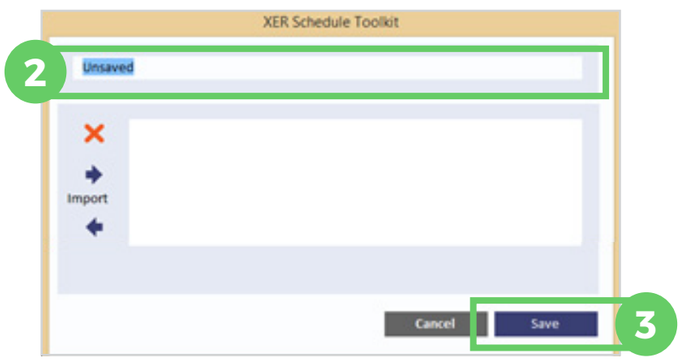
   A. Date Format

   B. Activity Code Format

Contents

Saving the current column scheme



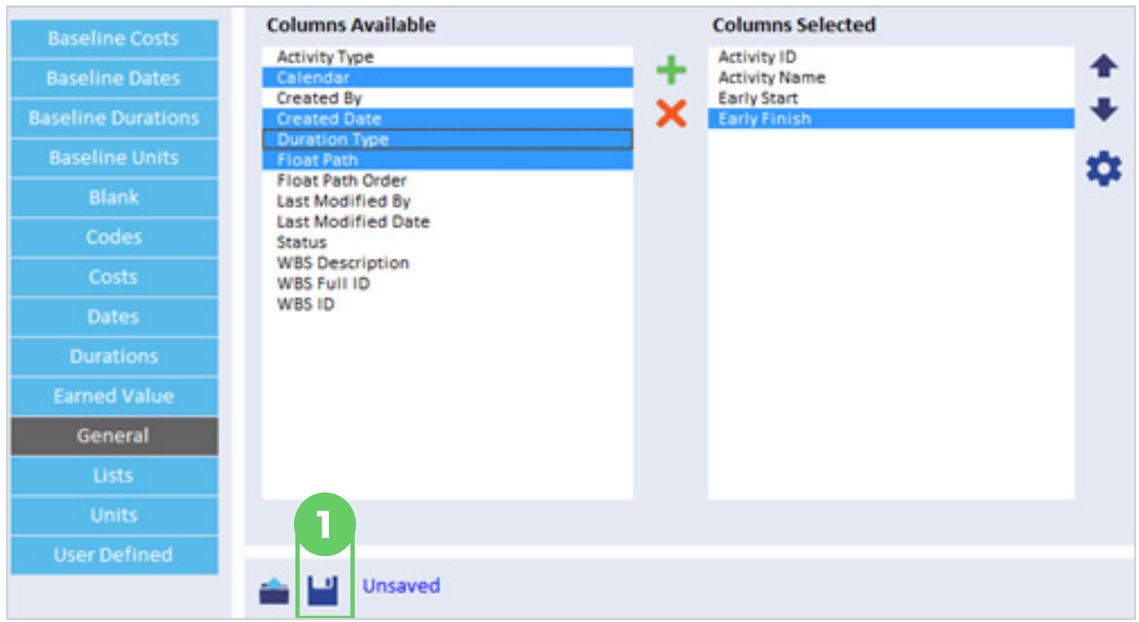


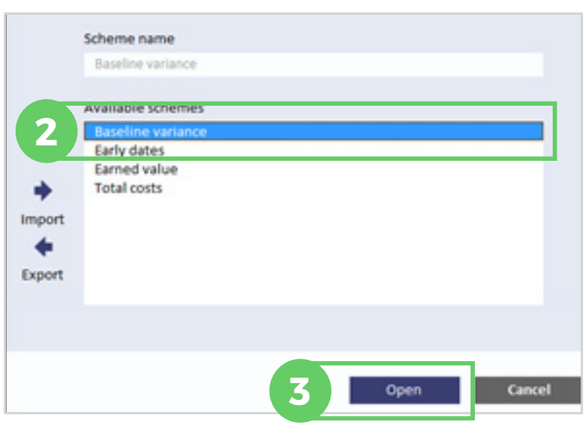
1. Click the ‘Save’ icon

2. Enter a new scheme name or if an existing scheme is to be overwritten, select it from the list

3. Click Save

Set a saved column scheme as the current scheme





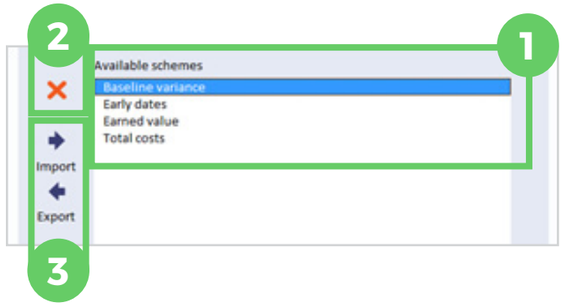
1. Click the ‘Open’ icon.

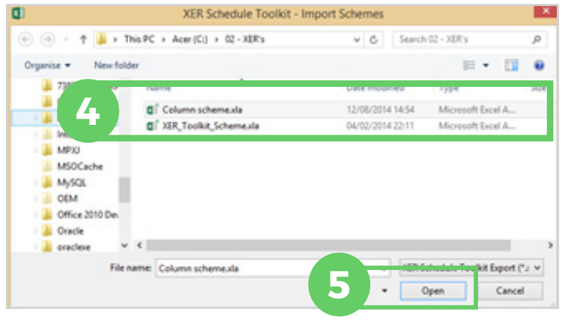
2. Select the scheme to be set as the current scheme.

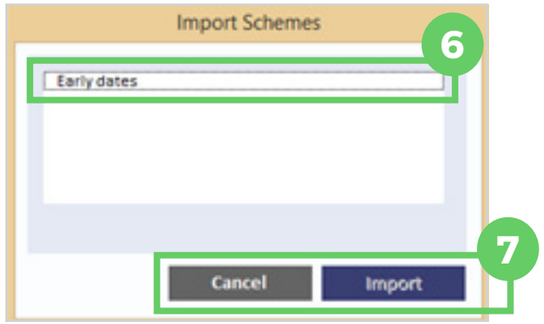
3. Click ‘Open’

Contents

When opening or saving a column scheme, there are options to delete/ import and export pre-saved column schemes.







Delete a saved column scheme

1. Select column scheme to be deleted.
2. Click the 'Delete' icon

Export column scheme

1. Select column scheme to be exported.
3. Click the 'Export' icon and then choose a filename.

Import column scheme

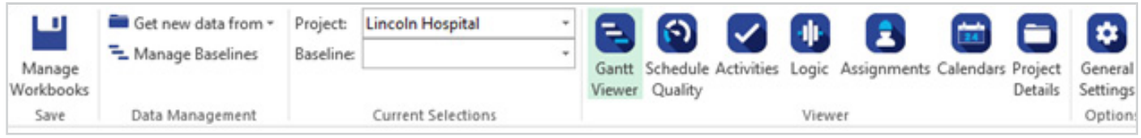
3. Click the 'Import' icon.
4. Select file containing column scheme(s)
5. Click 'open'
6. Select column scheme(s) to be imported.
7. Click 'Import'

Gantt Viewer

Overview

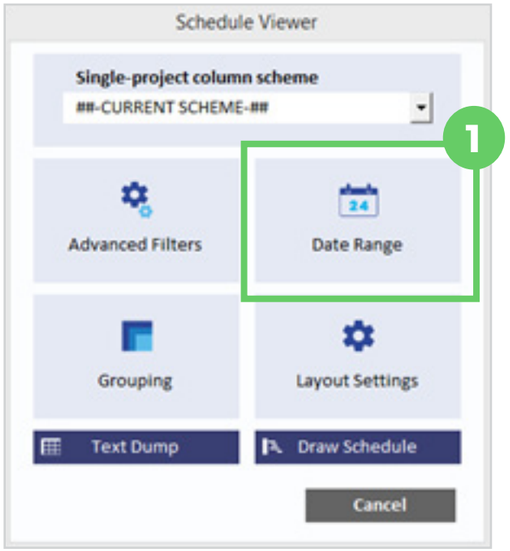
The toolkit provides an export function for producing gantt charts (or data tables) within Excel worksheets. The outputs can be saved as standard workbooks that can be shared with and accessed by anyone that has Excel.

As a result, anyone engaged with the schedule in this format can benefit from the familiar functionality that Microsoft Excel provides as standard, including the ability to search, format, annotate and filter.



Layout Settings

The XER Toolkit provides the ability to format the look and feel of the schedule output.



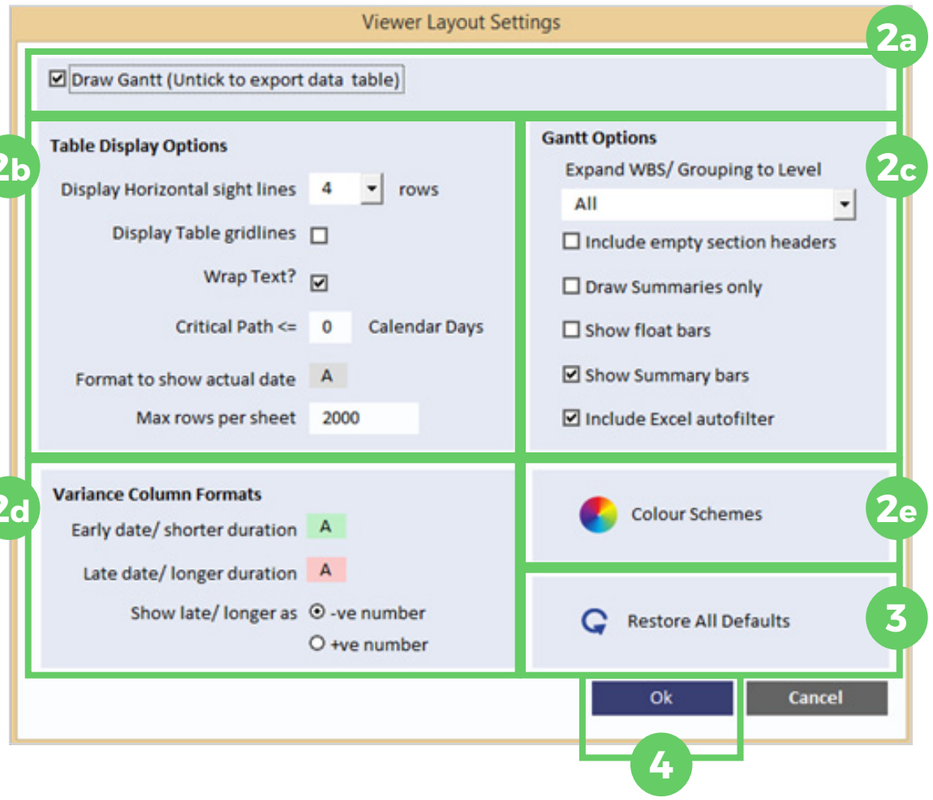
From the main toolkit menu, select 'Gantt Viewer'.

1. Select 'layout settings'.
2. Update options as required (see below for description)

OR

3. Restore all default settings
4. Click Ok to apply settings.

Contents



2a - Draw Gantt

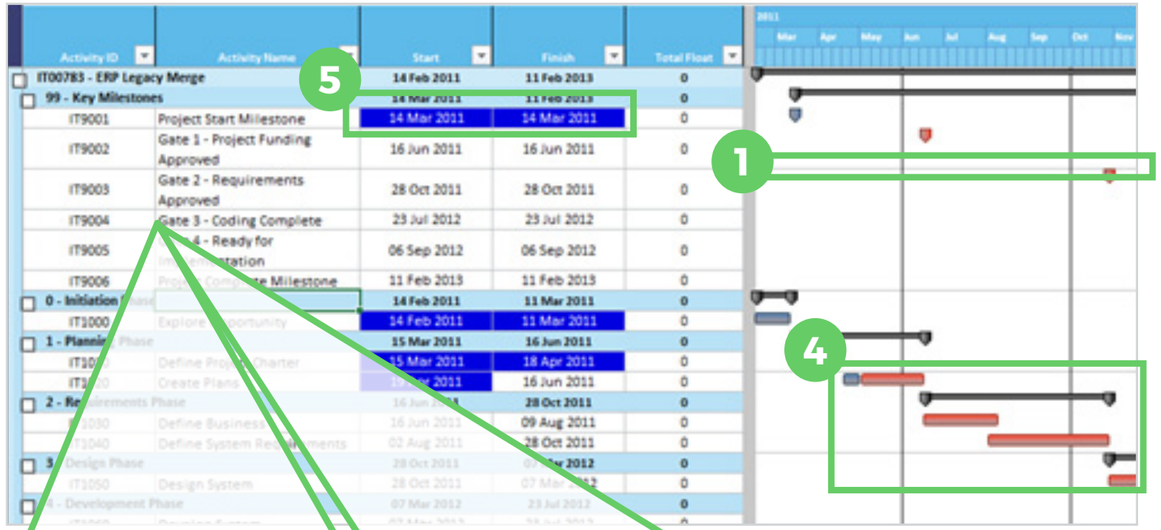
Data table

Gantt chart

Activity ID	Activity Name	Start	Finish	Total Float
IT00783 - ERP Legacy Merge		14 Feb 2011	11 Feb 2013	0
99 - Key Milestones		14 Mar 2011	11 Feb 2013	0
IT9001	Project Start Milestone	14 Mar 2011	14 Mar 2011	0
IT9002	Gate 1 - Project Funding Approved	16 Jun 2011	16 Jun 2011	0
IT9003	Gate 2 - Requirements Approved	28 Oct 2011	28 Oct 2011	0
IT9004	Gate 3 - Coding Complete	23 Jul 2012	23 Jul 2012	0
IT9005	Gate 4 - Ready for Implementation	06 Sep 2012	06 Sep 2012	0
IT9006	Project Complete Milestone	11 Feb 2013	11 Feb 2013	0
0 - Initiation Phase		14 Feb 2011	11 Mar 2011	0
IT1000	Explore Opportunity	14 Feb 2011	11 Mar 2011	0
1 - Planning Phase		15 Mar 2011	16 Jun 2011	0
IT1010	Define Project Charter	15 Mar 2011	18 Apr 2011	0
IT1020	Create Plans	19 Apr 2011	16 Jun 2011	0
2 - Requirements Phase		16 Jun 2011	28 Oct 2011	0
IT1030	Define Business	16 Jun 2011	09 Aug 2011	0

