University of Essex

IT Training

Microsoft Project

Vicky Samways, IT Training
Information System Services

Version 2.1

Scope

Learning outcomes

- Find out when and how to use Microsoft Project.
- Learn how to create a project, break it up into tasks and track its progress.
- Learn how to structure your projects effectively to achieve successful completion.

Table of Contents

Introduction

Microsoft Project is a tool which allows you to plan and manage a project by splitting it down into tasks and allocate resources to complete those tasks. Results and information can be displayed in a variety of ways. Following this methodology will facilitate the drawing together of principles.

The Microsoft Project Map

The Microsoft Project Map outlines the three phases of the project cycle:

- Build a plan
- Track and manage a project
- Close a project

Note: Project is a blunt tool which does not always reflect reality and needs to be used carefully and with some resorting to lateral thinking in order to achieve the best effect.

Getting started

Things needed to create a project

- Determine a list of tasks.
- Estimate length of time for completion of each task.
- Establish a sequence of events from start to finish showing how one task depends on others.
- Determine the resources available to complete the tasks.
- Allocate the resources to tasks.
- Adjust the task durations, relationships, and resource allocations until a satisfactory path from beginning to end of the project is achieved.

Tracking a project as it happens

1. Generate a list or report of tasks to be undertaken.
2. Enter actual information about the tasks completed or in progress.
3. Compare with the agreed plan.
4. Generate feedback information on deviations from the agreed plan.
5. Take management decisions to correct or alter progress, revise schedules.
6. Reiterate steps 2 to 6 until the project is complete.

Views

Setting up the views in your project

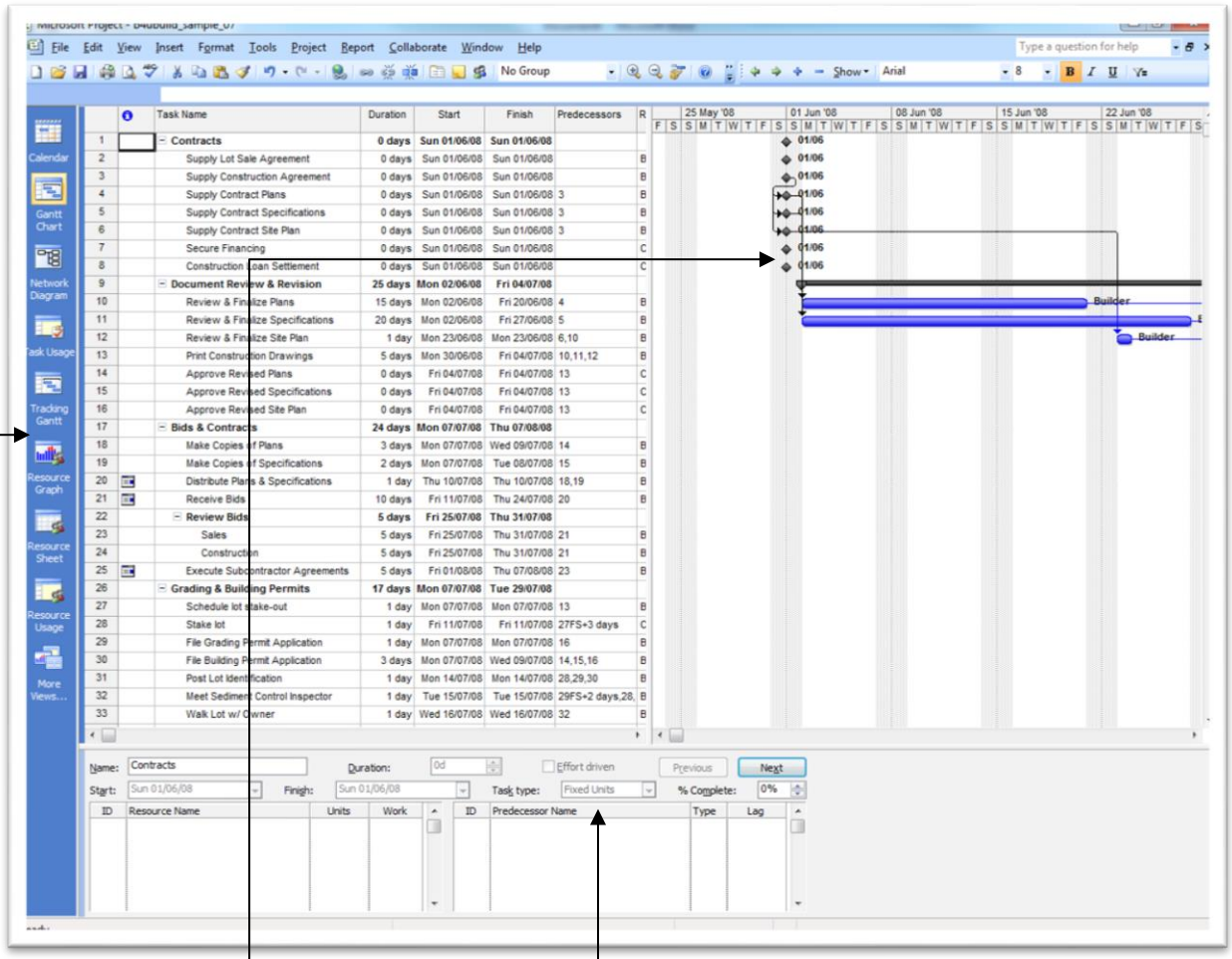

Figure 1

To set up the **View Bar,** click on **→View →View Bar**.

To view the **Gantt Chart,** click on **View →Gantt Chart**.

To view the **Task Form**, click on **Window →Split**.

Starting a new project

When you open Project it starts with a new blank project. Or you can start a project with **File →New**.

The first thing you should do is to check the project properties (this window appears automatically with **File →New**). To open it manually click on →**File →Properties**. The window looks as follows:

