PLANNING AND CONTROL **USING** ORACLE® PRIMAVERA® P6 **VERSIONS 8 to 20 PPM PROFESSIONAL**

Planning and Progressing Project Schedules With and Without Roles and Resources in an **Established Database**

BY

PAUL EASTWOOD HARRIS

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INTRODUCTION

This publication is an upgrade of the *Project Planning & Control Using Primavera P6 Version 7* and has been written to enable new users to learn the planning and scheduling functions of Primavera Version 8, 15, 16, 17,18, 19 or 20. Please note there are no versions 9 to 14 and Oracle changed their naming convention with the release of 15.1 so the name is the same as the year of the release. Due to the changes in the menus in this release, it is not possible to make the book backward compatible to earlier versions of the software.

Many users will have prior experience with Elecosoft (Asta) Powerproject or Microsoft Project and the author explains where there are differences in the products' functionality.

The author would appreciate any constructive comments on how this publication may be improved.

SUMMARY

The publication may be used as:

- > A training manual for a three-day training course, or
- A self-teach book, or
- A reference manual.

The screen shots for this publication are taken from Primavera Versions 8.1 or 8.2 or 8.3 or 8.4 or 15.1 or 15.2 or 16.1 or 16.2 or 17 or 18 or 19 or 20.

One-day, two-day, or three-day training courses may be run using this publication and it includes exercises for the students to complete at the end of each chapter. After the course, students may use this publication as a reference book. Instructors' PowerPoint presentations are available from Eastwood Harris web sites.

This publication is ideal for people who would like to quickly gain an understanding of how the software operates and explains how the software differs from Elecosoft Powerproject and Microsoft Project, thus making it ideal for people who wish to convert from these products.

CUSTOMIZATION FOR TRAINING COURSES

Training organizations or companies that wish to conduct their own training may have this publication tailored to suit their requirements. This may be achieved removing, reordering or adding content to the publication and by writing their own exercises. Please contact the author to discuss this service.

AUTHOR'S COMMENT

As a project controls consultant, I have used a number of planning and scheduling software packages for the management of a range of project types and sizes. The first publications I published were user guides/training manuals for Primavera SureTrak, P3 and Microsoft Project users. These were well received by professional project managers and schedulers, so I decided to turn my attention to Primavera Enterprise, which is now called Primavera P6. This publication follows the same proven layout of my previous publications. I trust this publication will assist you in understanding how to use Primavera P6 on your projects.

APPRECIATION

I would like thank Michael Jack for his assistance in writing this book and Thomas Grant for his assistance in proof reading parts of the book.

CURRENT BOOKS PUBLISHED BY EASTWOOD HARRIS

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3.19 Workshop 1 – Navigating Around the Windows



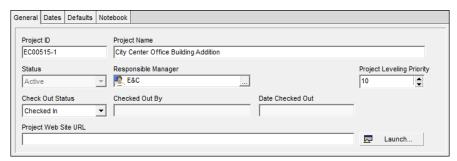
Background

To become familiar with Primavera you will open your database and navigate around the windows.

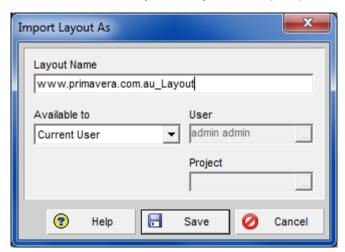
Note: Your windows may look different from the one used in this publication which uses a demonstration database provided by Oracle Primavera.

Assignment

- 1. Open your database. If a project is open, select **File**, **Close All** to close the project.
- 2. Close all open windows except the **Projects Window**. If the **Project Window** is not open then select **Enterprise**, **Projects** to open the **Projects Window**.
- 3. Hide and display the **Status Bar** by using the **View**, **Status Bar** menu.
- 4. Scroll up and down and inspect the Enterprise Project Structure and the projects.
- 5. Expand and close the EPS structure using the + and buttons to the left of the project descriptions and use the right mouse menu **Expand All**, **Collapse All** and **Collapse To**....
- 6. Explore the **EPS** by selecting **Enterprise**, **Enterprise Project Structure...**, click on the column headings and explore the menu options by clicking on the **Display: EPS** menu.
- 7. From the **Projects Window**, hide and display the bottom pane **Projects Details** form by clicking on the <u>View</u>, <u>Show on Bottom</u>, No Bottom Layout and <u>View</u>, <u>Show on Bottom</u>, Details.
- 8. Add the button to the **Bottom Layout** toolbar and then use the and buttons on the **Bottom Layout** toolbar to hide and display the bottom pane **Projects Details** form.
- 9. Double click in the Gantt Chart area in line with a project to bring the project bar into view.
- Select the <u>View</u>, <u>Toolbars...</u>, <u>Customize</u>, <u>Options</u> tab and uncheck the <u>Show full menus</u>
 after a short delay and the <u>Menus show recently used commands first</u> options in to
 ensure full menus are always displayed.
- 11. Open the **Projects Details** form, right-click on a tab in the **Projects Details** form and select **Customize Project Details...** then hide and display some tabs. Leave only the **General**, **Dates**, **Defaults** and **Notebook** tabs displayed. We will reveal the remainder as needed:

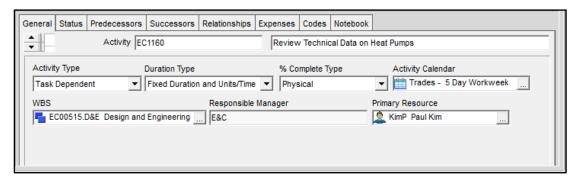


- 12. Select a project you have access to (possibly the City Center Office Building Addition project if you are operating in the Primavera Demonstration database) and open the **Project** by right-clicking on the project and selecting **Open Project**.
- 13. Click on the **Activities** tab or the icon on the right-hand side of the screen or select **Project**, **Activities** if the **Activities Window** does not open automatically and display the project activities.
- 14. You should now download a layout titled www.primavera.com.au_Layout.plf found at www.primavera.com.au or www.eh.com.au under Software and Downloads page, unzip it and place it on your desktop.
- 15. Import the Layout as a Project Layout by selecting <u>View</u>, Layout, Open Layout.
- 16. Do not save your Layout.
- 17. Select ______, select the layout from your desktop, import and save it:

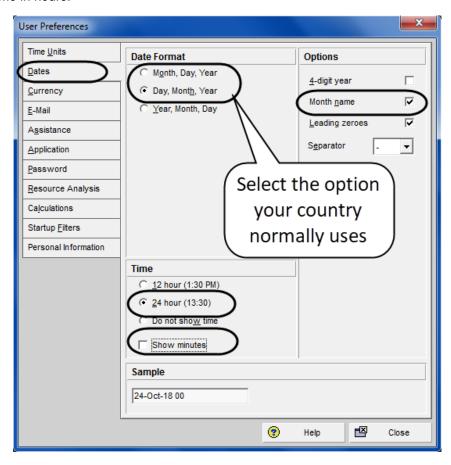


- 18. The Layout will be saved as a User Layout, select to apply the layout and you will see the changes on the screen.
- 19. Now select open Layout form.
- 20. Double-click in the Gantt Chart area in line with an activity to bring the activity bar into view.
- 21. Click on the Activity ID column title multiple times and see the activities reorder, then click on other column titles and see the activities reorder based on the column data. Leave the activities ordered by Activity ID.
- 22. Adjust the timescale using the buttons.
- 23. Move back to the **Projects Window** and then back to the **Activities Window** using the tabs at the top of the window.
- 24. From the **Activities Window** display the **Activity Details** form in the **Bottom** pane by selecting <u>View</u>, <u>Show on Bottom</u>, <u>Details</u> and then hide it by selecting <u>View</u>, <u>Show on Bottom</u>, <u>No Bottom Layout</u>.
- 25. From the **Activities Window** hide and display the bottom pane **Activity Details** form by clicking on the and buttons on the **Bottom Layout** toolbar.

Open the Activity Details form, right-click on a tab in the Activity Details form and select Customize Activity Details... then hide and display some tabs. Set the tabs as per the picture below:

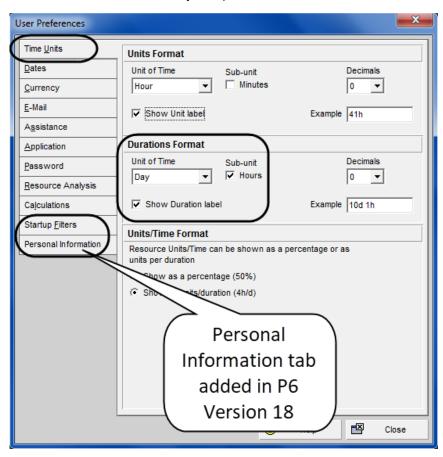


- 27. Close the project by selecting <u>File</u>, <u>Close All</u> and return to the <u>Projects Window</u>. From the <u>Projects Window</u>, ensure some bars are displayed by double-clicking in the bar area.
- Open the **User Preferences** form by selecting **Edit**, **User Preferences**...and select the method you wish to display the date from the **Dates** tab and set your options as per below, (people in the US may wish to use the **Month**, **Day**, **Year** option, but ensure you show the time in hours:

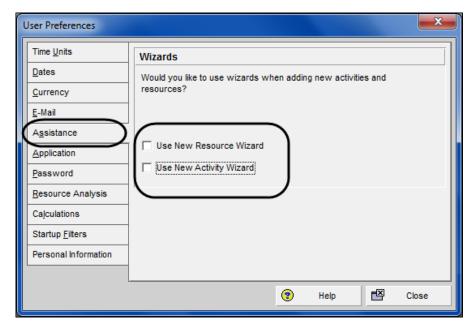


NOTE: It is strongly recommended that the time is always displayed as per the picture above so the user knows the time when Actual Start, Actual Finish and Constraints are applied because the software will often select 00:00, first minute of a day.

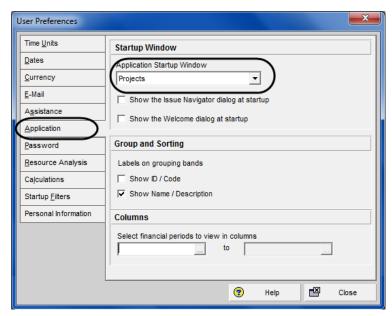
29. Select the **Time Units** tab and set your options as shown below:



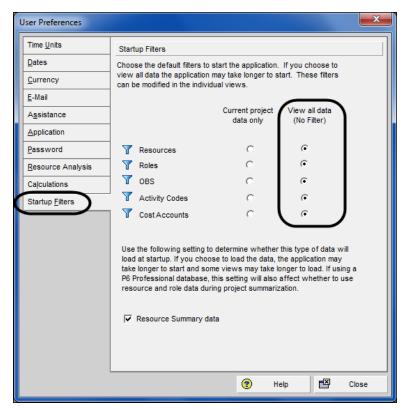
30. Select the **Assistance** tab and uncheck both **Wizards** as shown below because these make it slower to add activities and resources:



31. Select the **Application** tab and select the **Application Startup Window** as **Projects**. This will ensure the database opens at the **Project Window** each time you start up Primavera.



32. Select the **Startup Filters** and check **View all data (No Filter)** as this will ensure that when you open a one of the windows you will see all the database data and not a blank screen.



- 33. Close the **User Preferences** form.
- 34. Ensure all projects are closed by selecting **File**, **Close All**.

4.7 Workshop 2 – Creating Your Project



Background

You are an employee of Wilson International and are responsible for planning the Bid preparation required to ensure that a response to an RFQ (Request For Quote) from OzBuild Pty Ltd is submitted on time. While short-listed, you have been advised that the RFQ will be available on 06 December 2021 at 8:00 hrs (8:00 am) and you will be required to submit 3 bound copies of the proposal before 27 January 2022 at 16:00 hrs (4:00 pm).

NOTE: When multiple users are working in a single Professional database or using the Optional Client then:

- The Database Administrator or Instructor should create a unique EPS Node for each student to create their projects under.
- Each student should also be assigned a unique Project ID to use when creating their projects.

Assignment

- 1. Close any open projects.
- 2. Create a new project with the following information by selecting <u>File</u>, <u>New...</u> to open the **Create a New Project** wizard:
 - Select an appropriate EPS Node in your database to create the project or your nominated node when working in a shared database.
 - Project ID OZB.

NOTE: This Project ID may not be accepted if you are working in a shared database when there is another project with this Project ID. You may need to use another Project ID in this situation, such as OZB plus your initials.

- Project Name Bid for Facility Extension
- Planned Start Date 06 December 2021 at 08:00

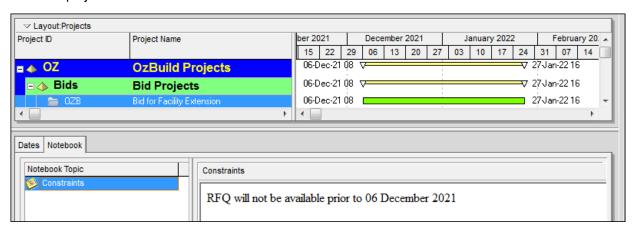
NOTE: Ensure that the 08:00 (8:00 AM) is added in this step. Forgetting to check and, if required, setting the time when assigning dates may lead to the schedule not calculating correctly.

- Must Finish By Leave Blank
- Responsible Manager Accept the default
- Rate Type Accept the default which is usually Price/Unit or Standard Rate
- Click Finish to create the project.
- 3. The project should now be open. Check the text in the top left side of the screen; the project name should be displayed.
- 4. Ensure you are in the **Projects Window**.
- 5. Ensure the project is selected by clicking on it.

- 6. Add the following project information in **Project Details** in the **Bottom Pane**:
 - Select your project in the Project Window by clicking on it.
 - In the **General** tab set the **Status** to **What-if**. The project needs to be open to change the **Status**.
 - Dates tab
 - Set the Data Date to 06 December 2021 at 08:00
 - Anticipated Start 06 December 2021 at 08:00
 - Anticipated Finish 27 January 2022 at 16:00

You should now see a bar in the Bar Chart above spanning these dates although there are no activities in the schedule. If no bar is displayed double-click in the Gantt Chart area level with the project.