Gantt chart can be included or excluded

2b - Table Display Options



IT9001	Project Start Milestone
IT9002	Gate 1 - Project Funding Approved
IT9003	Gate 2 - Requirements Approved
IT9004	Gate 3 - Coding Complet
IT9005	Gate 4 - Ready for Implementation

2a - Table with grid lines

IT9001	Project Start Milestone
IT9002	Gate 1 - Project Funding Approved
IT9003	Gate 2 - Requirements Approved
IT9004	Gate 3 - Coding Complete
IT9005	Gate 4 - Ready for Implementation
IT9006	Project Complete Mileston

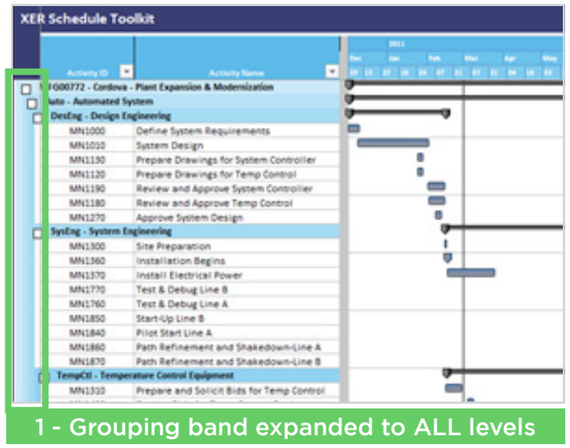
2b - Table without grid lines

1. **Display horizontal sight lines**: The number of rows between a horizontal line in the Gantt chart area (excluding grouping rows).
2. **Display table gridlines**: MS Excel borders can automatically be applied to the table area, or left.
3. **Wrap text**: Text will wrap in cell when too long to fit on a single line.
4. **Critical path** <= ## days: Early task bars will be coloured red when total float of the task less than or equal to the value entered in this box. Non critical task bars will be shown in green.
5. **Format to show actual date**: Cell will be pre-formatted when date represents an actual value – i.e. if a task has commenced or finished. The format style can be changed by clicking the coloured box.
6. **Max rows per sheet**: The value entered here will limit the total number of rows displayed on a single worksheet. The maximum number of rows per worksheet is limited to 3,000 to maintain Excel performance. The number of rows is a total including task and grouping rows.

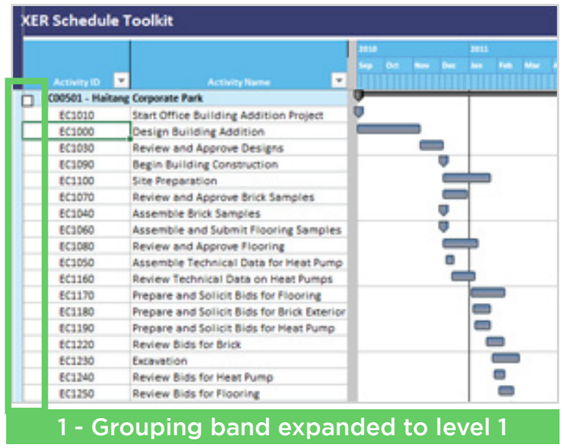
Contents

2c - Gantt Options

1. Expand WBS/ Grouping to level: Tasks can be grouped at any level within the work structure as demonstrated below



1 - Grouping band expanded to ALL levels

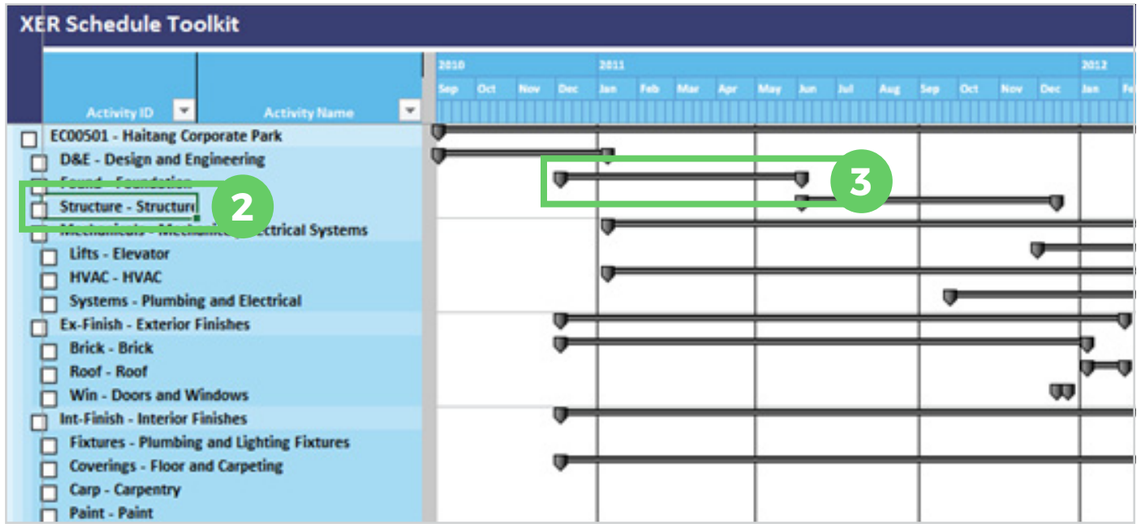


1 - Grouping band expanded to level 1

2. **Include empty section headers**: By default, WBS elements that do not contain any activities are excluded from schedule exports. By ticking this setting, empty WBS elements will be included within the outputs.

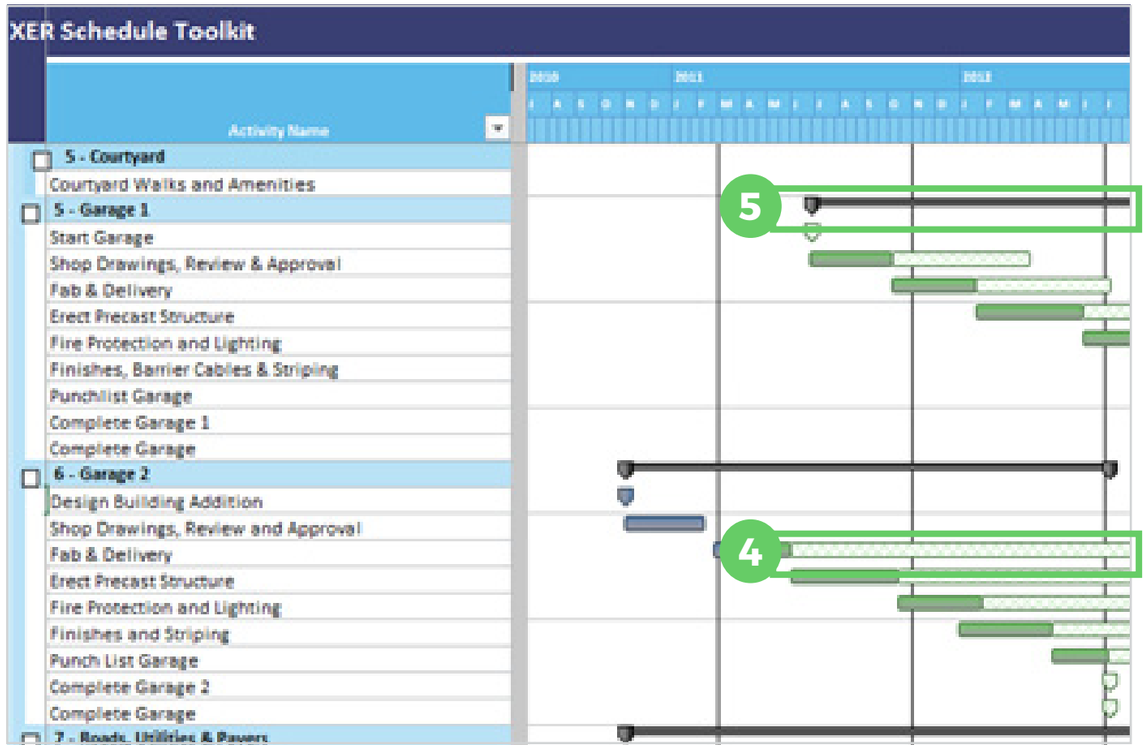
   NB: This option only applies when the project data is organised by the respective project's WBS.

3. **Draw summaries only**: When selected, tasks will not be shown on schedule exports and will instead be summarised to grouping level.

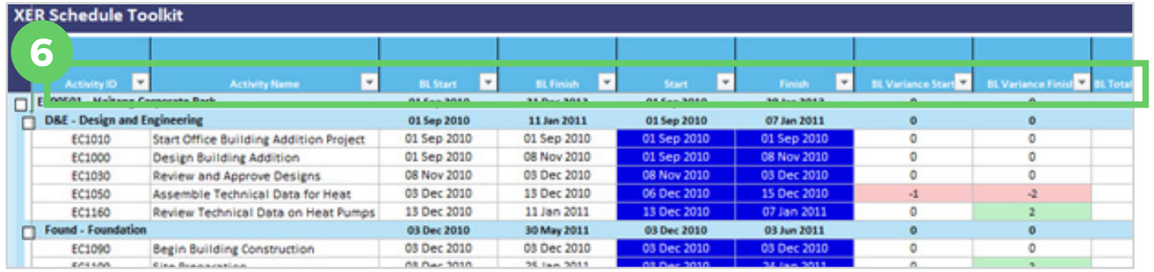


4. Show float bars: Task bars representing total float can be toggled on or off. The toolkit default excludes float bars from the output.

5. Show summary bars: The summary bars displayed against grouping structures can be toggled on / off.



6. Include Excel Auto-filter: Excel's auto-filter can automatically be installed within the schedule's data table, enabling simple filtering capability of the table. Simply untick this setting if it is not required.



Contents

2d - Variance Column Formats

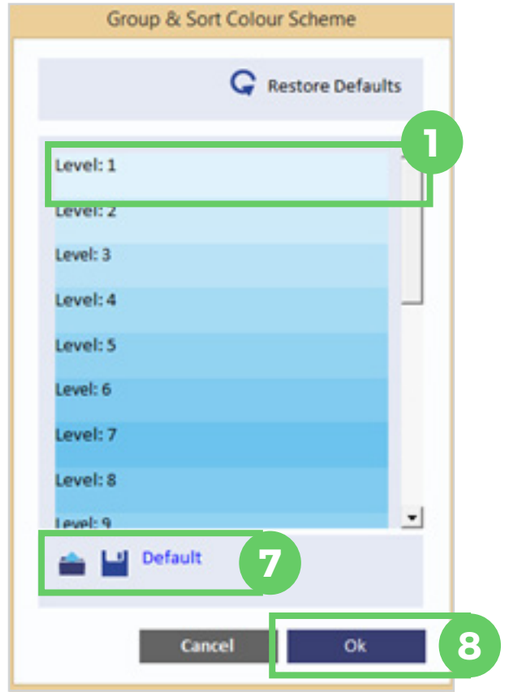
Activity Name	BL Start	BL Finish	Start	Finish	BL Variance Start	BL Variance Finish
'porate Park	**01 Sep 2010**	**21 Dec 2012**	**01 Sep 2010**	**29 Jan 2013**	**0**	**0**
gineering	**01 Sep 2010**	**11 Jan 2011**	**01 Sep 2010**	**07 Jan 2011**	**0**	**0**
Start Office Building Addition	01 Sep 2010	01 Sep 2010	01 Sep 2010	01 Sep 2010	0	0
Design Building Addition	01 Sep 2010	08 Nov 2010	01 Sep 2010	08 Nov 2010	0	0
Review and Approve Designs	08 Nov 2010	03 Dec 2010	08 Nov 2010	03 Dec 2010	0	0
Assemble Technical Data for	03 Dec 2010	13 Dec 2010	06 Dec 2010	15 Dec 2010	-1	-2
Review Technical Data on	13 Dec 2010	11 Jan 2011	13 Dec 2010	07 Jan 2011	0	2
	03 Dec 2010	**30 May 2011**	**03 Dec 2010**	**03 Jun 2011**	**0**	**0**
Begin Building Construction	03 Dec 2010	03 Dec 2010	03 Dec 2010	03 Dec 2010	0	0
Site Preparation	03 Dec 2010	25 Jan 2011	03 Dec 2010	24 Jan 2011	0	2
Excavation	26 Jan 2011	23 Feb 2011	26 Jan 2011	24 Feb 2011	0	0
Install Underground Electric	24 Feb 2011	10 Mar 2011	17 Feb 2011	25 Feb 2011	5	9
Install Underground Water	24 Feb 2011	10 Mar 2011	22 Feb 2011	28 Feb 2011	2	8
Form/Pour Concrete Footings	10 Mar 2011	08 Apr 2011	11 Mar 2011	11 Apr 2011	-1	-1
Concrete Foundation Walls	08 Apr 2011	09 May 2011	15 Apr 2011	12 May 2011	-5	-3
Form and Pour Slab	09 May 2011	23 May 2011	12 May 2011	26 May 2011	-3	-3
Backfill and Compact Walls	24 May 2011	30 May 2011	27 May 2011	03 Jun 2011	-3	-3
Foundation Phase Complete	30 May 2011	30 May 2011	03 Jun 2011	03 Jun 2011	-3	-3
	30 May 2011	**02 Dec 2011**	**03 Jun 2011**	**13 Dec 2011**	**0**	**0**
Erect Structural Frame	30 May 2011	27 Jul 2011	03 Jun 2011	03 Aug 2011	-3	-5
Begin Structural Phase	27 Jul 2011	27 Jul 2011	03 Aug 2011	03 Aug 2011	-5	-5

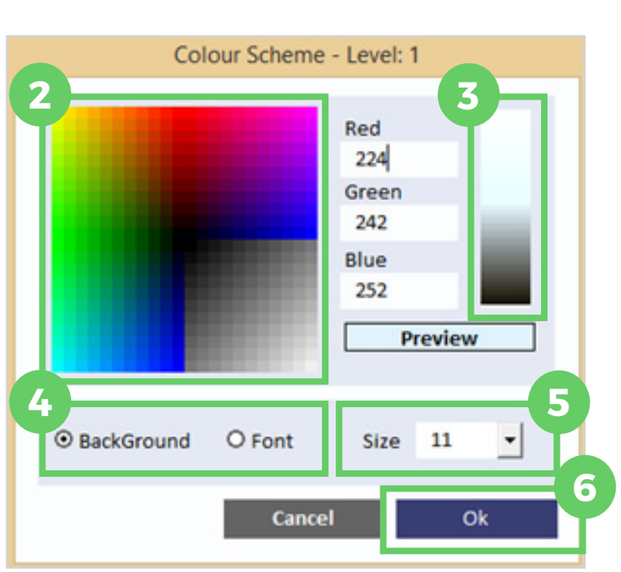
1. Early date / shorter duration (and more value for unit / cost fields): Cell formatting for numerical variance columns. The format can be changed by clicking on the coloured format box.