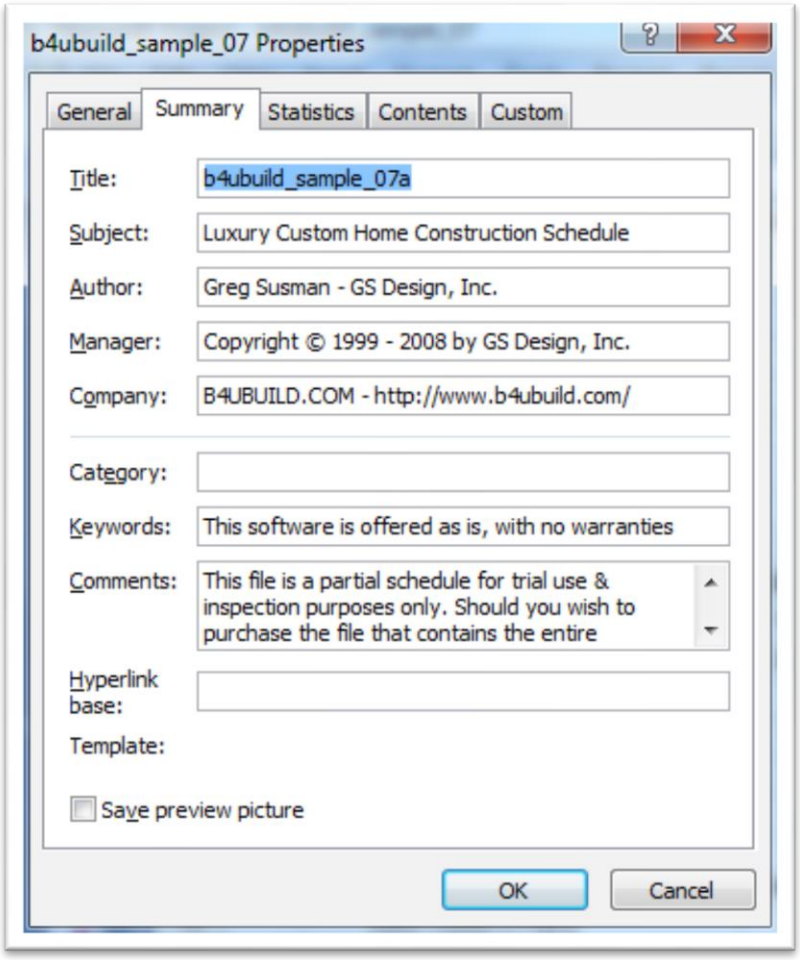

Figure 2

Schedule from start or finish

You must decide whether to schedule the project from the start date or the finish date.

To do this, go to →**Project Project** →**Information** and select **Project Start Date** from the drop down box.

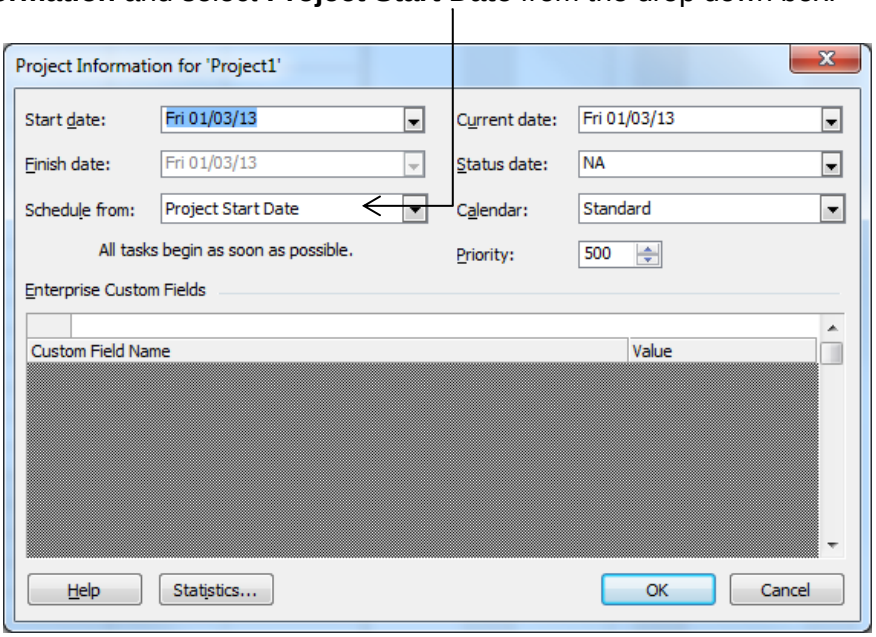

Figure 3

This will enable one of the two boxes above for you to enter the appropriate date.

The projects scheduled from the start date start all tasks as early as possible, projects scheduled from the finish date start all tasks as late as possible. Be aware of the consequences.

You can also choose which calendar to use, Standard, Nightshift or 24 Hour.

Note: You can create your own calendars if needed.

Note: If you are setting up your project as we go through the notes, at this point you should set your Project Start Time to next Friday.

The working calendar

Once you have created your project you need to set up your working calendar, informing Project about working hours and bank holidays.

To do this click on **Tools →Change Working Hours**. The following window appears:

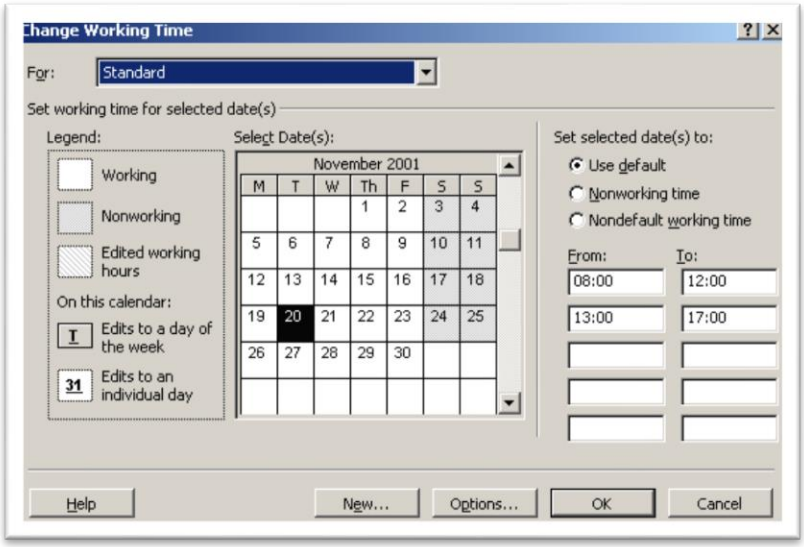

Figure 4

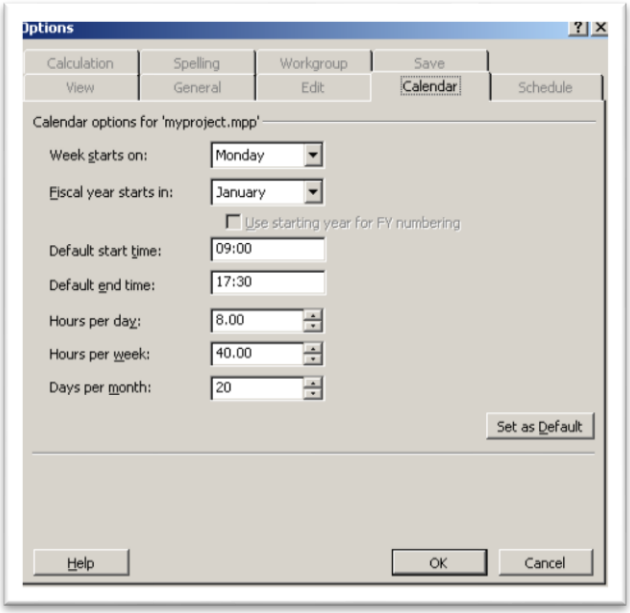

Figure 5

Individual days can be set as Non-working Time eg bank holidays or every occurrence of a weekday can be given an individual working time.