- Add a Notebook Topic using a suitable topic such as Constraints, Project Status or Issues stating, "RFQ will not be available prior to 06 December 2021."
- 7. Your project should look like this:



NOTES:

The date format will be displayed according to the **User Preferences** settings by selecting **Edit**, **User Preferences**... and selecting the **Dates** tab. Your date format should display the time as per the picture above.

The **First day of week** dates are displayed in the Timescale are normally a Sunday or Monday. This display option is set by the Administrator. In the picture above the Start of week has been set as Monday and in the picture below, this has also been set as a Monday:

December 2021				Ja	anuary	/ 2022	2	
29	06	13	20	27	03	10	17	24

5.15 Workshop 3 – Maintaining the Calendars



Background

The normal working week at OzBuild Pty Ltd is Monday through Friday, 8 hours per day excluding public holidays. The installation staff works Monday through Saturday, 8 hours per day and the company observes the following holidays:

	2021	2022	2023	2024
New Year's Day	1 January	3 January*	2 January*	1 January
Easter	2 - 5 April	15 - 18 April	7 - 10 April	29 March- 1 April
Christmas Day	27 December*	26 December*	25 December	25 December
Boxing Day	28 December*	27 December*	26 December	26 December

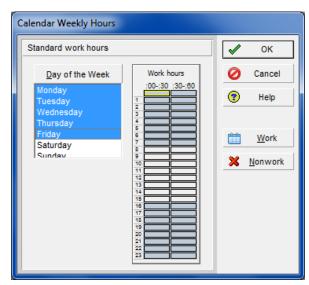
^{*} These holidays occur on a weekend and the dates have been moved to the next weekday.

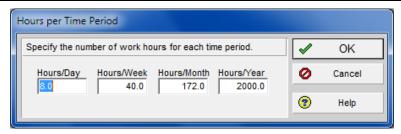
NOTE: Boxing Day is a holiday the day after Christmas celebrated in many countries.

Assignment

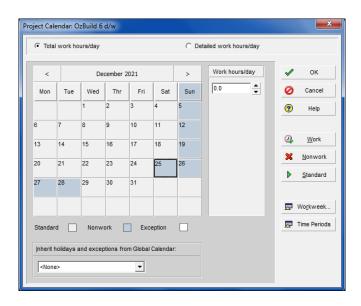
We will create two new calendars for this project, although we could use a standard calendar

- 1. Ensure your new OzBuild Bid project is open.
- 2. Select Enterprise, Calendars... to open the Calendars form,
- 3. Select the **Project** radio button,
- 4. Create a new Project Calendar titled "OzBuild 5 d/w" by clicking on the detailed button and copying an appropriate calendar.
- 5. Click on the button to open the **Calendars** form.
- 6. Select the **Detailed work hours/day** radio button.
- 7. Click on the Calendar Weekly Hours form.
- 8. Make the work hours from 08:00 to 16:00 without a lunch break from Monday to Friday and close the form.
- 9. Select <None> for Inherit holidays and exceptions from Global Calendar.
- 10. Click on the Form button and check the Hours per Time Period are the same as in the diagram below, if not then edit them and then close the form:

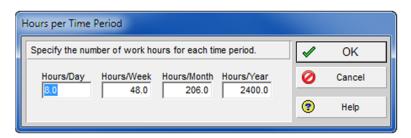




- 11. Add the holidays above in 2021 and 2022 only.
- 12. Check there are no pre-existing holidays in the source calendar that should be made into work days.



- 13. Create a new calendar titled "OzBuild 6 d/w" for the 6-day week by copying the same Global calendar.
- 14. Make the work hours from 8:00 to 16:00 from Monday to Saturday and close the form.
- 15. Select <None> for Inherit holidays and exceptions from Global Calendar.
- 16. Click on the _____ time Periods | button and check the Hours per Time Period are the same as in the diagram below, if not then edit them and then close the form:



- 17. Add the holidays above in 2021 and 2022 only.
- 18. Ensure Saturday 25 December 2021 and 1 January 2022 are made into Non-Work days.
- 19. Ensure Easter Saturdays are made into Non-Work days
- 20. Check there are no pre-existing holidays in the source calendar that should be made into work days.
- 21. Should you wish to make the first day of the week a Monday then select **Admin**, **Admin Preferences**, **General** tab and change the Starting Day of Week to Monday.

6.8 Workshop 4 – Creating the Work Breakdown Structure



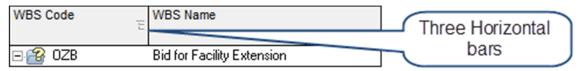
Background

A review of the scope identifies three deliverables:

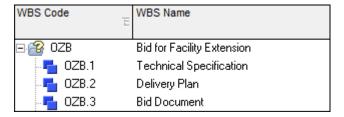
- Technical Specification
- Delivery Plan
- Bid Document

Assignment

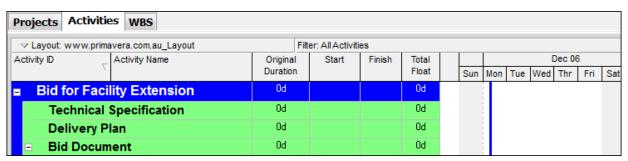
- 1. With your OzBuild project open click on the button to open the **WBS Window**.
- 2. Click in the WBS field header until the sort indicator is displayed as three horizontal bars, as displayed in the picture below. The WBS will now be displayed hierarchically now:



- 3. Select the Project Node and press the **Ins** key, or right-click and select **Add** to add the WBS Nodes and continue to add all three WBS Nodes for the three Phases above.
- 4. If the WBS Nodes are not indented, click the **WBS Code** heading as described in paragraph 2, until they are indented.
- 5. Use the arrows on the **Move** toolbar (right side of screen) to put them in the correct order and indent.
- 6. Your result should look like the following picture:

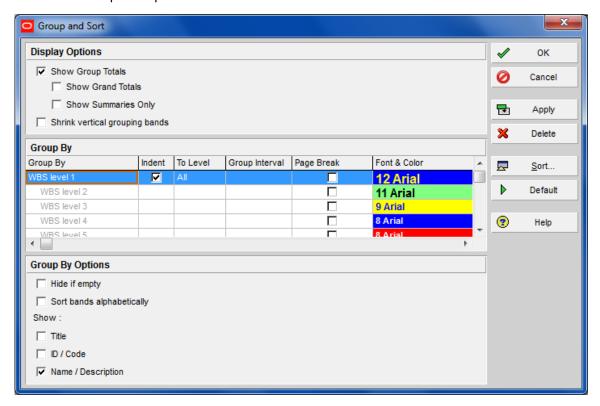


7. Move to the **Activities Window** by clicking on the **I**icon on the **Project** toolbar or clicking on the **Activities** tab. Your screen may look like this:



NOTE: Users may have to press the F5 key to refresh their data if the WBS is displayed incorrectly.

- 8. Your view may look different when you have not used the www.primavera.com.au_Layout.
- 9. The WBS will not be displayed for two reasons, in the **Group and Sort** form:
 - The Group By must be set to WBS level 1 and To Level set to All, and/or
 - Hide if empty must not be checked.
- 10. If the WBS is not displayed correctly select <u>View</u>, <u>Group and Sort by to open the Group and Sort form and set it as per the picture below:</u>



7.16 Workshop 5 – Adding Activities

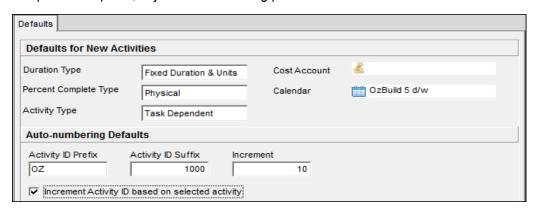


Background

We need to set up the defaults and add the activities to the schedule.

Assignment

 Go to the Projects Window, highlight the OzBuild project and select the Defaults tab in the Activity Details pane. If required, adjust all the following parameters.



2. Open the **Activities Window** and add the following activities under the appropriate WBS.

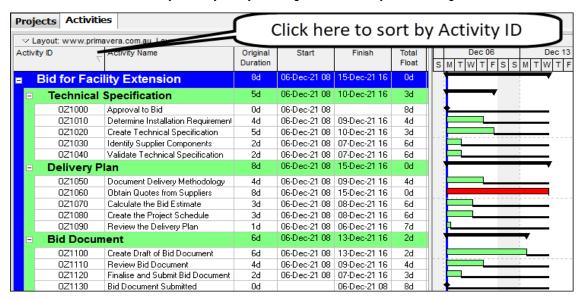
NOTE: If the New Activity wizard appears select the "do not show this wizard again."

3. Click on the Activity ID column header if the activities become out of order.

Activity ID	Activity Name	Orig Dur	Calendar	Activity Type
	Technical Specification			
OZ1000	Approval to Bid	0d	OzBuild 5d/w	Start Milestone
OZ1010	Determine Installation Requirements	4d	OzBuild 5d/w	Task Dependent
OZ1020	Create Technical Specification	5d	OzBuild 5d/w	Task Dependent
OZ1030	Identify Supplier Components	2d	OzBuild 5d/w	Task Dependent
OZ1040	Validate Technical Specification	2d	OzBuild 5d/w	Task Dependent
	Delivery Plan			
OZ1050	Document Delivery Methodology	4d	OzBuild 5d/w	Task Dependent
OZ1060	Obtain Quotes from Suppliers	8d	OzBuild 5d/w	Task Dependent
OZ1070	Calculate the Bid Estimate	3d	OzBuild 6d/w	Task Dependent
OZ1080	Create the Project Schedule	3d	OzBuild 6d/w	Task Dependent
OZ1090	OZ1090 Review the Delivery Plan		OzBuild 5d/w	Task Dependent
	Bid Document			
OZ1100	Create Draft of Bid Document	6d	OzBuild 5d/w	Task Dependent
OZ1110	Review Bid Document	4d	OzBuild 5d/w	Task Dependent
OZ1120	Finalise and Submit Bid Document	2d	OzBuild 5d/w	Task Dependent
OZ1130	Bid Document Submitted	0d	OzBuild 5d/w	Finish Milestone

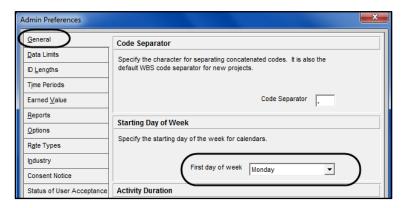
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- 4. Assign the **Activity Calendar** a **6-day per week calendar** to Activity IDs OZ1070 and OZ1080 in the **General** tab of the **Activity Details** form.
- 5. Reschedule by pressing **F9** and check that the Data Date is set at 6 December 2021 at 08:00.
- 6. Your answer should look like the following picture, but you may have different columns displayed and there may be different text on the bars.
- 7. Ensure the sort order is by Activity ID by clicking on the Activity ID Heading:



NOTE:

- 1. The picture above was created using the www.primavera.com.au_Layout, you will see different colors and columns when you use a different Layout. If you are unable to import this Layout, try selecting a different layout using the command <u>View</u>, <u>Layouts</u>, <u>Open Layout...</u> and select another layout from the list, such as the <u>Classic</u> or <u>Default WBS</u> Layout. If this does not solve your problem, then refer to the Layouts and Formatting sections of this book.
- 2. If your timescale week start date is different to the one above, for example the first day in the timescale is 5 Dec whereas the first day above is 6 Dec, then you may change this for all projects in the database if you have the access rights:
 - From the Professional Client (EPM) select <u>Admin</u>, <u>Admin Preferences</u> form, <u>General</u> tab,
 Starting Day of Week section and select Monday:



From the Web Client (EPPM) for the Optional Client, log into the web and select Administer,
 Application Settings, General tab, Starting Day of Week section.

8.12 Workshop 6 – Formatting the Bar Chart



Background

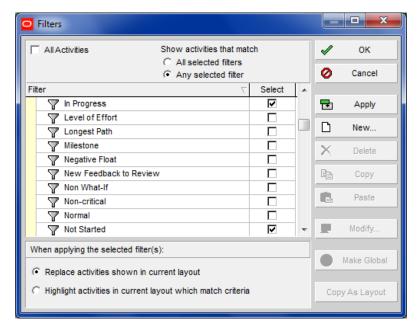
Management has received your draft report and requests that some changes be made to the presentation.

Assignment

Format your schedule as follows, but depending on the default settings, your Gantt Chart View may differ from that shown, e.g., there may be no summary bars:

- 1. You will not have to complete the Step 2 of this workshop if you have internet access and are able to download a layout from www.primavera.com.au.
 - If you have downloaded and applied the www.primavera.com_Layout.plf move to Step 3, DO NOT COMPLETE Step 2.
 - If you have NOT downloaded and applied the **www.primavera.com_Layout.plf** complete Step 2.
- 2. Format Bars, if you are unable to download the www.primavera.com_Layout.plf layout then:
 - To format the bars open the Bars form,
 - Click on the
 Default button to set the bars to the Primavera default settings,
 - Edit the **Float Bar** Filter (**Total Float** bar) so it only shows float for Not Started or In Progress activities. Ensure you select the **Any selected filter** in the **Filters** form:



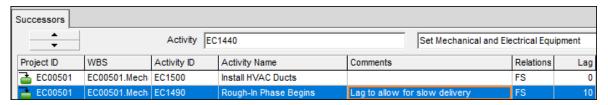


- Delete the Secondary Baseline & Tertiary Baseline bars,
- Move the Baseline bars and Baseline Milestones to the bottom of the Bars form to remove relationships on the Baseline bars,
- Add missing Project Baseline Milestone and format the Baseline bars as per the picture below, making them different colors:

Display	Name	Timescale	User S	User F	Filter	Preview
	Project Baseline Bar	Project Baseline Bar			Normal	
	Project Baseline Milestone	Project Baseline Bar			Milestone	▼ 7
	Primary Baseline	Primary Baseline Bar			Normal	
	Primary Baseline Milestone	Primary Baseline Bar			Milestone	Δ Δ

- Remove all text from all bars, except from the Current Bar Labels bar, by:
 - Clicking on the Bar Labels tab at the bottom,
 - Clicking on one bar at a time and using the button at the bottom (NOT SIDE) of the screen to delete the text line,
 - ➤ Change the **Current Bar Labels** bar filter to read All Activities and do not display.
- 3. Display the following bars:
 - Remaining Level of Effort
 - Actual Level of Effort
 - Actual Work
 - Remaining Work
 - Remaining Critical Work
 - Milestones
 - % Complete
 - Summary Bar
 - Float Bar (Total Float)
 - Negative Float Bar
- 4. Adding Columns:
 - Add Calendar and Activity Type columns, from the General section of the Columns form, to the right of the Activity Name column.
 - Adjust the column widths to a best fit by dragging the column header divider lines.
 - Display the Total Float column if not displayed.
- 5. Press the **F9** key and click the button which will schedule the project and calculate the float.
- 6. Adjusting Row Heights:
 - Change the Row Height to 30 points by selecting View, Table Font and Row and apply,
 - Now check the Optimize height by row content box, not exceeding 1 line per row and apply,
 - Now change the setting to 18 point height for all rows and apply.
 - Click on to close the form.