2. Late date / longer duration (and more value for unit / cost fields): Cell formatting for numerical variance columns. The format can be changed by clicking on the coloured format box.

3. Show late / longer (and more value for unit/ cost fields): Delays / increases can either be shown as a negative or positive number.

2e - Colour schemes





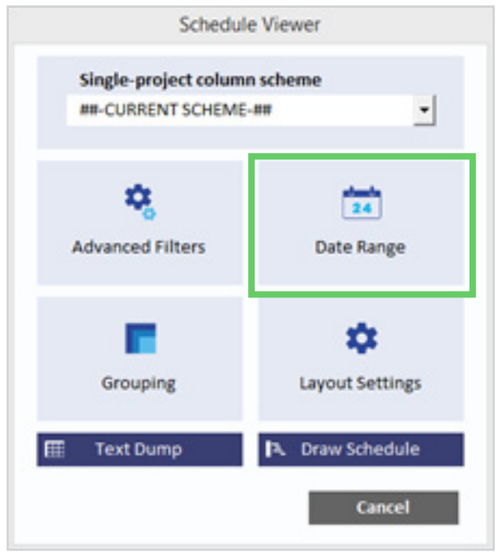
1. Click on grouping level.
2. Click desired colour in main colour map.
3. Fine tune colour.
4. Toggle between font and background and repeat steps 2 & 3.
5. Select font size.
6. Click the ‘Ok’ button
7. Use scheme management to save/ open existing schemes (see column scheme management for instructions).
8. Click the ‘Ok’ button.

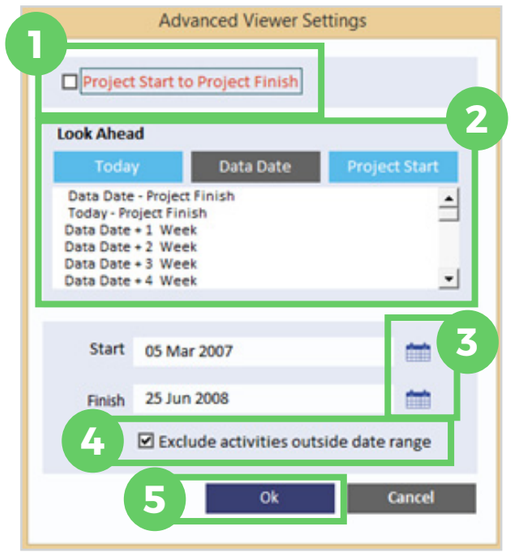
Contents

Date Range filters

Overview

The date range filters can be used to quickly display a specific time window within the gantt chart.





Applying a date range filter

1. The ‘project start to finish’ check box ticked is the toolkit’s default value and will include all tasks. In order to define a specific time period, untick this box.

2. Use the preset look ahead selections to display the gantt chart between specific time periods. Either choose to look ahead from Today, Data Date or the Project Start Date by clicking on the respective button, and then choose the look ahead period.

3. The gantt chart start & finish can also be manually set to specific dates by clicking the ‘Date Selection’ icons and selecting date(s).

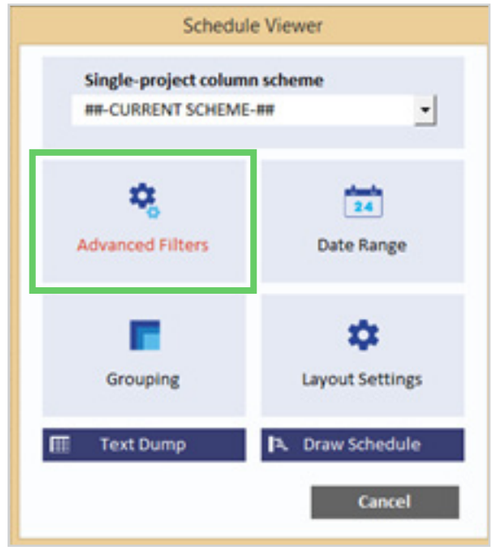
4. Choose whether to include or exclude tasks that occur outside of the defined period. If included, tasks that do not occur within the time period will not have any corresponding tasb bar within the gantt chart.

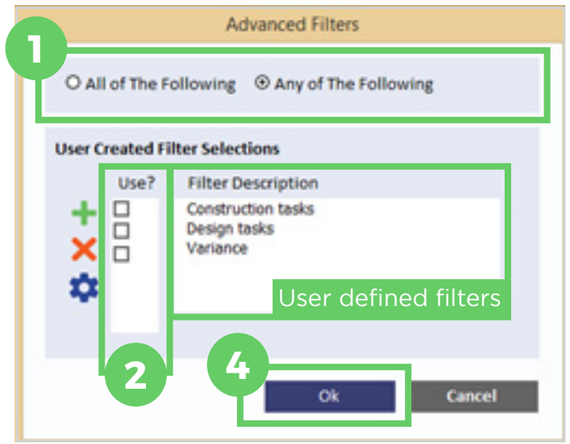
5. Click the ‘Ok’ button.

Advanced Filters

Overview

The XER Toolkit supports advanced, hierarchical task filtering based on a range of project data fields, including activity codes and user defined fields. Therefore, providing that a schedule has been appropriately coded, users can pinpoint and view tasks based on specific criteria.





1. Click the ‘Advanced Filters’ icon. The red text signifies that a filter is currently applied.

2. Select which user defined filters to apply

3. Click to choose whether ‘All’ of the selected filter conditions should apply in order to select a specific task or whether a task should be selected if it meets at least one of the the conditions of any single selected filter, i.e. ‘Any’ selected filter. See table below.

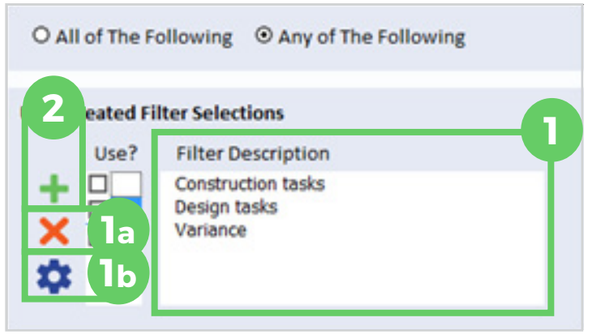
4. Click Ok

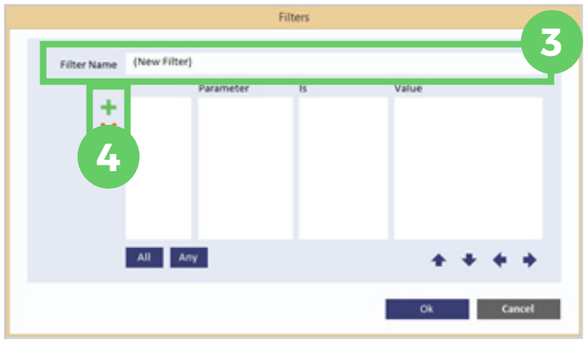
Filters Applied
Colour = Green
Shape = Box

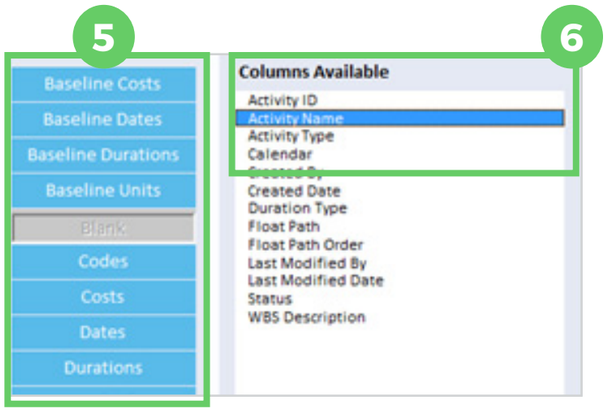
List of objects	Selections based on application of filters	
	ALL filters	ANY filters
Green Sphere		Yes (Colour)
Green Box	Yes	Yes (Shape and colour)
Blue Box		Yes (Shape)
Red Sphere		
Red Box		Yes (Shape)

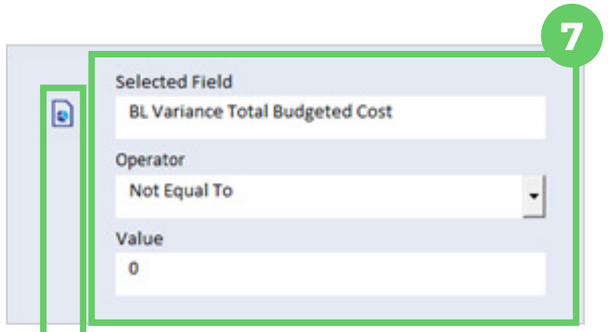
Contents

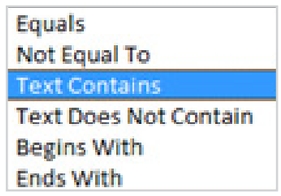
User defined filters











1. Select user defined filter.

   a. To delete, click the ‘delete filter’ icon.

   b. To modify an existing filter, click the ‘settings’ icon and then follow steps for adding a filter.

2. To create a new user-defined filter, click the ‘Add filter’ icon.

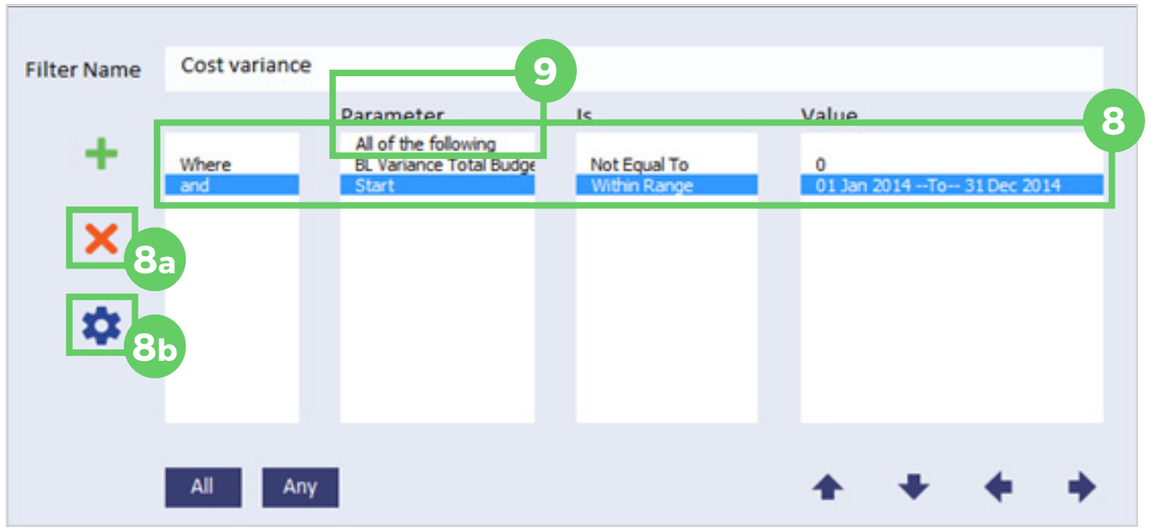
3. Enter a reference name for the filter.

4. Click the ‘add’ icon to add a filter condition.

5. Select field type.

6. Select field.

7. Select the required filter conditions – the options available here will change based on the selected field data type.

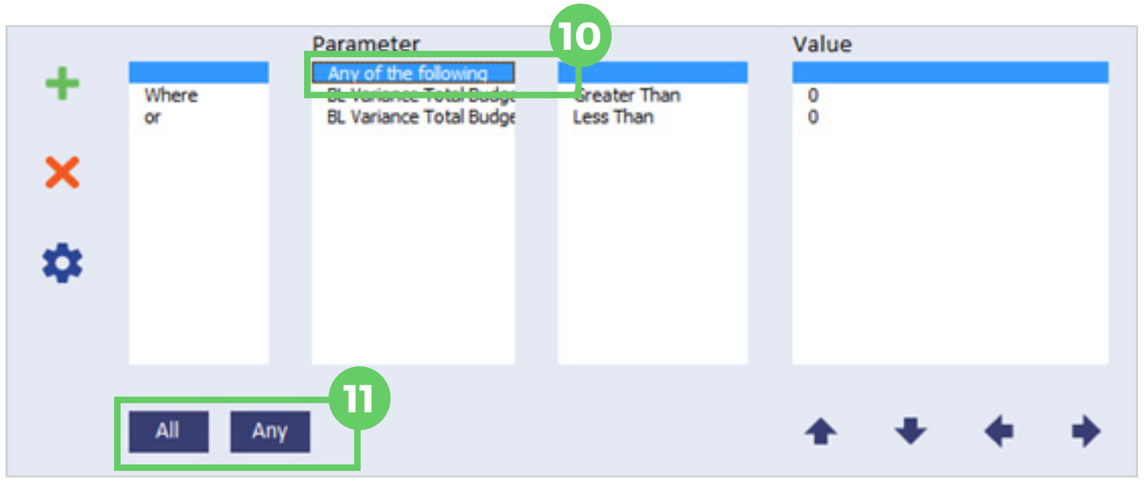


8. Repeat steps 2 to 5 to add multiple filter conditions.

   a. In order to delete an existing filter condition, select the filter condition to select and then click the ‘delete condition’ icon.

   b. To modify the filter condition, select and click the ‘settings’ icon.