Click on →**Options** button and check the hours per day and hours per week values.

These are important because if you decide a task takes 1 day to complete Project will interpret this as 8 hours (as default) and if there are not 8 working hours in the day scheduled the task will run over into the next working day. Similarly with weeks.

To set-up a new calendar

1. Go to **Tools menu →Change Working Time →New**.
2. In the **Name** box, type a name for your new calendar.
3. To begin with a default calendar **→Create New Base Calendar**.
4. To create a new base calendar based on an existing calendar **→Make a copy of →type calendar name (in the calendar box) →OK**.
5. Make the required changes to the calendar:
6. Under Set selected date(s) to **→Use Default**, Nonworking time or Nondefault working time.
7. To change **Nondefault** working time, type the times you want work to start in the **From** boxes and the times you want work to end in the **To** boxes.

To assign a calendar to a task

In the **Task Name** field, select the task to which you want to assign a calendar.

1. Display the **Task Information** dialog and click the **→Advanced** tab.
2. In the **Calendar** box, click the calendar you want to use for the task.
3. Select the **Scheduling ignores resource calendars** check box to have the task calendar ignore all resource calendars if applicable.
4. If you choose to have Project ignore resource calendars, a task will be scheduled even if resources assigned to the task have non-working time set in their resource calendar.

If you want to use a created calendar in several projects then it can be copied into the Normal template by using **Tools →Organiser.**

Tasks

The project should be broken down into its basic tasks. For example suppose we wish to lay a new patio in our garden then the tasks involved might include mapping the garden, designing the patio, ordering materials etc.

Task 1: A new patio

Tom wishes to create a new patio in his garden. This will require him to clear some ground and lay hard core, concrete and finally tiles on a bed of sand. The hard core can be picked up from a supplier, the sand and tiles can be delivered and rubbish must be removed. The concrete comes ready mixed from a firm that only deliver on Tuesdays or Thursdays. He has a friend, Dick, and who can help him mornings only.

- Go into Project making sure the view is of **Gantt** chart and in **Task Column** enter the following tasks:

1	Draw plan of garden
2	Design new patio
3	Calculate quantities
4	Find estimate of cost
5	Order materials
6	Prepare ground
7	Lay foundation
8	Lay tiles

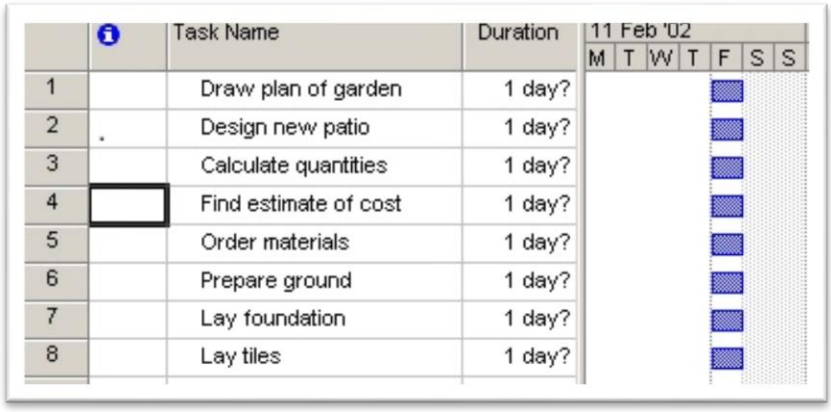

Figure 6

Notice that Project automatically sets the duration of a task to 1 day and follows it with a query because it is an estimate. To enter the actual durations **type** in the number of days (default) eg 1, 1.5d, 2 days etc or the number of hours (units essential eg 3h 4 hours) Times can be in week or months as well.

Note: for all calculations the duration is in resource hours (typically man hours) 1 day = 8 hours, 1 week = 40 hours, 1 month = 800 hours see section on calendar. So when entering the duration of a task to which you intend to allocate 2 people for 2 days enter it as 4 days. Project will reduce the elapsed time when resources are allocated.

- Change the durations of the tasks entered as follows:

1	Draw plan of garden	4h
2	Design new patio	1d
3	Calculate quantities	2h
4	Find estimate of cost	2h
5	Order materials	4h
6	Prepare ground	3d
7	Lay foundation	2d
8	Lay tiles	2d

The Gantt Chart should look something like this. →

Figure 7

End task

Editing tasks

Task information can be edited as you would edit an Excel cell BUT never press delete unless you want to delete the whole task.

- Add **Notes** to tasks to provide details - double click the task name →**Notes** Tab.
- Attach **Documents** to tasks by double clicking the task name →**Insert Object**.

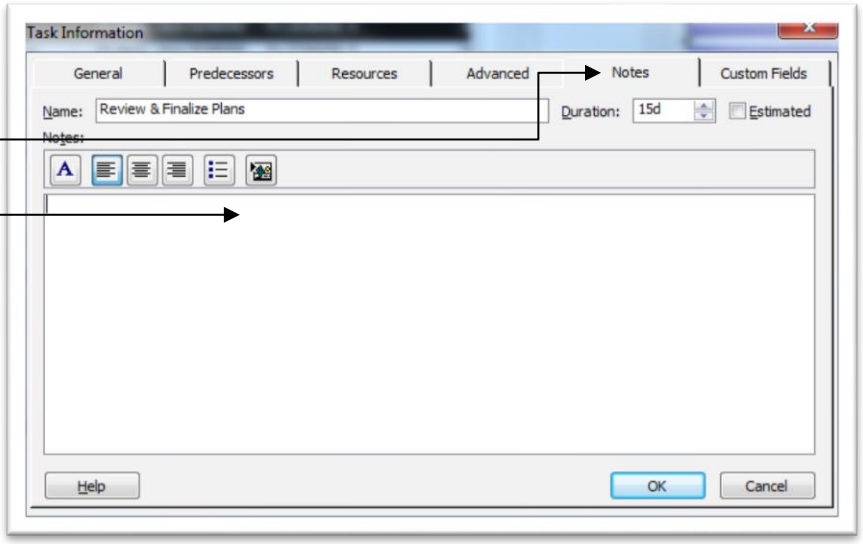

Figure 8

Insert **Hyperlinks** to tasks:

1. Select task →**Insert Hyperlink** (from standard toolbar); or
   Select tasks →**Ctrl K**; or
   Right click on tasks →**Hyperlink**.
2. Choose existing file or web page.
3. From the look in section, click the dropdown →**arrow**, navigate to the file you wish to hyperlink to.
4. Select the required document.
5. If you require a screen tip, click the →**Screen Tip** button in the top right corner and complete the screen tip text and click →**OK**.
6. Click →**OK** and observe that a hyperlink icon has appeared in the **Indicators** column.
7. To open the document from within Project, click the →**hyperlink icon**.