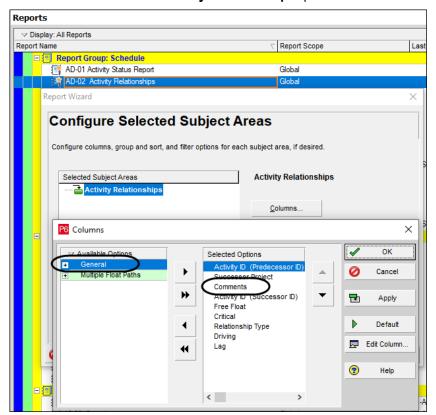
The comment is seen in both the Predecessor and Successor window of each relationship assigned a comment:



This is a very useful function and in the past one had to either use a Note or a UDF assigned to either the predecessor or successor activity to record notes about a relationship.

This function is also useful for recording changes to relationships.

The **Comments** column is available in the **Activity Relationship** report:



9.13 Workshop 7 – Adding the Relationships



Background

You have determined the logical sequence of activities, so you may now create the relationships.

Assignment

- 1. Display the **Predecessor** column from the **Lists** section of the **Columns** form, to the right of the Activity Name.
- 2. Input the logic below using several of the methods detailed in this chapter:

Activity ID		Activity Name	Predecessors	
=	Bid for Faci	ity Extension		
	Technical :	Specification		
	0Z1000	Approval to Bid		
	0Z1010	Determine Installation Requirements	0Z1000	
	0Z1020	Create Technical Specification	0Z1010	
	0Z1030	Identify Supplier Components	OZ1020	
	OZ1040	Validate Technical Specification	0Z1030	
	Delivery P	lan		
	0Z1050	Document Delivery Methodology	0Z1040	
	OZ1060	Obtain Quotes from Suppliers	0Z1030	
	0Z1070	Calculate the Bid Estimate	0Z1050, 0Z1060	
	OZ1080	Create the Project Schedule	0Z1070	
	0Z1090	Review the Delivery Plan	0Z1080	
	Bid Docum	ent		
	0Z1100	Create Draft of Bid Document	0Z1050	
	0Z1110	Review Bid Document	0Z1090, 0Z1100	
	0Z1120	Finalise and Submit Bid Document	0Z1110	
	0Z1130	Bid Document Submitted	0Z1120	

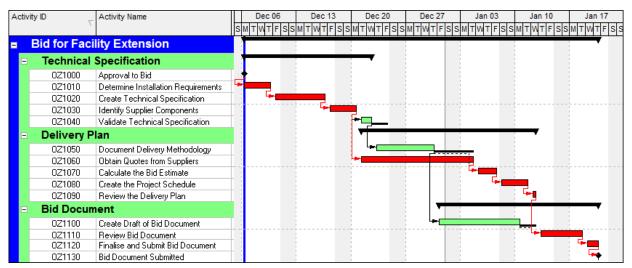
- 3. Press **F5 Refresh Data** if the relationships do not appear in columns.
- 4. Press **F9** or click on the button to schedule.
- 5. Hide and display the Logic Links using the icon. Leave them displayed.

continued...

Answer to Workshop 7

6. Format the columns as per the following picture:

Activ	ity ID $ abla$	Activity Name	Predecessors	Successors	Original Duration	Start	Finish	Total Float
П	Bid for Faci	lity Extension			31d	06-Dec-21 08	20-Jan-22 16	0d
Ξ	☐ Technical Specification ☐					06-Dec-21 08	22-Dec-21 16	2d
	0Z1000	Approval to Bid		0Z1010	0d	06-Dec-21 08		0d
	0Z1010	Determine Installation Requirement	0Z1000	0Z1020	4d	06-Dec-21 08	09-Dec-21 16	0d
	0Z1020	Create Technical Specification	0Z1010	0Z1030	5d	10-Dec-21 08	16-Dec-21 16	0d
	0Z1030	Identify Supplier Components	0Z1020	OZ1040, OZ1060	2d	17-Dec-21 08	20-Dec-21 16	0d
	OZ1040	Validate Technical Specification	0Z1030	0Z1050	2d	21-Dec-21 08	22-Dec-21 16	2d
	= Delivery Plan					21-Dec-21 08	12-Jan-22 16	0d
	0Z1050	Document Delivery Methodology	0Z1040	0Z1070, 0Z1100	4d	23-Dec-21 08	30-Dec-21 16	2d
	0Z1060	Obtain Quotes from Suppliers	0Z1030	0Z1070	8d	21-Dec-21 08	04-Jan-22 16	0d
	0Z1070	Calculate the Bid Estimate	OZ1050, OZ1060	0Z1080	3d	05-Jan-22 08	07-Jan-22 16	0d
	OZ1080	Create the Project Schedule	0Z1070	0Z1090	3d	08-Jan-22 08	11-Jan-22 16	0d
	0Z1090	Review the Delivery Plan	0Z1080	0Z1110	1d	12-Jan-22 08	12-Jan-22 16	0d
	Bid Document					31-Dec-21 08	20-Jan-22 16	0d
	0Z1100	Create Draft of Bid Document	0Z1050	0Z1110	6d	31-Dec-21 08	10-Jan-22 16	2d
	0Z1110	Review Bid Document	OZ1090, OZ1100	0Z1120	4d	13-Jan-22 08	18-Jan-22 16	0d
	0Z1120	Finalise and Submit Bid Document	0Z1110	0Z1130	2d	19-Jan-22 08	20-Jan-22 16	0d
	0Z1130	Bid Document Submitted	0Z1120		0d		20-Jan-22 16	0d



10.8 Workshop 8 – Scheduling Calculations and Activity Network View

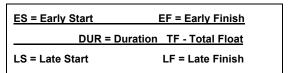


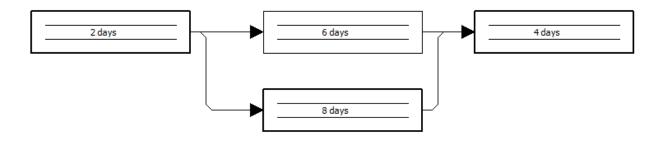
Background

We want to practice calculating early and late dates with a simple manual exercise.

Assignment

- 1. Apply the Activity Network View of your OzBuild schedule by clicking on the icon.
- 2. Click on each node of the WBS and notice how only activities assigned to each node are displayed.
- 3. Click on the three Zoom icons and notice their effect on the schedule.
- 4. Calculate the Early Dates, Late Dates, and Total Float for the following activities, assuming a Monday-to-Friday working week and the first activity starting on 1 April.







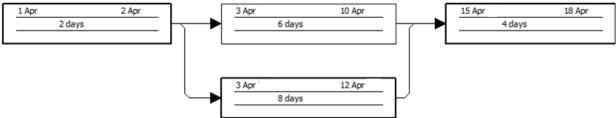
5. See over the page for the answer:



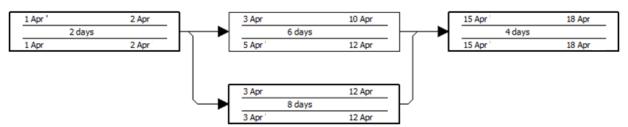
Early Start		Early Finish
	Duration	Float
Late Start		Late Finish



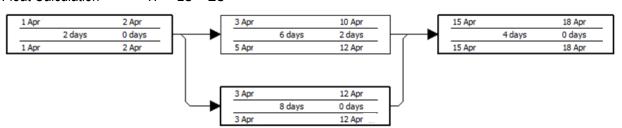
Forward Pass EF = ES + DUR – 1



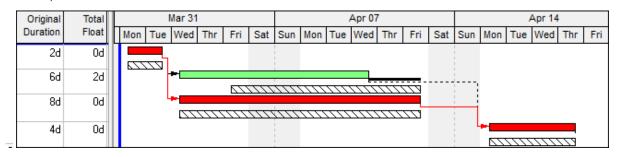
Backward Pass LS = LF - DUR + 1



Float Calculation TF = LS – ES



The Early Bar is the upper bar, the Late Bar the lower bar and the end of the Total Float bar, which is the thin bar, ends at the Late Finish date.



11.6 Workshop 9 – Constraints



Background

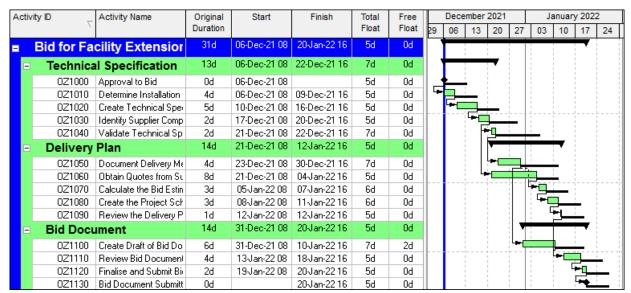
Management has provided further input to your schedule as the client has said that they require the submission on or before 27 January 2022.

Assignment

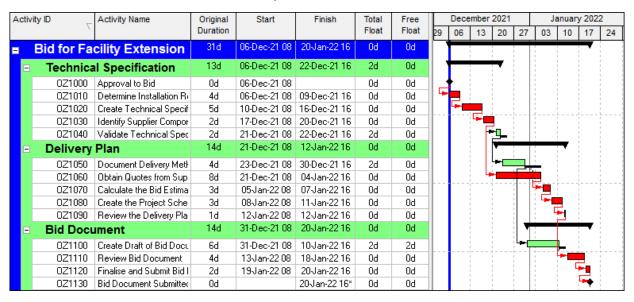
- 1. Go to the **Activities Window** and observe the calculated finish date and the critical path of the project before applying any constraints.
- 2. Bars Display the Float Bar (Total Float Bar) and Neg Float Bar (Negative Float Bar).
- 3. Columns display the columns as per the picture below.
- 4. The client has said that they require the submission on 27 January 2022. Apply a Finish On or Before constraint and assign a constraint date of 27 January 2022 16:00 to the Bid Document Submitted activity from the Status tab.

NOTE: The author has in the past found that constraint times have not always matched the activity calendar start times (e.g., 08:00) and finish times (e.g., 16:00) and have been set to 00:00. If you find the floats do not calculate correctly, then open the **User Preferences** form and display the time. Review if the times are correct and if not edit them to suit your calendar.

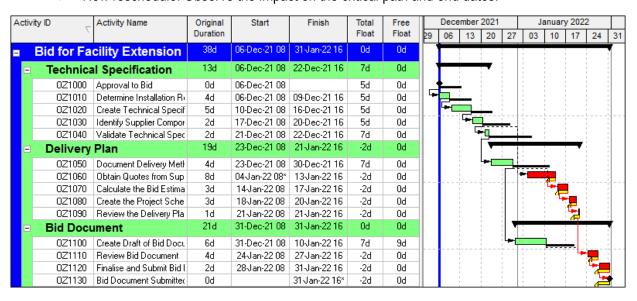
- 3. Schedule the project. There should be no change in the Total Float as a **Finish On or Before** constraint will not develop Positive Float.
- 4. Remove the Finish On or Before constraint from the Bid Document Submitted activity.
- Now move to the Project Window, Dates tab and assign a Project Must Finish By constraint of 27
 January 2022 16:00. Return to the Activities Window and reschedule. All activities now have their
 float calculated to this date and have positive float.



- 6. Remove **Project Must Finish By** constraint of 27 January 2022 16:00 (by highlighting the date and pressing the **Delete** key and tab out of the cell to ensure the date has been deleted.
- 7. Schedule the project and the Critical Path should return.
- 8. Apply a **Finish On or Before** constraint and assign a constraint date of 27 January 2022 16:00 to the **Bid Document Submitted** activity and schedule, the Critical Path will remain.

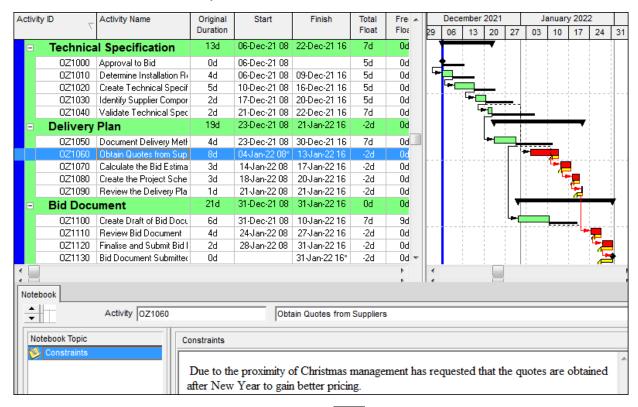


- Due to the proximity to Christmas, management has requested that you delay the **Obtain Quotes**from **Suppliers** until first thing in the New Year (04 January 2022). Consensus is that a better
 response and sharper prices will be obtained after the Christmas rush.
 - ➤ To achieve this, set a **Start On or After** constraint date of 04 January 2022 08:00 on the **Obtain Quotes from Suppliers** activity.
 - Now reschedule. Observe the impact on the critical path and end dates.