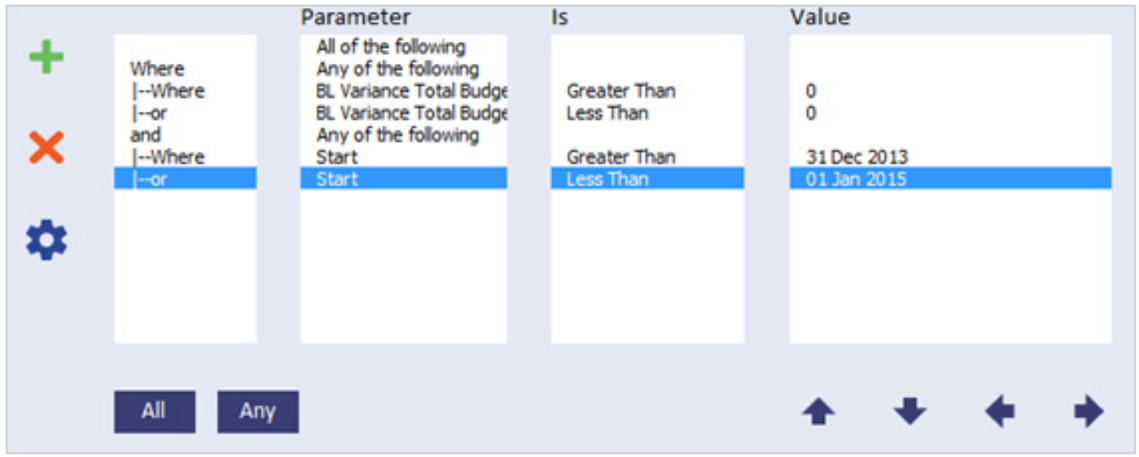
9. When adding a new filter condition, the toolkit automatically adds an ‘All of the following’ statement in the row immediately above the new condition. However, this can be changed to ‘Any of the following’ by double click on the ‘All of the following’ statement and vice versa.



10. Additional ‘All/ Any’ statements can be added within to the filter definition to enable more complex criteria to be defined. To add a new statement, select the filter condition immediately above the position the statement is to be added and then click the ‘All’ or ‘Any’ button.

11. Filter conditions can be indented behind ‘All/ Any’ statements to separate blocks of criteria as shown in example.

Contents



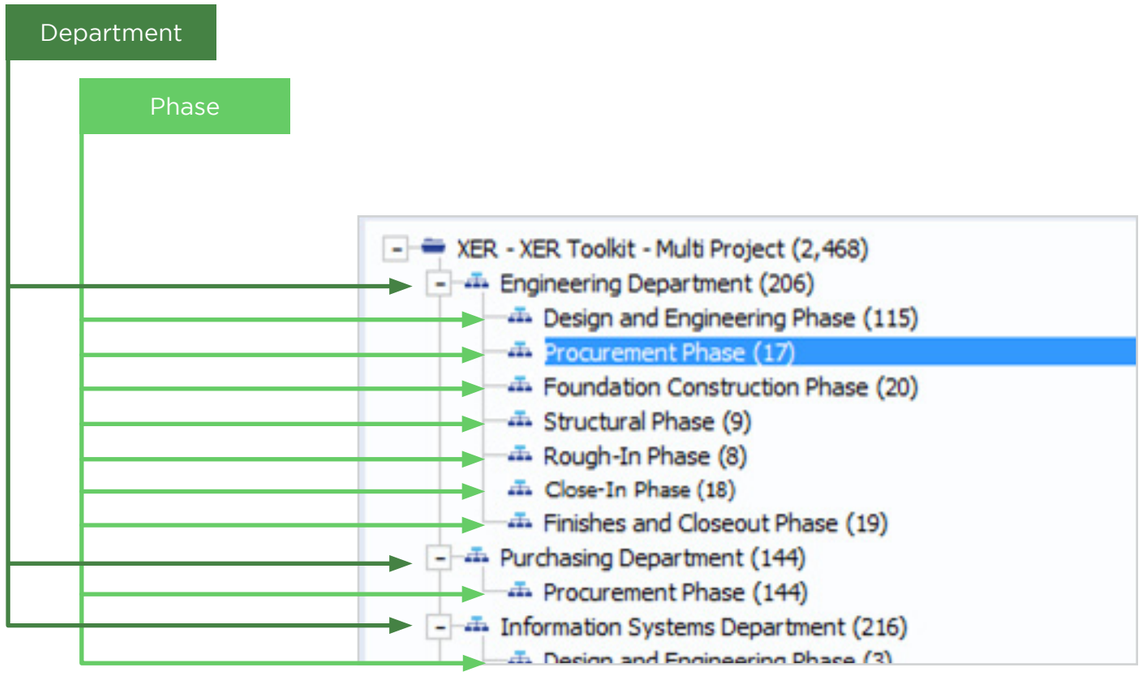
Simplified, the example filter above in words could read:

Tasks that start during 2014 and have a baseline Variance in total budgeted cost.

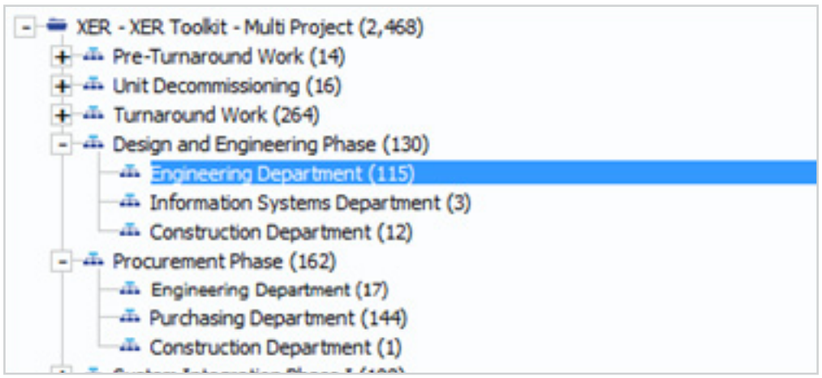
Task Grouping

Overview

Applying user defined task grouping enables assessment of project schedules to be precisely targeted. A simple example to demonstrate the advantages of task grouping might be an engineering department manager that needs to understand the value of work that they will be required to manage throughout the various stages of a project. The work structure below shows a schedule grouped by Department/ Phase. At this point, the engineering manager could select any phase (procurement in the example shown) and proceed to use the toolkit's dashboard creator to generate a cost chart.



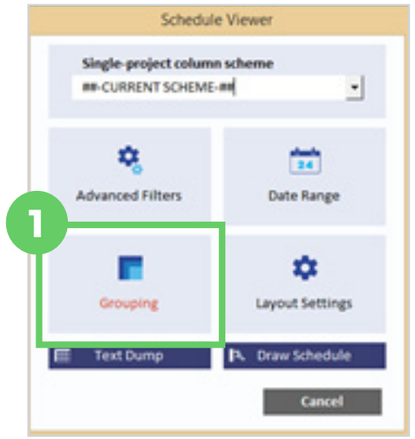
Similarly, a project manager might want to know which departments will be involved during each phase of a project. Therefore, we turn the above structure on it's head as shown below.



Contents

WBS Default

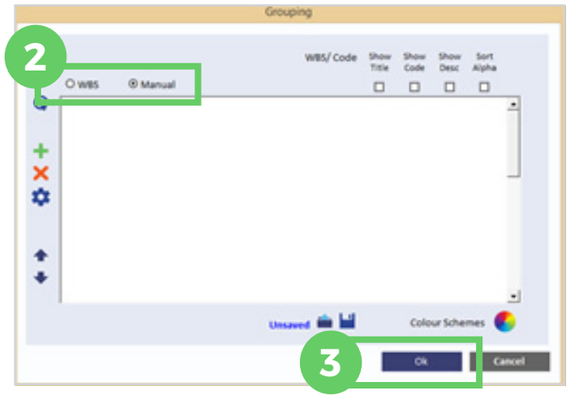
The default organistation (grouping) structure applied within the toolkit is the project(s) Work Breakdown Structure or WBS.



1. If a user defined grouping structure has been applied, as indicated by red text, the default can be reset by clicking the ‘Grouping’ icon.

2. Toggle the WBS/ Manual option to WBS

3. Click Ok



User defined group structure

1. If a user defined grouping structure has been applied, as indicated by red text, the default can be reset by clicking the ‘Grouping’ icon.

2. Toggle the WBS/ Manual option to WBS

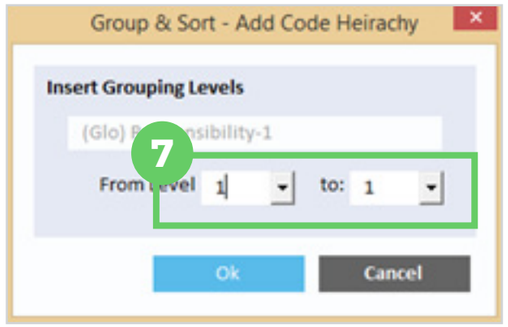
3. Click Ok

4. Select the grouping structure element type

5. Select the grouping structure element

6. Click Ok

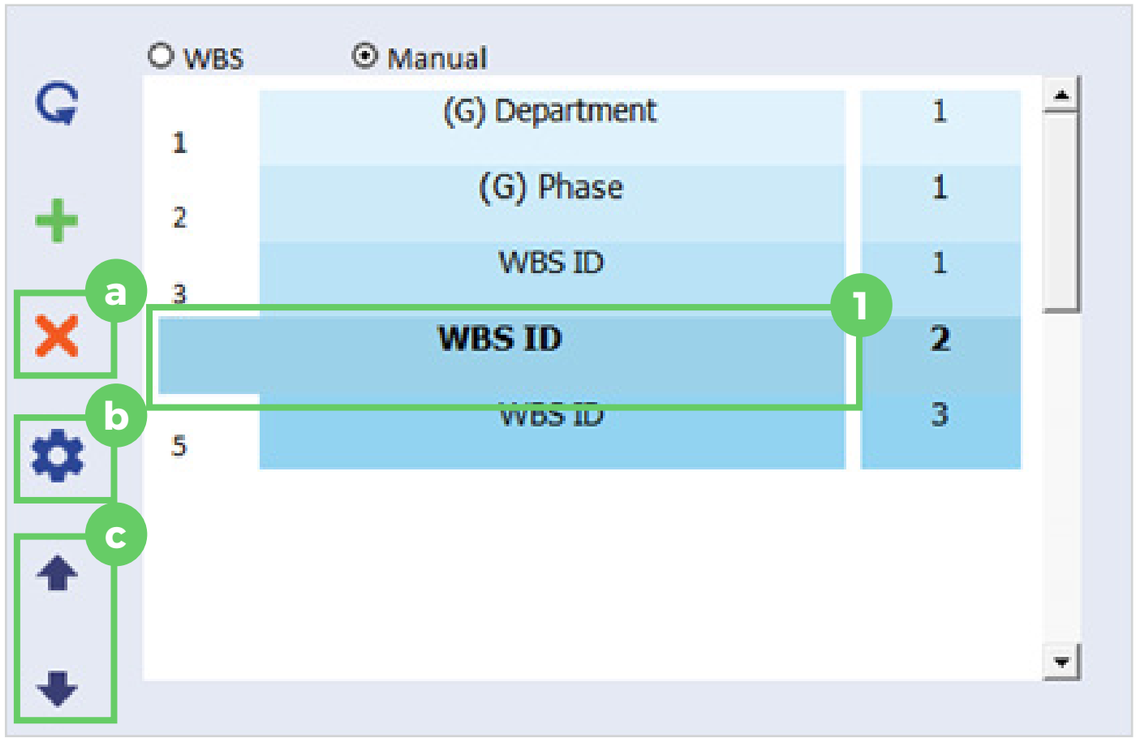
7. In the case that the selected field is heirachical (i.e. WBS ID), then multiple levels within the field heirachy structure can be inserted at once by selecting the ‘Level from’ and ‘Level to’.



8. Repeat steps 3 to 7 until grouping structure is constructed as required.

Contents

Modifying a user defined group structure



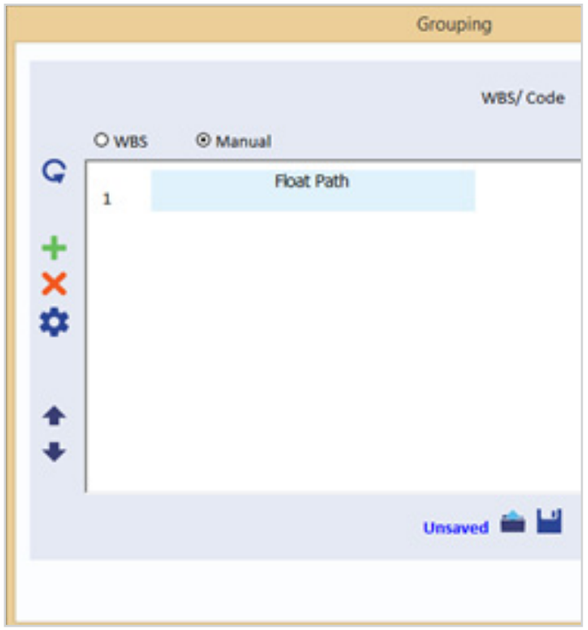
1. Select the element to be modified by clicking on the coloured band

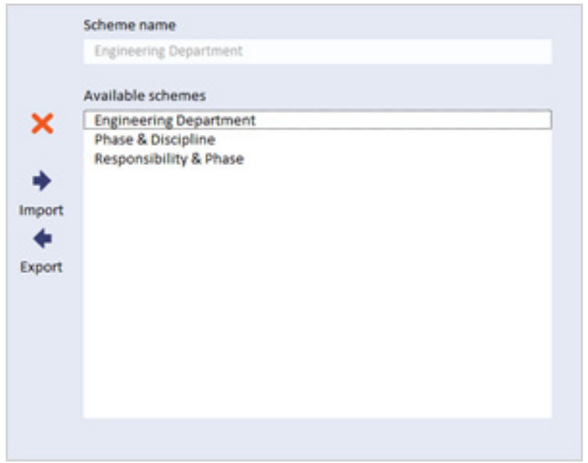
a. Click the ‘Delete level’ icon to delete the structure element

b. Click the ‘Settings’ icon to change the structure element field.

c. Click the ‘Up’ or ‘Down’ arrows to move the structure element higher or lower in the structure.