Creating a Work Breakdown Structure (WBS)

Subtasks are defined by being **indented** - the task above **automatically** becomes a summary task formatted in **bold**.

- An indented hierarchy in the Project is known as a Work Breakdown Structure (WBS).
- It is created by indenting task(s) which then make the row above into a summary task (bold)
- The Project summary task, which summarises the whole project is by default not turned on and can be activated by clicking on **Tools →Options →View →Project Summary Task**
  (this is what you have called the title of the document in the Properties).

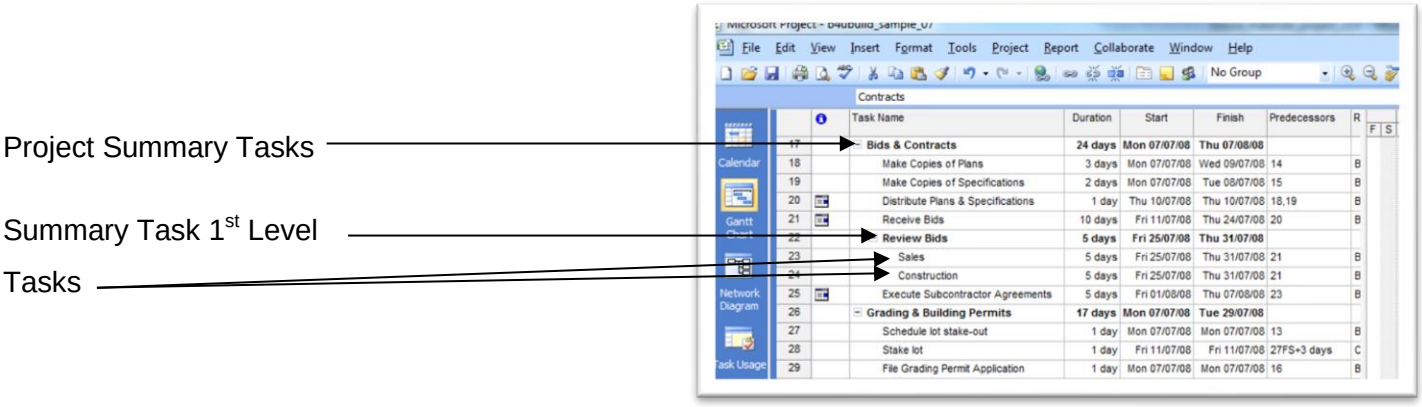

Figure 9

Tips for naming tasks and setting level of detail

Summary tasks: use a broad description ("selection phase", "user testing").

Tasks: verb + noun are often enough ("brief consultant", "install transformer").

Milestones: describe a point in time, a start/end ("start of review", "testing completed").

To find the right level of detail for your tasks aim for tasks that:

- have durations that can be reasonably estimated;
- are hard to divide into smaller tasks;
- will be easy to measure progress/completion;
- are self-contained; and
- are likely to be carried out by parties outside your project.

If you still need to add further detail you can avoid having to create more tasks by adding the additional information into the task notes tab (double click on the →**task name**).

Scheduling time

- **Lag** is waiting time.
- **Lead** is opposite of Lag.
- **Elapsed** time is the actual time taken from start to finish.
- **Start** time is when the task is started.

Moving tasks and adding extra tasks

To move a task, select the whole of the task row and **drag** it to where you want it.

If you need to add extra tasks simply select the task before which the new task is to go and press →**Insert**. Add the extra tasks as follows and change the duration of Lay Foundation to **0 days**

Task	Name	Duration
1	Preparation	0 days
9	Get Hard Core	1 day
10	Remove rubbish	1 day
11	Get and Spread concrete	0.5 days
12	Let Concrete dry	2 days
13	Lay Surface	0 days
14	Get Tiles and Sand	4 hrs

Notice that these 3 tasks have 0 durations and appear on the Gantt chart as a date. These are master tasks and check points. To turn them into master tasks select the tasks below them and demote them using the demote button Right pointing green arrow:

The Gantt chart should look like this: →

It is possible to display a project summary task which relates to the whole project.

Choose from the **Menu →Tools →Options →View** and ***check*** the box Project Summary task.

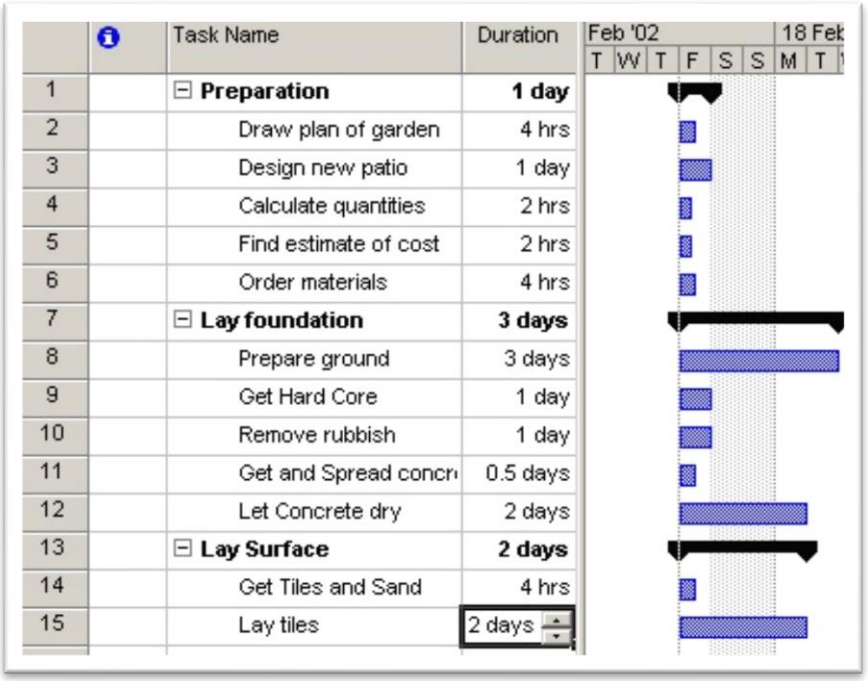

Figure 10

Elapsed Time

The **Let Concrete Dry task** has a duration of 2 days, but on the diagram this appears to take 4 days of which two are the weekend, ie non-working days. But the concrete will dry even if no one is working. To take this into account type 'e' before days to indicate elapsed days.

Figure 11

Recurring Tasks

To add a task which occurs regularly, select →**Insert** →**Recurring Task** and fill in the relevant boxes. These are best displayed near the top away from other tasks. Let us assume that Tom has to run the children to school every day which takes 1 hour. Enter appropriately.

For simplicity's sake for the rest of the example delete this task.