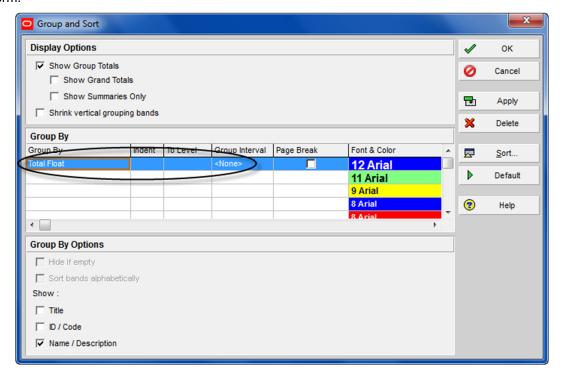


- 10. You will notice that the Finish Constraint on the Bid Document Submitted activity has created some negative float, which is displayed in the Total Float column and the Negative Float bar.
- 11. Display the Notebook tab in the **Activities Window**.

12. Add a Notebook Topic against the **Obtain Quotes from Supplier** activity indicating why there is a constraint on 03 January 2022.

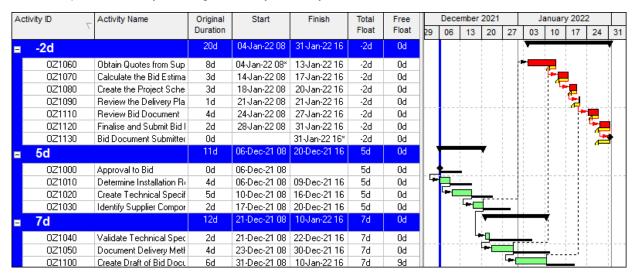


13. Open the **Group and Sort** form by clicking on the icon and group by **Total Float** and close the form.



continued...

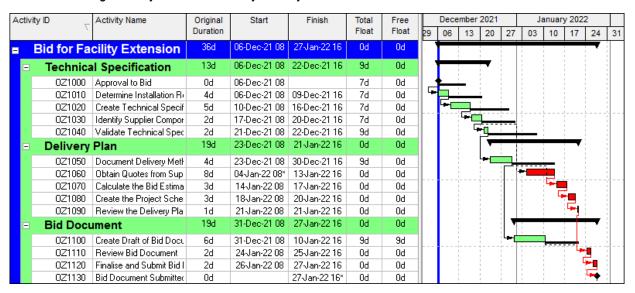
14. Sort on duration (by clicking in the **Original Duration** column) to bring the longest activity to the top. It is normally the longest activity that may be shortened.



15. After review, it is agreed that 2 days may be deducted from **Review Bid Document** activity. Change the duration of this activity to 2 days, reschedule:



16. Now organize by WBS and sort by Activity ID:



17. Notice that activities with constraints have an "*" by their dates.

12.4 Workshop 10 – Organizing Your Data



Background

Having completed the schedule, you may report the information with different Layouts.

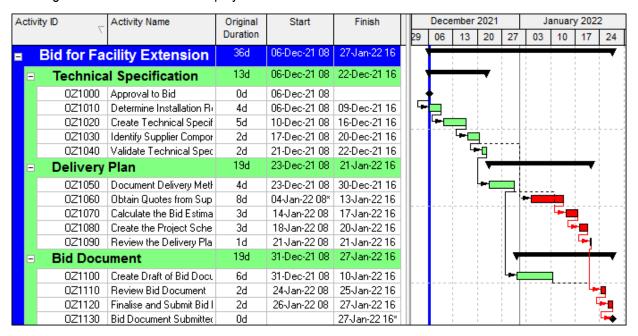
Assignment

Display your project in the following formats, noting the different ways you may represent the same data.

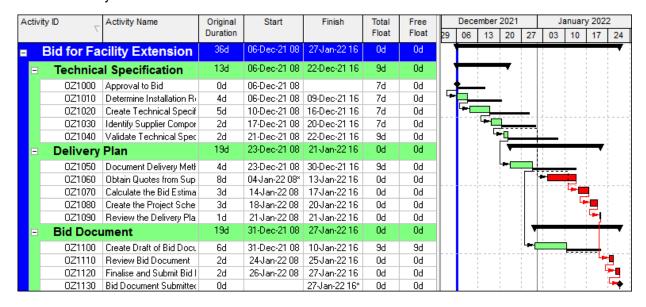
- 1. Hide and display the relationships, use the icon.
- 2. Display the **Activity Network**, use the licon.
- 3. Select **Zoom in**, **Zoom out** and **Best fit** using the eigens.
- 4. Scroll up and down or click the **WBS** Nodes on the left side of the screen. You will notice that only the Activities associated with the highlighted WBS are displayed.
- 5. Ctrl-click and select two WBS Nodes and you will see the relationships between the activities in each WBS Node.
- 6. Display the **Activity Table** by clicking on the icon.
- 7. Now display the Gantt Chart by clicking on the [3] icon
- 8. Hide and display the **Bottom** pane by clicking on the and icons; you may need to add these icons to your toolbar.
- 9. With the bottom pane displayed click the icon to show the **Trace Logic** form.
- Right-click in the Trace Logic form, select Trace Logic Options... and change the number of Predecessor and Successor Levels displaying 1, 2 and 3 levels and note the change in the layout.
- 11. Click on the predecessors and successors in each option and observe the changes.
- 12. Click on different activities in the upper pane and see the effect on the Trace Logic form.
- 13. Click on the icon to display the **Activity Details** form.

continued....

14. Create a new layout titled OzBuild Workshop 10 – Without Float, making it a User Layout, displaying the columns and formatting the bars per the following picture; the Total Float and Negative Float bars are not displayed:



- 15. Save this layout.
- 16. Make a copy of it titled OzBuild Workshop 10 With Float, making it a User Layout, displaying the columns and formatting the bars per the following picture; this is displaying the Total Float and Negative Float bars:
- 17. Save this layout.



13.4 Workshop 11 - Filters



Background

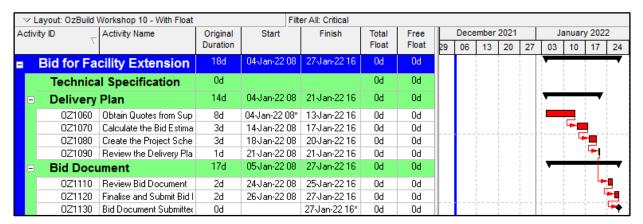
Management has asked for reports on activities to suit their requirements.

Assignment

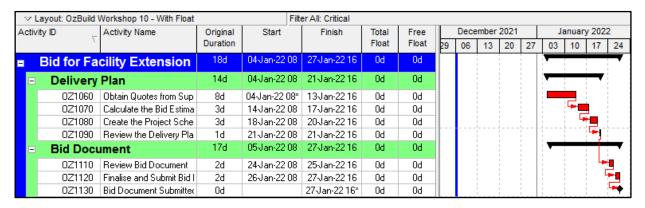
Ensure your **OzBuild Bid** project is open.

- 1. Apply the **OzBuild Workshop 10 With Float** layout.
- 2. They would like to see all the critical activities.
 - Ensure a column showing the Total Float is displayed, and
 - Apply the Critical activities filter.

You will see only activities that are on the critical path and their associated summary activities.



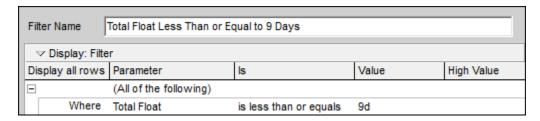
3. Open the **Group and Sort** form and check the **Hide if empty** box and notice the **Technical Specification** band is hidden.



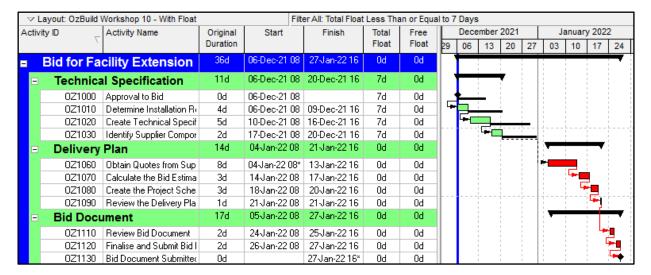
continued...

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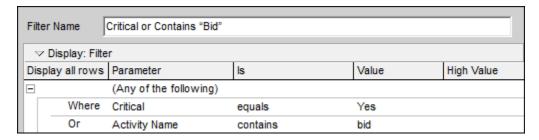
- 4. Now apply some other filters such as the **Milestone**, **Has Start Constraint** and **Has Finish Constraint**.
- 5. Management would like to see all the activities with float less than or equal to 9 days:
 - Create a new filter titled: Total Float Less Than or Equal to 9 Days, and
 - Add the condition to display a total float of less than 9 days.



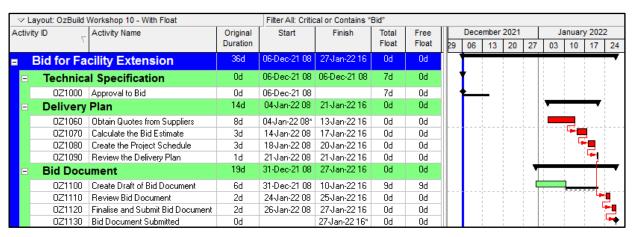
- Close the Filter form,
- Click on the All Activities check box to ensure all activities are displayed,
- > Apply the new filter,
- You should find that activities with more than 7 days float are hidden:



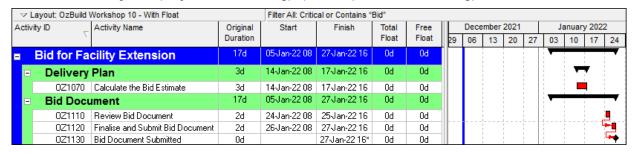
- 6. They would like to see all the activities that are critical or contain the word "Bid".
 - Copy the Critical filter,
 - Edit the filter title to read: Critical or Contains "Bid"
 - Edit the top line to read (Any of the following),
 - Add the condition: Or Name (Activity Name) contains Bid, and



- Note: The text is not case sensitive,
- Apply the filter.



7. Now change the (Any of the following) option to (All of the following) and see the effect.



- 8. There should be fewer activities as it is now displaying activities that meet both conditions.
- 9. Now apply the **All Activities** filter to display all the activities.

14.6 Workshop 12 - Printing



Background

We want to issue a report for comment by management.

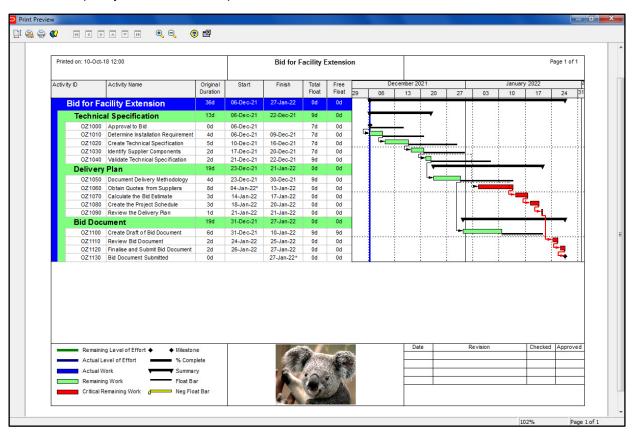
Assignment

Open your **OzBuild Bid** project from the previous workshop and complete the following steps:

- 1. Remove any filter.
- Apply the OzBuild Workshop 10 With Float layout.
- 3. From the **User Preferences**, **Dates** tab select **Do not show time**. It is not normal to display the time when submitting a schedule for review, but it must be displayed when manipulating a schedule.
- 4. Select <u>File</u>, <u>Print Preview</u> and click the icon on the <u>Print toolbar</u> to open the <u>Page Setup</u> form.
- 5. In the Page tab select:
 - > Orientation Landscape
 - ➤ Adjust to 100%
 - Fit to 0 page(s) wide by 0 pages tall
 - Fit timescale to: 1 page wide
 - ➤ Paper size: A4 or Letter
- 6. In the **Margins** tab set all the settings to 0.5", except for the **Top**: settings which should to be set to 0.75" to allow space for binding.
- 7. In the **Header** tab:
 - Divide Into: 3 Sections
 - Include on: All Pages, so this will repeat on every page
 - ➤ Height: 0.5
 - Section 1, insert as Text/Logo Printed on: [date] [time] Arial Regular 8 to the left
 - Section 2, insert as Text/Logo [project_name] Arial Bold 12 in the middle
 - Section 3, insert as Text/Logo Page [page_number] of [total_pages] Arial Regular 8, aligned to the right
- 8. In the **Footer** tab:
 - Divide Into: 3 Sections
 - Include on: First Page, so this will only be printed on the first page
 - ➤ Height: 1.25
 - Section 1 Gantt Chart Legend

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- Section 2 Picture Find a suitable picture to put in
- Section 3 Revision Box
- Adjust widths as required.
- 9. In the **Options** tab:
 - > Set the Timescale Start: from the Project Start minus 5 days and Timescale Finish: to the Project Finish plus 5 days,
 - ➤ Show the Activity Table, All Columns, Grid Lines and Gantt Chart.
- 10. Apply the Layout and click OK
- 11. Compare your result with the picture below:



12. From the **User Preferences**, **Dates** tab select **24 hour (13:00)** and do not check **Show minutes**. This will ensure you know the time that activities will start and finish when you assign progress.

15.5 Workshop 13 – WBS, LOEs and Setting the Baseline



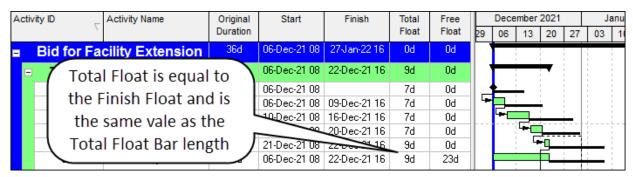
Background

We will first look at how WBS and LOE activities work and then set a Baseline.