Group scheme management





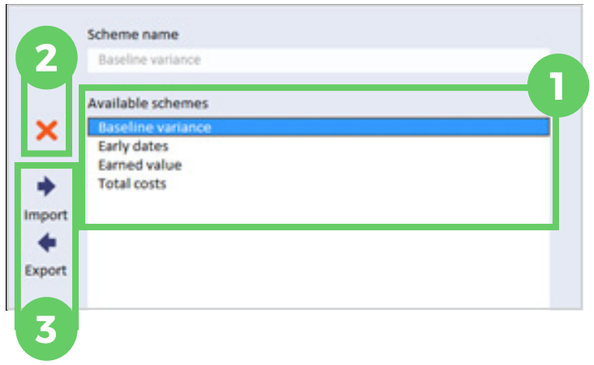
1. Click the ‘Open’ icon.

2. Select the scheme to be set as the current scheme.

3. Click ‘Open’

   NB: When opening or saving a grouping scheme, there are options to delete/ import and export pre-saved group schemes.

Delete / Export / Import grouping scheme



Delete a saved grouping scheme

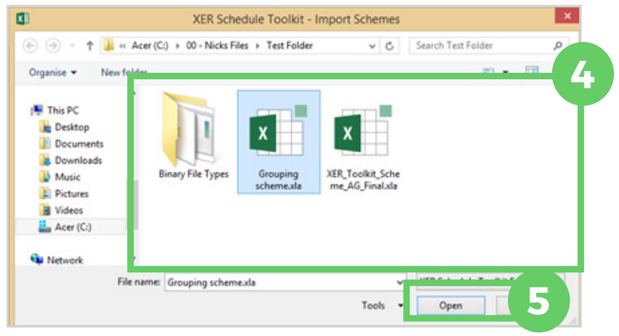
1. Select grouping scheme to be deleted.

2. Click the ‘Delete’ icon

Export grouping scheme

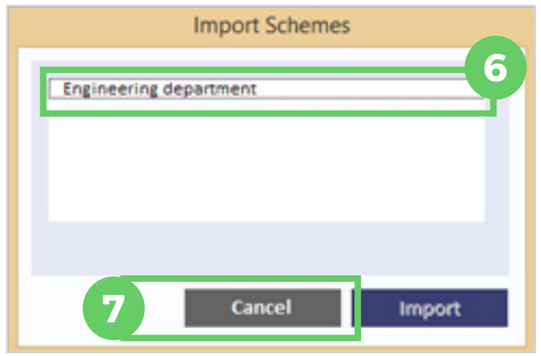
1. Select grouping scheme to be exported.

3. Click the ‘Export’ icon and then choose a filename.



Import grouping scheme

3. Click the ‘Import’ icon.



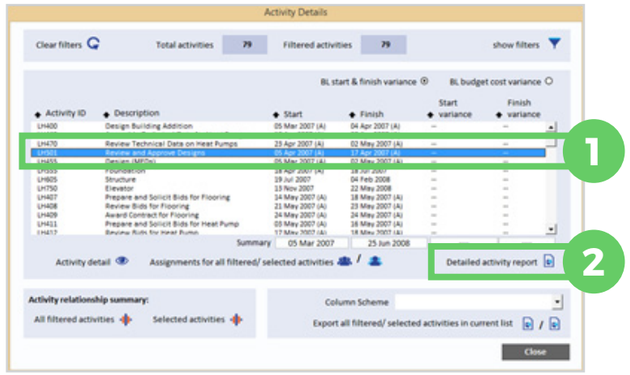
General Reports

Detailed activity report

The detailed activity report is designed to provide the vast majority of available data held within the XER file in relation to a specific task. E.g. it can provide access to all of the UDF values assigned against a task, which can otherwise be difficult to determine. The report is available to use within various Toolkit functions e.g.

- Project Health detailed screens
- Activities (as shown in example below),
- Logic (Detailed Predecessor/ Successor) report

The example shown below uses the Activities function as the source point for selecting the detailed activities report. The process is exactly the same when accessing the report from other functions.



1. Select a single activity to be viewed.

2. Click the ‘Activity Report’ button. This will activate the report output options form.

3. Select the summary data topics to be output via the report. The report can be refined to include only the data required by the user. E.g. if the user only wants to interrogate the UDFs assigned to an activity, select only the UDF’s option from the summary data topic area.

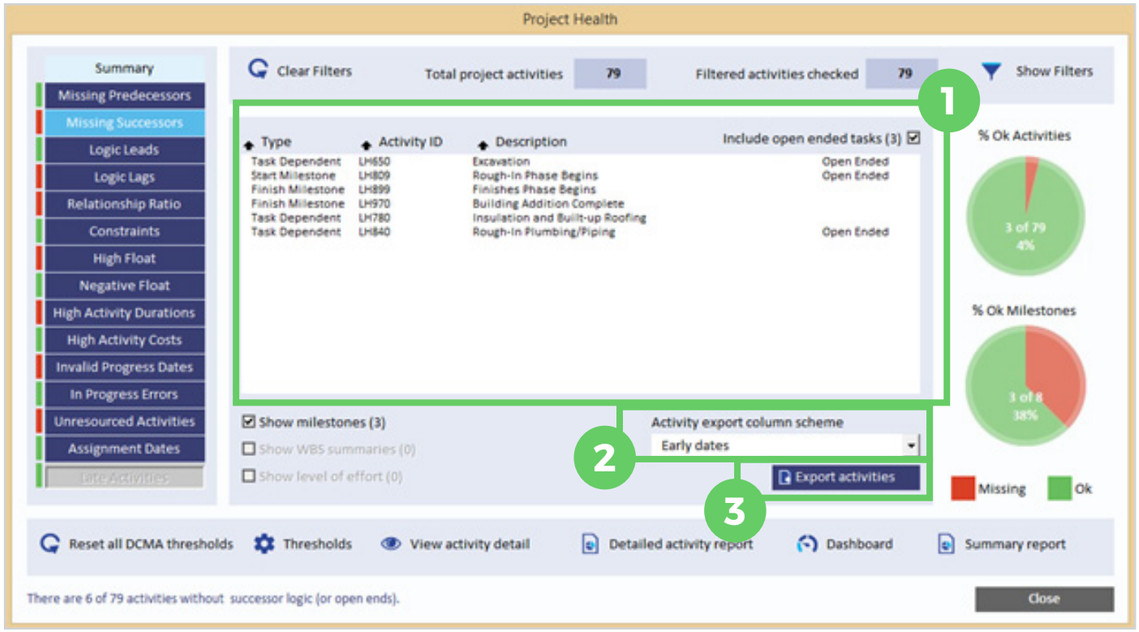
4. If either Resources or Expenses are selected as summary data topics then additional worksheets will be produced by the report containing tables of data specifically related to the resources/ expenses. The user can refine the report by selecting which columns to view within the output table.

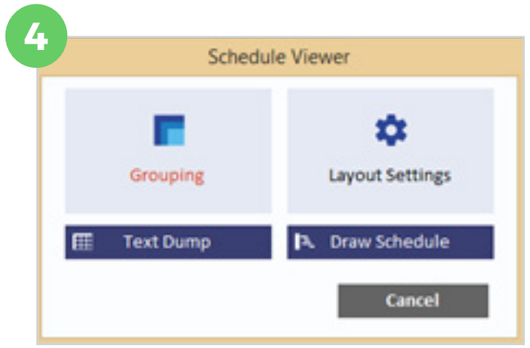
Contents

Activities Export

The activities export function is effectively a pre-filtered version of the schedule viewer. Users can export selected or all activities from windows within the Project Health detail screens or the Activities function.

The example shown below uses the project health function as the source point for using the export activities function. The process is the same when exporting from other functions.





1. The activities to be exported will appear in the 'current window'.

   NB: From within the Project Health detail windows, using the export function will export ALL activities within the current window. When exporting from the Activities function, the user can select activities within the window or choose to export selected activities only.

2. Select a column scheme from the list.

   NB: The user can also choose to select 'Current Scheme' from the list (refer to The Current Column Scheme). If the selection box is blank, then exporting activities will default to the current column scheme

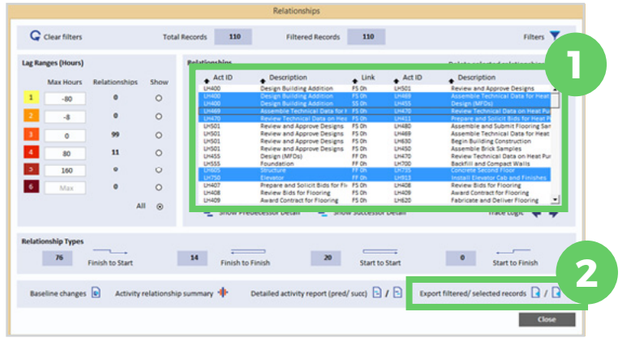
3. Click the Export Button

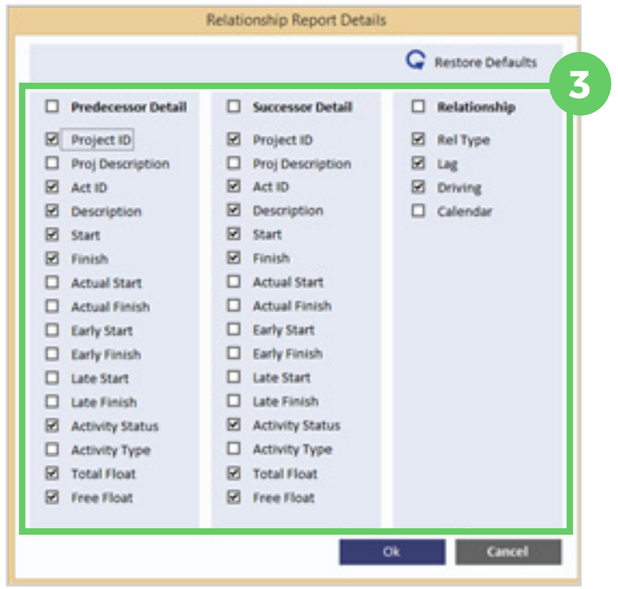
4. Use Schedule Viewer functions to finalise output report options.

Detailed Relationships Export Report

The activities export function is effectively a pre-filtered version of the schedule viewer. Users can export selected or all activities from windows within the Project Health detail screens or the Activities function.

The example shown below uses the project health function as the source point for using the export activities function. The process is the same when exporting from other functions.





1. If the user only wants to export particular relationships rather than all relationships, then they must first be selected from the current window.

   NB: Users can only choose to select specific relationships is only available within the logic window. The project health – leads/lags screen only provides the option to export all relationships.

2. Choose to export all relationships within the list or just the relationships selected within the list.

3. Select which columns are to appear in the output report and then click OK.

Contents

Schedule Quality

Overview

The XER Toolkit's schedule quality function is an extremely powerful diagnosis tool that can identify technical defficiencies within a schedule and assist with their rectification.

The schedule quality metrics calculated by the XER Toolkit are established measures by which a schedule can be assessed to help determine whether it is realistic.

As with all schedule quality indicators, there is no 'one size fits all' result and to that end, the XER Toolkit has some versatile features inlcuding the ability to filter the general results by WBS and/ or activity code. It can also measure all activities within a schedule or return results only for activities that are not yet complete. The toolkit also offers further options to refine individual health checks e.g. Activities with missing successors can be set to include open-ended tasks (activities with only a SS or SF successor).

The ranges by which red, amber & green are triggered can also be manually regulated by the user to reflect the nature and requirement of each individual project.

To aid the user benchmark against pre-defined and industry recognised results, the XER Toolkit has default 'red, amber, green' trigger points built in. These are based upon the Defence Contract Management Agency's (DCMA) 14 point schedule metrics.

The checks currently offered by the Toolkit are:

- Missing Predecessors
- Missing Successors
- Relationships with negative lag (Lead)
- Relationships with lag
- Non-FS Relationship ratio
- Activities with hard & soft constraints
- High Float
- Negative Float
- High Duration
- Late Activities
- Activities With High Cost
- Invalid Dates
- Activities In Progress
- Activities Without Resource Assignements
- Assignment Dates Not Aligned to Activity Dates

NB. Adjustments to filters and dial limits within the project health settings are reflected in the dashboard report outputs.

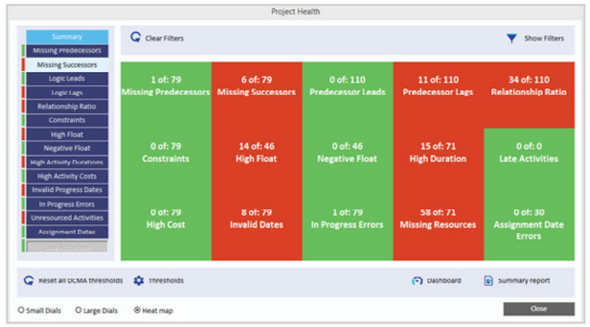
Summary Screen Options

There are 3 display options to choose from in order to view and assess the current project's schedule quality check results.

Large Dials

Small Dials

Heat map



1. The summary display format can be adjusted by toggling the option buttons as shown below:

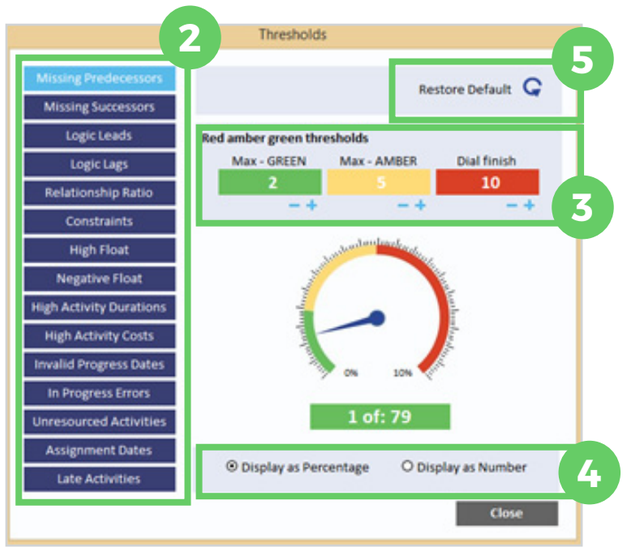
2. Summary results can also be identified by the small coloured rectangle positioned to the left hand side of the quality check tab selector.

3. Click the 'full screen' icon to enlarge the dials window to fill the screen.

Contents

Viewing detailed check results

In order to view the detail behind the summary reports, simply click on the relevant quality check tab selector, or click on the corresponding [heat map sector] or [dial].