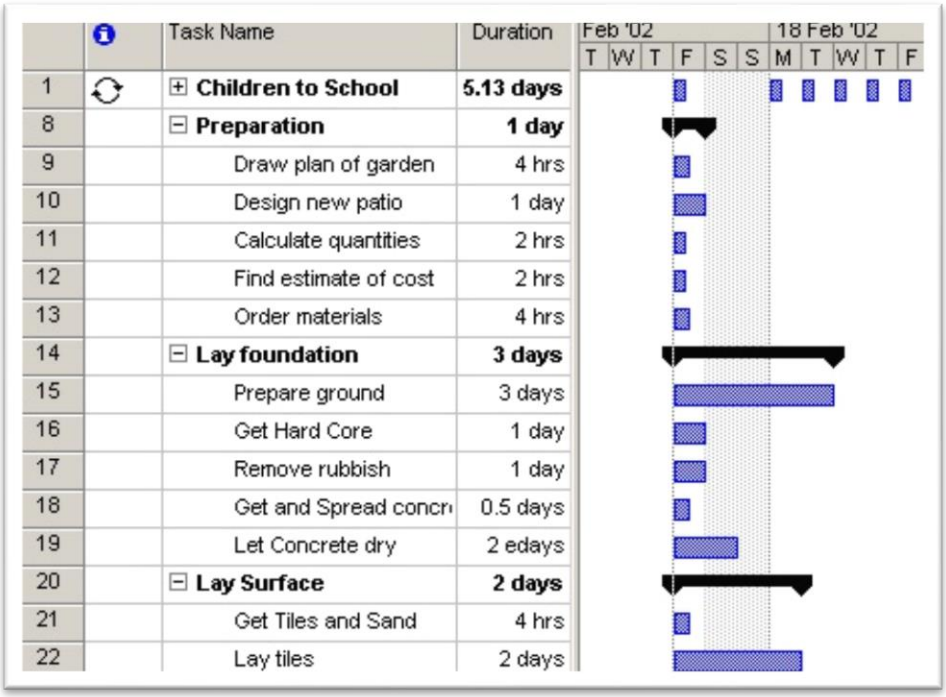

Figure 12

Relationships and dependencies

There are 4 ways in which tasks can be related:

1. Finish to Start (FS) where the ending of one task enables the start of another. (This is the default)
2. Start to Start (SS) where as one task starts so may another
3. Finish to Finish (FF) where the end of one task is related to the end of another.
4. Start to Finish (SF) rarely used, the finish of the current task is in some way related to the start of a predecessor.

Note that the starts and finishes do not have to be at the same time but they are related eg task B can start 10 minutes after task A has started. This is taken into account by inserting Lags (a positive offset) or Leads (a negative offset).

The example in *Figure 13* (following) describes having a tea break and illustrates the four types of dependencies. Most are the default, for example you can only fill the kettle when you have walked to the tearoom (FS).

However you can start preparing the teapot as soon as you have started the kettle boiling (SS). It makes sense that you finish eating your biscuit at the same time that you finish tea (FF).

You have to be back in your office 15 minutes after you leave, so the completion of the last task must be 15 minutes after the start of the first (SF) with a lag of 15 minutes.

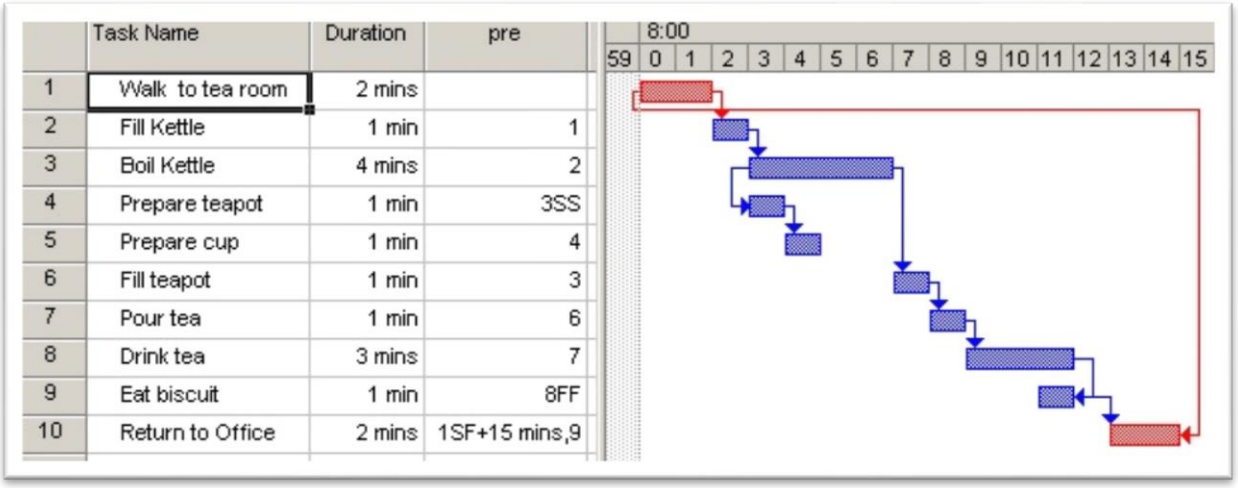

Figure 13

Breaking links

- Double click on →**dependency line** between the tasks, from the task dependency dialog box that appears click →**Delete**.
- Highlight or Ctrl click →**the tasks to be disconnected** and click the →**unlink tasks** button on the standard toolbar.
- Double click on the →**task name**. On the predecessors tab, click on the →**predecessor** to remove and press →**Delete**.
- On the successor task row, in the predecessor column delete the values in the cell.
- With a split screen in the lower right half of the screen, select the predecessor to remove and press →**Delete**.

Task 2: Enter a dependency

To enter a dependency move the mouse into the centre of the first task until it becomes a **4 headed arrow**. Then **drag** into the middle of the next task. The five tasks in the preparation section are sequential drag from one to the next as above to show this.

It is often easier to enter dependencies by typing values into the predecessors column. This column is several columns to the right under the Gantt chart.

To see the predecessors column select →**the start and finish columns**, right click and select →**Hide**.

Figure 14

Task 8 - *Prepare ground*, can't start until task 6 has been completed, so type 6 in the Predecessors column. *Getting the hard core* (9) and *Clearing the rubbish* (10) can't start until task 8 has started, but they can be going on whilst task 8 is happening, subject to the constraint that it's no good getting the hard core until one days preparation has been done and you can't finish clearing the rubbish until you've finished the preparation.

To enter this information make both tasks (9 and 10) dependent on task 8 then right click on →**Task 9** and choose **Task Information**.

The following window appears, choose the **Predecessors** tab:

Change the type from Finish-to-Start to Start-to-Start and enter a lag of 1 day

Similarly with task 10, change the type to Finish-to-Finish and allow a lag of 4 hours to clear away the last of the rubbish.