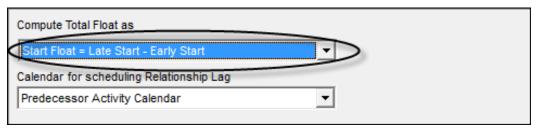
Assignment - WBS Activity

Open your **OzBuild Bid** project file and complete the following steps:

- 1. Apply the **OzBuild 10 With Float** layout
- 2. From the **User Preferences**, **Dates** tab select **24 hour**.
- 3. Create a new activity under the **Bid Document** WBS Node:
 - ➤ Activity ID OZ1140
 - Titled WBS Activity and
 - Assign it an Activity Type of WBS Summary using the Activities Window, General tab.
- 4. Schedule to see how it calculates the Float Bar length.
- 5. Drag the WBS activity to the **Delivery Plan** WBS Node and schedule to see how it operates.
- 6. Drag the WBS activity to the **Technical Specification** WBS Node and schedule:

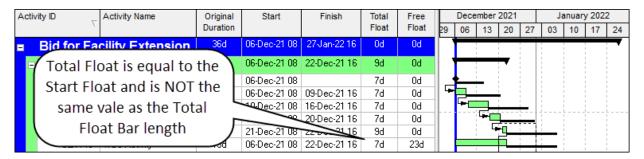


7. Select <u>Tools</u>, **Schedule**..., **Options** and change the **Compute Total Float** to **Start Float**: = Late Start – Early Start



continued...

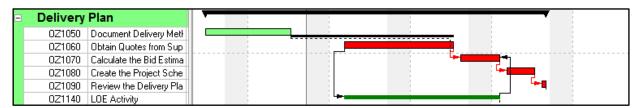
8. Schedule and you will see that the float value is now the same value as the Start Float, but the Float Bar still shows the Finish Float Value:



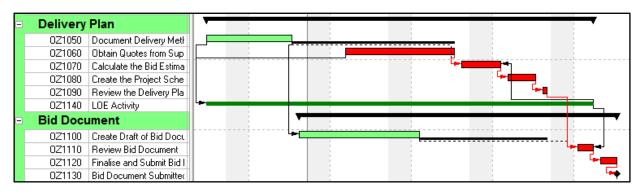
Go to the Schedule Options form and change the Compute Total Float to Finish Float and schedule.

Assignment - LOE Activity

- 10. Apply the **OzBuild 10 Without Float** Layout
- 11. Change the **Activity Type** of the WBS Activity to a **Level of Effort** and rename it to **LOE Activity**,
- 12. Open the Bars form and ensure LOE bars are displayed,
- 13. Drag activity OZ1140 to the **Delivery Plan** WBS Node and sort on Activity ID,
- 14. Add OZ1060 SS OZ1140 and OZ1140 FF OZ1070 relationships and see how it calculates.



15. Add OZ1050 SS OZ1140 and OZ1140 FF OZ1110 relationships and see how it calculates.



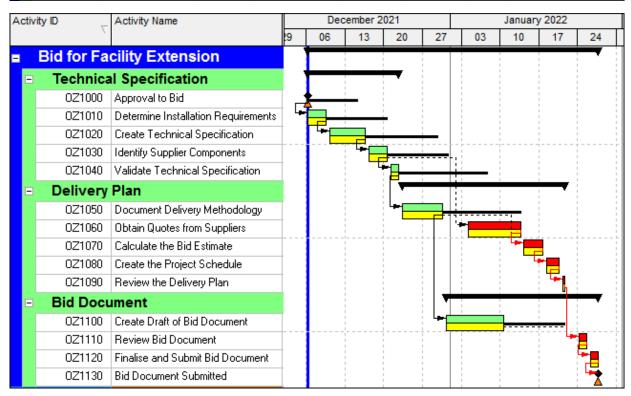
16. Delete the LOE activity.

Assignment - Setting a Baseline

- 17. Earned value calculation settings:
 - If you are using a PPM database you should check that the <u>Admin</u>, <u>Admin Preferences...</u>, Earned Value tab has the Earned value calculation set to <u>At Completion values with current dates</u> or <u>Budget Values with current dates</u>. You may not be able to change this if you do not have the necessary access.
 - If you are using a EPPM database you should find out what the Earned value calculation option is set to. It should be set to At Completion values with current dates or Budget Values with current dates.
 - ➤ If the Earned value calculation is set to Budget values with planned dates or Planned values with planned dates the Baseline has progress, then the Planed Dates will be read and the Baseline bars may be wrong.
- 18. Select **Project**, **Maintain Baselines...** and save a copy of the current project as a Baseline and title it **Bid for Facility Extension Baseline**.
- 19. Assign an appropriate **Baseline Type**, such as **Customer Sign-Off**, (the options may vary depending on your database) and close the form.
- 20. Select <u>Project</u>, <u>Assign Baselines...</u> and make this your <u>Project Baseline</u> and <u>Primary Baseline</u> and close the <u>Assign Baselines</u> form. This ensures that any baseline bar will show a real baseline and not the Planned Dates.
- 21. Apply the **OzBuild 10 With Float** layout, do not save the current layout, and save this as a new layout titled **OzBuild Workshop 13 Baseline**.
- 22. Create, if required, and display the following bars:
 - All current schedule bars which are Actual Work, Remaining Work and Critical Remaining Work, Milestones and Summary,
 - > % Complete Bar,
 - Float Bar (Total Float) and Neg Float Bar (Negative Float),
 - ➤ The Project Baseline Bar and Project Baseline Milestones,
 - For clarity ensure no text is displayed and adjust the row height if required.
- 23. Display the following columns:
 - Activity ID
 - Activity Name
 - Activity % Complete
 - Original Duration
 - Remaining Duration
 - > Start
 - > Finish
 - Total Float
 - Variance BL Project Finish Date

- 24. Make sure the Timescale is daily or weekly.
- 25. Show the time in 24-hour format, but do not show the minutes by selecting **Edit**, **User Preferences...**, **Dates** tab.
- 26. Save your layout.
- 27. Check your answer against the diagrams below:

Ac	tivity II	D ~	Activity Name	Activity % Complete	Original Duration	Remaining Duration	Start	Finish	Total Float	Free Float	Variance - BL Project Finish Date
	Bi	d for Fa	cility Extension		36d	36d	06-Dec-21 08	27-Jan-22 16	Od	Od	Od
П	= -	Technica	l Specification		13d	13d	06-Dec-21 08	22-Dec-21 16	9d	0d	0d
П		0Z1000	Approval to Bid	0%	0d	0d	06-Dec-21 08		7d	0d	0d
П		0Z1010	Determine Installation R	0%	4d	4d	06-Dec-21 08	09-Dec-21 16	7d	0d	0d
П		0Z1020	Create Technical Specif	0%	5d	5d	10-Dec-21 08	16-Dec-21 16	7d	0d	0d
П		0Z1030	Identify Supplier Compor	0%	2d	2d	17-Dec-21 08	20-Dec-21 16	7d	0d	0d
П		0Z1040	Validate Technical Spec	0%	2d	2d	21-Dec-21 08	22-Dec-21 16	9d	0d	0d
	- 1	Delivery	Plan		19d	19d	23-Dec-21 08	21-Jan-22 16	0d	0d	0d
П		0Z1050	Document Delivery Meth	0%	4d	4d	23-Dec-21 08	30-Dec-21 16	9d	0d	0d
П		0Z1060	Obtain Quotes from Sup	0%	8d	8d	04-Jan-22 08*	13-Jan-22 16	0d	0d	0d
П		0Z1070	Calculate the Bid Estima	0%	3d	3d	14-Jan-22 08	17-Jan-22 16	0d	0d	0d
П		0Z1080	Create the Project Sche	0%	3d	3d	18-Jan-22 08	20-Jan-22 16	0d	0d	0d
П		0Z1090	Review the Delivery Pla	0%	1d	1d	21-Jan-22 08	21-Jan-22 16	0d	Od	0d
	- 1	Bid Docu	ıment		19d	19d	31-Dec-21 08	27-Jan-22 16	0d	0d	0d
П		0Z1100	Create Draft of Bid Docu	0%	6d	6d	31-Dec-21 08	10-Jan-22 16	9d	9d	0d
		0Z1110	Review Bid Document	0%	2d	2d	24-Jan-22 08	25-Jan-22 16	0d	0d	0d
		0Z1120	Finalise and Submit Bid I	0%	2d	2d	26-Jan-22 08	27-Jan-22 16	0d	0d	0d
		0Z1130	Bid Document Submitted	0%	0d	0d		27-Jan-22 16*	0d	0d	0d



Note: For clarity the baseline above has been made thicker than would be viewed using the primavera.com.au layout and displayed in yellow for people viewing the book in black and white.

16.12 Workshop 14 – Progressing and Baseline Comparison



Background

At the end of the first week you have to update the schedule and report progress and slippage.

Assignment

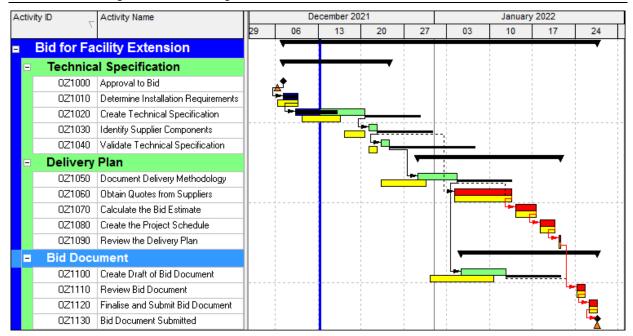
- 1. We are now going to update the schedule as at the end of the first week.
- Update the activities in the Activities, bottom pane Status tab or by adding the Actual Start and Actual Finish columns with the following information; ensure all activities are Physical % Complete:

Δ	ctiv	ity ID	Activity Name	Actual Start	Actual Finish	Activity % Complete	Remaining Duration
Е		Bid for Fa	cility Extension	07-Dec-21 08			31d
	Е	Technica	l Specification	07-Dec-21 08			10d
		0Z1000	Approval to Bid	07-Dec-21 08		100%	0d
		0Z1010	Determine Installation Requirements	07-Dec-21 08	09-Dec-21 16	100%	0d
		OZ1020	Create Technical Specification	09-Dec-21 08		60%	6d
		0Z1030	Identify Supplier Components			0%	2d

- 3. Reschedule the project by pressing F9 to open the Schedule form:
 - ➤ Change the Current Data Date to 13-Dec-21 08:00, that will be Monday morning,
 - ➤ Open the **Schedule Options** form by clicking on the **Logic** is selected,
 - > Close the **Schedule Options** form and
 - > Click on the schedule to reschedule.
 - > Check the answer in the following pictures.

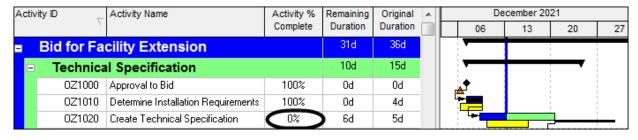
Acti	vity ID	Activity Name	Activity % Complete	Remaining Duration	Original Duration	Start	Finish	Total Float	Free Float	Variance - BL Project Finish
	Bid for Fa	cility Extension		31d	36d	07-Dec-21 08 A	27-Jan-22 16	0d	Od	04
E	Technica	al Specification		10d	15d	07-Dec-21 08 A	24-Dec-21 16	7d	0d	-2d
ı	0Z1000	Approval to Bid	100%	0d	0d	07-Dec-21 08 A				-1d
	OZ1010	Determine Installation Requirements	100%	0d	4d	07-Dec-21 08 A	09-Dec-21 16 A			0d
П	OZ1020	Create Technical Specification	60%	6d	5d	09-Dec-21 08 A	20-Dec-21 16	5d	0d	-2d
П	OZ1030	Identify Supplier Components	0%	2d	2d	21-Dec-21 08	22-Dec-21 16	5d	0d	-2d
П	OZ1040	Validate Technical Specification	0%	2d	2d	23-Dec-21 08	24-Dec-21 16	7d	0d	-2d
E	Delivery	Plan		17d	17d	29-Dec-21 08	21-Jan-22 16	0d	0d	0d
П	OZ1050	Document Delivery Methodology	0%	4d	4d	29-Dec-21 08	04-Jan-22 16	7d	0d	-2d
ı	OZ1060	Obtain Quotes from Suppliers	0%	8d	8d	04-Jan-22 08*	13-Jan-22 16	0d	0d	0d
ı	OZ1070	Calculate the Bid Estimate	0%	3d	3d	14-Jan-22 08	17-Jan-22 16	0d	0d	0d
ı	OZ1080	Create the Project Schedule	0%	3d	3d	18-Jan-22 08	20-Jan-22 16	0d	0d	0d
ı	OZ1090	Review the Delivery Plan	0%	1d	1d	21-Jan-22 08	21-Jan-22 16	0d	0d	0d
E	Bid Docu	ıment		17d	17d	05-Jan-22 08	27-Jan-22 16	0d	0d	0d
П	0Z1100	Create Draft of Bid Document	0%	6d	6d	05-Jan-22 08	12-Jan-22 16	7d	7d	-2d
	0Z1110	Review Bid Document	0%	2d	2d	24-Jan-22 08	25-Jan-22 16	0d	0d	0d
	0Z1120	Finalise and Submit Bid Document	0%	2d	2d	26-Jan-22 08	27-Jan-22 16	0d	0d	0d
	0Z1130	Bid Document Submitted	0%	0d	0d		27-Jan-22 16*	0d	0d	0d

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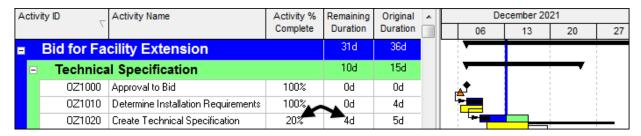


NOTE: The lower bar is the Baseline and delays to activities created by the late scheduling of the **Create Technical Specification** activity is clear in the picture above.