Adjusting red / amber / green thresholds

1. From the main window, click on the ‘thresholds’ icon.
2. Select the type of quality check to be adjusted.
3. Either type the new threshold values into the relevant coloured box or use the +/- buttons to increment the threshold value up/ down.
4. You can choose to display results as percentages or as a number. To provide an example of when it may be an advantage to use numbers rather than percentagesm the following example looks at activities with missing predecessor logic. Option 1 reflects the DCMA default whereas option 2 reflects the ideal network scenario.

   Display as a percentage
   - 5% of activities without a predecessor raises a flag

   Display as a Number
   - 1 activities without a predecessor raises a flag

5. Restore the toolkit’s preset defaults by clicking the icon.

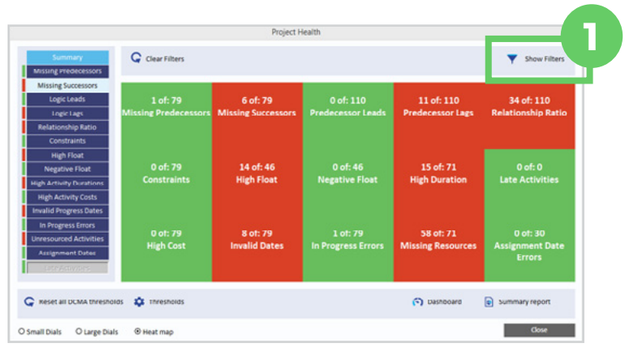
Resetting all defaults

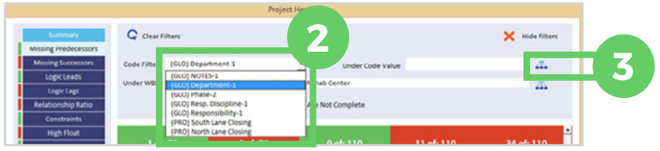
Click the ‘Reset all DCMA thresholds’ to reset all project quality check defaults. This will reset all Toolkit defaults including non-DCMA-related checks and settings.

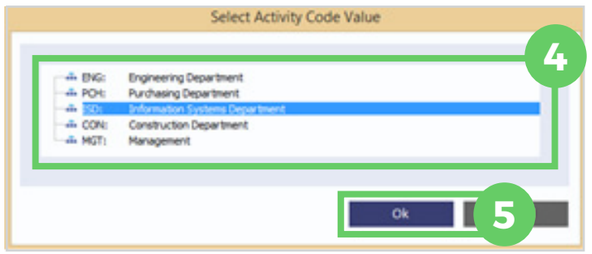
NB: The DCMA default values refer to the ‘Red’ trigger point. The DCMA standard does not refer to an ‘amber’ range. The DCMA reference document states:

‘The identification of a “red” metric is not in and of itself synonymous with failure but rather an indicator or a catalyst to dig deeper in the analysis for understanding the reason for the situation. Consequently, correction of that metric is not necessarily required but it should be understood’.

Filter by activity code







1. From the summary screen, click the ‘Show Filters’ icon. This will reveal the various filtering options.
2. Select the activity code type from the drop down list.
3. Click the code value selection icon.
4. Select the code value to be analysed.
5. Click Ok.

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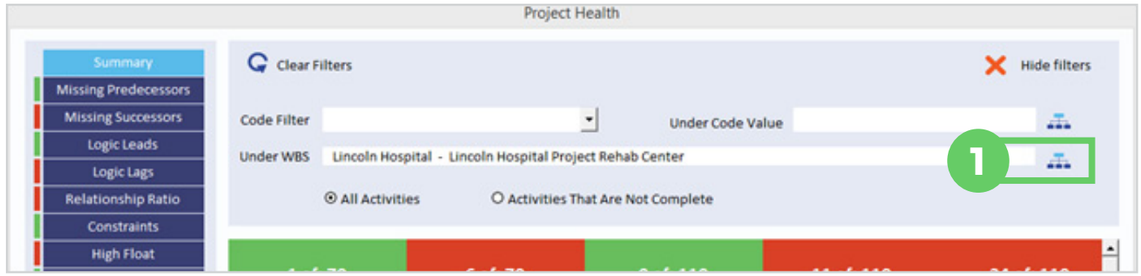
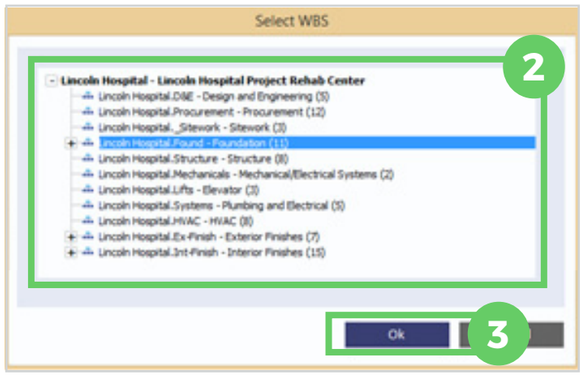
Filter by WBS

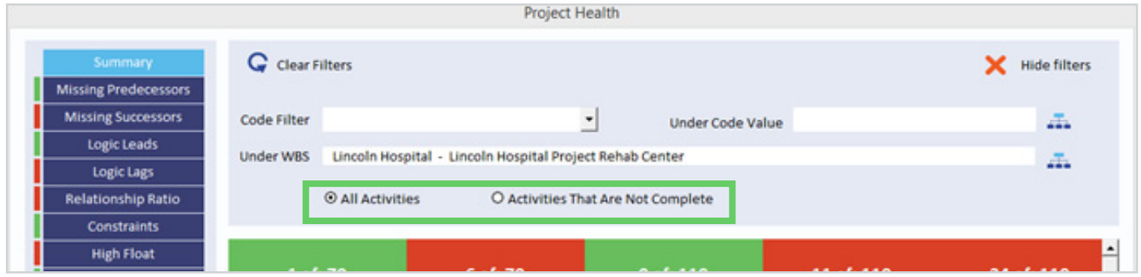




1. Select the WBS selection icon.
2. Select the WBS to be analysed.
3. Click Ok.

   NB: All sub-WBS elements of the selected WBS element will be included in the schedule quality check results.

Filter by Task Status



Summary / Dashboard reports

There are a variety of pre-formatted reports that can be exported to standard excel spreadsheets which can then be saved and shared with other Excel users. Simply select the desired report from the menu.

NB: The report will contain only data for the currently filtered tasks.

Contents

Quality check definitions & detail windows

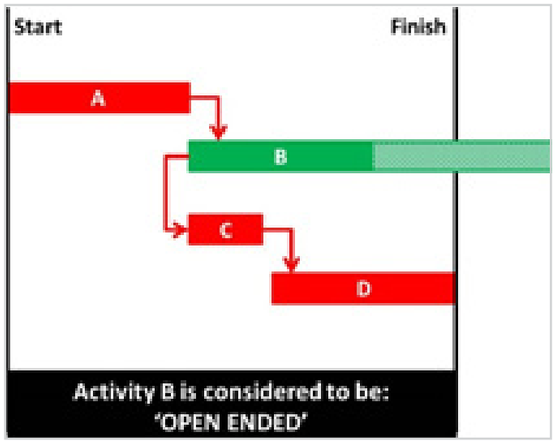
Missing logic (tasks without predecessors or successors)

What the DCMA state:

“This metric identifies incomplete tasks with missing logic links. It helps identify how well or poorly the schedule is linked together. Even if links exist, the logic still needs to be verified by the technical leads to ensure that the links make sense. Any incomplete task that is missing a predecessor and/or a successor is included in this metric. The number of tasks without predecessors and/or successors should not exceed 5%. An excess of 5% should be considered a flag. The formula for calculating this metric is as follows”

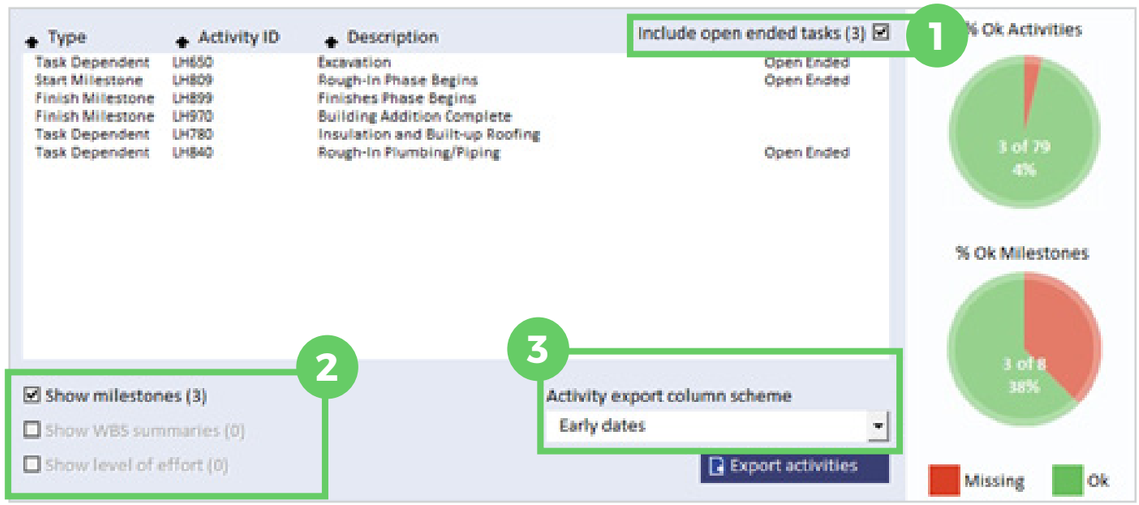
$$\text{Missing logic \%} = 100x \frac{\text{\# of tasks missing logic}}{\text{\# of incomplete tasks}}$$

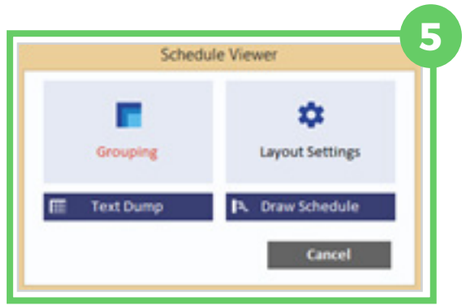
Open ended tasks



Although activity B has a successor (Start to Start with activity C), it is considered as ‘Open Ended’ since its completion date could potentially slip until the point where all other activities within the network are complete before impacting upon the schedule’s critical path.

NB: Relationships to and from Level of Effort/ WBS Summary activities cannot affect the start/ finish of other activities. Therefore, activities that only have predecessors/ successors that are Level of Effort or WBS Summary activities are effectively ‘Open Ended’.





1. Select ‘Include open ended tasks’

2. Select or deselect activity type options to include/ exclude results for [Milestones], [WBS Summary] & [Level of Effort]

Exporting results to Excel:

3. To export the tasks that are identified within the results window, select the desired column scheme.

4. Click the ‘Export activities ‘ button.

5. Refer to the instructions for schedule viewer controls.

Contents

Relationships with leads or lags

What the DCMA state:

Leads

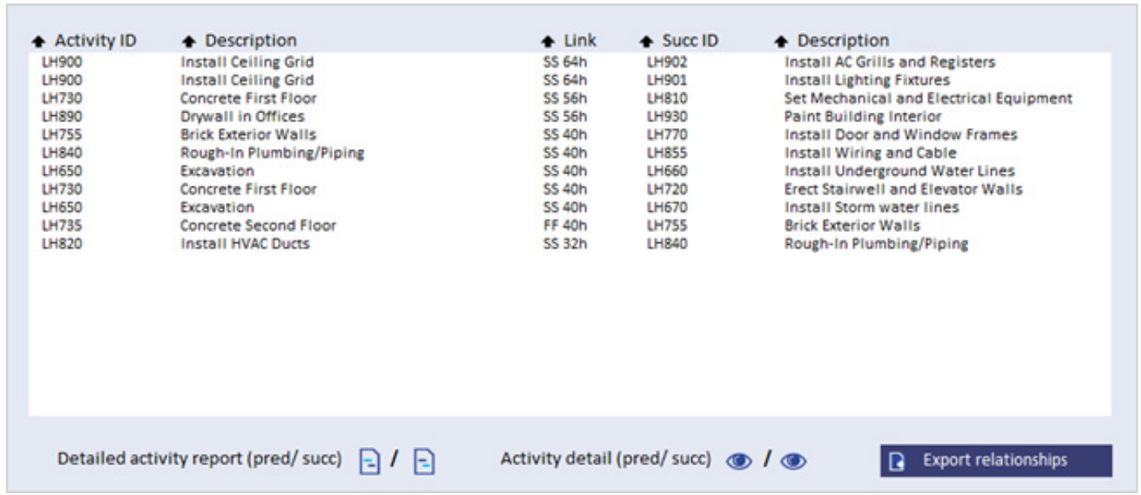
"This metric identifies the number of logic links with a lead (negative lag) in predecessor relationships for incomplete tasks. The critical path and any subsequent analysis can be adversely affected by using leads. The use of leads distorts the total float in the schedule and may cause resource conflicts. Per the IMS Data Item Description (DID), negative time is not demonstrable and should not be encouraged. Using MS Excel, count the number of "Leads" that are found. Leads should not be used; therefore, the goal for this metric is 0"

$$\text{Leads \%} = 100x \frac{\text{\# of logic links with leads}}{\text{\# of logic links}}$$

Lags

"This represents the number of lag in predecessor logic relationships for incomplete tasks. The critical path and any subsequent analysis can be adversely affected by using lags. Per the IMS DID, lag should not be used to manipulate float/slack or to restrain the schedule. Using MS Excel, count the number of "Lags" that are found. The number relationships with lags should not exceed 5%."