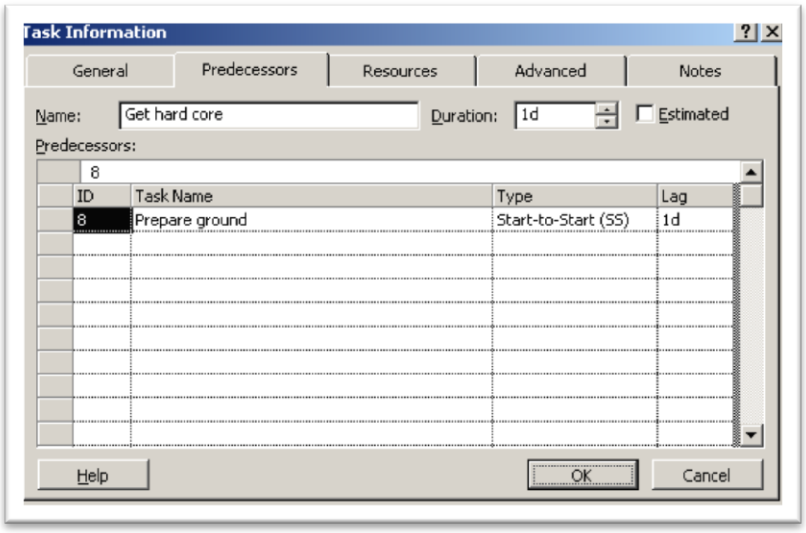

Figure 15

Set task 11 *Get and spread concrete* to be dependent on task 8 *Prepare Ground*, (note it might be said to be dependent on the *Removal of rubbish*, but given enough resources it could be happen while the final rubbish is being removed), set task 12 *Let concrete dry* to be dependent on task 11.

Task 14 *Get tiles and sand* can happen any time after the concrete is laid, so make it dependent on task 11. Task 15 *Lay sand and tiles* is dependent on task 14 and on task 12, so enter both numbers separated by a comma. The final project looks like this:

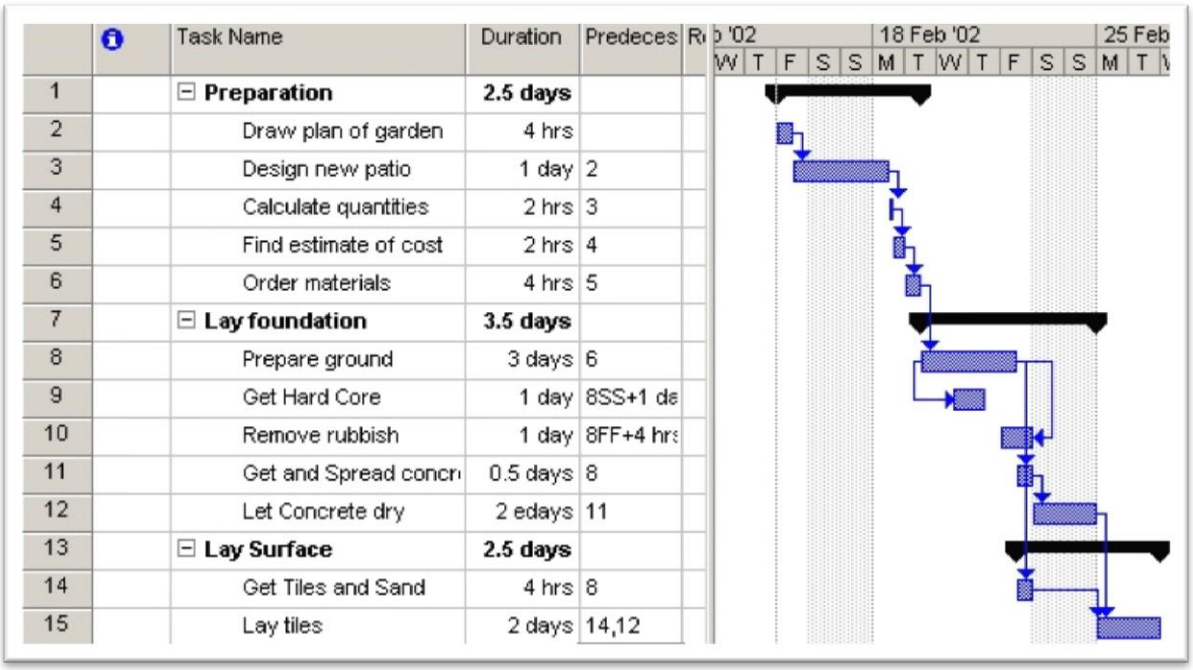

Figure 16

Task end

Critical Path

To see the Critical path, ie those jobs whose delay or early completion will have an effect on the project finish date, right click in the →**Gantt chart** and select **Gantt Chart Wizard**. Follow the wizard through selecting Critical path in the second window, otherwise accept the defaults, finally clicking on →**Format it**. Critical jobs appear on the chart in **Red**.

Using Lag (delay) and Lead time

To model delay between tasks you can either:

- Double click on the →**arrow linking the tasks**; or
- Double click on the →**name of the successor** and choose the **Predecessor** tab then;
- In the lag field add the number of days, estimated days or % delay.

A negative value produces **lead** rather than lag, and brings the successor earlier in the plan as opposed to delaying it.