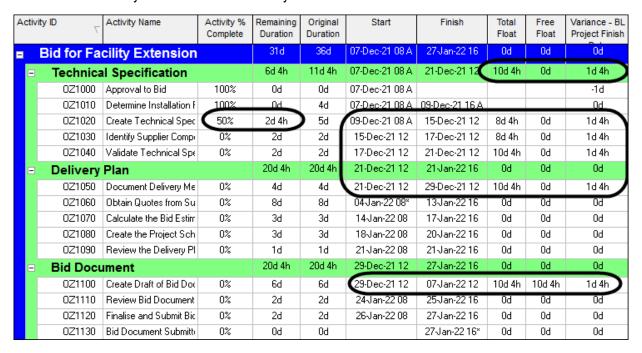
- 4. If you do not receive the same answer then check that all your activities are Physical % Complete.
- 5. Open the General tab of the Create Technical Specification activity and change the % Complete Type to Duration. Reschedule and the % Complete will change to 0%. A link is now established between the % Complete and Remaining Duration and therefore the % Complete and Remaining Duration may not be entered independently from the Activity % Complete. The Activity % Complete Value is zero because the Remaining Duration is greater than the original duration.



6. Enter 20% Complete against the **Create Technical Specification** activity in the **Status** tab, the Remaining Duration will reduce to 4 days and you will notice the link between the Activity % Complete and Remaining Duration.



- 7. Now change the % Complete for the **Create Technical Specification** activity to 50%.
- 8. Reschedule.
- Ensure you are showing the Duration Sub-unit of Hours by opening the <u>Edit</u>, <u>User</u>
 Preferences... Time Unit tab and check the Duration Format Sub-unit Hours box and check
 Show Duration label.
- 10. This has resulted in the Remaining Duration no longer being expressed in whole days and activities which are two days long, for example Activity OZ1030, now spanning three days because they start and finish at midday.



- 11. The situation of having durations that are not round days is often not desirable and may be prevented by using Physical % Complete and entering the Remaining Duration in whole days.
- 12. Save the layout as **OzBuild Workshop 14 –Baseline Comparison**.

18.4 Workshop 15 – Adding Resources to the Database



Background

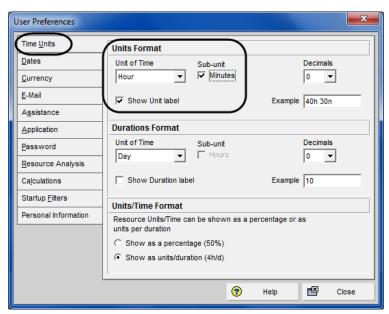
This workshop will only use Resources and these must now be added to the database.

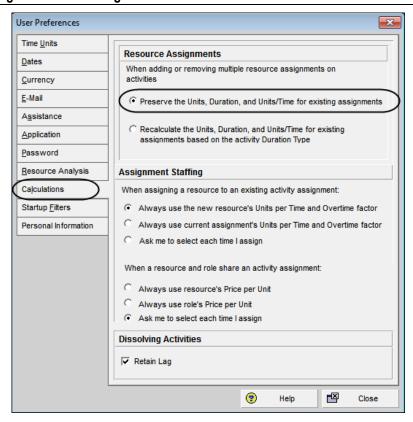
We have updated our current project, but we need a project that has not been updated for the next activity of assigning resources. Therefore, we will have to restore the Baseline schedule saved prior to updating the current schedule to provide an un-progressed schedule for this exercise.

NOTE: If you are working in a database with other people completing this workshop then each person's Resource ID will have to be unique, say by adding your initials at the end of each Resource ID. A training course leader or database administrator should advise here.

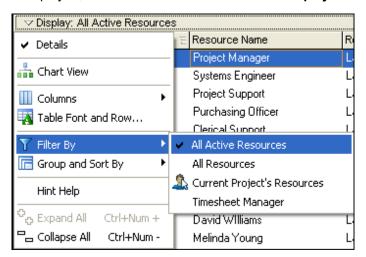
Assignment

- Select <u>Project</u>, <u>Assign Baselines</u>... and remove all project Baselines by setting the Baselines to the <u>Current Project</u>.
- NOTE: Baseline Bars in the Gantt Chart will now display the Planned Dates and these should be removed, using the Bars dialogue box.
- 3. Restore the project using **Project**, **Maintain Baselines**....
- 4. Go to the **Projects Window** where the restored baseline file will be visible.
- 5. Rename the restored Baseline project **Bid for Facility Extension Resourced Schedule** and change the Project ID to **OZB-R**.
 - **NOTE:** Users sharing a database will need to use unique Project IDs.
- Open the restored project.
- 7. Open the **User Preferences** form, set the **Calculations** and **Time Units** tab as per the following pictures.





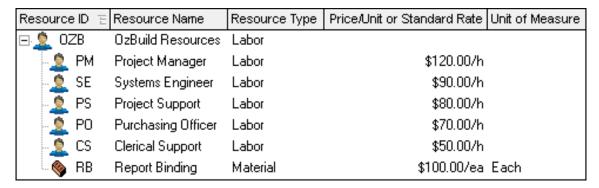
- 8. Now open the **Resource Window**.
- 9. If no resources are displayed, then select all resources from the **Display:** menu:



10. Format the columns in the **Resources Window** as in the following picture.

- 11. Add the resources as in the following picture:
 - If the New resource Wizard is displayed then close it as it is quicker just to type in resources.
 - The **Unit of Measure** may not be available in your database, so either add it in the **Admin**, **Admin Categories**..., or do not assign one if you do not have the access right to create a **Unit of Measure**.
 - > Price/Unit must be entered in the bottom pane, it may be viewed but not added in a column.

NOTE: If you are working in a database with other people completing this workshop then each person's Resource ID will have to be unique, say by adding your Initials at the end of each Resource ID.



12. You may need to use the arrows on the **Move** toolbar to move the resources to the correct indent location:



- 13. Set the **Default Units/Time** to 8 hours per day for all the resources.
- 14. Set the calendar for all resources to be a Global **5-**Day Workweek, with 8 hours per day, yours may be called a Standard 5 Day/Week or similar.
- 15. Check Calculate Costs from units and Auto compute actuals for each resource.
- 16. Ensure that the resource Effective Date in the Units & Prices tab is set to 1 December 2021 or earlier otherwise the Resource will be delayed beyond this date when Leveling the resources in the Resource Optimization Workshop.

19.10 Workshop 16 – Assigning Resources and Expenses to Activities



Background

The Resources must now be assigned to their specific activities.

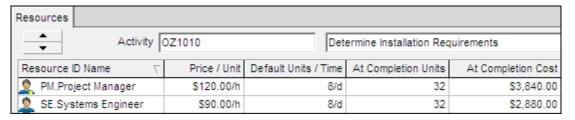
Assignment

Open the OzBuild with Resources project and complete the following steps.

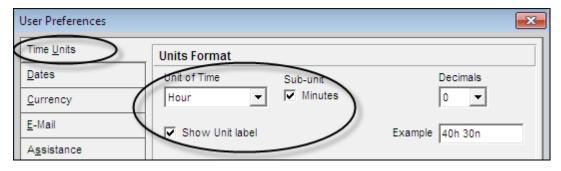
- Apply the OzBuild Workshop 10 Without Float layout and save as OzBuild Workshop 16 Assigning Resources layout.
- 2. In the **Activities Window** display the **Gantt Chart** in the top view and **Resources** and **Expenses** tab of the **Activities Details** form in the bottom view.
- 3. Assign an Expense to the **Create Technical Specification** activity as per the picture below:



4. Format the **Resources** tab with the columns shown in the following picture:



5. Set your **User Preferences** as in the picture below:



continued....

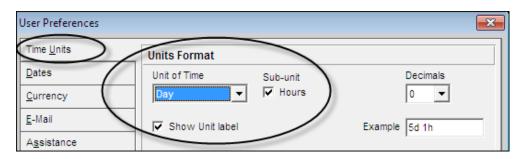
- 6. Add the **Resources** column to the Gantt Chart per the picture below.
- 7. Assign the following Resources to the Activities using the **Resource** tab icon:

Activ	rity ID	Activity Name	Resources
П	Bid for Faci	lity Extension	
	Technical	Specification	
	0Z1000	Approval to Bid	
	0Z1010	Determine Installation Requirements	Project Manager, Systems Engineer
	OZ1020	Create Technical Specification	Systems Engineer
	OZ1030	Identify Supplier Components	Purchasing Officer
	OZ1040	Validate Technical Specification	Project Manager, Systems Engineer
	Delivery P	lan	
	OZ1050	Document Delivery Methodology	Project Manager
	OZ1060	Obtain Quotes from Suppliers	Purchasing Officer, Project Manager
	OZ1070	Calculate Bid Estimate	Project Support
	OZ1080	Create the Project Schedule	Project Support
	OZ1090	Review the Delivery Plan	Project Manager, Systems Engineer
	Bid Docum	ent	
	0Z1100	Create Draft of Bid Document	Clerical Support, Project Manager
	0Z1110	Review Bid Document	Project Manager, Systems Engineer
	0Z1120	Finalise and Submit Bid Document	Project Manager, Report Binding
	0Z1130	Bid Docuement Submitted	

- 8. Enter 3 as the Budgeted Units and At Completion Units for the Report Binding.
- 9. Add the columns per below and your answer should look like this:

Act	tivity ID $_{ riangledown}$	Activity Name	Resources	At Completion Labor Units	At Completion Labor Cost	At Completion Expense	At Completion Material Cost	At Completion Total Cost
=	Bid for	Facilit	y Extension	520h	\$49,760.00	\$5,000.00	\$300.00	\$55,060.00
=	Technic	cal Spe	cification	152h	\$14,800.00	\$5,000.00	\$0.00	\$19,800.00
	0Z1000	Approva		0h	\$0.00	\$0.00	\$0.00	\$0.00
	0Z1010	Determir	Project Manager, Systems Engineer	64h	\$6,720.00	\$0.00	\$0.00	\$6,720.00
	0Z1020	Create T	Systems Engineer	40h	\$3,600.00	\$5,000.00	\$0.00	\$8,600.00
	0Z1030	Identify!	Purchasing Officer	16h	\$1,120.00	\$0.00	\$0.00	\$1,120.00
	0Z1040	Validate	Project Manager, Systems Engineer	32h	\$3,360.00	\$0.00	\$0.00	\$3,360.00
Ξ	Deliver	y Plan		224h	\$21,520.00	\$0.00	\$0.00	\$21,520.00
	0Z1050	Docume	Project Manager	32h	\$3,840.00	\$0.00	\$0.00	\$3,840.00
	0Z1060	Obtain C	Purchasing Officer, Project Manager	128h	\$12,160.00	\$0.00	\$0.00	\$12,160.00
	0Z1070	Calculat	Project Support	24h	\$1,920.00	\$0.00	\$0.00	\$1,920.00
	0Z1080	Create tl	Project Support	24h	\$1,920.00	\$0.00	\$0.00	\$1,920.00
	0Z1090	Review	Project Manager, Systems Engineer	16h	\$1,680.00	\$0.00	\$0.00	\$1,680.00
Ξ	Bid Do	cument	t	144h	\$13,440.00	\$0.00	\$300.00	\$13,740.00
Г	0Z1100	Create E	Clerical Support, Project Manager	96h	\$8,160.00	\$0.00	\$0.00	\$8,160.00
	0Z1110	Review	Project Manager, Systems Engineer	32h	\$3,360.00	\$0.00	\$0.00	\$3,360.00
	0Z1120	Finalise	Project Manager, Report Binding	16h	\$1,920.00	\$0.00	\$300.00	\$2,220.00
	0Z1130	Bid Doc		0h	\$0.00	\$0.00	\$0.00	\$0.00

10. Change the **User Preferences, Time Units, Units Format, Units per Time** to **Days** and see the difference:



11. You will notice that there is no column to display the Materials quantity at completion.

Activity ID	Activity Name	Resources	At Completion Labor Units	At Completion Labor Cost	At Completion Expense	At Completion Material Cost	At Completion Total Cost
Bid for	Facilit	y Extension	65d	\$49,760.00	\$5,000.00	\$300.00	\$55,060.00
∃ Techni	cal Spe	cification	19d	\$14,800.00	\$5,000.00	\$0.00	\$19,800.00
0Z1000	Approva		0d	\$0.00	\$0.00	\$0.00	\$0.00
0Z1010	Determin	Project Manager, Systems Engineer	8d	\$6,720.00	\$0.00	\$0.00	\$6,720.00
OZ1020	Create T	Systems Engineer	5d	\$3,600.00	\$5,000.00	\$0.00	\$8,600.00
OZ1030	Identify!	Purchasing Officer	2d	\$1,120.00	\$0.00	\$0.00	\$1,120.00
OZ1040	Validate	Project Manager, Systems Engineer	4d	\$3,360.00	\$0.00	\$0.00	\$3,360.00
■ Deliver	y Plan		28d	\$21,520.00	\$0.00	\$0.00	\$21,520.00
0Z1050	Docume	Project Manager	4d	\$3,840.00	\$0.00	\$0.00	\$3,840.00
OZ1060	Obtain G	Purchasing Officer, Project Manager	16d	\$12,160.00	\$0.00	\$0.00	\$12,160.00
OZ1070	Calculat	Project Support	3d	\$1,920.00	\$0.00	\$0.00	\$1,920.00
OZ1080	Create tl	Project Support	3d	\$1,920.00	\$0.00	\$0.00	\$1,920.00
OZ1090	Review	Project Manager, Systems Engineer	2d	\$1,680.00	\$0.00	\$0.00	\$1,680.00
■ Bid Do	cumen	t	18d	\$13,440.00	\$0.00	\$300.00	\$13,740.00
0Z1100	Create E	Clerical Support, Project Manager	12d	\$8,160.00	\$0.00	\$0.00	\$8,160.00
0Z1110	Review	Project Manager, Systems Engineer	4d	\$3,360.00	\$0.00	\$0.00	\$3,360.00
0Z1120	Finalise	Project Manager, Report Binding	2d	\$1,920.00	\$0.00	\$300.00	\$2,220.00
0Z1130	Bid Doc		0d	\$0.00	\$0.00	\$0.00	\$0.00



In a multi-user environment it is important that all users have the same User Preferences otherwise each person may display different Quantities at completion.