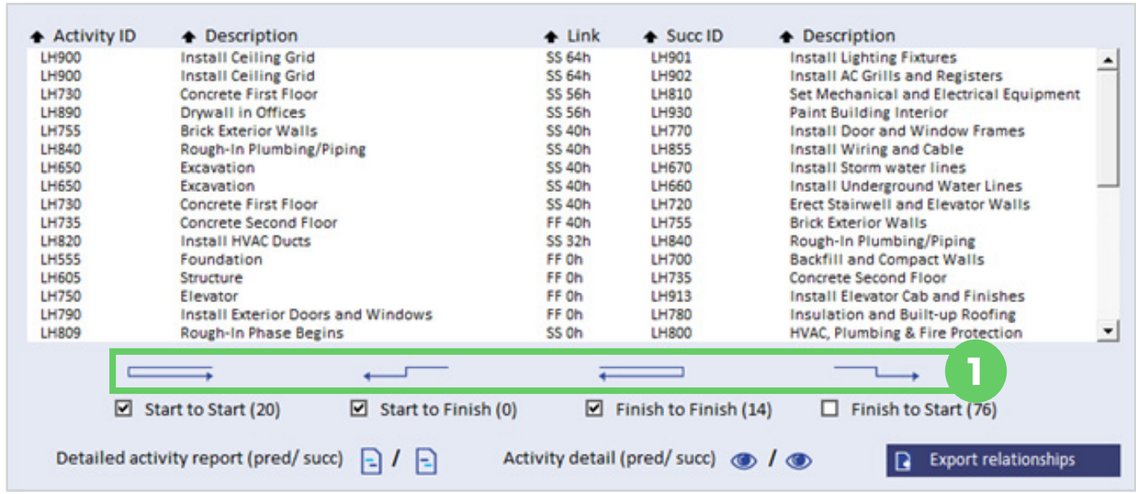
$$\text{Lags \%} = 100x \frac{\text{\# of logic links with lags}}{\text{\# of logic links}}$$



Relationships Ratio

What the DCMA state:

"The metric provides a count of incomplete tasks containing each type of logic link. The Finish-to-Start (FS) relationship type ("once the predecessor is finished, the successor can start") provides a logical path through the program and should account for at least 90% of the relationship types being used. The Start-to-Finish (SF) relationship type is counter-intuitive ("the successor can't finish until the predecessor starts") and should only be used very rarely and with detailed justification. By counting the number of Start- to-Start (SS), Finish-to-Finish (FF), and Start-to-Finish (SF) relationship types, the % of Finish-to-Start (FS) relationship types can be calculated."



1. Select/ deselect the relationship types to view the desired results

Contents

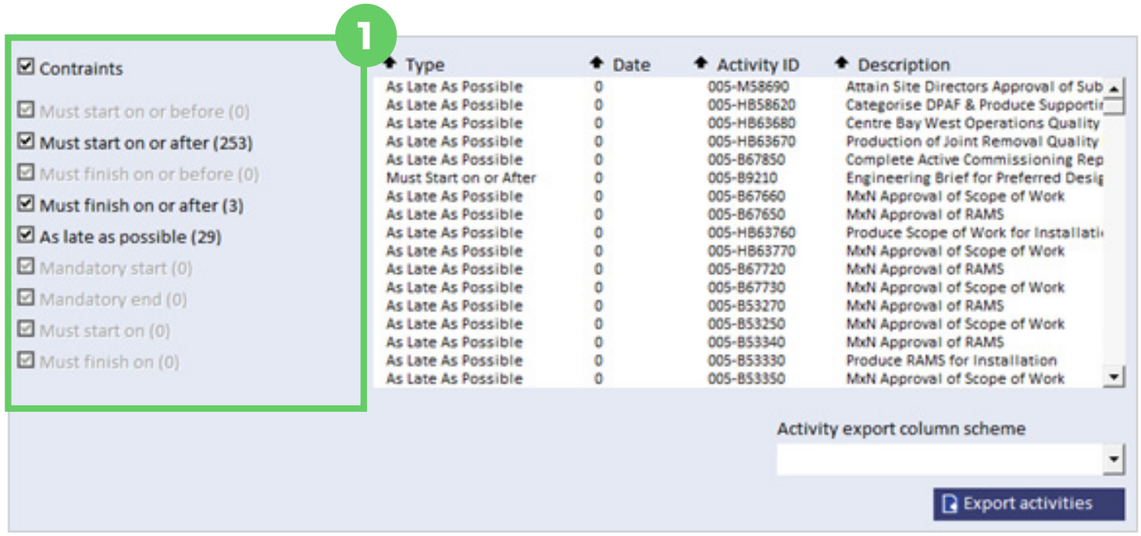
Constraints

What the DCMA state:

Hard Constraints

"This is a count of incomplete tasks with hard constraints in use. Using hard constraints [Must-Finish-On (MFO), Must-Start-On (MSO), Start-No-Later-Than (SNLT), & Finish- No-Later-Than (FNLT)] will prevent tasks from being moved by their dependencies and, therefore,prevent the schedule from being logic-driven. Soft constraints such as As- Soon-As-Possible (ASAP), Start-No-Earlier-Than (SNET), and Finish-No-Earlier-Than (FNET) enable the schedule to be logic-driven. Divide the total number of hard constraints by the number of incomplete tasks. The number of tasks with hard constraints should not exceed 5%."

$$\text{Hard Constraint \%} = 100x \frac{\text{Total \# of incomplete tasks with hard constraints}}{\text{Total \# of incomplete tasks}}$$



1. The XER Toolkit does not differentiate between hard and soft constraints in the default settings, i.e. all constraints (hard and soft) will be included in calculation. The user can select / deselect any constraint type which will then be included in the calculations.

Float

What the DCMA state:

High Float

"An incomplete task with total float greater than 44 working days (2 months) is counted in this metric. A task with total float over 44 working days may be a result of missing predecessors and/or successors. If the percentage of tasks with excessive total float exceeds 5%, the network may be unstable and may not be logic-driven."

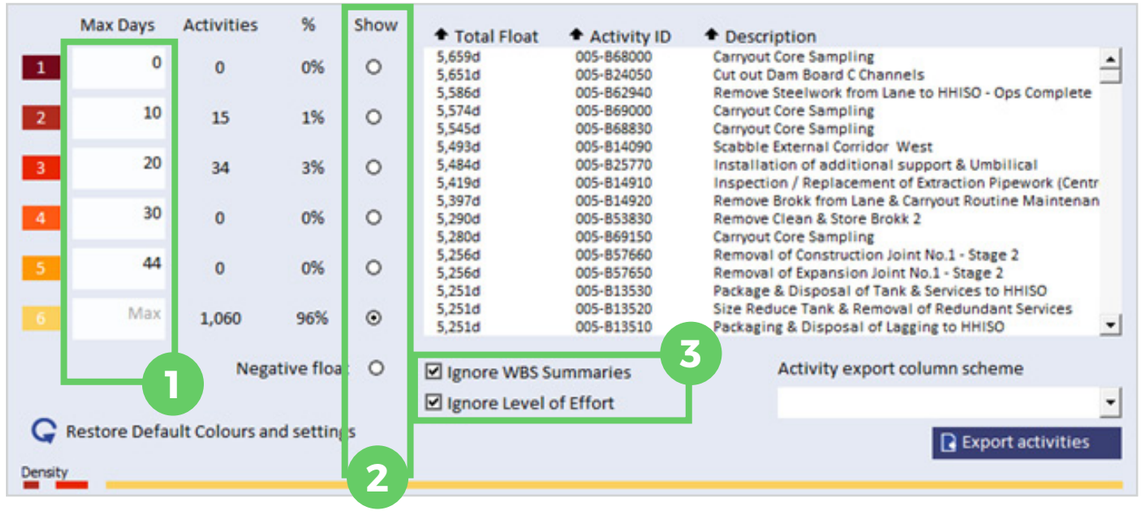
$$\text{High Float \%} = 100x \frac{\text{Total \# of incomplete tasks with high float}}{\text{Total \# of incomplete tasks}}$$

Negative Float

"An incomplete task with total float less than 0 working days is included in this metric. It helps identify tasks that are delaying completion of one or more milestones. Tasks with negative float should have an explanation and a corrective action plan to mitigate the negative float. Divide the total number of tasks with negative float by the number of incomplete tasks. Ideally, there should not be any negative float in the schedule."

$$\text{Negative Float \%} = 100x \frac{\text{Total \# of incomplete tasks with negative float}}{\text{Total \# of incomplete tasks}}$$

Contents



1. The values entered within the 'max days' boxes represent the maximum total float duration of activities within the range i.e. Using the example screen above:

   Float range 1
   Includes all activities that have a maximum total float = 0 days (critical). There are zero activities in this float range.

   Float range 2
   Includes all activities that have greater than 0 days total float and up to a maximum of 10 days total float (near critical). There are a total of 15 activities in this float range.

   Float range 6
   Includes all activities that have greater than 44 days total float (DCMA definition of high-float). There are a total of 1,060 activities in this float range.

2. By toggling the 'Show' selection to a specific float range, the activites within that float range will be listed within the results window. The example above shows that float range 6 has been selected and to the right of the screen, the 1,060 activities in float range 1 are listed. The detail included for each activity within the list includes ID, description and float value.

3. Users can select whether to include or exclude specific activity types from the quality check results.

   NB: To change the colour of the selected float range, simply click the coloured box to the left hand side of the float range and then choose a new colour. Any changes made to colours will be reflected within the dashboad report.

Duration

What the DCMA state:

High Duration

"An incomplete task with a baseline duration greater than 44 working days (2 months), and has a baseline start date within the detail planning period or rolling wave is included in this metric. It helps to determine whether or not a task can be broken into two or more discrete tasks rather than one. In addition, it helps to make tasks more manageable; which provides better insight into cost and schedule performance. Divide the number of incomplete tasks with high duration tasks by the total number of incomplete tasks. The number of tasks with high duration should not exceed 5%."

$$\text{High Duration \%} = 100x \frac{\text{Total \# of incomplete tasks with high duration}}{\text{Total \# of incomplete tasks}}$$

NB: For instructions relating to the project health tab for durations, refer to instructions for Float tab.

Costs

Not applicable to DCMA checks:

NB: For instruction relating to the project health tab for durations, refer to instructions for Float tab.

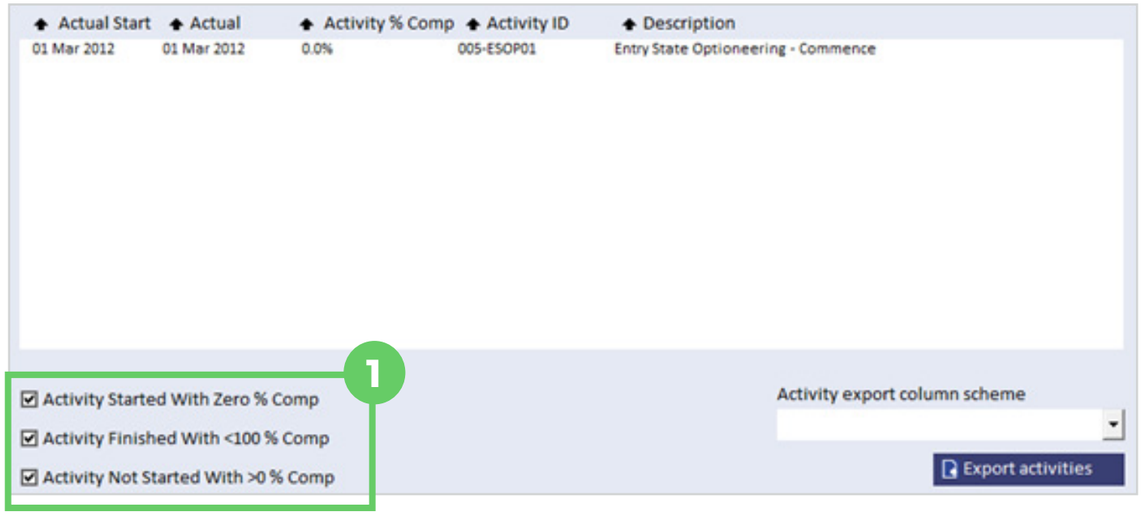
Invalid Dates

What the DCMA state:

"Incomplete tasks that have a forecast start/finish date prior to the IMS status date, or has an actual start/finish date beyond the IMS status date are included in this metric. A task should have forecast start and forecast finish dates in the future relative to the status date of the IMS (i.e. if the IMS status date is 8/1/09, the forecast date should be on or after 8/1/09). A task should not have an actual start or actual finish date that is in the future relative to the status date of the IMS (i.e. if the IMS status date is 8/1/09, the actual start or finish date should be on or before 8/1/09, not after 8/1/09). There should not be any invalid dates in the schedule."

NB: In addition to the Invalid Dates tab, the XER Toolkit also provides a tab for possible errors with activities that are in-progress. The potnetial errors identified by the In Progress tab are:

- Activities that have started but remain at 0% complete.
- Activities that are complete but tagged as less than 100% complete.
- Activities that are tagged as greater than 0% complete but have not been marked as started.



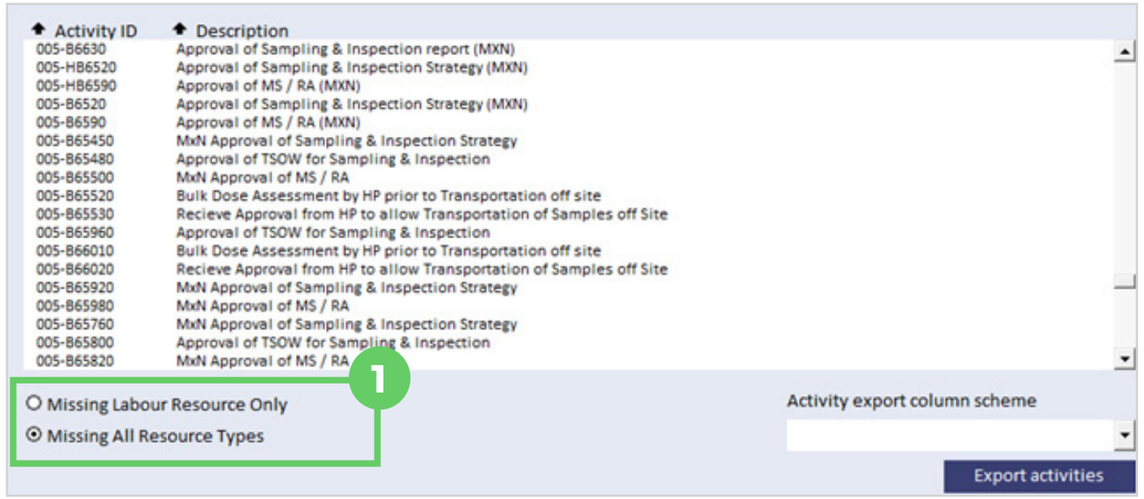
1. Simply toggle the desired checks on/ off

Missing Resources

What the DCMA state:

"This metric provides verification that all tasks with durations greater than zero have dollars or hours assigned. Some contractors may not load their resources into the IMS. The IMS DID (DI-MGMT-81650) does not require the contractor to load resources directly into the schedule. If the contractor does resource load their schedule, calculate the metric by dividing the number of incomplete tasks without dollars/hours assigned by the total number of incomplete tasks."

$$\text{Missing resource \%} = 100x \frac{\text{Total \# of incomplete tasks with missing resource}}{\text{Total \# of incomplete tasks}}$$



1. The XER Toolkit provides the opportunity to differentiate between tasks without ANY resource and those that are without LABOUR resource types.