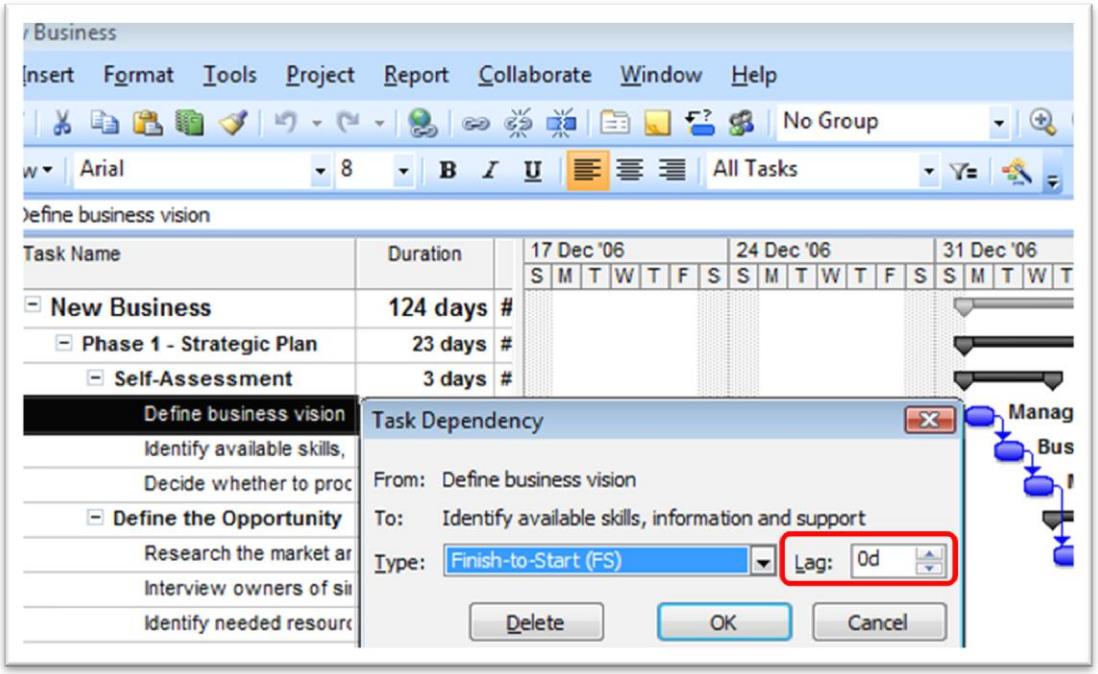

Figure 17

Note: a simpler way of dealing with Tasks is to use the Task Form as described in **Setting up the views in your project** *(page 4).*

To view the **Task Form**, click on →**Window** →**Split**.

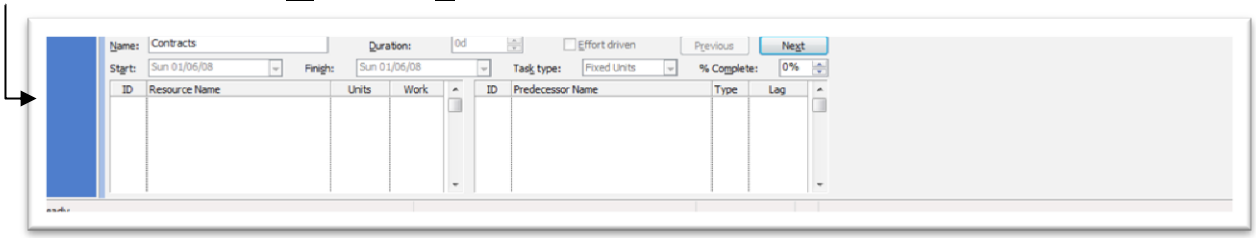

Figure 18

Setting Constraints

Use constraints to model dates that affect the start or finish of your tasks. In addition to the constraint and date you set, Project will also take into account other factors such as calendars, resource availability and dependencies when calculating where to place the task on the chart.

All automatically scheduled tasks have a constraint. By default this is set to **As Soon As Possible** (ASAP). This means that unless another task or link gets in the way Project will position the task as early in the plan as it can.

Modifying constraints

Double clicking on the name of the task to be constrained then from the advanced tab choose the constraint type and if appropriate add a date:

As Late As Possible (ALAP)	The task will take place as late it can.
Finish No Earlier Than (FNET)	Models a task that is not able to finish before a certain date, but could be delayed beyond it.
Finish No Later Than (FNLT)	Is used to describe tasks that are not able to finish beyond a date, but are able to finish earlier.
Must Finish On (MFO)	Positions the task's finish on the specified date.
Must Start On (MSO)	As MFO but positions the task's start on the specified date.
Start No Earlier Than (SNET)	The task starts on or after the specified date but no earlier.
Start No Later Than (SNLT)	For activities that must start on or before a specified date.

Setting deadlines

Deadlines added to a task show the date when it should finish but won't prevent the task being delayed beyond that date. Instead an alert icon appears in the indicators column if the task finishes later than its deadline. To add a deadline to a task:

- Double click the →**Task**.
- On the **advanced tab** enter a date in the **Deadline box → OK** (see *Figure 19* following).

  On the Gantt Chart a green arrow indicates the deadline for the task.
- To remove a deadline double click the →**Task** and delete the date from the deadline field →**OK**.

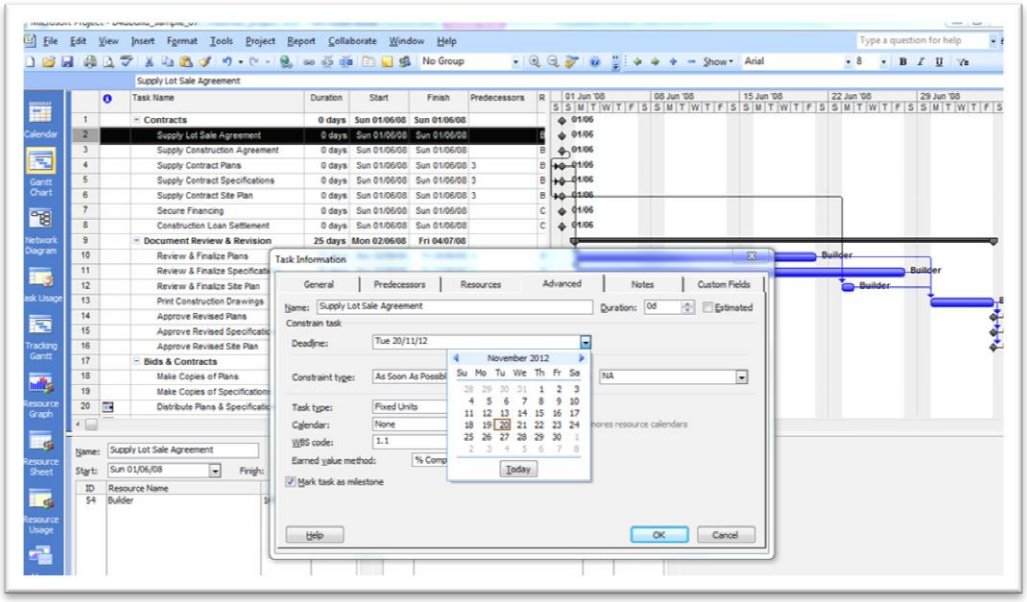

Figure 19

Bonus Task: Create a project schedule from scratch

A company intends to move a department from one office to another. You have the task of creating a project schedule for the move. The new office is to be operational on the **first working day of July.**

Use the following information to draw up a **task list**, **estimate task durations**, **create dependencies** and set a **project start date**. There are a number of tasks that have been identified; they are described here as they might be in a rough project brief.