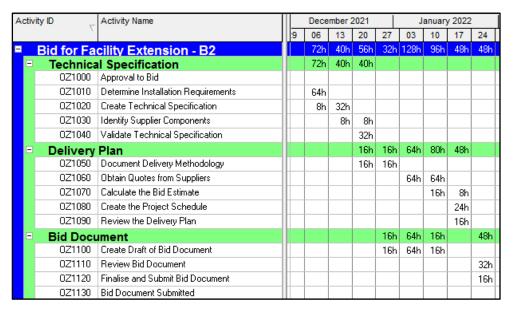
- 12. Change the User Preferences, Time Units, Units Format, Units of Time to Hours.
- 13. Save your layout as **OzBuild Workshop 16 Assigning Resources**.

20.12 Workshop 17 - Resources Optimization

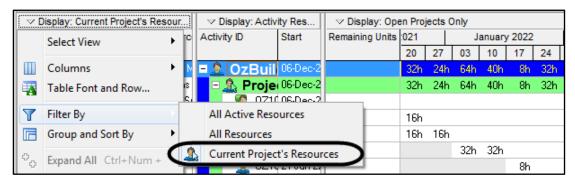


Assignment

- 1. Open the OzBuild schedule and apply the **OzBuild 10 With Float** Layout,
- 2. Display the **Activity Usage Spreadsheet** by clicking on the licon. The following picture shows the number of hours per week per activity, adjust the timescale to weeks:



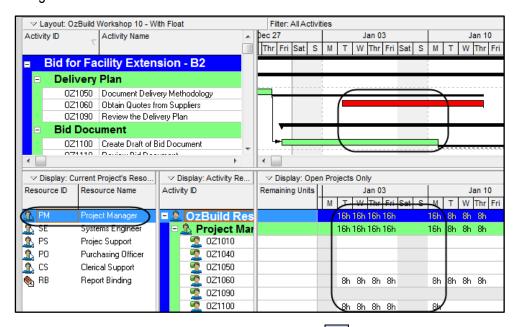
- 3. Display the **Resource Usage Sheet** by clicking on the icon.
- 4. Use the **Display**, **Filter** option in the bottom left window to display the **Current Project's Resources** only,



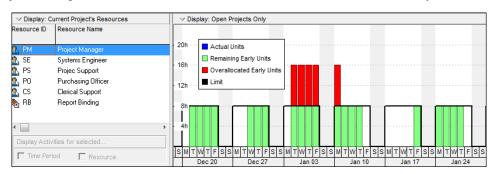
- 5. Select **Resource** for the option **Display Activities for selected...** (in the bottom left corner of the screen), this will display only the activities assigned to this resource.
- 6. Increase the timescale to a daily interval.

continued...

- Select the Project Manager (in the bottom left window), which will display the Project Managers Resource Table,
- 8. Select **Resource** (at the bottom of the bottom left window), which will select the activities Project Manager is assigned,
- 9. The **Projects Manager** is overloaded (16 hours per day) on a number of days where he/she is working two activities at a time:



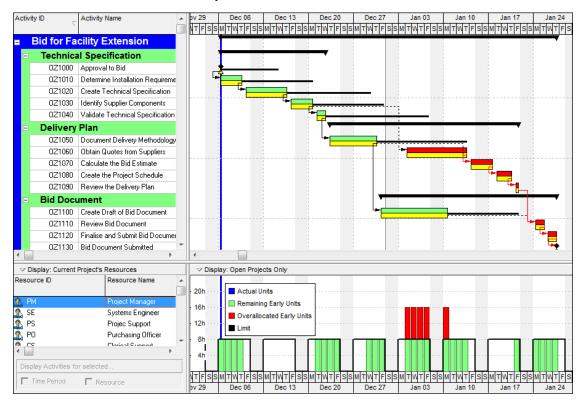
10. Display the **Resource Usage Profile** by clicking on the licon; you will also see that the Project Manager is overloaded from the end of December to start of January.



11. Check the other resources. Project Support appears overloaded on Saturday 15 January. This is because some activities are on a 6-day per week calendar and the resource calendar is a 5-day per week:

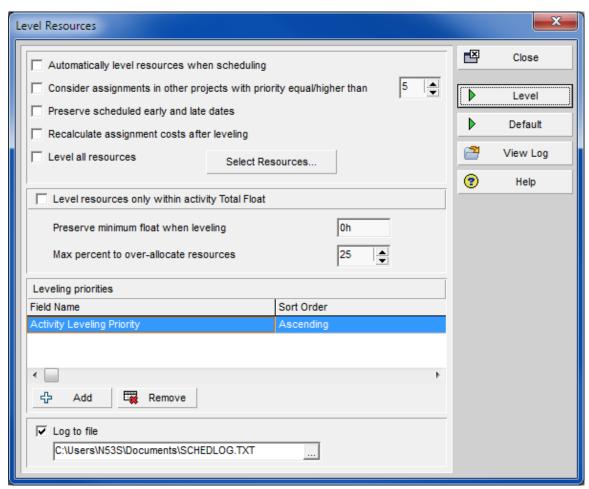


- 12. At this point in time resources may be optimized by a number of methods including:
 - Assigning a different resource, or
 - Reducing the assignment against the activities, or
 - Adding sequencing logic to level the schedule, or
 - Splitting activities, this has to be done by creating two activities in P6, or
 - Using the Bucket Planning function, or
 - Using the Primavera leveling function.
- 13. We will try using the leveling function to resolve the Project Managers overload.
- 14. Firstly we will create and assign a baseline and display the Baseline bar by:
 - Select <u>Project</u>, <u>Maintain Baselines</u>... and create a Baseline by saving a copy of the existing project,
 - Select <u>Project</u>, Assign Baselines... and select this as both your <u>Project Baseline</u> and <u>Primary User Baseline</u>, thus ensuring the baseline bar will either be blank or display the <u>Baseline</u> and not the <u>Planned Dates</u>.
 - > Apply your **OzBuild Workshop 13 Baseline** layout and the Baseline bar should be displayed,
 - ➤ If there is a yellow vertical band then this is created by the **Progress Spotlight** line. Drag the **Progress Spotlight** line back to the **Data Date**.
- 15. Display the Resource Usage Profile by clicking on the Licon,
- 16. Select Current Projects Resources.
- 17. Increase the timescale to a daily timescale.

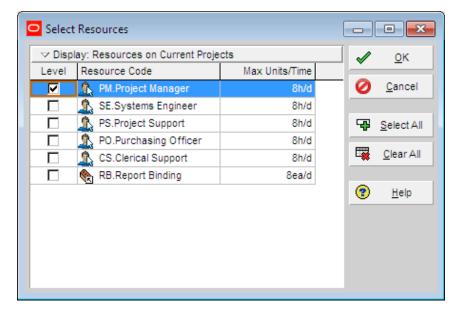


continued...

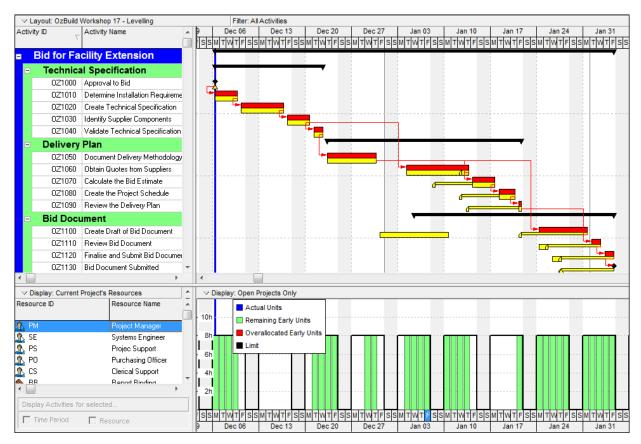
- 18. Save the layout as **OzBuild Workshop 17 Leveling**.
- 19. Select **Tools**, **Level Resources**.
- 20. Set options as per the picture below:



21. Click on the select Resources... icon and select only **Project Manager** to level:



- 22. Click on the local icon to return to the Level Resources form,
- 23. Click on the icon to level **Project Manager's** resource assignment:
 - The Project Manager's assignment will be leveled,
 - There should be Negative Float as your schedule should have a **Late Finish Constraint** on the last activity, and
 - There will be a Baseline variance.



- 24. Reschedule and therefore un-level by pressing F9.
- 25. You may now wish to work through and recreate some of the other examples in this chapter.
- 26. At the end of the workshop, schedule the project so it is not leveled.

21.10 Workshop 18 – Updating a Resourced Schedule

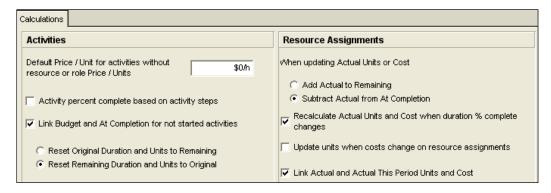


Background

We now need to update the activities and resources as of 13 Dec 21.

Assignment

- 1. If you did not complete the previous Leveling Workshop you will need to create and assign a baseline and display the Baseline bar:
 - Select <u>Project</u>, <u>Maintain Baselines</u>... and create a Baseline by saving a copy of the existing project,
 - Select <u>Project</u>, <u>Assign Baselines</u>... and select this as both your <u>Project Baseline</u> and <u>Primary User Baseline</u>, thus ensuring the baseline bar will either be blank or display the Baseline and not the <u>Planned Dates</u>.
- 2. Apply your **OzBuild Workshop 13 Baseline** layout and the Baseline bar should be displayed.
- 3. Go to the **Project Window**, **Calculations** tab ensure your settings are as per the following picture. These are the standard settings:



- 4. Assign the Project Manager to the Create Technical Specification activity as this resource was missed out at the estimating stage and will give an immediate difference between the Current Schedule and the Baseline Units and Costs.
- 5. Save the Layout as **OzBuild Workshop 18 Updating Resources** and format the columns as in the following picture. Display the Primary Baseline bar.
- 6. Update this schedule manually by entering the following data in the **Activities**, **Status** tab or columns. Ensure all activities are Physical % Complete.

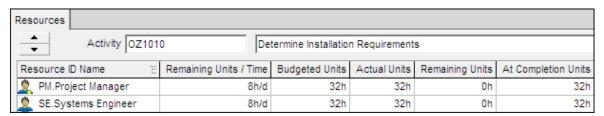
Acti	vity ID $ abla$	Activity Name	Actual Start	Actual Finish	Remaining Duration	Activity % Complete
П	Bid for Fa	cility Extension	07-Dec-21 08		32d	
E	Technica	l Specification	07-Dec-21 08		9d	
	0Z1000	Approval to Bid	07-Dec-21 08		0d	100%
	0Z1010	Determine Installation Requirements	07-Dec-21 08	09-Dec-21 16	0d	100%
	0Z1020	Create Technical Specification	09-Dec-21 08		2d	80%

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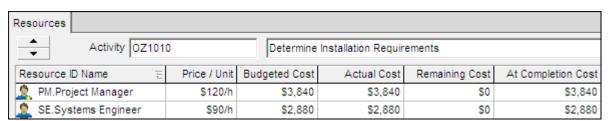
- 7. As you work through this workshop you should create several layouts, one for Actual Dates and Durations, one for Units, one for Costs, and one for Percentages. The Costs layout would display costs in the Activity columns and the Resources tab. The Units layout would display units in the Activity columns and the Resources tab.
- 8. Schedule and move the **Data Date** to 13-Dec-21 08:00.

Ac	tivity ID	Activity Name	Actual Start	Actual Finish	Remaining Duration	Activity % Complete	Original Duration	Â	Dec 06	Dec 13
Ξ	Bid for Fa	cility Extension	07-Dec-21 08		31d		36d			
	 Technica 	l Specification	07-Dec-21 08		6d		11d			
	0Z1000	Approval to Bid	07-Dec-21 08		0d	100%	0d		<u>, </u>	
	0Z1010	Determine Installation Re	07-Dec-21 08	09-Dec-21 16	0d	100%	4d		-	
	OZ1020	Create Technical Specifi	09-Dec-21 08		2d	80%	5d		-	

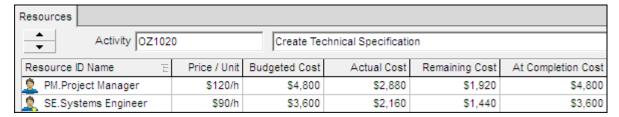
- 9. Create an **OzBuild Workshop 18 Units** layout and display the columns shown in the Resources tab as shown below. See how the resources have been updated.
- 10. OZ1010 is complete so there are no Remaining Costs or Remaining Units and the Actuals have been set to equal the Budget but may be manually adjusted.



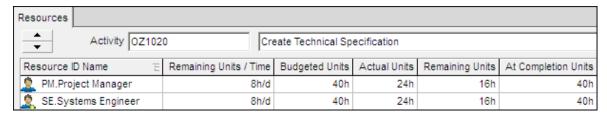
11. Now create an OzBuild Workshop 18 – Costs layout, format the columns and check the costs:



12. OZ1020 is in progress and the Remaining Units and Costs have been calculated from the Remaining Duration and the Remaining Units/Time, but may be manually adjusted.



13. Now display the **Workshop 18 – Units** layout and check the units:



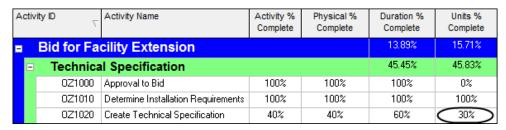
14. Check the expenses for the Specialist Consultant assigned to OZ1020; they do not auto update. Update the Actual Costs to \$2,000.00 and the remaining to \$4,500.00.