Contents

Late Activities

What the DCMA state:

Missed Tasks

“A task is included in this metric if it is supposed to be completed already (baseline finish date on or before the status date) and the actual finish date or forecast finish date (early finish date) is after the baseline finish date or the Finish Variance (Early Finish minus Baseline Finish) is greater than zero. This metric helps identify how well or poorly the schedule is meeting the baseline plan. To calculate this metric, divide the number of missed tasks by the baseline count which does not include the number of tasks missing baseline start or finish dates. The number of missed tasks should not exceed 5%.”

$$\text{Missed \%} = 100x \frac{\text{\# of tasks with actual/forecast finish date past baseline date}}{\text{\# of tasks with baseline finish dates on or before status date}}$$

Activity ID	Description	Baseline Finish	Forecast Finish	Finish Var
005-M5120	P50 Project Finish Ponds Surface Scabbling & Furniture Re	23 Feb 2015	18 May 2015	-56.75
005-I0221	I0221 - SAB & South Corridor Scabbling Complete (005>039	26 Jun 2013	20 Feb 2014	-166.62
005-I0261	I0261 - NAB & North Corridor Scabbling Complete (005>040	12 Jun 2014	16 Feb 2015	-172.12
005-I0003	I0003 - Ponds Scabbling Operations & Deplant Complete (	10 Nov 2014	07 Apr 2015	-101.62
005-I0132	I0132 - PNV Washdown & Transfer to MSV Complete (020>I	06 Aug 2012	30 Apr 2013	-185
005-I0167	I0167 - Flask Washdown Drains Tank (FWDT) Sludge Rem	17 Jul 2012	05 Mar 2013	-161
005-B56280	Safety Case Officer Approval of Submission	06 Feb 2012	11 Jul 2013	-361
005-B56320	Prepare INSA Request & Submit for Independent Nuclear	17 Feb 2012	24 Jul 2013	-361
005-B56260	Categorise DPAF & Produce Supporting Submission	13 Jan 2012	20 Jun 2013	-362
005-B56270	Submission Verfication Period	30 Jan 2012	04 Jul 2013	-361
005-B56330	Independent Nuclear Safety Assessment Period	05 Apr 2012	11 Sep 2013	-361
005-M15930	Submission Assessment Approved by INSA (Form 5b Recie	05 Apr 2012	11 Sep 2013	-361
005-M15920	Attain Site Directors Approval of Submission	16 Feb 2012	23 Jul 2013	-361
005-M15940	Design Authority Approval to Implement Issued	13 Apr 2012	19 Sep 2013	-363
005-M15950	Site Directors Letter of Implementation Issued	18 Apr 2012	24 Sep 2013	-363
005-B56290	Circulate DPAF for Subject Matter Expert (SME) Advise	13 Feb 2012	18 Jul 2013	-361

Activity export column scheme

Export activities

Assignment dates

Not applicable to DCMA checks:

Primavera makes allowance for resources to be applied across an activity duration in 2 ways:

- Across the whole activity duration
- Across part of the activity duration

E.g. An activity scope that consists of laying a concrete base may only include resources for the initial part of that activity as the remaining duration may account for the time it takes the concrete to set, during which no work may take place.

Although this can potentially be is a useful feature, it can also lead to situations whereby resource dates become misaligned with their parent activity without the knowledge of the scheduler. Moreover, it is also possible for resource dates to go beyond the finish date of their parent activity.

Act Start	Act Finish	Res Start	Res Finish	Activity ID	Resource ID Name
01 Apr 2010	31 Mar 2011	01 Sep 2010	31 Mar 2011	005-HB63910	9289210 Mechanical Engineer
01 Apr 2010	31 Mar 2011	02 Aug 2010	31 Mar 2011	005-HB63910	9280980 Radiation Protection Manager
01 Apr 2010	31 Mar 2011	02 Aug 2010	31 Mar 2011	005-HB63910	9281090 Shift Charge Engineer / Operations Engineer
01 Apr 2010	31 Mar 2011	02 Aug 2010	31 Mar 2011	005-HB63910	9281090 Shift Charge Engineer / Operations Engineer
01 Apr 2010	31 Mar 2011	02 Aug 2010	31 Mar 2011	005-HB63910	9280980 Radiation Protection Manager
01 Apr 2011	31 Mar 2012	01 Aug 2011	31 Mar 2012	005-B3150	9281090-MODP Shift Charge Engineer / Operations Engir
01 Apr 2011	31 Mar 2012	01 Aug 2011	31 Mar 2012	005-B3150	9280940-MODP Project Manager B/C
14 Apr 2015	29 Apr 2015	14 Apr 2015	28 Apr 2015	005-B24590	9289290-MODP Safety Case Author
28 Jun 2010	30 Jun 2010	28 Jun 2010	30 Jun 2010	005-HB8080	9289290 Safety Case Author
07 Jul 2010	13 Jul 2010	07 Jul 2010	13 Jul 2010	005-HB5790	9289290 Safety Case Author

☐ Only Include Resource Finishes Later Than Activity 1

Export assignments

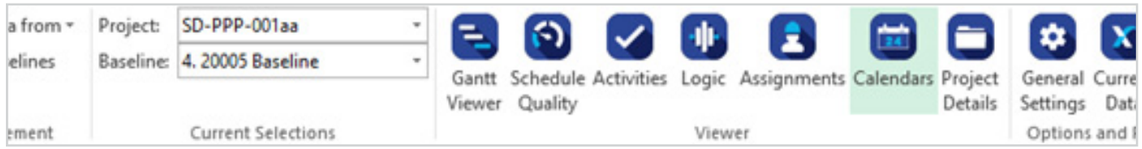
1. The XER Toolkit provides the user with the opportunity to review resources that have start and finish dates which are misaligned with the start and finish of their parent activity. The user can choose to include all activities or just those with resource completion dates beyond the completion of their parent activity by checking / unchecking the tickbox.

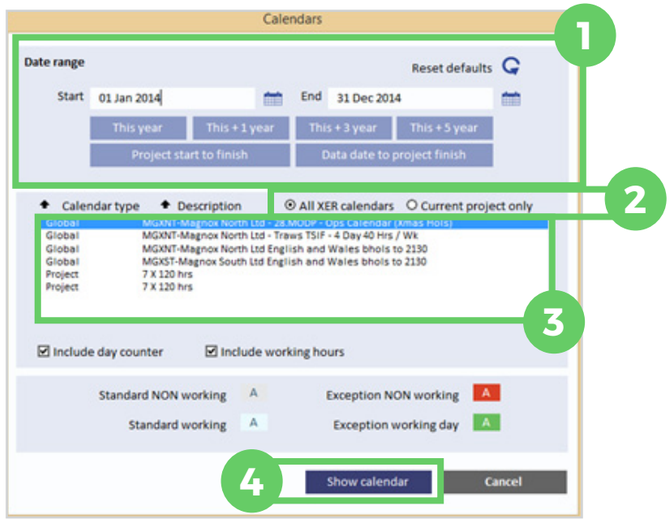
Calendar Viewer

Overview

The XER Toolkit's calendar viewer provides users with the opportunity to quickly identify and report upon the details of a calendar's working patterns and holidays, something that is not readily available within Primavera.

The toolkit can read calendar data directly from any XER file or directly from a Primavera database.





1. The XER toolkit produces a detailed day by day report, along with yearly wallcharts for each year between the user defined start and finish date range selected. There are some default settings from which the user can select by clicking on the appropriate button (E.g. project start to finish)

   NB: The toolkit can produce calendar information for up to 10 years in one go. For longer periods, simply repear process for each 10 year period required.

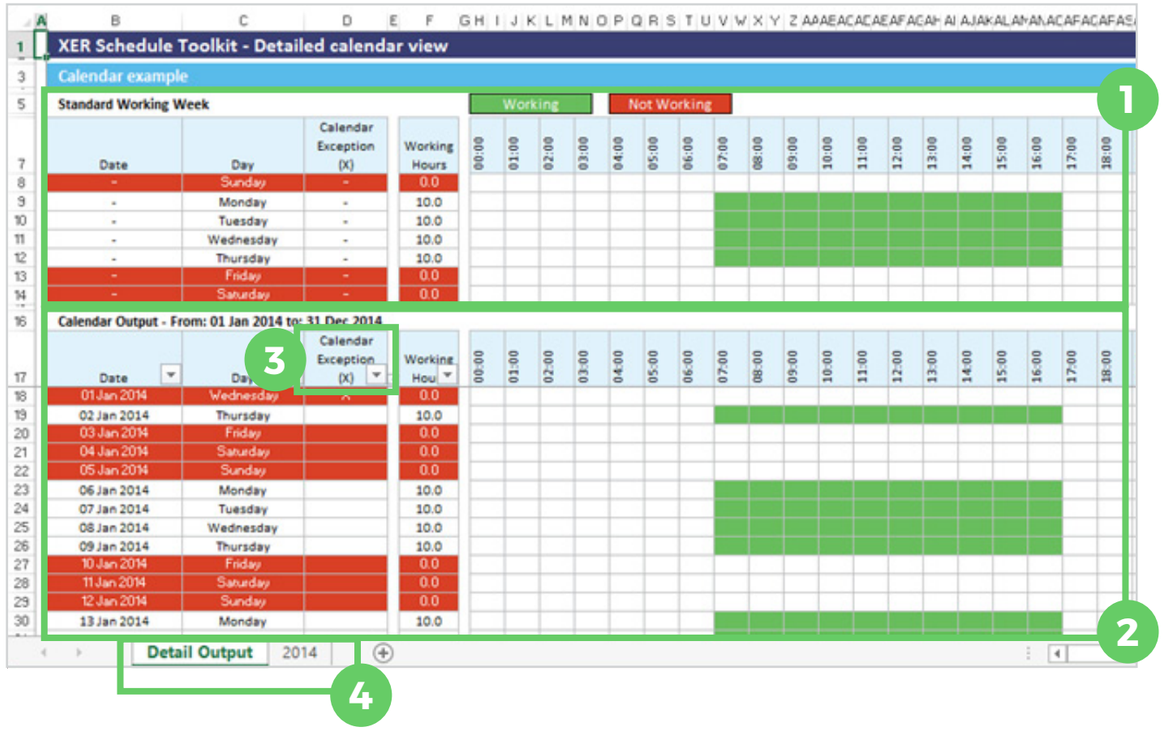
2. Select to see all calendars within current XER file or, for multi project files, toggle to see only calendars for the current project.

   NB: All calendars that are in use for the current selection will appear within the list, i.e. Global, Project and Resource.

3. Select the calendar to view.

4. Click 'Show calendar'.

Detailed View



1. The top area of the report details the standard working pattern of the selected calendar which will be applied throughout the project duration, excluding calendar exceptions. The left hand table details the weekdays along with a summary of working hours for each day. The right hand detail table provides a display of the working pattern for each day in half-hourly sectors.

2. The table underneath the standard working week provides detailed, day-by-day calendar working patterns and exceptions. An 'X' displayed within the calendar exception column identifies a day that has been changed from the default standard working pattern.

3. Excel's auto-filter buttons, which are automatically inserted into the left hand table can be used to select and identify the 'X' values, and therefore identify all calendar exceptions within the user-defined report period.

4. The detailed output sheet is produced as a separate worksheet from the calendar wallchart(s) withn the calendar output workbook.

Contents

Yearly wall-chart

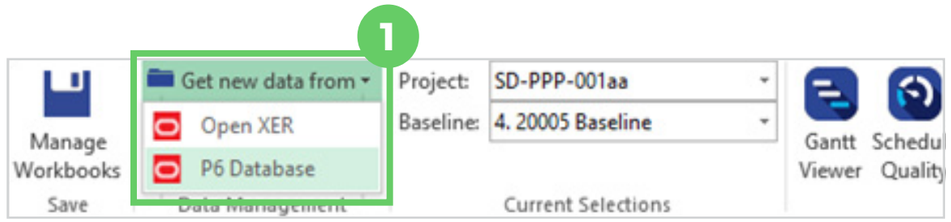
The following wall-chart formats can be adjusted via the calendar viewer form:

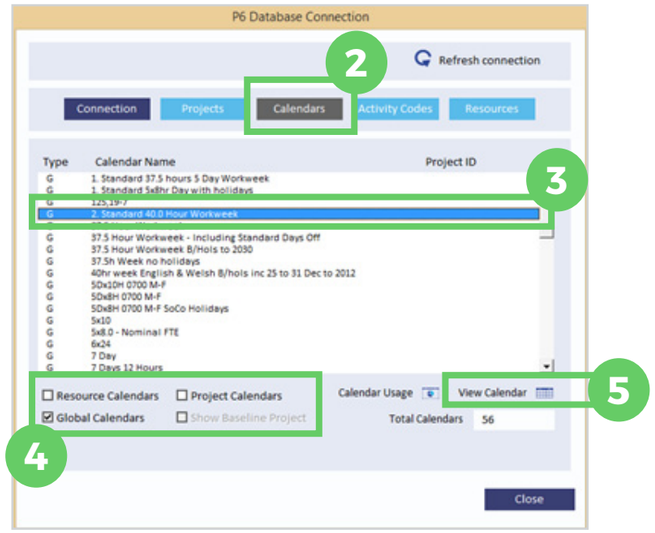
- Colour scheme
- Include day counter
- Include working hours

NB: The day counter is a running total of working days from the report start date selected by the user until the finish date.

To alter the legend colours, click on the coloured text box within the calendar viewer form.

Directly from P6





1. From the main toolkit menu, select to ‘Get new data from’ P6 database.
2. Once connected to the database, select calendars from the menu.
3. Choose which calendar types to display within the list.
4. Select the calendar to view.
5. Click ‘View calendar’
6. Once the calendar viewing form has opened, follow steps for viewing XER file calendars.

Contents

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