1. A **survey** of existing office furniture and equipment will be conducted to assess the space required and to establish what new furniture will have to be **ordered**. It is anticipated that this survey will take **one day to complete**, with a further **day** being taken to plan and sketch the new layout.
2. A further **half-day** will be set aside for identifying and ordering the new furniture.
3. It has already been established that the suppliers will be able to **deliver five weeks from the date of order**.
4. From previous experience, we are confident that it takes roughly **half a day** to pack up the contents of all staff members' work areas.
5. A further **half-day** to pack the usable equipment and furniture for the journey.
6. It is normally possible to commence packing the equipment and furniture **two hours after** starting to pack the office contents.
7. The vehicle journey will take **one day** from start to finish.
8. Unpacking and re-installing the furniture is expected to take a further **half-day**, as is the installation of new furniture.
9. Neither can **start** until the new office has been carpeted.
10. Re-installing office equipment **cannot start** until the furniture is in place although all the cabling will have been completed before the new carpet is laid.
11. Decorating the new office will take **five days** and installing cabling for machines **two days**; however the cabling engineers can start their work **a day before** the painters complete their tasks.
12. Laying the carpet **cannot start** until all the cabling work has been completed and **three days** must elapse between the last of the painting and the carpeting starting.
13. It will take **one day** to carpet the empty office.

14. Because of a lack of storage space**,** no goods must be delivered until the carpet is **completed**.
15. Although it is accepted that office functions will cease during the move, **packing**, **moving** and **unpacking** should be executed in one steady flow of tasks.
16. As soon as the old office is vacated, the painters will spend **three days** making good; their task can extend beyond the date set for recommencing business.

End task

Reporting

When a project is in progress it is usually necessary to produce reports on how the project is performing in terms of schedule and cost.

To access built in reports: →**Reports** →**Choose Reports** →**select the category and report required**.

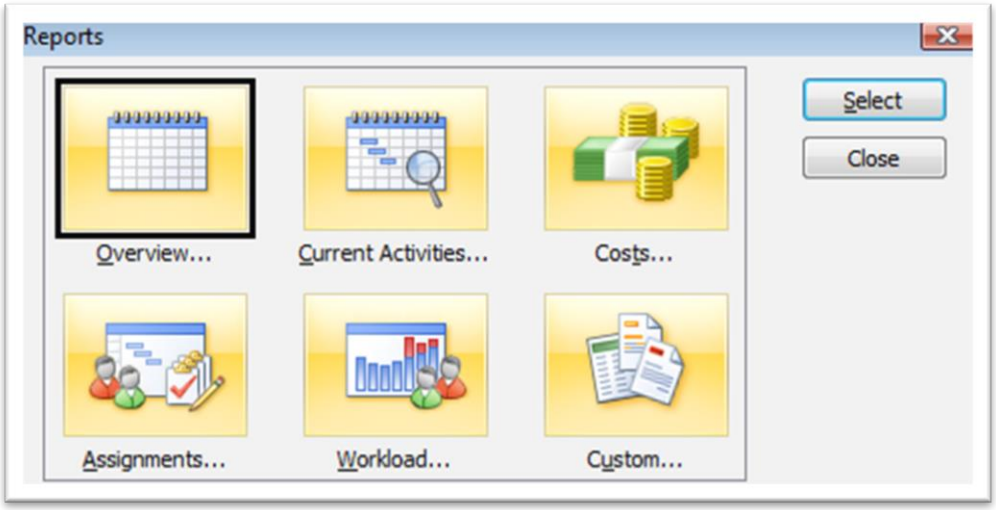

Figure 20

Overview:	Summarises the most significant project information, including numbers of tasks and resources, task and schedule status, costs, start and finish dates, and so on.
Current Activities:	Displays information about top-level tasks for the entire project. Includes summary tasks and task notes.
Costs:	Shows critical tasks for the entire project. Includes summary and successor tasks and task notes.
Assignments:	Shows project milestones. Includes summary tasks and task notes.
Workload:	Shows working and nonworking times for resources for the entire project duration.
Custom:	Create a new report.

Formatting for Printing

To print a view: **File →Print →select the relevant settings →OK**.

- Select the relevant printer.
- Specify which pages to print.
- Specify how many copies.
- Specify the period of time to be covered by the print.

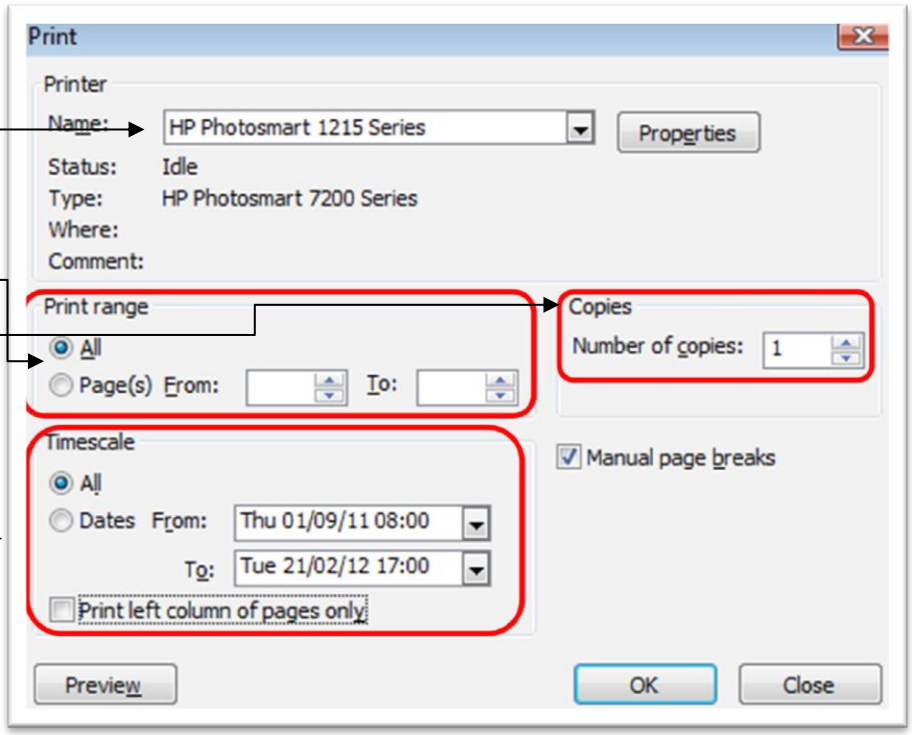

Figure 21

Project Management technologies

The University of Essex is rolling out an initiative exploring the various commercially available Project Management technologies.

- As part of this initiative, IT Training will be creating some online training videos using some of the popular alternative project management tools to Microsoft like Smartsheet, Kanban and Trello.

Contacts

For queries or help

- e-mail the IT Helpdesk at **desk@essex.ac.uk** in the first instance.
- If you are trying to work out what course may be right for you or your team e-mail the IT Training group at: **ittraining@essex.ac.uk**.

Useful resources

Training videos

- **www.youtube.com/uniessexit**

Online training materials from Microsoft

- Quick start Project training: **microsoft.com/project/en-us/quick-start-training.aspx**
- Project 2010 resources: **support.microsoft.com/ph/931/en-us**

Your feedback

Help us improve your training

Your feedback is important to us.

You will receive an e-mail asking you to complete an online feedback survey.

Please take a few minutes to tell us what you think.