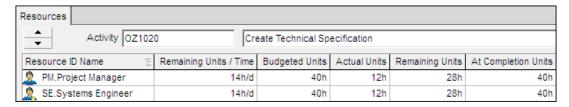
- 15. Now create an **OzBuild Workshop 18 Percentages** layout and display the Percent Complete columns as per the following picture. Ensure Group Totals are displayed:
- 16. Enter 40% against the Physical % Complete of Create Technical Specification and see the Activity % Complete change to 40% as the activity % Complete Type is Physical:

Δ	ctiv	ity ID	Activity Name	Activity % Complete	Physical % Complete	Duration % Complete	Units % Complete
Е		Bid for Fa	cility Extension			13.89%	20%
		Technica	l Specification			45.45%	58.33%
		0Z1000	Approval to Bid	100%	100%	100%	0%
		0Z1010	Determine Installation Requirements	100%	100%	100%	100%
		0Z1020	Create Technical Specification	40%◀━	→ 40%	60%	60%

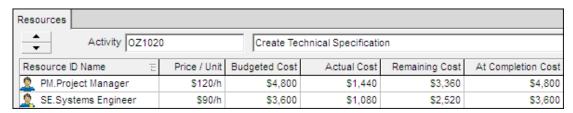
17. Select the Create Technical Specification activity, open the Status tab, and change the Actual Labor Units from 48h to 24h in the box on the right side. Notice the Units % Complete change to 30% as fewer hours have been used, but the Remaining has changed to 56 hours:



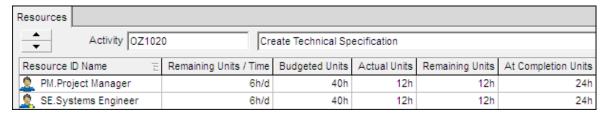
18. Now open the **OzBuild Workshop 18 – Units** layout and both resources now show 12h Actual and 28h remaining each. The **Remaining Units/Time** is now 14 hours/day because the **Activity Type** is **Fixed Duration and Units**:



19. Now open the **OzBuild Workshop 18 – Costs** layout and the Actual Costs and Remaining Costs are recalculated:



20. Now open the OzBuild Workshop 18 – Units layout and change the Remaining Units of Create Technical Specification in the Status tab from 56 to 24. Note the change in the Units and Costs against the resources.



 Now open the OzBuild Workshop 18 – Costs layout and the Actual Costs and Remaining Costs should have been recalculated:



22. Create a new View titled OzBuild Workshop 18 – Baseline Compare and edit the columns so you are able to see the At Completion Variances against activity OZ1020, the Technical Specification WBS Node, and the Project:

Activ	vity ID	Activity Name	Activity % Complete	BL Project Labor Units	At Completion Labor Units	Variance - BL Project Labor Units	BL Project Total Cost	At Completion Total Cost	Variance - BL Project Total Cost
	Bid for Fa	cility Extension		520h	528h	-8h	\$55,060.00	\$58,000.00	(\$2,940.00)
=	Technica	l Specification		152h	160h	-8h	\$19,800.00	\$22,740.00	(\$2,940.00)
	0Z1000	Approval to Bid	100%	0h	0h	0h	\$0.00	\$0.00	\$0.00
	0Z1010	Determine Installation Re	100%	64h	64h	0h	\$6,720.00	\$6,720.00	\$0.00
	0Z1020	Create Technical Specifi	40%	40h	48h	-8h	\$8,600.00	\$11,540.00	(\$2,940.00)
	0Z1030	Identify Supplier Compon	0%	16h	16h	0h	\$1,120.00	\$1,120.00	\$0.00
	0Z1040	Validate Technical Spec	0%	32h	32h	0h	\$3,360.00	\$3,360.00	\$0.00
=	Delivery	Plan		224h	224h	0h	\$21,520.00	\$21,520.00	\$0.00
	OZ1050	Document Delivery Meth	0%	32h	32h	0h	\$3,840.00	\$3,840.00	\$0.00
	0Z1060	Obtain Quotes from Supp	0%	128h	128h	0h	\$12,160.00	\$12,160.00	\$0.00
	0Z1070	Calculate the Bid Estimat	0%	24h	24h	0h	\$1,920.00	\$1,920.00	\$0.00
	0Z1080	Create the Project Sched	0%	24h	24h	0h	\$1,920.00	\$1,920.00	\$0.00
	0Z1090	Review the Delivery Plar	0%	16h	16h	0h	\$1,680.00	\$1,680.00	\$0.00
=	Bid Docu	ıment		144h	144h	0h	\$13,740.00	\$13,740.00	\$0.00
	0Z1100	Create Draft of Bid Docu	0%	96h	96h	0h	\$8,160.00	\$8,160.00	\$0.00
	0Z1110	Review Bid Document	0%	32h	32h	0h	\$3,360.00	\$3,360.00	\$0.00
	0Z1120	Finalise and Submit Bid [0%	16h	16h	0h	\$2,220.00	\$2,220.00	\$0.00
	OZ1130	Bid Document Submitted	0%	0h	0h	0h	\$0.00	\$0.00	\$0.00

- 23. At this point you may experiment with this activity. Uncheck **Auto Compute Actuals** will allow you to change the Costs and they are not recalculated from the Resource Rate.
- 24. You may also look at some of the other tabs such as the **Summary** tab.

22.9 Workshop 19 – Activity Codes and User Defined Fields



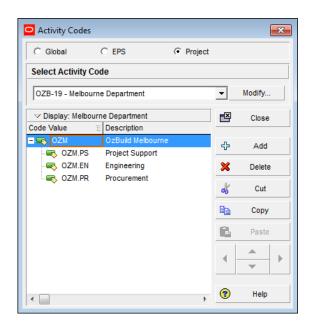
Background

This workshop will look at creating an Activity Code and some UDFs. In the next workshop you will populate the UDFs using a Global Change.

We will create an activity code to represent the departments' responsibilities for the Project.

Assignment – Activity Codes

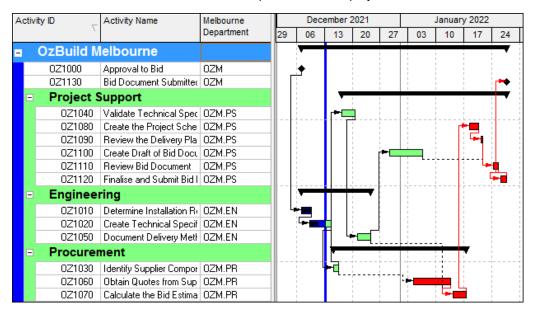
- Select Enterprise, Activity Codes... to open the Activity Code form,
- 2. Click on the **Project** button at the top of the form.
- 3. Select do open the Activity Code Definitions Project form.
- 4. Select to create a new code titled **Melbourne Department** and assign a **Max Length** of 3.
- 5. Click on to close the form.
- Create the Activity Code Values and Descriptions as in the picture on the right.
- Apply the OzBuild Workshop 10 Without Float layout.
- Add the Melbourne Department column per the picture and save the layout as OzBuild Workshop 19 – Assign Codes layout.
- Assign the Melbourne Departments using all the methods available as in the following picture:



Acti	vity ID	Activity Name	Melbourne Department
	Bid for Fa	cility Extension	
Ε	Technica	l Specification	
	OZ1000	Approval to Bid	OZM
	OZ1010	Determine Installation Requirements	OZM.EN
	OZ1020	Create Technical Specification	OZM.EN
	OZ1030	Identify Supplier Components	OZM.PR
	OZ1040	Validate Technical Specification	OZM.PS
E	Delivery	Plan	
	0Z1050	Document Delivery Methodology	OZM.EN
	OZ1060	Obtain Quotes from Suppliers	OZM.PR
	OZ1070	Calculate the Bid Estimate	OZM.PR
	OZ1080	Create the Project Schedule	OZM.PS
	OZ1090	Review the Delivery Plan	OZM.PS
Е	Bid Docu	ıment	
	0Z1100	Create Draft of Bid Document	OZM.PS
	0Z1110	Review Bid Document	OZM.PS
	0Z1120	Finalise and Submit Bid Document	OZM.PS
	0Z1130	Bid Document Submitted	OZM

continued...

- 10. Now Group and Sort by the **Activity Code: Melbourne Department**, sort by Activity ID. The Milestones are now at the top of the screen.
- 11. Display the Project Baseline Bars and Project Baseline Milestones and move them both to the bottom of the form to ensure the relationships would be displayed on the Current Schedule bars:



- 12. Save the layout as Workshop 19 Activity Codes.
- 13. Now Group and Sort by the **WBS**, sort by **Activity ID**.

Assignment - UDFs

14. We will create some UDFs which we will populate using a Global Change.

NOTE: If you are in a shared database the instructor will create these UDFs.

- 15. Select Enterprise, User Defined Fields... to open the Used Defined Fields form,
- 16. Select **Activities** in the drop-down box at the top of the form,
- 17. Add three UDFs titled:
 - Last Period Start as a Data Type of Start Date
 - Last Period Finish as a Data Type of Finish date
 - Last Period AC Dur (Last Period At Completion Duration) as a Data Type of Number.
- 18. Display the columns and Group by WBS as in the following picture:

A	ctivi	ty ID	Activity Name	At Completion Duration	Last Period AC Dur	Start	Last Period Start	Finish	Last Period Finish
=		Bid for Fa	cility Extension	35d	0.00	07-Dec-21 08 A		27-Jan-22 16	
	=	Technica	l Specification	10d	0.00	07-Dec-21 08 A		20-Dec-21 16	
		0Z1000	Approval to Bid	0d		07-Dec-21 08 A			
		0Z1010	Determine Installation Re	3d		07-Dec-21 08 A)9-Dec-21 16 /	
		0Z1020	Create Technical Specif	4d		09-Dec-21 08 A		14-Dec-21 16	
		0Z1030	Identify Supplier Compor	2d		15-Dec-21 08		16-Dec-21 16	
		OZ1040	Validate Technical Spec	2d		17-Dec-21 08		20-Dec-21 16	
	=	Delivery	Plan	21d	0.00	21-Dec-21 08		21-Jan-22 16	

19. Save the Layout as **Workshop 19 – UDF**.

23.11 Workshop 20 - Global Change

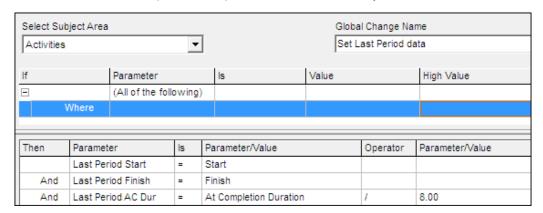


Background

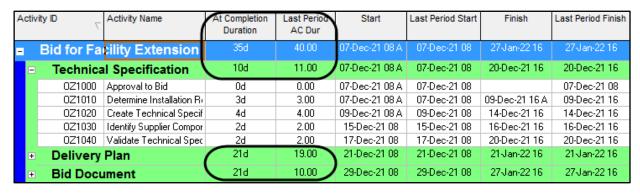
We wish to copy the current update information to the User Defined Fields created in the previous workshop.

Assignment

- 1. Apply the Workshop 19 UDF Layout.
- 2. Create a Global Change titled **Set Last Period Data** and add the following parameters:
 - Last Period Start to equal Start
 - Last Period Finish to equal Finish
 - Last Period AC Dur to equal At Completion Duration divided by 8 as P6 calculates in hours:



3. Run the Global Change and commit the changes with the icon at the bottom of the screen:

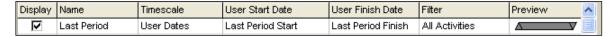


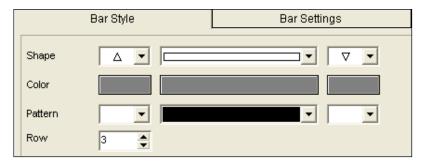


You will notice that the WBS and Project Last Period Durations are not correct and are a mathematical addition of the values below. To resolve this you may either:

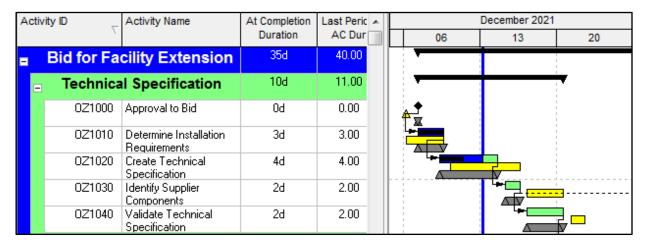
- Hide the Group Total in the Group and Sort form, or
- Use a further Global Change Line to put the Durations in a Text UDF that will not add up in the WBS and Project fields.

4. Create and display a gray bar showing from **Last Period Start** to **Last Period Finish** and place in position 3.

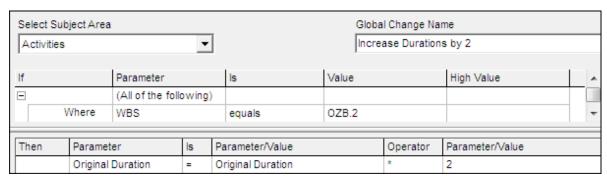




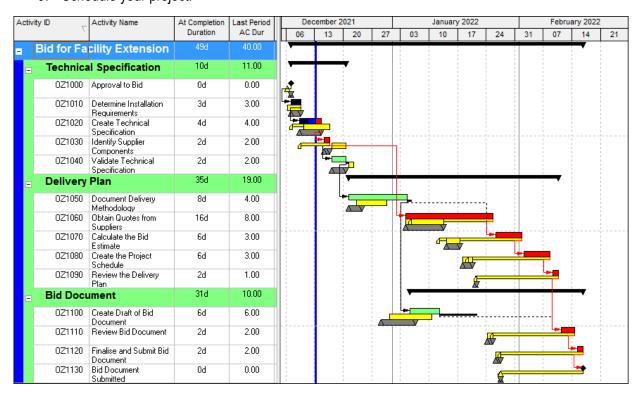
- 5. Display the Project Baseline, Total Float and Negative Float bars.
- 6. Adjust the row height as required and your schedule may look like the following picture with three bars.
- Save the layout as OzBuild Workshop 20 Last Period Bars.



8. Create and run a Global Change to multiply the Original Durations of Activities in the Delivery Plan Phase by 2.



9. Schedule your project:



10. You will notice that Negative Float has been created and the change in durations is observed in the bars and from the differences in the Duration values.